Health, Ethics and Society

Solomon R Benatar
Professor of Medicine
University of Cape Town

Submitted to the University of Cape Town for the DSc (Med) Degree

This work is my own and has not been submitted for any other degree

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Table of Contents

1. Letter of submission

2. Dedication

3. Synopsis and list of selected publications

4. Selected articles for examination

5. Acknowledgments

6. Examiners' Reports

7. Curriculum Vitae

UNIVERSITY OF CAPE TOWN

Department of Medicine
Centre for Bioethics

Solomon R Benatar MBChB *Cape Town* FFA *SA* FRCP *London* FACP [Hon] FRS SAfr
PROFESSOR OF MEDICINE AND DIRECTOR UCT BIOETHICS CENTRE
J46 Old Groote Schuur Hospital
Observatory, 7925 • Cape Town • South Africa
Tel : +27 21 406 6115
Fax : +27 21 448 6815
Email : sbenatar@uctgsh1.uct.ac.za

5th June 2006

Professor Marian Jacobs
Dean Faculty of Health Sciences
University of Cape Town

Dear Professor Jacobs

Re: DSc (Med) submission 'Health, Ethics and Society'

This submission for the degree Doctor of Science in Medicine in our Faculty of Health Sciences is based on the scholarly work I have pursued during a lifetime in academic medicine at UCT, in response to challenges related to care of individual patients, the structure and nature of health care delivery systems, and to the ethical, social and economic forces that profoundly influence the health of individuals and whole populations.

All of my publications are listed in the attached curriculum vitae.

For the purpose of registration for the DSc I am enclosing a synoptic overview of my work and a list of selected publications in peer-review journals and invited chapters in books. Copies of all this work listed will be submitted for review.

Yours sincerely

To my wife, Evelyn and our sons David, Michael and Brian.

University of Cape Town

Health, Ethics and Society

Solomon R Benatar

In my research and academic work over 35 years I have addressed a wide range of issues relevant to the health of individuals, the structure and nature of health care delivery systems, and the ethical, social and economic forces that influence the health of individuals and whole populations in South Africa and globally.

The attached selected publications (92 of 231 peer review articles and book chapters) are representative of my research and serial academic involvement with health care considerations that cut across many disciplines (medicine, public health, applied ethics, political science, sociology and anthropology).

In this brief synopsis I outline the forces that motivated me and portray the relevance of my work as it evolved to include a range of interrelated aspects of medicine as a scientific, clinical, social, ethical and humanitarian endeavour, while I remained rooted in clinical medicine.

Respiratory Medicine [1-15]

My published work in respiratory medicine undertaken in the early part of my career and in the first few years after I was appointed as Head of the UCT/GSH Department of Medicine (1980), includes contributions to understanding mechanisms of airway obstruction in asthmatics, gas exchange and oxygen therapy in critically ill patients, smoking and lung function in children, and the pathophysiology and natural history of fat embolism, asthma, tuberculosis, sarcoidosis, and venous thromboembolism. This work has been published in several international journals and as invited chapters in books. Six articles have become citation classics (> 50 citations).

Health care services in South Africa [16-30]

When I was appointed as Professor and Head of the Department of Medicine at the University of Cape Town and Groote Schuur Hospital in 1980, a turbulent time in South Africa's history, my interests extended to include attention to broader aspects of medicine and health as outlined below. My first concern was to examine the health system within which our medical school functioned. This initial research formed the basis of my Inaugural Lecture ('Changes, Challenges and Choices in Medicine', New Series Inaugural Lectures No. 72, UCT, August 1981), and was one of the earliest studies on health care expenditure in South Africa.

My work on medicine and health care services in South Africa in the apartheid era, during a complex transition period and into the second decade of our new democracy reflects two concerns or motives – to ensure the sustainability of centres of excellence in clinical practice and medical education in South Africa's public sector and to enhance equity in the delivery of health care in our society.

In 1986 the editor of the *New England Journal of Medicine* invited me to write a definitive article on 'Medicine and Health Care in South Africa.' That article and

three single author sequels published in the NEJM over the following 18 years describe trends in medicine and health care in South Africa.[16, 22, 26, 28] Interspersed between these reviews I have published many articles on such specific issues as the need for a unitary health service, failure to control tuberculosis, the problems associated with increasing privatisation and commercialisation of health care, the potential implications of the transition process for health care in South Africa, the future of academic medicine, the legacy of apartheid on health in South Africa, and on the history and future of medicine in Africa [90, 91]

My work thus became increasingly focused on the adverse social impact of apartheid and economic disparities on health, on advocacy for a deeper level of introspection by the profession about its role in society, and on arguments in favour of the development of universal access to health care. While this work was stimulated by local considerations, the issues I have worked on have become of increasing relevance to all countries, and indeed in relation to global heath (see sections on International research ethics and Global health below). My concern that racial apartheid in health care would be replaced with economic apartheid has regrettably been confirmed -- with serious implications for medical education and health care in the future in South Africa. Widening disparities have similar implications for many other countries and at a global level.

Academic freedom and academic boycott [31-36]

In the mid 1970s many physicians left South Africa for political reasons. One of the challenges when I became Professor of Medicine in 1980 was to work with colleagues to rebuild a strong Department of Medicine and to ensure that the renowned medical training provided at UCT could continue into the future for new generations of students.

Academics who decided to remain in South Africa were contributing to changes taking place in the country. For example, progressive integration of all racial groups within the wards of Groote Schuur Hospital (University of Cape Town's main academic hospital) in the mid 1980s in the face of considerable opposition; striving for universal access to health care; [20] increasing sensitisation to adverse effects of apartheid on health care; [18, 24] and a gradual shift towards community/primary care based practice were uniting many health care professionals in transformative endeavours.

In the late 1980s the threat to academic medicine from the academic boycott came as a blow to those who were working for progress in our society while also opposing apartheid. We believed that we were members of a global community of physicians and academics held together by universal aspirations, universal moral and professional codes, universal scientific methods, belief in science and medicine as endeavours promoting human progress through co-operation across the world and devoted to the pursuit of new knowledge and health care for the benefit of all.

Grappling with the complex sentiments and arguments underlying the heated debate about academic boycott led to my writing several articles, on this topic (the first of which was published in *Nature* in 1991).[31] The thrust of the case I developed was that

although there were understandably different ideological and political perspectives on academic boycott, no adequate ethical argument had been advanced to justify the boycott as a moral imperative. My argument that moral justification could be provided for selective support of those working for relevant change in the country was conceded by NAMDA (the activist National Medical and Dental Organisation in opposition to the SA Medical Association) who soon thereafter adopted this idea.

Increasingly the view was shared that a crucial role for those in academic medicine was to sustain the best of academic medicine in South Africa, and to assist in preventing destruction of so much of value that had been built up over many decades which if severely damaged, would not easily be re-established in a new society. My article in the *Journal of the American Medical Association* provided criticism of the unprofessional way in which the Australasian College of Physicians had conducted itself in relation to the College of Medicine of South Africa.[33] My article on academic freedom and challenges for universities in South Africa in the *South African Journal of Science* sought to describe perspectives on academic boycott through Western and African eyes and from both capitalist and socialist perspectives.[34]

In 1991 the Royal Society of Canada held an International Symposium on 'Constraints to Freedom of Scholarship and Science.' National Academies of Sciences from many countries were invited to send speakers. The US National Academy of Sciences declined to send a representative and asked The Royal Society to invite me in their place because of my work on human rights and academic boycott. It was a great privilege to speak at the symposium and to assist the Royal Society with the publication of the proceedings.[36]

Medical Ethics (Bioethics), Human Rights/Social Responsibility in Medicine[37-57]

The impact of the rebirth of medical ethics as a scholarly field of work in the 1960s and 1970s (initially in the USA) was slow to reach South Africa. It was only in the early 1980s that a few South African physicians began to introduce this newly developing field of study into our local medical school teaching programmes. In 1985 I began to organise regular faculty symposia on bioethics in Cape Town, the proceedings of five of which were published under my editorship. With a philosopher colleague a new curriculum was designed for medical students and we have taught this together over the past 18 years.

While I have written on such subjects as abortion, euthanasia, resource allocation and other conventional topics in medical ethics my writings on such issues as the ethics of medical practice in relation to detention without trial, the care of hunger strikers, the right to health care, professionalism and the social responsibilities of physicians have raised the profile of ethical issues of special relevance to medicine in South Africa during apartheid.[37-43] These works published in several international journals remain relevant to medical practice in many countries and to events in the Abu Ghraib Prison and Guantanamo Bay.

I have also been a long-standing critic of privatisation and commercialisation of health care and of the narrow individualistic focus of North American Bioethics.[17 20 41] My

most recent article on professionalism in relation to global health challenges was published in *'Perspectives in Biology and Medicine'* .[82]

International research ethics [58-67]

Within bioethics I have developed a special interest in the ethical requirements for conducting international collaborative medical research in developing countries, a topic that was under the international spotlight as the Declaration of Helsinki and the CIOMS research ethics guidelines were being updated in the early 2000s. The stark implications of the HIV/AIDS pandemic, escalation of clinical research in developing countries and the imbalance of only 10% of world medical research expenditure on diseases causing 90% of the global burden of disease, rekindled concern about exploitation and other aspects of relationships between researchers and research subjects.

My research and writings focused on the need for: a) much more attention to justice in international collaborative research, b) avoidance of exploitation; c) understanding different world views, d) expanding the concept of the standard of care to be provided when undertaking research on vulnerable people in resource poor countries, e) seeking means of applying universal ethical principles in the context of poverty and cross-cultural considerations and e) linking medical research to improved standards of health care [58-65]

Global Health [68-92]

South Africa's abject failure during apartheid to meet up to universal aspirations for human dignity, in association with wide disparities in wealth and human flourishing in this country, attracted considerable international criticism. My research and work in medicine, health care, human rights and bioethics in South Africa gave me insight into how this country is in many ways a microcosm of the world, and led me to critically examine the upstream causal factors contributing to widening disparities in wealth and health at a global level.[72 73]

Through my study of global health and global economics I came to understand racial discrimination and exploitation and widening economic disparities (although more covert) as striking characteristics of the modern world – a form of 'global apartheid' with similar adverse effects to those forces operative in South Africa. The HIV/AIDS pandemic,with South Africa as one of worst afflicted regions in the world, has also been a major global force in changing how we think about health and disease. [57 61 79]

My work on Global Bioethics has advocated for extension of the bioethics discourse beyond the ethics of interpersonal relationships to include ethical considerations at macro relationships that influence population health. In 1995 I drew attention to the potential for tuberculosis to become an untreatable disease because of (potentially avoidable) emergence of multi-drug resistance [72] (*Thorax*). Other articles focused on the upstream forces promoting Global Disparities in Health and Human Rights [76] (*American Journal of Public Health*); Millennial Challenges for Medicine and Modernity (*Journal of the Royal College of Physicians of London* [77]); Globalisation, HIV and health with special reference to South Africa [79] *(International Affairs)* Global

Health Ethics; the rationale for mutual caring. [81] (*International Affairs*) and The Coming Catastrophe in International Health [80] (*International Journal)* - Journal of the Canadian Institute of International Affairs.

In 2000 the editor of the *American Review of Respiratory and Critical Care Medicine* invited me to write an article on threats to global health in order to bring these issues to the attention of scientists and physicians in respiratory medicine in the US and world-wide.[78] My chapter on ethics and tropical diseases analysing the social construction of poverty and human rights abuses, and the moral justification for changes in the global economy as a prerequisite for improving global health is the first chapter on ethics ever in *Manson's Tropical Disease* (21st Edition) [54] – and an updated chapter has been prepared for the 22nd Edition.

My most recent contribution to global health is an invited, co-edited, special issue of the journal *Theoretical Medicine and Bioethics* (January 2006) on the topic '*Challenges for global health in the 21st century: some upstream considerations*' [84 85] In this issue powerful upstream social forces influencing health are critically examined and proposals are made for reducing global injustice. Subsequently my work on ethical aspects of migration and recruitment of health care professionals from developing countries was published in the Royal Society of Medicine Journal '*Clinical Ethics*'.[86]

It is now dawning on many that a broad multidisciplinary approach to health and disease is required, and that it is only by viewing the HIV pandemic as a manifestation of global instability resulting from complex processes of change over many generations that appropriate action can be taken for ensuring improved long-term outcomes.[80-86] The medical literature on global disparities in health and human rights has burgeoned and many medical schools are opening departments of global health.

Summary of Publications (see CV)

	Articles in Peer Review Journals	**Chapters in Books**
Respiratory Medicine	75	7
Health Services	27	3
Medical Ethics	52	21
Academic Freedom	6	
Global Health	24	7
Medical History/Education	6	3
Total	190	41
Chapters in Proceedings		13
Articles in non-peer review journals		33
Edited books/proceedings		7
Others		115

SELECTED PUBLICATIONS INCLUDED IN THIS THESIS

Respiratory Medicine: Articles in peer-review journals

1. Benatar S.R, Hewlett A.M, Nunn J. F. (1973) The use of iso-shunt lines for control of oxygen therapy. Brit J Anaes. (1973) 45, 711-718
2. Benatar S.R, Konig P. Maximum expiratory flow and lung volume changes associated with exercise induced asthma in children and the effect of breathing a low density gas mixture. (1974) Clin Sci Molec Med. 46, 317-329.
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4. Benatar S.R. Aspergillus infection in the Western Cape. (1977). S Afr Med J. 51, 297-305
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6. Yach D, Myers J, Bradshaw D, Benatar S.R. (1985). A respiratory epidemiological survey of grain mill workers in Cape Town. Amer Rev of Resp Dis. 131, 505-510.
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8. Ainslie G.M, Benatar S.R. S.A.C.E.(1985). Sensitivity and specificity in diagnosis: correlations with disease activity, duration, extrathoracic involvement, radiographic type and therapy. Quarterly J Med. 55, 253-270.
9. Benatar S.R. Fatal asthma. (1986). New England Journal of Medicine. 314; 423-429.
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Respiratory Medicine: Book Chapters

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Social Aspects of Medicine

Health Services: Articles in peer-review journals

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17. Benatar S.R. (1987). Privatization and medicine. S Afr Med. J 72: 655-656.
18. Benatar S.R. (1989). Apartheid in medical care. S Afr Med J 75: 559.
19. Taylor S.P, Benatar S.R. (1989). The Tuberculosis Control programme: a time to re-evaluate? S Afr Med J. 76: 639-640.
20. Benatar S.R. (1990). A unitary health service for South Africa. S Afr Med. 77: 441-447.

21. Benatar S.R. (1990). The South African Medical and Dental Council: some proposals for change. S Afr Med J. 78: 179-180.
22. Benatar S.R. 1991). Medicine and health care in South Africa: 5 years later. Special Article. New Engl J Med. 325: 30-36.
23. Benatar S.R. (1993). Reforming the S African health Care System. Physician Executive. 19: 51-57.
24.Van Rensburg H.C.J, Benatar S.R. (1993). The legacy of apartheid in health and health care. S Afr J Sociology. 24: 99-111.
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26. Benatar S.R. (1997). Health care reform in the new South Africa. N Engl J Med. 336: 891-95.
27. Benatar S R. (2000) Preventing vertical HIV transmission: the controversy in South Africa Journal of Women's health and law. 1 (3) 313-18.
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30. Savage M, Benatar S.R. (1990). An analysis of health and health services in South Africa In: Critical Choices for South Africa. Ed. R Schrire, Oxford University Press, 147-167

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32. Benatar S.R. (1990). Academic freedom in South Africa. The Lancet 335: 1576-8.
33. Benatar S R. (1991). Academic boycott: through the looking glass. JAMA. 266: 501-504.
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THE USE OF ISO-SHUNT LINES FOR CONTROL OF OXYGEN THERAPY

S. R. BENATAR, A. M. HEWLETT AND J. F. NUNN

Brit. J. Anaesth. (1973), 45, 711

ALTRINCHAM
JOHN SHERRATT AND SON LTD

Brit. J. Anaesth. (1973), 45, 711

THE USE OF ISO-SHUNT LINES FOR CONTROL OF OXYGEN THERAPY

S. R. BENATAR, A. M. HEWLETT AND J. F. NUNN

SUMMARY

The concept of "virtual shunt" is presented as a practical means for determining the optimal inspired oxygen concentration for patients with hypoxaemia due to pulmonary venous admixture. The approach permits a reduction in the number of blood-gas analyses needed. Its limitations have been explored and its validity assessed from a series of 44 observations made on 4 patients.

Careful control of oxygen therapy is essential in the treatment of severe defects of arterial oxygenation. This is especially important in the type of case which is commonly treated by intermittent positive pressure ventilation. While aiming to maintain the arterial oxygen tension above the level required to avoid tissue hypoxia, it is also important to avoid unnecessarily high inspired oxygen concentrations, which might result in manifestations of pulmonary oxygen toxicity, or favour absorption collapse. There are three basic practical problems in the control of oxygen therapy:

(1) Choice of an arterial oxygen tension (Pa_{O_2}) which is acceptable or desirable for a particular patient.

(2) Choice of an inspired oxygen concentration (FI_{O_2}) which will produce this arterial oxygen tension under the prevailing conditions in that patient.

(3) The control of inspired oxygen concentration.

This paper is concerned with the second problem which, in an ideal situation, might be solved by continuous monitoring of arterial Po_2, with automatic or human feed-back to control the oxygen concentration in the inspired gas. This, however, is seldom feasible and we are proposing an alternative solution based on the fact that, if hypoventilation is excluded, the most important cause of arterial hypoxaemia is pulmonary venous admixture or shunting. Spread of ventilation-perfusion ratios (relative maldistribution) may also be a factor but, for practical purposes, it may be considered as though it were a shunt, albeit one which is negligible at high oxygen tensions, increasing as the Pa_{O_2} falls below 100 mm Hg.

In our approach we have considered two variables; FI_{O_2}, which is under the control of the medical and nursing staff, and Pa_{O_2}, which is the value it is required to influence. The relationship between these variables is complex and non-linear, being governed by five main parameters: shunt ($\dot{Q}s/\dot{Q}t$), arterial/mixed venous oxygen content difference ($(a\text{-}\bar{v})\Delta Co_2$), haemoglobin concentration (Hb), arterial CO_2 tension (Pa_{CO_2}), and the displacement of the haemoglobin dissociation curve. The complexity of the relationship normally precludes quantitative assessment in the clinical environment.

We have attempted a simplification by graphical exploration of the relationship between the variables FI_{O_2} and Pa_{O_2}. The parameters Hb, Pa_{CO_2} and the displacement of the dissociation curve may be shown to be of relatively minor importance. $\dot{Q}s/\dot{Q}t$ is clearly the most important factor and the relationship between FI_{O_2} and Pa_{O_2} may be defined in terms of the value of $\dot{Q}s/\dot{Q}t$ with graphical representation of iso-shunt lines (Nunn, 1966). The $(a\text{-}\bar{v})\Delta Co_2$ presents a difficulty, as the effect of this parameter is important but its value is usually unknown in the clinical situation. However, for a particular value of $\dot{Q}s/\dot{Q}t$, the relationship between FI_{O_2} and Pa_{O_2} follows the same pattern with different values of $(a\text{-}\bar{v})\Delta Co_2$ although it is quantitatively different. We have, therefore, indicated the relationship between FI_{O_2} and Pa_{O_2} in terms of the "virtual shunt" which we define as the shunt value if the $(a\text{-}\bar{v})\Delta Co_2$ were 5 ml/100 ml.

Derivation of the "virtual shunt" of a patient appears to offer a practicable basis for oxygen therapy in patients with major defects of arterial oxygenation and we present a graphical method for determination of "virtual shunt" and its subsequent use in therapy.

S. R. BENATAR,* M.B., CH.B., F.F.A.(S.A.); A. M. HEWLETT, M.B., CH.B., F.F.A.R.C.S.; J. F. NUNN, M.D., PH.D., F.F.A.R.C.S.; Division of Anaesthesia, Clinical Research Centre, Watford Road, Harrow, Middlesex

*Present address: Brompton Hospital, London S.W.3.

Requests for reprints should be addressed to Dr Nunn.

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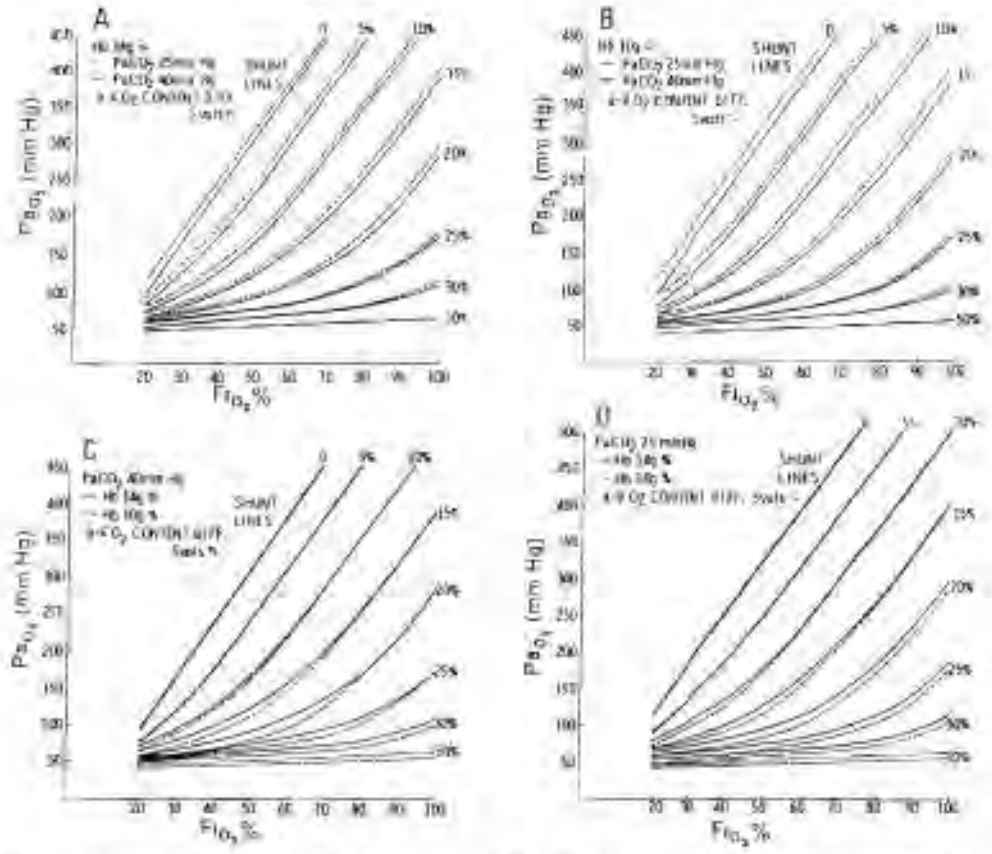


FIG. 1. Theoretical relationship between arterial P_{O_2} (Pa_{O_2}) and inspired oxygen concentration (Ft_{O_2}) for different values of shunt under various conditions of the parameters Hb, Pa_{CO_2} and $(\bar{a}-\bar{v})\Delta Co_2$.

METHODS

Preparation of the charts.

The relationship between cardiac output, physiological shunt and oxygen content of pulmonary end-capillary, arterial and mixed venous blood is indicated in the well-known shunt equation:

$$\dot{Q}s/\dot{Q}t=(Cc'_{O_2}-Ca_{O_2})/(Cc'_{O_2}-C\bar{v}_{O_2}) \quad (1)$$

This may be rearranged so that:

$$Cc'_{O_2}-Ca_{O_2}=\dot{Q}s/\dot{Q}t\times(Ca_{O_2}-C\bar{v}_{O_2})/(1-\dot{Q}s/\dot{Q}t) \quad (2)$$

Pc'_{O_2} is assumed to be equal to $P_{A_{O_2}}$. Ca_{O_2} and Cc'_{O_2} can then be calculated from the corresponding Po_2 values. With an assumed value of 5 ml/100 ml for $(\bar{a}-\bar{v})\Delta Co_2$ and the use of computer-produced haemoglobin dissociation curves (Hewlett and Coles, in preparation), graphs have been prepared relating Pa_{O_2} to Ft_{O_2} for various values of $\dot{Q}s/\dot{Q}t$. The coefficient of 1.34 was used for the oxygen combining power of haemoglobin. In practice this value is more often found than the theoretical figure of 1.39 which is based on the molecular weight of haemoglobin (Gregory, Hulands and Millar, 1972).

Figure 1A,B shows that the effect of changing the assumed value of Pa_{CO_2} from 40 to 25 mm Hg is to displace the iso-shunt lines to the left by the equivalent of 1–2% shunt. This effect is quantitatively similar at Hb levels of 10 and 14 g/100 ml.

Figure 1C,D shows the effect of a change in Hb from 14 to 10 g/100 ml at Pa_{CO_2} values of 40 and 25 mm Hg respectively. In both cases, the shape of the lower end of the iso-shunt curve is markedly changed. Haemoglobin concentration is the only parameter we have studied which causes any marked change in the shape (as opposed to the intercept) of the curves.

Pc'_{O_2}=Pulmonary end-capillary Po_2.
Cc'_{O_2}=Pulmonary end-capillary oxygen content.
$C\bar{v}_{O_2}$=Mixed venous oxygen content.
Ca_{O_2}=Arterial oxygen content.

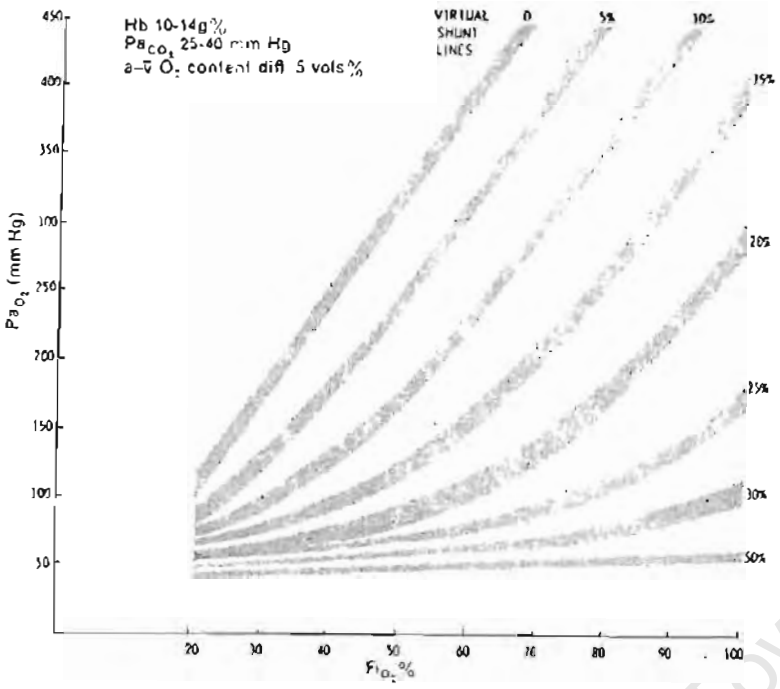


FIG. 2. Composite diagram of the theoretical relationship between Pa_{O_2} and FI_{O_2} for different values of shunt, with the shaded areas including all relationships illustrated in figure 1. This format is suitable for ploting results obtained on individual patients.

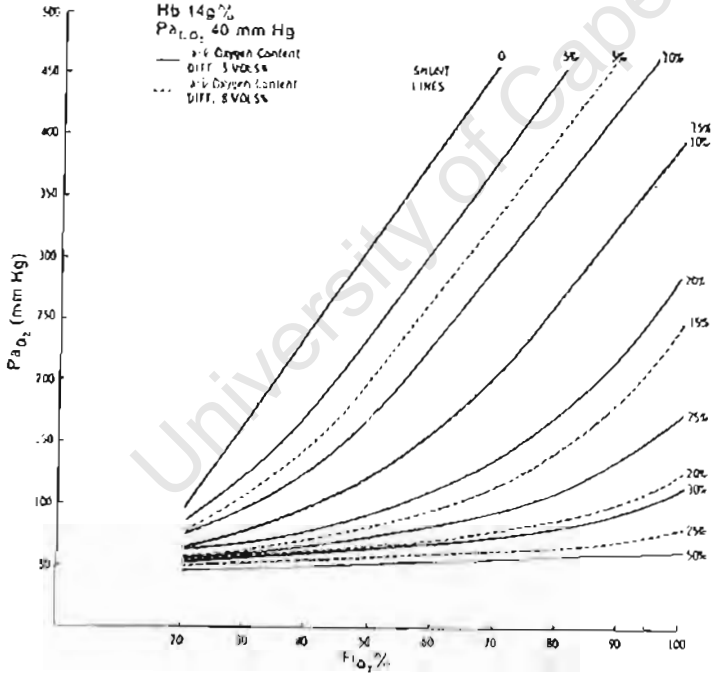


FIG. 3. Theoretical relationships between Pa_{O_2} and FI_{O_2} for different values of shunt at two different values of arterial/mixed venous O_2 content difference. Note that curves are displaced but their pattern is unaltered.

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Figure 2 combines the limits of all the lines in figure 1 and indicates the possible range of each iso-shunt line within the limits of haemoglobin concentration 10–14 g/100 ml and Pa_{CO_2} 25–40 mm Hg. All five figures have assumed an $(a-\bar{v})\Delta Co_2$ of 5 ml/100 ml, and a respiratory quotient of 0.8.

If the various relationships are re-examined at an $(a-\bar{v})\Delta Co_2$ of 8 ml/100 ml, there is a marked displacement of all iso-shunt lines to the right (fig. 3). The shapes of the curves, however, are unchanged: for example, the 10% iso-shunt line at the higher $(a-\bar{v})\Delta Co_2$ is identical to the 15% iso-shunt line at the lower value. It follows that, as the shapes of the curves are unaltered, they can be used at any $(a-\bar{v})\Delta Co_2$ to define the relationship between Pa_{O_2} and FI_{O_2} without the necessity to define the precise values for $\dot{Q}s/\dot{Q}t$ and $(a-\bar{v})\Delta Co_2$. The absolute $\dot{Q}s/\dot{Q}t$ value for each curve will be dependent on the $(a-\bar{v})\Delta Co_2$.

Thus, within the limits of applicability of the graph, a single pair of measurements of Pa_{O_2} and FI_{O_2} will identify a curve which we suggest can then be used to predict the relationship between these two variables higher up or lower down the curve. For example, if Pa_{O_2} is 250 mm Hg at FI_{O_2} of 80%, it may be predicted that a Pa_{O_2} of 100 mm Hg will be obtained at an FI_{O_2} of approximately 40%. Since the $(a-\bar{v})\Delta Co_2$ is probably unknown, it is not possible to give a precise value to the $\dot{Q}s/\dot{Q}t$. But, since it is often convenient to ascribe a numerical value to this index of defective oxygenation, it seems reasonable to assign a shunt value derived under the standard conditions incorporated in figure 2. This may be called the virtual shunt which we define as the shunt value which would describe the Pa_{O_2}/FI_{O_2} relationship *if* the $(a-\bar{v})\Delta Co_2$ were 5 ml/100 ml. In the example above the virtual shunt would be close to 15%.

Where maldistribution due to spread of ventilation/perfusion ratios is an appreciable factor in the causation of hypoxaemia, the iso-shunt curve of a patient may be expected to turn downwards at arterial Po_2 values below about 100 mm Hg; that is to say, the apparent virtual shunt value is increased in the lower range of inspired oxygen concentrations.

Use of the charts.

In the clinical situation it would be too laborious to prepare iso-shunt curves for individual patients, tailored to their own current values of haemoglobin, Pa_{CO_2} and $(a-\bar{v})\Delta Co_2$. We therefore propose that the standard graph (fig. 2) be used, with its bands to indicate the effect of variations in haemoglobin and Pa_{CO_2} within the previously stated limits. Without knowing the patient's $(a-\bar{v})\Delta Co_2$ the graph will indicate the virtual shunt.

The suggested procedure is to measure Pa_{O_2} at a known FI_{O_2} in the range 60–100% and then to derive the virtual shunt from figure 2. This curve is then followed down to the point at which the desired Pa_{O_2} is indicated; the required FI_{O_2} being read off the X axis. Greatet confidence is obtained with two pairs of values and fine adjustment of Pa_{O_2} may be undertaken by subsequent measurement if considered necessary. In any case, use of the iso-shunt lines will substantially reduce the number of measurements of Pa_{O_2} which are required.

Test of validity of the charts.

We have tested the validity of the charts by recording simultaneous values of inspired oxygen concentration and arterial Po_2 on patients, details of whose pathology is indicated in table I. Pairs of measurements were carried out at intervals of approximately 25 minutes allowing at least 20 minutes for stabilization on the new FI_{O_2}. FI_{O_2} was measured using a Servomex OA150 paramagnetic analyser calibrated with oxygen-free nitrogen and 100% oxygen. Pa_{O_2} was measured with a Radiometer electrode (type E5406) calibrated with oxygen-free nitrogen and air-equilibrated 30% glycerol (Hulands, Nunn and Paterson, 1970). Pa_{CO_2} was measured with a Radiometer electrometer electrode (type E5306) and pH was measured with the Radiometer PHM electrode. Appropriate corrections were applied for the patient's temperature and for time delay between sampling and analysis (less than 10 minutes in all cases). Minute volume of ventilation was held constant during each series of measurement.

RESULTS

A series of paired measurements of Pa_{O_2} and FI_{O_2} were made on eleven separate occasions in 4 patients who were critically ill and required inrermittent positive pressure ventilation in au intensive therapy unit (table I). In most cases, simultaneous values for Pa_{O_2} and FI_{O_2} followed iso-shunt lines reasonably closely, the majority of points being within $\pm 2\frac{1}{2}\%$ of the mean iso-shunt line (figs. 4–6). In two cases there was a marked rise in the virtual shunt values ar the lowest value of FI_{O_2} and Pa_{O_2}, and this is compatible with increased scatter ventilation/perfusion ratios. At values of Pa_{O_2} above 90 mm Hg the iso-shunt lines

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TABLE I.

Patient		$F_{I_{O_2}}$ × 100	$P_{a_{O_2}}$ (mm Hg) Observed	$P_{a_{O_2}}$ (mm Hg) Predicted*	$P_{a_{CO_2}}$ (mm Hg)	pH	Hb (g/100 ml)	Virtual shunt (%)†
No. 1 aged 68 years	▲	100	197					24
		83	125	135				24
Diagnosis:		63	88	91	41	7.480	11.8	24
Ischaemic heart disease		53	75	78				24
Chronic obstructive lung disease		42	65	69				24
Respiratory failure								
	■	100	263					22
		71	101	125	45		11.0	24
		43	71	70				22
		36	65	65				22
	●	100	383					16
		82	257	260				16
		52	90	116	36	7.440	10.7	20
		38	84	85				16
		28	60	70				24
No. 2 aged 69 years	▲	87	320					15
		74	262	248				14
Diagnosis:		64	184	175	38	7.502	14.6	15
Bronchiectasis		54	120	135				16
Bronchopneumonia		46	89	110				19
		21	54	69				25
	●	91	378					13
		77	281	290				13
		74	248	268				14
		64	190	210	34	7.490	12.9	14
		48	121	137				15
		21	83	70				5
	■	98	317					18
		54	120	112	39	7.480	15.5	16
		43	116	88				13
No. 3 aged 63 years	♦	100	309					19
		70	145	155	49	7.388	11.4	19
Diagnosis:		50	110	100				17
Myocardial infarct								
Pulmonary oedema	▲	55	111					18
		40	88	82	51	7.423	9.2	17
	■	100	365					16
		70	182	190	37	7.486	7.6	17
		40	87	90				17
	●	100	356					17
		50	119	110	40	7.475	10.0	15
		34	84	78				15
No. 4 aged 70 years	♦	99	220					23
Diagnosis:		80	125	135	42	7.512	14.0	24
Myocardial infarct		60	90	90				23
Pulmonary oedema		50	87	78				20

*Predicted values for $P_{a_{O_2}}$ are derived by interpolation of $F_{I_{O_2}}$ into virtual shunt curve obtained from highest pair of $F_{I_{O_2}}$ and $P_{a_{O_2}}$ measurements.

†Virtual shunts derived from figure 2.

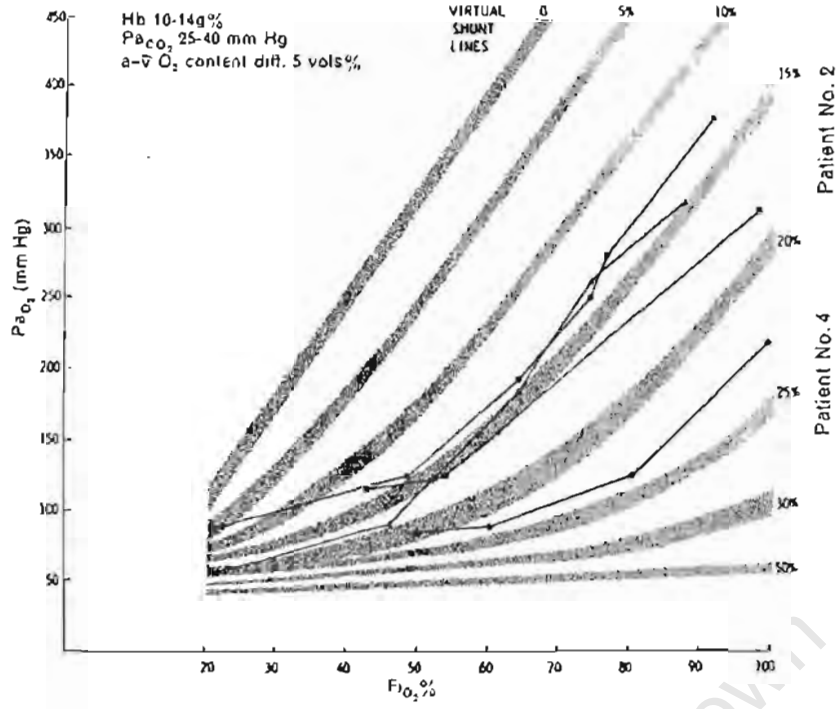


FIG. 4. Symbols ● ▲ and ■ are the points obtained on three separate occasions in patient No. 2. Line ♦ is from one occasion in which four estimations were performed on patient No. 4.

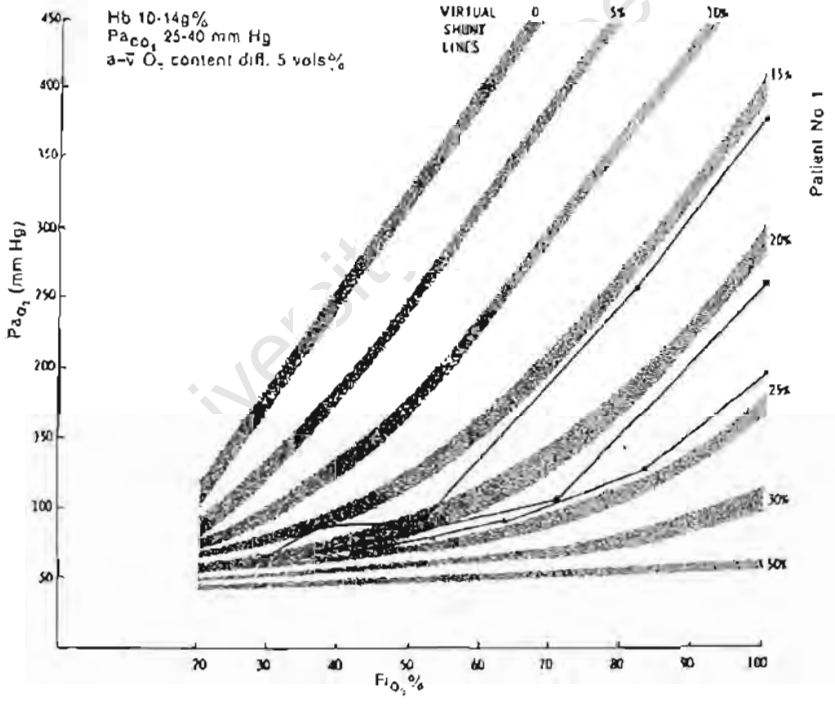


FIG. 5. Symbols ▲ ■ and ● show three successive lines derived from patient No. 1 at approximately 3-weekly intervals. Note the improvement during each interval.

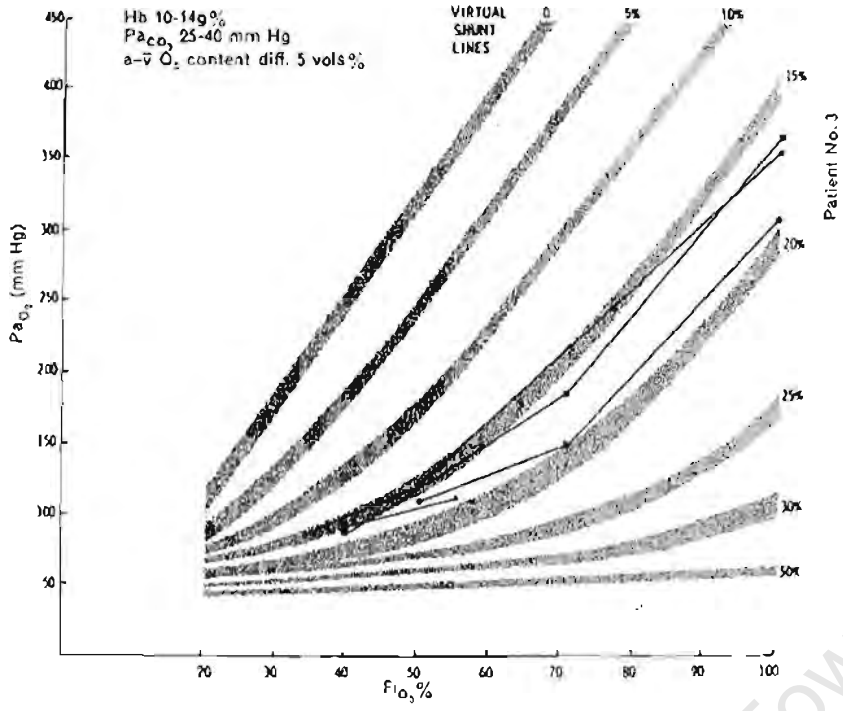


FIG. 6. Lines derived on four separate occasions from patient No. 3.

were closely followed and deviations from the mean iso-shunt line of a patient did not exceed 2½%. On three of the lines the shunt appeared to be smaller at the lowest level of FI_{O_2} and this anomaly can be explained by the fact that on this part of the graph small errors in measurement of Pa_{O_2} can result in a fairly large error in the estimation of the shunt. The alternative explanation of changes in cardiac output seems less likely.

In the case of patient No. 1 the virtual shunt decreased over a 3-week period between the first and third lines, and was found to be a useful index for assessing progress and response to therapy.

DISCUSSION

Until a decade ago, oxygen toxicity was of interest mainly to respiratory physiologists or investigators involved in the study of special environments such as hyperbaric conditions and outer space. With the increased use of IPPV and improvement in intensive therapy, the magnitude of the problem of pulmonary oxygen toxicity has become of increasing concern to clinicians and has been the subject of considerable experimental work and pathological studies. The recent article by Winter and Smith (1972) comprehensively reviews all such work to date.

Unlike retrolental fibroplasia, which is related to increased Po_2 in retinal arterial blood in neonates receiving high inspired concentrations of oxygen (Ashton, 1968), the development of pulmonary oxygen toxicity appears to be predominantly dependent on alveolar oxygen tension (Winter et al., 1967).

The now well recognized danger of prolonged administration of high concentrations of oxygen necessitates frequent blood gas analyses if "overdose" with oxygen is to be avoided. From a logistic point of view, this is both laborious and time consuming. The concept of virtual shunt and the use of iso-shunt curves, although not without limitations, offers the advantage of a rational and less laborious approach to the control of oxygen therapy in patients on IPPV in an intensive therapy unit. The approach is only applicable to patients whose hypoxaemia is due to pulmonary venous admixture, who have Pco_2 and haemoglobin values within the limits indicated in figure 2 and are in a relatively steady state. For control of Pa_{O_2} it is not necessary to know the $(a\text{-}\bar{v})\Delta Co_2$, although changes in this parameter will clearly influence the prognostic significance of changes in a patient's virtual shunt.

Examination of factors such as Hb, Pa_{CO_2} and $(a\text{-}\bar{v})\Delta Co_2$, which influence the slope and intercept of the shunt lines, reveals the limitations of the

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method and from figure 2 it can be seen that inaccurate estimations of virtual shunt are most likely to be made at low values of $F_{I_{O_2}}$ in the presence of shunts greater than 25% as in this range the curves relating Pa_{O_2} and $F_{I_{O_2}}$ are very close together. However, since the curves are also flat, large changes in $F_{I_{O_2}}$ will have little effect on Pa_{O_2}, which will always be less than 100 mm Hg under these conditions. With shunts of less than about 28%, the suggested procedure of making the initial paired measurement of $F_{I_{O_2}}$ and Pa_{O_2} at high values of $F_{I_{O_2}}$ enable the virtual shunt line to be located with a degree of accuracy which seems adequate for clinical use.

Although derived values for the virtual shunt tend to be most consistent at arterial Po_2 levels above 100 mm Hg, the accuracy of prediction of Pa_{O_2} is similar throughout the range. If, from the table, the virtual shunt is derived from a single $F_{I_{O_2}}$ (the highest), actual values for Pa_{O_2} at other values of $F_{I_{O_2}}$ are within 10% of the predicted value in 70% of cases, and within 20% in 91% of cases, the largest error being 32% (28 mm Hg). This would probably give better control of Pa_{O_2} than could be obtained by intuitive selection of $F_{I_{O_2}}$, at least by those without considerable experience of the problem.

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MAXIMAL EXPIRATORY FLOW AND LUNG VOLUME CHANGES ASSOCIATED WITH EXERCISE-INDUCED ASTHMA IN CHILDREN AND THE EFFECT OF BREATHING A LOW-DENSITY GAS MIXTURE

S. R. BENATAR AND P. KÖNIG

Departments of Medicine and Paediatrics, Brompton Hospital and Cardiothoracic Institute, London

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SUMMARY

1. Lung volumes and maximum expiratory flow volume (MEFV) curves were measured before and after exercise and after a bronchodilator in eight asthmatic children.

2. Exercise produced significant changes in all volumes and flow rates measured, but the most sensitive measurement was of flow rate at an absolute volume in the terminal portion of the forced vital capacity. Of the more simply obtained measurements maximal flow at 50% of the exhaled vital capacity was the most sensitive, but reductions in forced expiratory volume at 1 s and peak flow rate were almost as marked.

3. The marked reductions in flow rates at low lung volumes after exercise were accompanied by large increases in residual volume and a reduction in the slope of the MEFV curve. These changes suggest functional closure of some lung units and an increase in the time-constant of emptying of other units.

4. The response of flow to breathing helium–oxygen (79:21, v/v) was assessed in the dilated state (before exercise or after bronchodilator) and the constricted state (after exercise) in five of the subjects.

5. An increase in density-dependence of flow rates at all lung volumes during constriction is evidence that, despite the reduction in flow rates, convective acceleration and turbulent flow constitute a greater proportion of the total upstream resistance after exercise than before exercise. The implication is that the cross-sectional area at equal pressure points (EPP) is smaller after exercise than before exercise. This could result from either bronchoconstriction with no change in the location of EPP, or from progression of the EPP further upstream to a region where loss of airways or reduction in their diameter has rendered the total cross-sectional area considerably smaller than under normal circumstances.

Key words: flow–volume curve, exercise, asthma, gas density, lung volumes.

Correspondence: Dr S. R. Benatar, Department of Medicine, University of Cape Town Medical School, Observatory, Cape, South Africa.

The mechanical function of the lungs in asthmatic subjects has been extensively investigated and the site of air-flow obstruction debated. There is bronchographic evidence of narrowing of the major bronchi during an acute attack (Dulfano & Hewetson, 1966), and during remission there may be evidence of disturbed distribution of inspired gas and other abnormalities attributable to obstruction in small peripheral airways (Heckscher, Bass, Oriol, Rose, Anthonisen & Bates, 1968). Physiological studies during spontaneous acute asthma have demonstrated the extent of mechanical derangement which may occur and suggest that although all sizes of airways are involved, the principal area of obstruction is in those airways which lie closer to the alveoli, designated as 'upstream airways' (McFadden & Lyons, 1969). A study of the mechanical events in asthma provoked by methacholine has provided evidence that the larger (downstream) airways may be the first to increase their resistance but that the increased resistance persists for longer in the smaller airways (Cade, Woolcock, Rebuck & Pain, 1971). More recently observations on the changes in lung volumes and maximal forced expiratory flow–volume relationships in allergen-induced asthma have shown that the earliest change was often a parallel shift of the flow–volume curve, the most sensitive indicator of change being the maximal flow at low lung volumes, e.g. at 60% of the control total lung capacity (TLC) (Olive & Hyatt, 1972). Since the observations of Barnett (1967) and Wood & Bryan (1969) on the effect of gas density on flow rate from the lung, an attempt has been made to elucidate the extent to which large and small airways limit air flow during forced expiration by studying the effect on maximal forced expiratory flow–volume (MEFV) relationships of breathing a gas of low density (Despas, Leroux & Macklem, 1972).

That exercise may provoke asthma is well known (Jones, Buston & Wharton, 1962), and the associated changes in forced expiratory volume in 1 s (FEV_1), forced vital capacity (FVC) and peak expiratory flow rate (PFR) have been well documented (Jones, 1966). The lung-volume changes in exercise-induced asthma have been reported (Anderson, McEvoy & Bianco, 1972) and the observed increases in TLC were considerably greater than those usually seen in other forms of induced asthma.

We have measured static and dynamic lung volumes and the MEFV curve both before and after exercise and also after the inhalation of a bronchodilator drug. We have also studied the effect of breathing a low-density gas mixture on the MEFV curve at each stage of the investigation.

METHODS

Eight children with asthma since early childhood were studied before standardized treadmill exercise (Connolly & Godfrey, 1970), soon after exercise and then after the inhalation of 200 μg of salbutamol aerosol. Their mean age was 11·7 years (range 10–14) and their mean height was 143 cm (range 127–158). Maintenance drug treatment included sodium cromoglycate in five patients, and salbutamol aerosol in three. None of the subjects had used any medication in the 12 h preceding our studies. The use of the standardized exercise test in the routine evaluation and follow-up of children with asthma has now become standard practice in many hospitals in the United Kingdom. All the children had previously performed the standardized exercise test several times as part of their routine evaluation. In the present study a more detailed analysis was made of the events which result from such exercise. Parental consent was obtained for the investigation.

The apparatus used for the investigation was a 600 l body plethysmograph, which could be used in two modes: (a) as a conventional constant-volume plethysmograph and (b) as a modified pressure-corrected volume-displacement plethysmograph. In the latter mode the apparatus was shown to have a flat frequency amplitude response and no phase shift up to 5 Hz when tested with a sinusoidal pump delivering a volume of 500 ml. The limitation of our sinusoidal pump prevented us from testing beyond 5 Hz with this volume but the absence of any phase shift at this frequency suggests that the frequency amplitude response would probably be flat to 8–10 Hz, within the limits required for faithful records of the forced expiratory manoeuvre (McCall, Hyatt, Noble & Fry, 1957).

Functional residual capacity (FRC) was measured by the method of Du Bois, Botelho, Bedell, Marshall & Comroe (1956) and inspiratory capacity and expiratory reserve volume after each measurement of thoracic gas volume were recorded on a Minograph 34T with the output from an Ohio 800 spirometer, whose frequency amplitude response was flat to 5 Hz, when tested with a volume of 500 ml. Measurement of the subdivisions of lung volume were performed three or four times before going on to use the plethysmograph in the volume displacement mode to record several MEFV curves. Exhaled flow rate, obtained by differentiation of the volume signal from the spirometer, was displayed against change in thoracic gas volume (recorded from the plethysmograph in its volume-displacement mode) on a Tektronix 564 storage oscilloscope; the curve was subsequently traced and related to TLC so that flow rate at 60% TLC ($\dot{V}_{60\ TLC}$) could be calculated. Expired volume and flow signals from the Ohio spirometer were also recorded against time on the Minograph so that FEV_1, FVC and other indices of expiratory flow (Table 1) could be obtained. After performing three MEFV curves, the subject breathed helium–oxygen (79:21) for 2 min and then performed three FVC manoeuvres at approximately 1 min intervals, breathing the helium–oxygen between each manoeuvre. On all occasions, with either air or helium–oxygen being inspired, the FVC manoeuvre was performed after the first inhalation from the tidal breathing range to TLC.

The subject then performed the standardized exercise test and the whole series of measurements was repeated in the sixth to fourteenth minutes after the end of exercise and again 10–15 min after the inhalation of 200 μg of salbutamol aerosol. In one typical subject the MEFV curve was recorded breathing air after exercise, then breathing helium–oxygen and then again breathing air. The flow rates were the same after breathing air on both occasions but were markedly increased after the helium. This excludes the possibility that some of the increase in flow rates after breathing the helium was due to spontaneous recovery from the induced bronchoconstriction in this particular subject. The successive measurements within each stage of the investigation in each patient were consistent and showed little evidence of increasing obstruction after successive forced expiratory manoeuvres. The post-exercise measurements showed no improvement during the time that three sets of measurements were made. The response to helium was observed in the first FVC manoeuvre after breathing the helium and was of the same order of magnitude in each of the successive manoeuvres while the low-density mixture was still being breathed. The total duration of the investigation was approximately 1 h.

Predicted normal values for lung volumes were taken from the data collected by Polgar & Promadhat (1971), for PFR from Godfrey, Kamburoff & Nairn (1970), for flow rate at 60% of total lung capacity ($\dot{V}_{60\ TLC}$) from Zapletal, Motoyama, Van de Woestijne, Hunt & Bouhuys (1969) and for flow rate at 50% of vital capacity (MEF 50) from Weng & Levison (1969). All volumes are expressed in litres BTPS.

TABLE 1. Measurements of lung volumes and flow rates: (A) before exercise, (B) after exercise and (C) after bronchodilator (expressed in litres BTPS except $\dot{V}_{60\ TLC}$). The pre-exercise measurements are also shown as a percentage of the predicted value (in parentheses). Abbreviations: TLC, total lung capacity; FRC, functional residual capacity; RV, residual volume; RV/TLC, residual volume/total lung capacity ratio; FEV_1, forced expired volume in 1 s; FVC, forced vital capacity; FEV_1/FVC, forced expired volume in 1 s/forced vital capacity ratio; PFR, peak expiratory flow rate; MEF 50, maximum expiratory flow rate at 50% exhaled vital capacity; $\dot{V}_{60\ TLC}$, maximal expiratory flow rate at 60% of the pre-exercise total lung capacity expressed in pre-exercise TLC/s.

		TLC	FRC	RV	RV/TLC	FEV_1	FVC	FEV_1/FVC	PFR	MEF 50	$\dot{V}_{60\ TLC}$
1	A	4·75	3·28	2·11	44·2	1·38	2·53	61	180	1·0	0·121
		(140%)	(211%)	(300%)	(215%)	(57·5%)	(94%)	(61%)	(51%)	(32%)	(14%)
	B	5·00	4·02	3·18	63·8	0·75	1·65	45·5	105	0·49	0
	C	4·92	3·51	2·13	43·3	1·71	2·67	64	220	1·35	0·133
2	A	3·47	2·61	0·86	24·6	2·05	2·54	80·5	305	2·3	0·851
		(99%)	(163%)	(115%)	(115%)	(82%)	(91%)	(90%)	(82%)	(71%)	(97%)
	B	3·67	2·96	2·28	62	0·99	1·27	79	160	0·9	0
	C	3·37	2·00	0·87	25·4	2·09	2·56	82	250	2·5	1·105
3	A	3·57	2·08	1·50	41·7	1·28	2·22	57·8	205	0·9	0·190
		(120%)	(154%)	(242%)	(201%)	(60%)	(92%)	(66%)	(66%)	(32%)	(22%)
	B	3·88	3·13	2·65	68·4	0·68	1·49	45·6	115	0·42	0
	C	3·37	2·02	1·43	42·4	1·54	2·25	68·5	230	1·21	0·395
4	A	4·33	2·60	2·28	52·7	1·75	2·28	76·9	250	2·0	0·197
		(144%)	(193%)	(350%)	(243%)	(81%)	(97%)	(84%)	(78%)	(69%)	(21%)
	B	4·59	3·41	3·00	65·3	1·06	1·84	57·9	145	1·0	0
	C	4·21	2·52	2·00	47·5	2·05	2·53	80·1	325	2·5	0·521
5	A	4·27	1·91	1·4	32·7	1·95	2·88	67·1	295	1·8	0·531
		(102%)	(98%)	(156%)	(153%)	(65%)	(87%)	(74%)	(71%)	(47%)	(60%)
	B	4·55	3·13	2·59	56·9	1·09	2·38	45·9	185	0·7	0·082
	C	4·22	2·00	1·44	34·2	2·29	3·08	74·4	310	2·5	0·694
6	A	3·84	2·64	1·55	40·4	1·67	2·39	69·9	195	1·3	0·247
		(122%)	(189%)	(221%)	(182%)	(74%)	(96%)	(78%)	(59%)	(44%)	(28%)
	B	4·23	3·22	2·38	62·4	1·18	2·23	52·9	145	0·78	0·085
	C	4·06	2·48	1·68	41·5	1·94	2·44	79·5	230	1·78	0·306

TABLE 1 (*continued*)

		TLC	FRC	RV	RV/TLC	FEV_1	FVC	FEV_1/FVC	PFR	MEF 50	$\dot{V}_{60\ TLC}$
7	A	4·09	2·62	1·86	45·5	1·71	2·36	72·4	235	1·6	0·239
		(167%)	(256%)	(358%)	(215%)	(103%)	(127%)	(81%)	(94%)	(76%)	(27%)
	B	4·63	3·45	2·43	52·5	1·55	2·28	67·8	215	1·4	0
	C	4·15	2·59	1·89	45·5	2·05	2·35	87·3	245	2·3	0·352
8	A	4·39	2·48	1·87	42·7	2·28	3·03	75·2	375	2·3	0·460
		(139%)	(177%)	(267%)	(192%)	(101%)	(121%)	(84%)	(114%)	(79%)	(52%)
	B	4·66	2·95	2·10	45	2·21	3·01	73·3	325	2·1	0·279
	C	4·31	2·48	1·68	39	2·51	3·14	79·7	370	3·0	0·666
Mean*	A	4·04	2·52	1·62	39·4	1·68	2·47	68·9	238	1·55	0·356
		(121%)	(168%)	(231%)	(185%)	(70%)	(93%)	(75%)	(68%)	(49%)	(40%)
	B	4·32	3·31	2·68	63·1	0·96	1·81	54·5	143	0·72	0·028
	C	4·03	2·42	1·59	39·1	1·94	2·59	74·8	260	1·97	0·526
SD*	A	0·5	0·48	0·51	9·7	0·3	0·24	8·8	53	0·57	0·281
		(19%)	(40%)	(87%)	(46%)	(11%)	(3%)	(11%)	(12%)	(19%)	(32%)
	B	0·49	0·38	0·35	3·8	0·2	0·43	13	29	0·23	0·043
	C	0·59	0·59	0·45	8	0·27	0·28	7·2	45	0·61	0·342

* Excluding subjects 7 and 8.

RESULTS

The pattern of change in PFR and the times when our more detailed measurements were made are shown in Fig. 1. During exercise there was an increase in PFR, which then fell, reaching its lowest level in individual subjects at 1–5 min after the end of exercise. The mean peak flow rate during the sixth to fourteenth minutes after exercise was less than 20% lower than the pre-exercise value in subjects 7 and 8, but on average was 40% lower than the pre-exercise value in the other six subjects. This degree of fall is commonly seen in exercise-induced asthma. In the two subjects with PFR falls of less than 20% at the time of the post-exercise measurements, one had a maximum fall of only 10% at 5 min, but the other had reduced his PFR by 63% and had begun to recover before the post-exercise measurements were made. These two

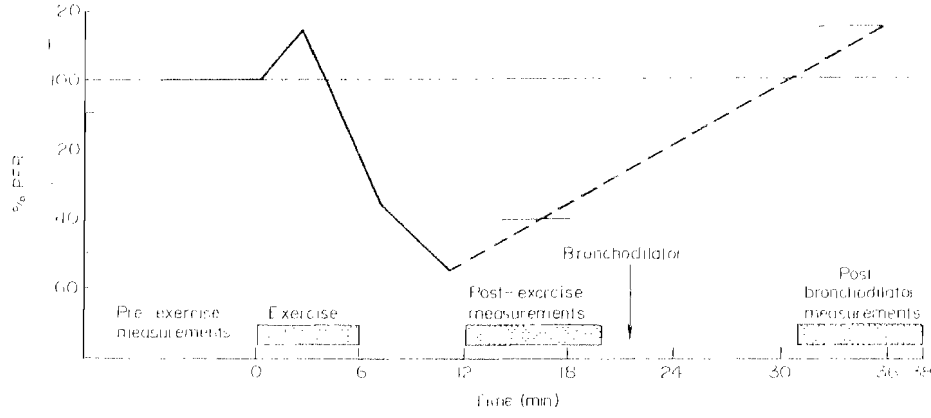


FIG. 1. Pattern of change in mean peak flow rate for six children (nos. 1–6).

subjects have therefore been separated in the tables, and have been excluded from Fig. 1 and Fig. 2 as at the time of the post-exercise measurements they did not demonstrate the degree of PFR change usually accepted as diagnostic of bronchial lability.

The pre-exercise measurements of lung volumes and flow rates are shown in Table 1, both in absolute volumes and as percentages of the predicted values, and show that persistent air-flow obstruction was present in all, but varied in severity between the children. In subjects 7 and 8 dynamic lung volumes were within the normal range, but their lungs were hyper-inflated.

The mean (±SE) changes in volumes and flow rates in subjects 1–6 as measured during the sixth to fourteenth minutes after exercise are shown in Fig. 2. Absolute values of the pre-exercise, post-exercise and post-bronchodilator measurements are shown in Table 1.

The differences between the pre- and post-exercise measurements were significant for all the volumes and flow rates measured (paired t test, $-P<0{\cdot}001$ for TLC, FRC, RV, RV/TLC, FEV_1 PFR and $\dot{V}_{60\ TLC}$, $0{\cdot}005<P<0{\cdot}01$ for FVC, and $0{\cdot}01<P<0{\cdot}02$ for MEF 50). There was no significant difference between the TLC, FRC, RV, RV/TLC and PFR after bronchodilator as compared with the pre-exercise values, but there was significant improvement in $\dot{V}_{60\ TLC}$ ($P<0{\cdot}001$), FEV_1 and MEF 50 ($0{\cdot}001<P<0{\cdot}005$). MEFV curves at each stage of the investigation are shown in Fig. 3 for each subject. For the purpose of standardization volumes have been expressed as a percentage of the initial TLC and flow rates as initial TLC values/s (Mead, Turner, Macklem & Little, 1967; Zapletal *et al.*, 1969).

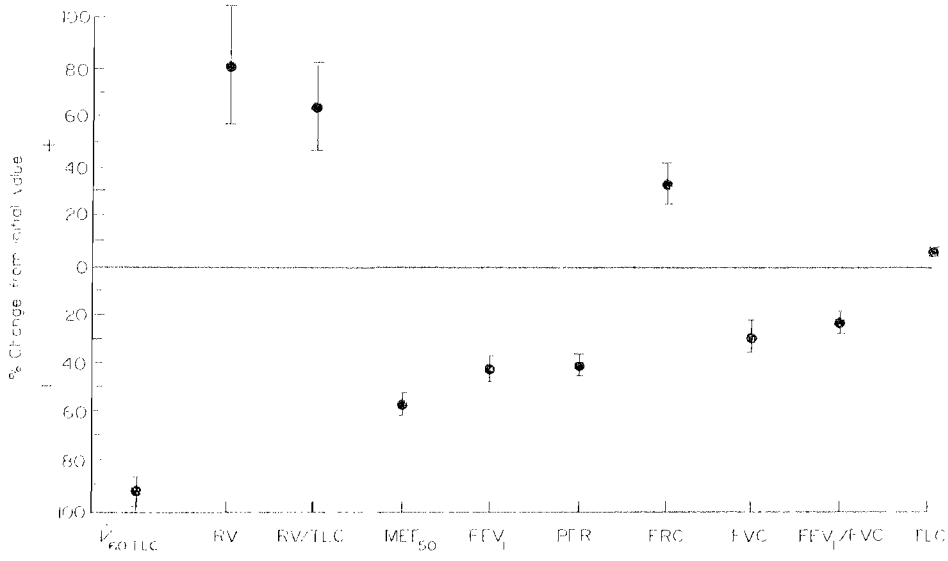


FIG. 2. Changes in volumes and flow rates after exercise in children nos. 1–6 (mean ± SEM), expressed as % change from the pre-exercise values. For abbreviations see Table 1.

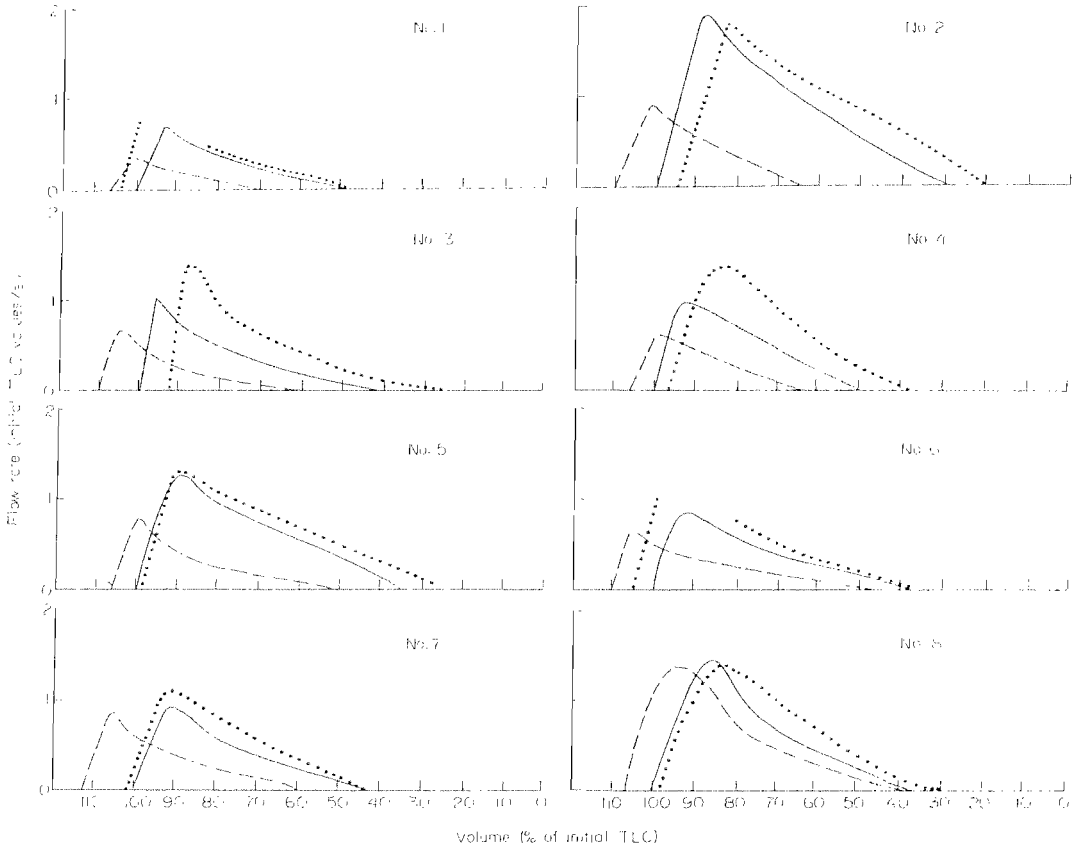


FIG. 3. Maximum expiratory flow–volume curves at each stage of the investigation: ——, before exercise; – – –, after exercise; · · · · ·, after bronchodilator. Flow is expressed in initial TLC values/s and volume as % of the pre-exercise TLC.

The effect of breathing a mixture of helium–oxygen (79:21) for 2 min on the MEFV curve was assessed in subjects 4, 5, 6, 7 and 8. Differences in flow rate at 70% of the pre-exercise TLC, between air breathing and helium–oxygen breathing, at each stage of the investigation, are given in Table 2. The MEFV curves of subjects 4 and 7 are shown in Fig. 4 as examples of the effect of breathing the less-dense gas mixture. There are insufficient data to assess the statistical

TABLE 2. Increase in flow rate at 70% of initial TLC after breathing helium–oxygen, expressed as a percentage of the flow rate at that volume breathing air at each stage of the investigation

Subject no.	% Increase in flow rate at 70% TLC		
	Before exercise	After exercise	After bronchodilator
4	29	81	—
5	—	208	41
6	73	126	44
7	92	71	51
8	27	51	32
Mean	55	107	42
SD	32	63	8

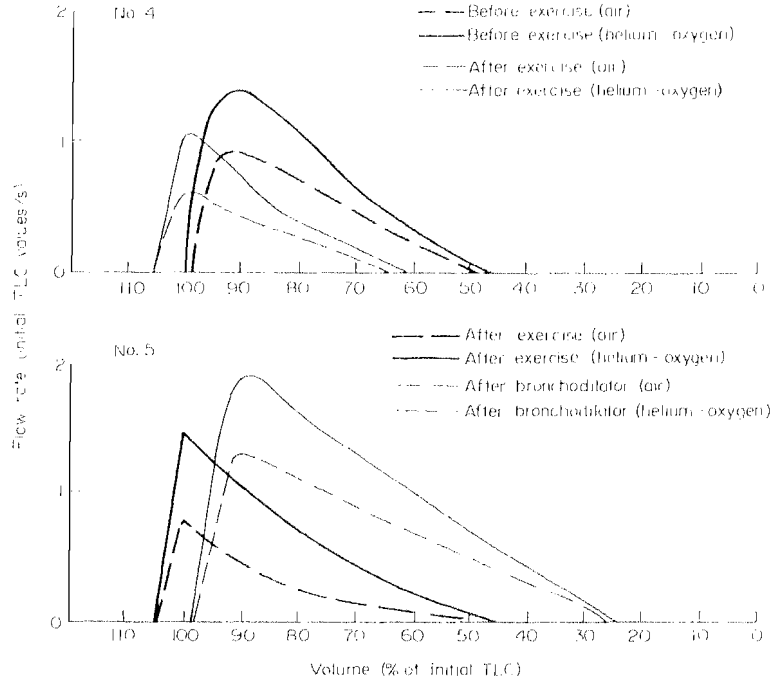


FIG. 4. Examples of the effect of breathing helium–oxygen (79:21) on the MEFV curves.

significance of the increases in flow rates when breathing helium in the constricted and non-constricted states. The response, when expressed as a percentage of the flow rate when breathing air, was greater when bronchoconstricted after exercise than before exercise, or after the bronchodilator, in all but one subject.

DISCUSSION

The mean values for our pre-exercise measurements and the mean changes after exercise are compared with previous studies of provoked asthma in Table 3.

TABLE 3. Mean values of pre-'challenge' measurements and changes after 'challenge' with those reported in other studies of provoked asthma. Abbreviations: A, Pre-challenge measurements, expressed as a percentage of the predicted normal value; B, changes after challenge, expressed as a percentage increase (+) or decrease (−) from the pre-challenge values; other abbreviations are as in Table 1.

	VC	TLC	FRC	RV	FEV_1	PFR	$\dot{V}_{60\ TLC}$	RV/TLC	MEF 50
(A) Olive & Hyatt (1972)	102	113		146	86	76	49		
Anderson *et al.* (1972)		111	134	165	81	61			53
Cade *et al.* (1971)	81	128	155		81	81		152	
Present series	91	121	168	221	70	68	34	185	49
(B) Olive & Hyatt (1972)	−18·5	+2·4		+41	−27	−31	−72		
Anderson *et al.* (1972)		+22·5	+52·5	+174	−55·4	−48·8			−67
Cade *et al.* (1971)	−51	+6	+33		−64			+69	
Present series	−32	+7	+34	+81	−43	−40	−92	+66	−55

The differences in the degree of change in lung volumes and flow rates in these reports is probably due to differences in the intensity of the provoking factor used, and also in the degree of airways obstruction before the provocation.

In all our subjects there was considerable abnormality in static and/or dynamic measurements before exercise. The degree of hyper-inflation does not generally bear a direct relationship to the severity of asthma, as judged by measurements of FEV_1, as has been noted previously (Engstrom, 1964; Meisner & Hugh-Jones, 1968; Woolcock & Read, 1966). The hyper-inflation can be attributed to extensive narrowing of small airways, as a result of increased smooth muscle tone (Colebatch, Finucaine & Smith, 1973), oedema, secretions or a combination of these factors. In the subjects showing a PFR fall of more than 20% after exercise there were large increases in RV, small increases in total lung capacity (which was already raised, with a mean of 121% of the predicted value) and reductions in the slope of the MEFV curve. Of the two subjects with relatively unchanged PFR one produced a change in the slope of the MEFV curve with only a small change in RV, and in the other there was an increase in RV with only a small reduction in slope. An increase in RV with no change in slope is commonly observed in allergen-induced asthma and with more intensive challenge is often followed by a change in slope and further increase in RV (Olive & Hyatt, 1972). It would appear that the degree of increase in RV is not dependent on changes in the slope of the MEFV curve, for similar changes in RV can occur with or without changes in slope. It has been postulated that the increase in RV without change in slope reflects functional closure of some lung units, and

support for this argument is given by the close correlation between the predicted and calculated values for the product of resistance (measured by forced oscillation) and the thoracic gas volume at which it was measured (Olive & Hyatt, 1972). The anatomical localization of these closed units is uncertain, but they may be scattered diffusely throughout the lungs (Novey, Wilson, Suprenant & Bennett, 1970).

A decrease in the slope of the MEFV curve implies a decrease in the time-constant of emptying of some lung units. It is possible to interpret the MEFV curve in terms of the mechanical properties of the lungs and thus identify the factors which affect maximum expiratory flow rates ($\dot{V}_{max.}$) throughout the VC range. According to J. Mead's analysis, $\dot{V}_{max.}$ at lung volumes where flow maxima occur (<70% VC in normal subjects and at higher lung volumes in subjects with obstruction to air flow) are independent of effort, and are determined by lung elastic recoil pressure [Pst(1)] and the resistance of those airways upstream (Rus) from the equal pressure points (EPP), these last-named being defined as the points in the airways where intraluminal pressure is equal to pleural pressure. At each volume on the effort-independent portion of the MEFV curve:

$$\dot{V}_{max.} = \frac{Pst(1)}{Rus}$$

Changes in either Pst(1) or Rus can therefore affect $\dot{V}_{max.}$. Changes in the compliance of bronchial walls may also affect $\dot{V}_{max.}$ (Pride, Permutt, Riley & Bromberger-Barnea, 1967), but this element is more difficult to evaluate.

It has been shown that in emphysema loss of elastic recoil is often the dominant factor determining the reduction in $\dot{V}_{max.}$ (Leaver, Tattersfield & Pride, 1971; Black, Hyatt & Stubbs, 1972; Colebatch *et al.*, 1973). In asthma, although there may be some loss of recoil pressure, the dominant factor in reducing flow rates is probably intrinsic narrowing of airways (Colebatch *et al.*, 1973). Reports on changes in elastic recoil pressure in asthma have been conflicting. There is, however, evidence that there is a temporary loss of recoil in the hyper-inflated asthmatic with a return to normal levels over several days, after treatment and deflation (Gold, Kauffman & Nadel, 1967). There is also evidence that reversible changes in elastic recoil may occur acutely in association with changes in TLC (McFadden & Lyons, 1969) or even in the absence of changes in TLC (Colebatch *et al.*, 1973). As we thought it was not justified to measure oesophageal pressure in these children we can only speculate on the contribution of changes in elastic recoil to the reductions in $\dot{V}_{max.}$ before and after exercise in our subjects. It appears probable that in all our subjects there was some loss of elastic recoil associated with the increase in TLC. Although the further increases in TLC after exercise were only small, it would not be unreasonable to assume that there was further slight loss of elastic recoil at comparable absolute volumes. We envisage a parallel shift of the pressure-volume curve to the left over the upper part of the VC range, with in addition a reduction in slope over the lower part of the VC (see Fig. 8, Colebatch *et al.*, 1973).

The reduction in $\dot{V}_{max.}$ at comparable absolute lung volumes are more marked than could be accounted for by this loss of recoil alone, and intrinsic narrowing of the airways with a resultant increase in Rus is more likely to be the dominant factor. The increase in flow rate after breathing helium–oxygen is evidence in favour of the latter mechanism. Rus depends upon the resistance to convective acceleration (Rca) and the frictional resistance to airflow (Rfr), and the contribution of these two factors varies with lung volume (Macklem & Mead,

1967). Rea and the turbulent component of Rfr are greatest when the total cross-sectional area of the airways at the EPP is small and $\dot{V}_{max.}$ great (as at high lung volume) and also when gas density is high, whereas the laminar component of Rfr is greatest when the cross-sectional area at the EPP is large and flow is more laminar (as at low lung volume). In normal subjects $\dot{V}_{max.}$ is density-dependent over at least the initial 70% of the VC (Wood & Bryan, 1969), in keeping with the observations of Macklem & Wilson (1965), who showed by means of intrabronchial pressure measurements that EPP are at approximately the level of lobar bronchi (total cross-sectional area 1·1–2·7 cm^2) between 70% and 30% VC, and that a large proportion of Rus over this volume range is due to convection acceleration and turbulent flow. In chronic obstructive bronchitis and emphysema, where there is extensive obliteration of small airways (Hogg, Macklem & Thurlbeck, 1968), EPP moves upstream (to a point where presumably there is a larger total cross-sectional area) more rapidly than in normal subjects during a forced expiration (Macklem, Fraser & Brown, 1965). In these circumstances it would be expected that $\dot{V}_{max.}$ would become less density-dependent than normal and this is indeed the case (Despas *et al.*, 1972).

We observed that the percentage increase in $\dot{V}_{max.}$ over the whole VC range when breathing helium–oxygen after exercise was greater than the percentage increase before exercise or after a bronchodilator (Fig. 4). Table 2 shows the percentage increase at a single comparable absolute lung volume at each stage of the investigation.

The increase in density-dependence of $\dot{V}_{max.}$ throughout the VC range after exercise (Fig. 4), despite much lower flow rates, indicates that convective acceleration and turbulent flow constitute a greater percentage of Rus than before exercise. The only way that this can occur in association with lower flow rates is for there to have been a marked reduction in the cross-sectional area at the EPP. Two mechanisms could contribute to this development: (a) the EPP remaining at the same site but the total cross-sectional area being reduced by bronchoconstriction, or (b) progression of EPP upstream to a region where closure of airways or reduction in their diameter has reduced the total cross-sectional area to a value considerably less than would normally exist at that level. Generalized bronchoconstriction with resulting closure of some airways and narrowing of others could have the net effect of increasing residual volume and could result in an increased density-dependence of flow through other narrowed airways.

All the changes induced by exercise were rapidly reversed by 200 μg of salbutamol aerosol, and the measurements made shortly after inhalation of the salbutamol showed that RV had fallen at least to the pre-exercise levels and the slopes of the MEFV curves were increased. All the arguments used to explain the changes induced by exercise can be used in a reverse manner to explain the changes after the bronchodilator.

We cannot quantitate the relative extents to which obstruction in small and large airways contribute to the total abnormality from this study, as we have no means of quantitatively comparing increases in RV (presumably due predominantly to closure of small airways) with changes in the slope of the MEFV curve (presumably due predominantly to narrowing of the remaining and larger airways).

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Clinical Relevance of the Flow Rate Response to Low Density Gas Breathing in Asthmatics[1-3]

S. R. BENATAR, T. J. H. CLARK, and G. M. COCHRANE

SUMMARY

The maximal expiratory flow rate response to low density gas breathing was examined at the mid-vital capacity point in 31 asthmatic patients. Clinical features and long-term follow-up data were documented to assess the clinical relevance of the various responses. Many of the patients with chronic asthma had not responded adequately to outpatient therapy, and they had been admitted to hospital for evaluation and management. With increased steroid doses and intensive bronchodilator therapy, all showed considerable improvement and were studied when this improvement occurred. The remainder of the patients were studied after recovery from acute asthmatic attacks or during maintenance management as outpatients. All patients with a forced expiratory volume in 1 second > 75 per cent of the predicted value and mid-expiratory flow rate > 50 per cent of the predicted value at the time of study showed a good response to helium. Those patients with more severe obstruction could be divided into 2 groups, responders and nonresponders. A qualitatively similar response to normal subjects (density-dependent flow rates) was a feature of those patients who in general showed further improvement in ventilatory function on follow-up. A qualitatively similar response to that seen in patients with chronic irreversible obstruction (density-independent flow rates) was a feature of those patients who in general showed no further improvement in ventilatory function on long-term follow-up. There were, however, exceptions to both groups. We conclude that in asthmatics with more than mild air flow obstruction, the assessment of helium response can be of value in identifying those patients who have, in addition to asthma, chronic irreversible obstruction due to concomitant chronic bronchitis and/or emphysema. Clinical assessment and measurement of single-breath diffusion of carbon monoxide provide additional support for the latter diagnoses and separate the few exceptions from the bulk of the nonresponders. Responders and nonresponders can be fairly reliably identified from the simply recorded exhaled flow volume curve, thus obviating the need for a volume displacement plethysmograph.

Introduction

It was reported recently that analysis of the mechanical properties of the lungs in symptomatic asthmatics can identify 2 separate groups of patients, independent of the severity of air flow obstruction (1). The separation into these 2 groups is made most simply by measuring the maximal expiratory flow rate response to low density gas breathing (1). It has been suggested that the major site of resistance to expiratory air flow is in small peripheral airways (< 2 to 3 mm diameter) in those patients not showing a flow rate response to He, and in larger more central airways in those showing a good response (1).

Asthma is not a homogenous disease and has defied accurate, simple, comprehensive definition (2). The term is used frequently to describe patients with a significant reversible component

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[1] From Brompton Hospital, Fulham Road, London, S.W. 3, England.

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[3] Requests for reprints should be addressed to Dr. S. R. Benatar, Department of Medicine, University of Cape Town Medical School, Observatory, Cape, South Africa.

to their air flow obstruction and thus covers a wide range of conditions with differing etiology, immunologic features, and natural history (2). The clinical relevance of the various flow rate responses in asthma has not yet been reported; the object of the present study was to look for these responses in a random group of asthmatic patients in Bromptom Hospital and to determine whether any differences observed could be of clinical value. The patients we studied appeared to be very similar to those reported by Despas and associates (1) in that they were all symptomatic, covered a wide age range, and showed a significant response to bronchodilator at the time of the study.

Materials and Methods

Ten nonsmoking normal subjects with no recent history of upper respiratory infection were studied. Measurements of the subdivisions of lung volume were made to confirm that they were within the predicted normal range, and the normal response of maximal expiratory flow rates ($\dot{V}max$) to low-density gas breathing was then determined.

Thirty one asthmatic patients were studied. Many had been admitted to hospital for treatment of acute or chronic asthma. At the time of admission some were in a phase of relatively fixed obstruction but with intensive treatment showed considerable improvement in the degree of obstruction, and took part in the study at a time when significant improvement since admission had occurred, and when there was a response to inhaled bronchodilator aerosol. A few of the patients studied were on maintenance outpatient treatment. All patients satisfied the Ciba Foundation Symposium definition of asthma (2).

Atopic status was assessed from the history and intracutaneous prick tests. Those patients with a definite history related to an allergen or with multiple positive skin prick tests were labeled extrinsic; most of the younger patients were in this group. The remaining patients were labeled intrinsic and included predominantly older patients. Smoking history, previous history of significant chest disease, duration of corticosteroid treatment, and other clinical details are shown in table 1.

Measurements of the subdivisions of lung volume were made using a body plethysmograph in the conventional Du Bois manner (3). The plethysmograph was then used as a modified pressure-corrected volume displacement instrument to record maximal expiratory flow volume (MEFV) curves, thoracic gas volume (Vtg) change being measured by integrating the flow signal produced by the pressure difference across 2.8-cm diameter copper mesh screens. The characteristics and frequency response of this apparatus have been reported previously (4) and were adequate for the faithful recording of a forced expiratory maneuver. During maximal forced expiration from total lung capacity (TLC) the following recordings were made: exhaled volume and flow rate (using an Ohio spirometer with a flat frequency amplitude response to 5 Hz) and Vtg change against time on a Mingograph 34 T; exhaled flow rate displayed against Vtg change on a Telequipment DM 64 storage oscilloscope, and exhaled flow rate displayed against exhaled volume on a Bryans 2600 A3 XY recorder (with flow rate on the Y axis limited to a maximal amplitude of 5 cm, at which amplitude there was no distortion of the MEFV curves). Forced expiration maneuvers were also recorded after the patients had breathed a mixture of 79 per cent He and 21 per cent O_2 for 10 min. All measurements of the subdivisions of lung volume, forced expiration breathing air, and forced expiration after breathing He/O_2 were made 2 to 3 times and nonrepeatable tracings discarded. In some studies repeatable tracings of flow volume curves derived from exhaled flow/Vtg relationships were not obtained (possibly because of integrator drift or large thermal differences between the plethysmograph and the room); in those cases only the exhaled flow volume curve data were used. From the various recordings the following measurements were made: functional residual capacity (FRC), vital capacity (VC), residual volume (RV), TLC, forced expired volume in one second (FEV_1), forced vital capacity (FVC), peak expiratory flow (PEF) rate, maximal flow at 50 per cent exhaled VC obtained from recording flow volume relationships at the mouth ($\dot{V}max_{50M}$), and maximal flow at 50 per cent of the Vtg change during forced expiration obtained from relating exhaled flow rate to Vtg change ($\dot{V}max_{50B}$), and the percentage change in the latter 2 after breathing He/O_2. Predicted values for FRC, VC, RV, TLC, FEV_1, and FVC were taken from the collected data of Bates and associates (5). Predicted values for $\dot{V}max_{50M}$ were taken from Leuallen and Fowler's (6) measurement of maximal mid-expiratory flow (MMEF) rates, the assumption being made that MMEF and $\dot{V}max_{50M}$ are almost the same. Satisfactory predicted values for $\dot{V}max_{50B}$ are not available. Although the measurement of carbon monoxide diffusion was not undertaken as a part of this study, it had been measured by the single breath method ($D_{LCO_{SB}}$) (7) within 2 months of the study in some of the patients, and when available this result has been included. Quasi-static pressure volume curves were obtained in 3 patients, and in one of these at 2 widely different degrees of air flow obstruction. The esophageal pressure was measured with an esophageal balloon (length 10 cm, diameter 2 cm, thickness 0.005 cm) attached to a 55-cm length of tubing of 1.5 mm internal diameter and using a mercury electronics A300 capsule transducer volume displacement coefficient of 0.0005 ml per cm of water to measure the differential pressure between the esophagus and

TABLE 1

CLINICAL DATA

Subject	Age (years)	Height (inches)	Sex	Duration of Asthma (years)	Atopic Status	Steroids	Smoking	Helium Response	Other Relevant Chest Illness
1	47	61	F	5 months	I	This admission only	Never	R	None
2	60	70.5	M	4 to 5	E	3 years	30 years, 5 per day, stopped 5 years ago	R	None
3	66	60.5	F	8	I	Never	25 years, 15 per day, stopped 5 years ago	R	Bronchitis since childhood
4	18	64	F	17.5	E	1 year	No	R	Pneumonia twice
5	22	69	M	20	E	Never	No	R	None
6	22	64	F	Few days	E	Never	5 years, 10 per day	R	None
7	33	65	M	8 to 10	E	± 1 to 2 years	10 years, 10 per day, stopped for 6 months	R	None
8	43	70	M	20	I	10 years	Never	R	None
9	33	66	F	20	E	No	4 years, 20 to 30 per day, stopped 6 years ago	R	None
10	24	60.5	F	11	E	No	Never	R	None
11	56	63	M	10	I	10 years	Pipe	R	None
12	23	73	M	3	E	No	Stopped 3 years ago	R	Paraquat inhalation 3 years ago
13	25	60.5	F	20	E	Recently	No	R	None
14	25	68	M	20	E	No	8 years, 4 per day, occasional	R	None
15	22	74	M	3	I	6 months	Stopped 4 years ago	R	None
16	43	70	M	3	E	No	Never	R	Pneumonia once
17	38	67	M	30+	E	1 year	Stopped 2 years ago	R	None
18	36	69	M	10	E	5 years	No	R	None
19	48	60	F	14	I	11 years	10 per day, stopped for 2 months	R	None
20	55	67	M	2	I	Recent short course	16 years, 20 per day, stopped for 18 months	R	Onset of asthma after flu
21	34	65.5	F	2	I	No	No	NR	Pulmonary tuberculosis 8 years ago. Scars on chest roentgenogram
22	49	71	M	18	E	20 years	10 per day	NR	Bronchiectasis right lobe + left lung
23	62	62	F	60 (on and off)	I	5 years	Never	NR	Pneumonia twice
24	56	67	M	6	E	6 years	10 per day	NR	None
25	29	61.5	F	28.5	E	9 months	No	NR	Pulmonary hypertension
26	38	72	M	34	E	2 months	Occasional	NR	None
27	48	66	M	43	E	4 years	5 to 10 per day	NR	None
28	17	63	F	1	E	No	No	NR	None
29	47	60	F	2	I	Beclomethazone dipropionate aerosol	Several years 20 to 30 per day	NR	None
30	62	59	F	2	I	1.5 years	Many years, 5 per day, stopped 12 years ago	NR	None
31	20	67	F	Recent onset	E	Recent short course	Never	NR	Frequent bronchitis in childhood

Definition of abbreviations: I = intrinsic, E = extrinsic, R = responder to helium, NR = nonresponder to helium.

the mouth. Expiratory pressure volume curves were plotted from pressure and volume signals obtained during slow expiration (100 to 200 ml per sec) from TLC, after 2 previous slow deep breaths up to TLC to provide a constant volume history. Several pressure volume curves were recorded and the mean value of repeatable measurements taken.

Results

Normal subjects. The mean age and height of the normal subjects were 28.9 years and 68.5 inches and the mean and standard deviation in absolute values and in per cent predicted for the measurements made were: FRC, 3.75 ± 0.95 (104 ± 15); RV, 1.82 ± 0.37 (110 ± 35); TLC, 7.03 ± 1.49 (107 ± 11); FEV_1, 4.24 ± 0.99 (107 ± 13); PEF, 628 ± 115 (106 ± 12); $\dot{V}max_{50M}$, 4.88 ± 1.28 (111 ± 26); $\dot{V}max_{50E}$, 6.37 ± 1.99. All absolute values were expressed in liters or liters per sec at body temperature and pressure saturated. All percentages have been corrected to the nearest 1 per cent. The mean and standard deviation for the increase in $\dot{V}max_{50E}$ after breathing He/O_2 was 0.43 ± 0.06; this is similar to the values obtained by Despas and co-workers (1) (0.48 ± 0.117 SEM). The mean and standard deviation for the increase in $\dot{V}max_{50M}$ after breathing He/O_2 was 0.46 ± 0.06.

Patients. Clinical details of the asthmatic patients are listed in table 1. Measurements of lung volumes and flow rates, $D_{LCO_{SB}}$ when available, and the per cent increase in flow rates after breathing He/O_2 are shown in table 2. Response to breathing the low density gas mixture in both the normal subjects and the patients (expressed as a per cent increase in flow rate at

TABLE 2

MEASUREMENTS OF LUNG VOLUMES AND FLOW RATES EXPRESSED IN LITERS OR LITERS PER SECOND, BTPS, AND AS PER CENT PREDICTED, PER CENT INCREASES IN FLOW RATE AFTER BREATHING HELIUM-OXYGEN, AND SINGLE BREATH GAS TRANSFER OF CARBON MONOXIDE EXPRESSED AS A PERCENTAGE OF THE PREDICTED VALUE

													$\dot{V}max_{50B}$		$\dot{V}max_{50M}$		
	FEV_1		FVC		FRC		RV		TLC		PEF		Initial Value	% Increase	Initial Value	% Increase	
Subject	*(liters)*	*(% pred.)*	*(liters)*	*(% pred.)*	*(liters)*	*(% pred.)*	*(liters)*	*(% pred.)*	*(liters)*	*(% pred.)*	*(liters per sec)*	*(% pred.)*	*(liter per sec)*	with He/O_2	*(liter per sec)*	*(% pred.)*	with He/O_2	$DLCO_{SB}$ *(% pred.)*
1	1.61	73	2.55	91	3.54	146	2.94	204	5.87	139	280	77	1.96	42	1.16	40	65	153
2	2.61	89	4.21	100	5.09	132	4.36	183	9.07	137	495	91	2.4	75	1.8	56	78	94
3	1.19	66	1.79	74	2.95	121	2.5	156	4.55	113	230	69	1.48	40	0.9	39	88	145
4	1.59	49	2.74	73	4.61	155	3.93	284	6.17	121	160	36	1.23	13	1.18	30	11	90
	1.89	57	2.73	73	3.41	122	2.67	194	5.25	102	210	47	1.77	63	1.51	39	66	90
	2.16	66	2.94	79							245	54	2.1	67	1.98	51	55	90
5	3.43	77	5.31	101	3.66	98	1.42	83	6.48	93	550	87	4.01	51	2.74	58	59	112
6	2.96	91	3.82	102	3.29	118	2.32	168	5.71	112	490	109	3.64	37	2.8	72	32	87
7	1.63	48	3.63	84	4.37	135	3.57	227	7.19	122	270	47	1.36	35	1.1	27	55	82
8	1.65	44	3.47	72	3.91	101	3.16	152	6.11	89	300	54			0.84	21	44	
9	2.76	87	4.52	120							360	82	3.01	62	2.0	54	62	
	3.41	108	4.59	122							395	90	4.8	50	3.4	92	41	
	3.33	105	4.59	122	3.40	113	1.84	119	6.49	122	415	93	4.6	42	3.54	96	41	
10	2.53	87	3.24	97	2.95	121	1.85	156	4.95	109	360	90	2.5	40	2.4	63	64	108
11	1.38	59	3.48	107	3.72	125	2.69	150	6.43	128	160	32	1.16	28	0.54	18	40	
12	1.99	40	3.89	70	4.84	114	3.42	169	7.34	93	275	41	1.44	31	1.1	22	46	93
	3.78	76	6.14	104	3.58	84	1.61	80	7.65	97	525	78	4.04	28	3.2	66	24	90
13	0.84	32	2.38	76	4.69	193	4.07	317	6.17	139	180	44	0.54	33	0.38	11	37	85
14	3.2	78	5.65	114							480	79	3.55	23	1.9	45	47	92
15	2.89	64	5.37	96							450	70	2.57	83	1.9	42	47	
16	1.63	47	4.39	94	4.14	107	3.14	146	6.49	95	90	15	0.79	53	0.7	18	43	87
17	2.53	76	5.12	118	4.81	137	3.63	195	8.15	131	350	63			0.91	23	30	95
18	1.90	53	3.90	84	4.69	125	3.44	176	8.54	128	380	60			0.51	13	62	59
19	1.21	58	1.98	74	2.53	109	2.20	161	4.03	100	230	65			0.9	38	37	120
20	2.27	82	3.97	102	4.31	124	3.15	145	7.2	120	370	70	2.56	22	1.44	45	48	
21	1.58	51	3.23	87	3.83	127	3.12	179	5.93	109	310	71	0.87	13	0.71	21	27	88
22	0.82	21	4.18	84	5.55	139	3.85	172	7.62	107	185	31	0.37	10	0.34	9	10	46
23	1.25	59	2.13	78	3.18	125	2.3	145	4.28	99	230	67	1.4	7	0.97	37	18	132
24	0.74	29	2.36	63	5.14	148	4.24	195	6.74	114	235	43	1.24	5	0.38	12	0	
25	0.95	34	2.55	78	4.53	178	3.33	246	5.99	130	160	36	0.53	15	0.40	11	15	86
26	2.33	59	5.50	107	5.91	143	4.31	190	9.51	129	500	79	1.3	14	0.99	27	4	94
27	1.11	39	2.64	68	5.44	166	4.24	217	7.51	129	190	35			0.4	12	0	64
28	2.15	69	3.47	96	3.65	137	2.5	189	6.10	124	360	81			1.25	33	5	95
29	0.99	43	1.43	50	4.79	206	4.16	304	5.59	135	135	36			0.4	13	0	63
30	1.15	64	2.83	120	3.76	166	2.42	177	5.34	144	100	35			0.4	18	27	140
31	2.86	77	3.41	80	3.95	121	3.09	196	6.50	114	316	66			2.5	61	27	94

Definition of abbreviations: FEV_1 = forced expiratory volume in one sec; FVC = forced vital capacity; FRC = functional residual capacity; RV = residual volume; TLC = total lung capacity; $\dot{V}max_{50B}$ = flow rate at 50 per cent of the change in thoracic gas volume during forced expiration; $\dot{V}max_{50M}$ = flow rate at 50 per cent of the exhaled vital capacity; $DLCO_{SB}$ = single breath gas transfer of carbon monoxide.

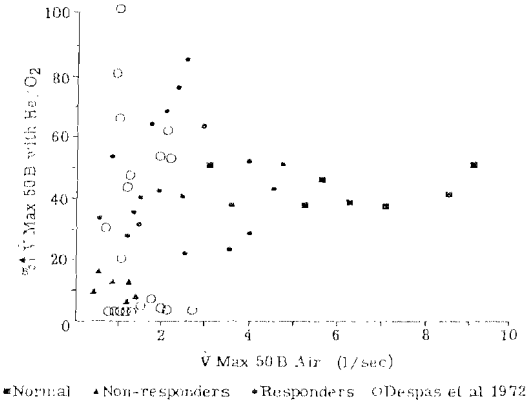


Fig. 1. Relationship between maximal expiratory flow rate at 50 per cent thoracic gas volume change ($\dot{V}max_{50B}$) during he forced vital capacity maneuver and the per cent increase in flow rate at that volume after 10 min of He/O_2 breathing.

$$\% \dot{V}max_{50B} = \frac{\dot{V}max_{50B} \text{ breathing } He/O_2 - \dot{V}max_{50B} \text{ breathing air}}{\dot{V}max_{50B} \text{ breathing air}} \times 100$$

50 per cent change in Vtg during the FVC maneuver) is plotted against the flow at the same volume breathing air in figure 1. The results obtained by Despas and associates (1) are also included in this figure. The simultaneously recorded relationship between $\dot{V}max_{50M}$ and response at 50 per cent exhaled VC are shown in figure 2. In 9 patients only the latter pairs of measurements were obtained. In 2 such cases with increases of $\dot{V}max_{50M}$ > 20 per cent

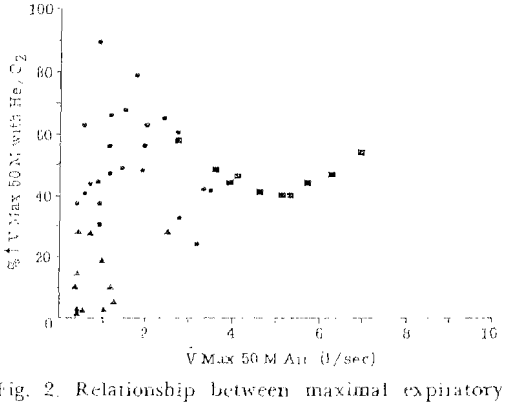


Fig. 2. Relationship between maximal expiratory flow rate at 50 per cent of the exhaled forced vital capacity ($\dot{V}max_{50B}$) and the per cent increase in flow at that volume after 10 min of He/O_2 breathing. Responders and nonresponders are labeled as in figure 1. $\dot{V}max_{50B}$ and $\dot{V}max_{50M}$ were recorded simultaneously (on separate recorders) in each subject. $\dot{V}max_{50B}$ was not obtained in a few subjects, which is why there are more points in figure 2 than in figure 1.

but < 30 per cent, it was decided to label them nonresponders because only one of 27 patients in whom $\dot{V}max_{50B}$ and $\dot{V}max_{50M}$ were available showed a response on $\dot{V}max_{50M}$ of < 30 per cent (table 2). Four such patients with $\dot{V}max_{50M}$ response > 30 per cent were labeled responders, and 3 patients with $\dot{V}max_{50M}$ response < 6 per cent were labeled nonresponders.

From the 27 sets of paired $\dot{V}max_{50B}$ and $\dot{V}max_{50M}$ data (table 2), it can be seen that although there was no consistent difference between these 2 measurements of response, only one patient with a $\dot{V}max_{50B}$ response < 20 per cent had a $\dot{V}max_{50M}$ response > 20 per cent, and in no case was a $\dot{V}max_{50B}$ response < 20 per cent associated with a $\dot{V}max_{50M}$ response > 30 per cent. All except one patient with a $\dot{V}max_{50B}$ response > 20 per cent had a $\dot{V}max_{50M}$ response > 30 per cent.

Three patients were studied at more than one degree of severity of obstruction and their MEFV

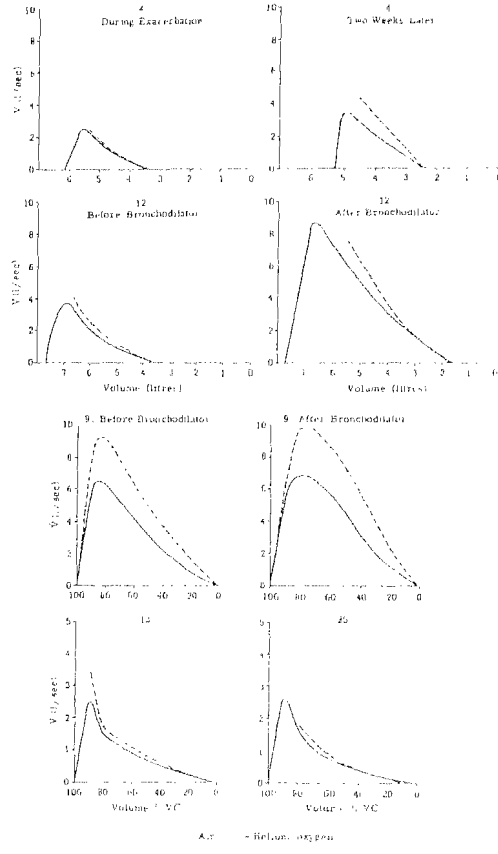


Fig. 3. Maximal expiratory flow volume curves breathing air and then breathing He in 5 patients. Exhaled flow rate is plotted against thoracic gas volume change.

curves are shown in figure 3. In Subjects 9 and 12, the marked differences in MEFV curves occurred within 20 min of inhalation of aerosolized bronchodilator, and the response to He was qualitatively the same at both levels of obstruction. This is in keeping with the observations of Despas and co-workers (1), who found that responders remained responders. Subject 4 was first studied shortly after admission to hospital and is particularly interesting because she was initially a nonresponder and later became a responder, the only patient in whom this observation was made. She had been admitted because of a steady deterioration in her condition over several months with diminishing response to bronchodilator therapy. After 2 weeks of intensive bronchodilator and corticosteroid treatment she was considerably better, both clinically and on physiologic assessment, and had become a good responder to He. In a study 6 months later, after further improvement, she remained a responder. Of the other subjects studied, all had improved from the time of admission until the time of the study, and repeat observations were not obtained at various levels of obstruction. Quasi-static pressure volume curves were constructed in Subjects 10, 12, and 13 (figure 4) and maximal-flow static recoil (MFSR) curves (figure 5) and upstream resistance (Rus) volume curves (figure 6) were derived in each case. In Subject 12 all measurements were made before and after bronchodilator.

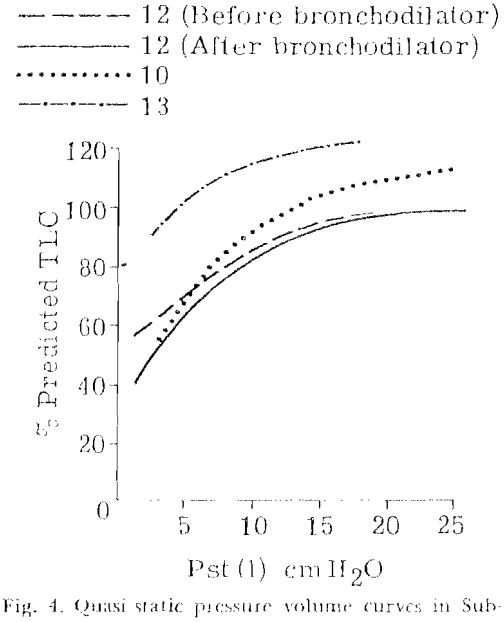


Fig. 4. Quasi static pressure volume curves in Subjects 10, 12, and 13.

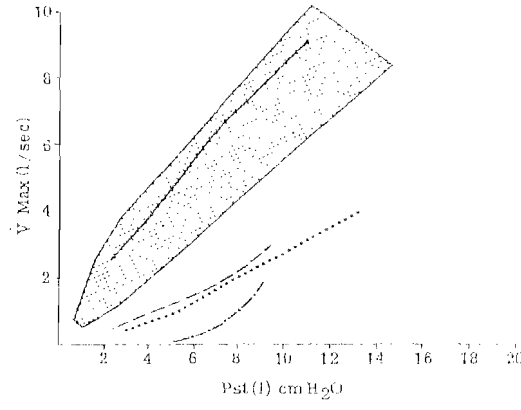


Fig. 5. Maximal flow static recoil curves in Subjects 10, 12, and 13.

To evaluate the subsequent progress of the patients studied, the hospital records were recalled and measurements noted of FEV_1/FVC and/or PEF rate in the outpatients department during the 6 to 9 months after the patients had been studied. Of the 11 nonresponders, 7 had not improved their ventilatory function significantly (Subjects 21, 22, 25, 26, 27, 29, 30) and had FEV_1 and PEF rates similar to, or worse than, at the time of the study. One nonresponder (Subject 23) had died suddenly at home, and the remaining 3 (Subjects 24, 28, 31) had shown significant improvement in ventilatory function (i.e., an increase in FEV_1 or PEF to more than 150 per cent of value at the time of the study.

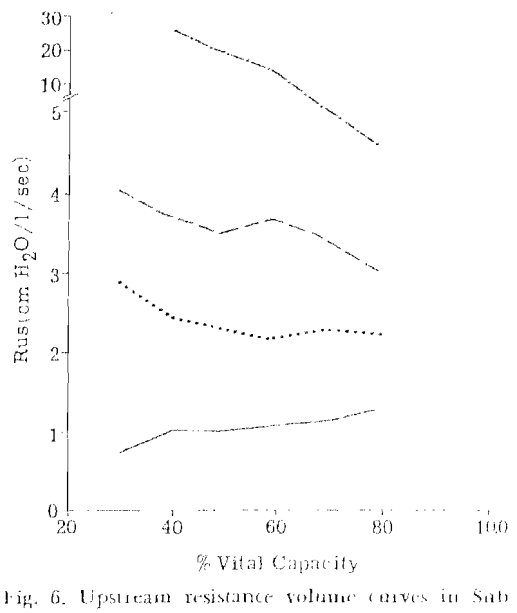


Fig. 6. Upstream resistance volume curves in Subjects 10, 12, and 13.

Two of these 3 patients who improved were young nonsmokers with a history of asthma for less than one year. Of the 20 responders, 8 had $FEV_1 > 75$ per cent predicted at the time of the study and their ventilatory function was largely unchanged over the subsequent months, although there had been some variability during this time. The remaining 12 had more severe obstruction at the time of the study. Five subsequently showed significant improvement in ventilatory function (Subjects 1, 4, 12, 16, 19), and another one had less marked improvement (Subject 3). No improvement was evident in 3 patients (Subjects 8, 13, 18) and 3 had not attended follow-up (Subjects 11, 15, 21). Although the He response in Subject 12 was qualitatively the same before and after bronchodilator, the corresponding Rus volume curves sloped in different directions. In the other 2 responders, Rus increased with reduction in volume and thus resembled that of previously reported nonresponders (1).

Response and nonresponse were observed in both intrinsic and extrinsic asthmatics, and there was no difference in the incidence of atopic status in the 2 groups. Steroids had been used for more than 6 months in 45 per cent of the responders and in 54 per cent of the nonresponders. Many of the patients in both groups had been smokers in the past, and 15 per cent of the responders and 36 per cent of the nonresponders were still smoking within 6 months of the study. A history of previous complicating chest disorder was present in 20 per cent of the responders and in 36 per cent of the nonresponders. $D_{LCO_{SB}}$ was < 80 per cent predicted in 6 per cent of the responders and in 30 per cent of the nonresponders. The 3 nonresponders with $D_{LCO_{SB}} < 80$ per cent predicted (Subjects 22, 27, 29) were all still smoking at the time of the study. Two of these patients had been asthmatic since childhood (longer than 35 years) and had multiple positive Type I skin prick tests; one of these two had been using steroids for control of asthma for 20 years. The third patient had been a smoker for years and had a 2-year history of asthma with negative skin tests.

Discussion

The previously reported observation that asthmatics can be divided into 2 groups on the basis of the flow rate response to He has been confirmed by our data. These 2 responses are, however, only seen within a group of fairly severely obstructed asthmatics, and nonresponse (as defined by Despas and associates [1]) is not seen at 50 per cent VC in patients with only mild obstruction. All patients with $\dot{V}max_{50B}$ breathing air > 1.5 liter per sec were responders. When $\dot{V}max_{50B}$ was < 1.5 liter per sec, both response and nonresponse were observed. Although Despas and co-workers reported some nonresponders with $\dot{V}max_{50B}$ of up to 2.7 liter per sec, this still represents fairly severe obstruction; the majority of their nonresponders had $\dot{V}max_{50B} <$ 1.5 liter per sec as in the present series. In depicting the MEFV curves of an asthmatic with a response < 10 per cent, they chose to show an MEFV curve with $\dot{V}max_{50B}$ of 3.5 liter per sec. This may be misleading because in their main body of data there was no nonresponder with $\dot{V}max_{50B} > 2.7$ liter per sec. The mean $\dot{V}max_{50B}$ in our normal subjects was 6.47 liter per sec, and even though the mean age of the patients was greater than the mean age of the normal subjects (38.7 years as compared with 28.9 years) it is clear that nonresponse at 50 per cent VC has not yet been documented in only mildly obstructed asthmatics.

Nonresponse at lower lung volumes than 50 per cent VC is, however, often observed in patients with mild obstruction (Subject 12, figure 3) and it has been reported that one of the earliest changes in patients with diseases of small airways, for example, smokers, is a reduction in He response at low lung volumes (8). Because patients with severe chronic irreversible obstruction have an absent response up to much higher lung volumes (1), it seems likely that progressive obstruction in the small airways during the natural history of these diseases results in progressively less He response at ever-increasing lung volumes. The pathologic studies showing that the small airways < 2 to 3 mm diameter are the major site of obstruction in these diseases (9) and the predicted response to He under these circumstances fit in with the observed He response (1).

The induction of acute asthma, for example, by exercise has been shown to be accompanied by a preservation or even enhancement of the flow rate response to He (4, 10) and it has been argued that this is an indication of large central airway constriction. The increase in RV that commonly occurs in such induced attacks indicates that there has also been narrowing, and probably closure, of smaller lung units. There is, unfortunately, no known way of quantitatively comparing the severity of obstruction centrally, producing a flow rate response change, with

the obstruction more peripherally producing an increase in RV. Thus, the presence of a good He response when there is severe obstruction would perhaps indicate a bronchoconstrictive element that is potentially reversible, whereas an absent response would indicate that the obstruction present is largely irreversible and that maximum reversibility has been achieved. The relationship between the response to bronchodilators and the He response has yet to be systematically studied.

Follow-up data on the 20 responders show that several of the patients in this group with more than mild obstruction at the time of the study had significant improvement in ventilatory function during the ensuing months. The 3 patients who showed no further improvement had all had asthma for more than 20 years. Of the 11 nonresponders, 7 showed no further improvement during the next few months; it appears that the reversible element of their airway obstruction had been optimally treated before the study. It would have been of great interest to know what the response was like in these patients before their intensive treatment in hospital.

A poor He response thus usually seemed to reflect the presence of an underlying, nonreversible component of the obstructive disease; the question that arises is whether these patients have associated chronic obstructive bronchitis and/or emphysema, or whether their asthma had resulted in extensive mucous plugging of airways that was nonresponsive to intensive treatment. It is well documented that people dying in status asthmaticus may have such mucous plugging (11). It is possible that the 3 nonresponders who did show improvement in ventilatory function during the few months after the study had partially recovered from such plugging; Subject 4 is a possible example of this sequence of events. It is well known that patients satisfying the criteria for the diagnosis of asthma are not protected from the possible development of unassociated obstructive bronchitis and/or emphysema; we suggest that the nonresponders who did not improve after the study had such associated structural changes in their lungs. This conclusion is supported by the low $D_{LCO_{SB}}$ in 3 of these patients (Subjects 22, 27, 29), long smoking history in one (Subject 30), past history of tuberculosis in one (Subject 21), and associated documented elevation in pulmonary artery pressure at rest in one (Subject 25).

The range of abnormalities in pressure volume curves, MFSR curves, and Rus volume curves in 3 patients, all responders, indicates that the He response could not be predicted accurately from such an analysis.

The collection of more extensive data about the He response at various stages in the management of asthma and in relation to bronchodilator response would be simplified if the volume plethysmograph could be dispensed with and the more simply recorded exhaled flow volume curve used. The theoretic disadvantage of the latter method is that flow rates are not accurately related to absolute lung volume change because of the effect of thoracic gas compression (12). At any given flow rate, change in volume is underestimated; thus, $\dot{V}max_{50M}$ will be lower than $\dot{V}max_{50B}$ because $\dot{V}max_{50M}$ is actually flow at a lower lung volume. Because the degree of compression will be less when He is breathed, $\dot{V}max_{50M}$ when breathing He will actually be flow rate at a higher lung volume than the volume at which $\dot{V}max_{50M}$ breathing air was measured. The combined effect of measuring the response at a lower lung volume than true 50 per cent Vtg change (and therefore at a volume at which flow rate may be less density dependent) and of $\dot{V}max_{50M}$ breathing He actually being at a higher lung volume than $\dot{V}max_{50M}$ breathing air could result in over or under estimation of the true He response. Because flow rates can be density dependent to almost the same degree, down to 25 per cent VC (13), and because the degree of compression, breathing He, will vary with the flow rate response, it is unlikely that the response measured from $\dot{V}max_{50M}$ will differ consistently in the same direction from the $\dot{V}max_{50B}$ response.

In view of the practical advantages of using the simply recorded MEFV curve and the fairly reliable identification of response by this method, it seems justifiable to use this method alone in the clinical situation so that frequent measurements during recovery from attacks of asthma, and in relation to bronchodilator therapy, can be documented in sufficiently large groups of patients to establish whether the test is of any practical value.

It is also suggested that the examination of Type I and Type III induced asthmatic attacks could be studied by this method to determine whether the airway responses and their blockade by previously administered drugs differ in any way that has not been previously identifiable.

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Aspergillus Infection in the Western Cape

S. R. BENATAR

SUMMARY

The inhalation of spores of *Aspergillus* may result in allergic, infective or saprophytic clinical reactions, depending on the immunological status of the host. Five cases of bronchopulmonary aspergillosis in asthmatics, 62 asthmatics with evidence of skin hypersensitivity to *Aspergillus*, but without bronchopulmonary aspergillosis, 3 patients with *Aspergillus* pneumonia and 7 with aspergillomas diagnosed in the Western Cape during the last 18 months, are described. The characteristic features of each type of reaction to *Aspergillus* are reviewed. The importance of bronchopulmonary aspergillosis and the permanent damage it can produce when it goes unrecognized and untreated, are emphasized. It is hoped that this report will increase local awareness of this complication in asthmatics and thus favour early diagnosis and treatment.

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The fungus *Aspergillus* is found all over the world in soil and in decaying vegetable matter. Its spores are carried in the air and the fungus may be found as a harmless commensal in the respiratory tract of man. It also causes several different types of lung disease, depending largely on the immunological status of the host inhaling the spores: bronchopulmonary aspergillosis in asthmatics;[1-4] aspergillomas in lungs damaged by tuberculosis, bronchiectasis, or sarcoidosis;[5] allergic alveolitis;[6] and *Aspergillus* pneumonia or invasive aspergillosis in the immunocompromised patient.[7] Most reports of *Aspergillus* infection have come from Britain, where it has been shown that bronchopulmonary aspergillosis is the commonest cause of pulmonary infiltrates with eosinophilia in asthmatics[1,2,4,8] and that 11% - 20% of healed tuberculous cavities are colonized by *Aspergillus*.[9]

The supposed lower incidence of *Aspergillus* infection in the USA[10] has been shown to have arisen from a failure to recognize cases.[11,12] With a knowledge of the various characteristics of *Aspergillus* infection and by a systematic search for evidence of such infection, investigators have identified cases in many countries.[13-16] No comprehensive reports of *Aspergillus* infection have appeared in the South African medical literature. This article draws attention to the variety of such infections seen in the Western Cape over the last 18 months and it briefly reviews the characteristic features and their significance.

Respiratory Clinic, Groote Schuur Hospital and Department of Medicine, University of Cape Town

S. R. BENATAR, M.B. CH.B., F.C.P.(S.A.), M.R.C.P., *Senior Consultant and Senior Lecturer*

Date received: 23 November 1976.

PATIENTS AND METHODS

The patients reported here attended the Groote Schuur Hospital Respiratory Unit during the past 18 months. Skin prick tests were done in suspected asthmatic patients and the following antigens were used: house dust, house dust mite, *A. fumigatus*, *A. terreus*, *A. niger*, mixed moulds, South African trees, South African grasses, South African shrubs, feathers, and dog hair.* Wheals 2 mm or more in diameter were regarded as positive in the absence of a wheal produced by the control solution. The serum of asthmatic patients with a clinical picture suggestive of bronchopulmonary aspergillosis, and patients with radiological features of an aspergilloma was examined by double diffusion[2] for precipitating antibodies to *Aspergillus*. The criteria for the diagnosis of bronchopulmonary aspergillosis were: asthma (defined as reversible airways obstruction[11]), blood eosinophilia, pulmonary shadowing on X-ray examination (the shadows are described later), evidence of allergy to *Aspergillus* (type I skin prick reaction to *Aspergillus*), and precipitating antibodies to *Aspergillus* in the serum. *Aspergillus* cultured from the sputum, Arthus type III skin reaction to the prick test, and the characteristic proximal bronchiectasis of bronchopulmonary aspergillosis in some cases were supporting evidence. Tuberculosis was looked for and excluded in each patient.

The diagnosis of aspergilloma was made on the characteristic radiological appearance in association with serum precipitating antibodies to *Aspergillus*. Spirometry was performed with a Vitalograph and gas transfer for carbon monoxide was measured by the single-breath method. Mantoux skin tests were done with 5 test units of freshly diluted PPD Weybridge stabilized with Tween 80 and read according to international standards.[16]

RESULTS

Bronchopulmonary Aspergillosis

A diagnosis of bronchopulmonary aspergillosis was made in 5 patients (Table I) and case reports are presented.

Patient 1. A 17-year-old Coloured girl was seen in March 1975. She gave a history of having had asthma since childhood and an intermittent cough productive of thick, yellow sputum during recent years as her asthma had worsened. She did not smoke, had never contracted tuberculosis or pneumonia, nor had she been hospitalized. She was well nourished and had moderately severe airways obstruction with rhonchi and wheezing throughout both lung fields. There were no other abnormal features. Spirometry showed an FEV_1/FVC of 790/1 440 ml (predicted vital capacity 3 470 ml) which changed very little after 2 puffs of a dry aerosol bronchodilator. Skin prick tests produced a 9-mm reaction to house dust mite, 6-mm reaction to house dust, and 3-mm reactions to *A. niger*, *A. fumi-*

* Bencard antigens.

TABLE I. PATIENTS WITH BRONCHOPULMONARY ASPERGILLOSIS

No.	Age	Sex	Race	Clinical data	Skin prick tests	Precipitins	Eosinophil count (/μl)	Chest X-ray	Pulmonary function		
									VC%P	FEV_1%	TLCO%P
1	17	F	Coloured	Asthma since childhood. Recurrent respiratory infections. Steroid-dependent. Mantoux negative	Multiple positives including AF and AN	Positive AF	1 768	Tramline shadows in both upper lobes. Ring shadows in lingula	45	55	
2	29	M	White	Asthma since childhood. Recurrent CXR shadows. Aspergillus cultured from sputum. Mantoux negative	Multiple positives including AT	Positive AF	>1 000	Transient upper lobe shadows	120	66	83
3	25	M	White	Asthma since childhood. Treated for pulmonary TB because of upper lobe shadows. Mantoux negative	Multiple positives including AT, AF and AN	Positive AN and AF	260 (on steroids)	Bilateral upper lobe fibrosis and ring shadows suggesting bronchiectasis	90	37 ↓ 57	65
4	42	M	Coloured	Chronic cough for several years. Treated for pulmonary TB because of upper lobe shadows. No response. Sputum negative for AFB. Mantoux negative	Only positive to AF	Positive AF	3 300	LUL and RMZ shadowing persisting for 3 months on anti-TB treatment and clearing gradually on steroids	65 ↓ 70	37 ↓ 57	53
5	43	F	White	Asthma since childhood. Recurrent 'pneumonias'	Multiple positives including AF and AN	Positive AF	740	Recurrent upper and mid-zone shadows >10 yrs leading to bronchiectasis	50	49	77

AG = *A. glaucus*; AF = *A. fumigatus*; AT = *A. terreus*; AN = *A. niger*; TB = tuberculosis; AFB = acid-fast bacilli; CXR = chest radiograph; VC%P = vital capacity as % of predicted value; FEV_1% = FEV_1/FVC ratio; TLCO%P = carbon monoxide gas transfer as % of predicted value; LUL = left upper lobe; RMZ = right mid-zone.

gatus, and horse hair. She had an eosinophilia of 1 768/μl and serum precipitins to *A. fumigatus*. Faeces contained no ova or parasites. X-ray films showed 'tramline' shadows in both upper lobes and cystic changes in the lingula. The Mantoux test was negative. Protein electrophoresis and the sweat test were normal. There were no acid-fast bacilli in her sputum and cultures were negative for fungi and pathogens. She was treated with steroids and improved markedly: her asthma became less troublesome and she no longer expectorated purulent sputum. Her FEV_1/FVC improved to 1 200/1 800 ml. Subsequently she used the steroid medication irregularly to control her asthma.

Patient 2. A 29-year-old White man had a history of intermittent attacks of asthma separated by long periods of remission since childhood. In September 1974 he presented with a persistent cough of 2 months' duration, which was associated with mucopurulent sputum and worsening of his asthma. He had been treated with antibiotics without success and bronchodilators and disodium cromoglycate had not produced much relief. A wheeze was his only abnormal sign. An X-ray film of his lungs showed consolidation in the right mid-zone. The Mantoux test was negative, sputum was negative for acid-fast bacilli, but a pure growth of *Aspergillus* was cultured from sputum. Prick tests gave a 6-mm reaction to house dust, a 5-mm reaction to house dust mite, 4-mm reactions to *A. terreus*, mixed moulds, South African trees, South African grasses, South African shrubs, and dog hair. Serum precipitins to *Aspergillus* were initially not detected but were found later.

He responded well to steroid therapy; there was rapid clearing of the shadowing in the X-ray film, but when the steroid medication was stopped, he developed another area of shadowing in the right upper zone. This also was successfully treated with a short course of steroids. He remained well without steroid treatment but recently developed a shadowing in the lung associated with sputum containing *Aspergillus*.

Patient 3. A 25-year-old White man was first seen in February 1975. He had a history of asthma since early childhood and of many admissions to hospital. At puberty his asthma improved but over the last 2 years it had worsened. In June 1975 an X-ray examination showed extensive shadowing of the upper lobes of his lungs for which he was treated with streptomycin, rifampicin, INH and ethambutol, despite a negative Mantoux test and no acid-fast bacilli in his sputum. His asthma deteriorated and in December 1975 he was admitted to hospital in status asthmaticus. There he was treated with bronchodilators and corticosteroids and slowly recovered. Because there was no radiological improvement from June 1975, and because his sputum had remained negative for acid-fast bacilli and his Mantoux test was negative, antituberculous drugs were stopped.

He was prescribed prednisone 20 mg daily and a tentative diagnosis of bronchopulmonary aspergillosis was made. On this treatment he felt that his asthma was under perfect control. He had expectorated brown and yellow plugs of sputum in the months preceding his admission to hospital but no longer did so. He had never smoked. He presented the characteristic chest of severe childhood asthma and his pulmonary expiration was somewhat prolonged. An X-ray film compared with his earlier films showed some clearing of the upper lobe shadows. Spirometry showed an FEV_1/FVC of 2 480/4 570 ml, a ratio of 54%, increasing slightly to 2 750/4 860 ml after 2 puffs of a dry aerosol bronchodilator (predicted vital capacity 5 100; predicted ratio >80%). Single-breath gas transfer for carbon monoxide was 22 ml/min/mmHg (predicted value 35 ml/min/mmHg). Skin prick tests produced a 6-mm reaction to South African grasses, 5-mm reactions to house dust mite and house dust, 4-mm reactions to *A. fumigatus* and to *A. terreus*, and 3-mm reactions to *A. niger*, South African shrubs, and feathers. A skin prick test repeated with the protein fraction of the antigen of *A. fumigatus* produced a 6-mm reaction with pseudopod formation. His blood counts were normal but he was on 20 mg prednisone daily.

The Mantoux test was repeated, and was again negative. Serum precipitins for *A. fumigatus*, *A. niger* and *A. glaucus* were present. Over the next few weeks the prednisone medication was gradually reduced but he cannot do without 15 mg per day for any length of time. He also uses a bronchodilator. Beclomethasone dipropionate has not been used because of the possibility that topical steroids may have adverse effects in the presence of bronchopulmonary aspergillosis.[10] At no time has his FEV_1/FVC ratio become normal, and his single-breath transfer for carbon monoxide remains reduced. X-ray films of his

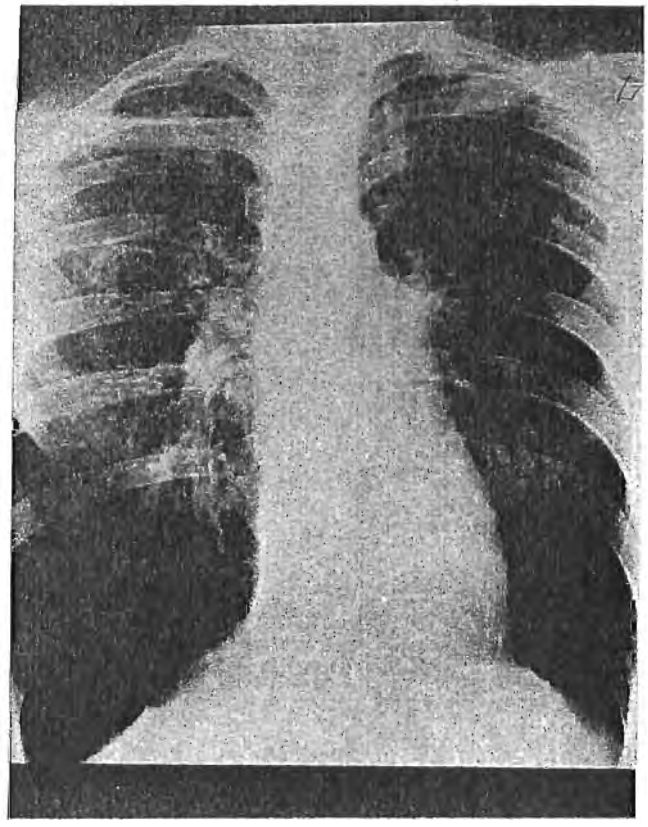


Fig. 1. Patient 3. Upper lobe damage from bronchopulmonary aspergillosis.

chest show only partial clearing, an indication that some permanent lung damage has occurred (Fig. 1).

Patient 4. A 42-year-old Coloured man was admitted to a tuberculosis hospital in January 1976. An X-ray examination of his chest was abnormal. His sputum was consistently negative for acid-fast bacilli and malignant cells, and the Mantoux test was negative. He was treated with antituberculous drugs but in the next 3 months there was no radiological improvement. He was referred to Groote Schuur Hospital. He gave a history of many years' smoking and of a productive cough of several years; some shortness of breath was of recent onset. He admitted to no pulmonary disease in childhood nor to asthma. The only abnormal sign on examination was prolonged pulmonary expiration and bilateral scattered rhonchi (Fig. 2, top). Spirometry showed an FEV_1/FVC of 1 080/2 950 ml which rose to 1 730/3 470 ml after two puffs of a dry aerosol bronchodilator (predicted vital capacity 4 660 ml). His single-breath gas transfer for carbon monoxide was 16 ml/min/mmHg (predicted 30 ml/min/mmHg). His blood showed an eosinophilia of 30% with an absolute count of eosinophils of 3 300/μl. The ESR was 66 mm in the first hour. Skin prick tests produced a 4-mm positive reaction to *A. fumigatus* only. Precipitins to *A. fumigatus* were present in the serum. Faeces were negative for ova and parasites. He was treated with steroids and his productive cough ceased, his spirometry improved to 2 150/3 780 ml and over a 3-month period the shadowing of the left upper lobe gradually disappeared (Fig. 2, bottom). Bronchoscopy 3 months after the start of treatment with steroids revealed a normal tracheobronchial tree, and selective bronchography showed the pathognomonic, proximal bronchiectasis of bronchopulmonary aspergillosis, present in the right mid-zone (Fig. 3). Bronchodilators and 10 mg of prednisone daily control the condition.

Patient 5. A 43-year-old White woman had had asthma since the age of 10 years and had been treated with various bronchodilators and occasional courses of steroids. She had a history of recurrent purulent bronchitis associated

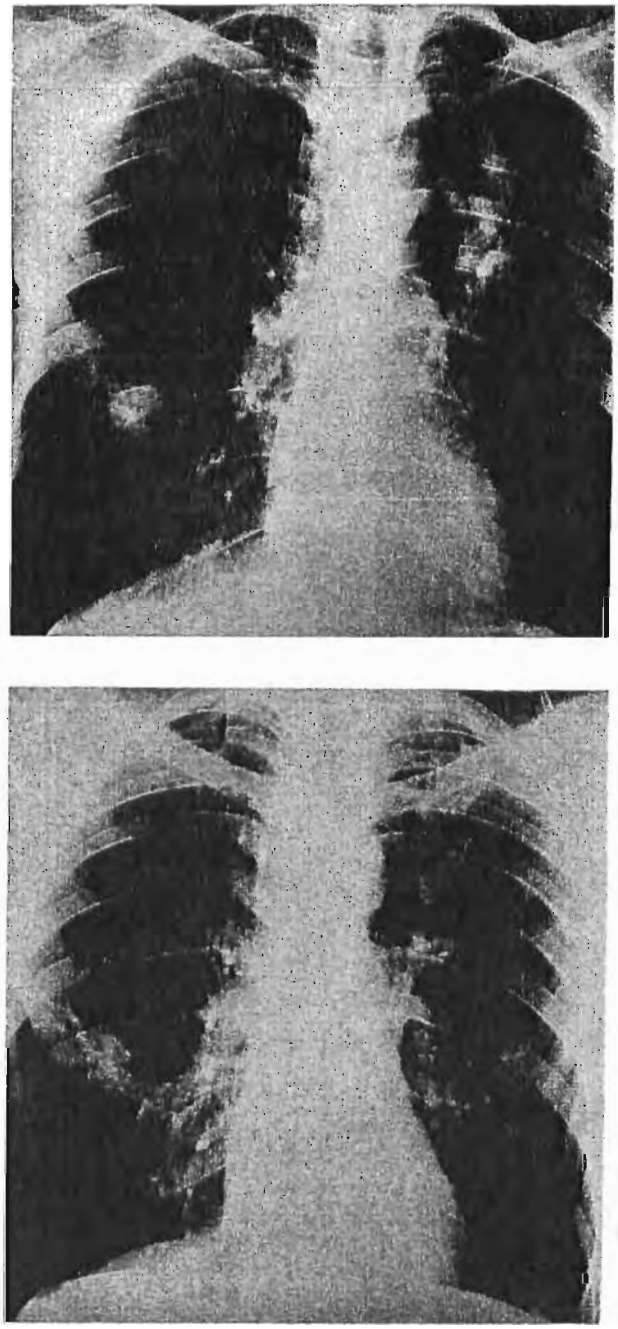


Fig. 2. Patient 4. Top: **Chest X-ray film after 3 months of antituberculous treatment (before steroids).** Bottom: **Chest X-ray film after 3 months of steroid treatment.**



Fig. 3. Patient 4. Bronchogram showing characteristic proximal bronchiectasis in the area of persistent right mid-zone shadowing.

with exacerbations of asthma in winter. She had smoked moderately for some years but had stopped in 1965. In 1960 she had had an emphysematous cyst excised from her lung, and in 1966, 1967, 1968, 1969 and 1972 she had been treated for 'pneumonia'. She had learned to live with her asthma, having suffered nocturnal attacks for as long as she could remember; but recently she had been troubled by dyspnoea on exertion between attacks of asthma. On examination the relevant features were a thoracotomy scar, poor thoracic excursion with diminished air entry bilaterally, and some wheezing. Spirometry showed an FEV_1/FVC of 650/1 310 ml, a ratio of 49% (predicted vital capacity 2 840 ml) and an X-ray film of her lungs showed cystic changes at both apices, some fibrosis of the upper lobes, and shadowing in the left mid-zone and right mid-zone. The lungs were hyperinflated. Earlier X-ray films showed that during the preceding 10 years she had had recurrent episodes of consolidation which had gradually disappeared only to reappear at each site where the present shadows were. Prick tests produced a 10-mm reaction to house dust mite, a 7-mm reaction to *A. fumigatus*, a 6-mm reaction to house dust, a 5-mm reaction to moulds and feathers, 4-mm reactions to *A. terreus*, South African trees, South African grasses, and dog hair. She had an eosinophilia of 9% (absolute count 765/μl). Precipitins to *A. fumigatus* were present in her serum. A skin prick test repeated with the purified protein fraction of *Aspergillus* antigen gave a 12-mm reaction with numerous pseudopods to *A. fumigatus*. The following day an area of painful induration >50 mm was present at the testing site (Arthus type III reaction). She was treated with steroids and obtained great relief. Her pulmonary function, however, did not revert to normal, and her best spirometric values were an FEV_1/FVC of 860/2 290 ml, indicating an irreversible component of her airways obstruction.

These case reports illustrate the various clinical features of bronchopulmonary aspergillosis. In summary, asthma had been a lifelong complaint in 4 of the 5 patients who were highly atopic and who had positive type I skin prick reactions to multiple allergens, including *Aspergillus*.

The fifth patient, an undiagnosed asthmatic, had had a chronic cough for several years, but spirometry revealed the presence of airways obstruction which improved remarkably with bronchodilators, indicating that he was indeed asthmatic. He had not received bronchodilator therapy in the past. Skin prick tests in this patient were positive only to *Aspergillus*. Repeated examinations of sputum for acid-fast bacilli were negative in all patients, although 2 patients (3 and 4) had received approximately 3 months' treatment for presumptive tuberculosis on the basis only of shadowing in the lungs on X-ray examination. Neither had improved on specific therapy, but in both patients there was considerable clearing of pulmonary shadows after treatment with steroids. The eosinophil count was elevated above 700/μl in 4 patients, but it was not elevated in the patient who was on steroids when he was examined. Precipitating antibodies to *A. fumigatus* were present in the serum of the 5 patients, 1 of whom also had precipitins to *A. niger*. In patient 2 a pure growth of *Aspergillus* was obtained from a plug of sputum coughed up during a symptomatic episode. Patients 1, 3 and 4 are steroid-dependent and in all probability patient 5 will become so. X-ray films showed features compatible with bronchopulmonary aspergillosis in all patients (Table I). Bronchography showed that patient 4, who had an area of persistent shadowing in the right lower lobe, had proximal bronchiectasis but normal distal bronchi, features characteristic of bronchiectasis in bronchopulmonary aspergillosis (Fig. 3).[5] Patients 1, 3 and 5 also had radiological evidence of bronchiectasis. All 5 patients had some irreversible obstruction to pulmonary function, even while they were on steroids, and the single-breath gas transfer for carbon monoxide was significantly decreased in 2 out of 4 patients in whom it was measured.

Aspergillomas

Aspergillomas were diagnosed in 7 patients (Table II). Two case reports are presented to illustrate the clinical features and the approach to management.

Patient 1. A 44-year-old Coloured woman contracted pulmonary tuberculosis at the age of 24 years and was treated as an inpatient in a tuberculosis hospital. She presented in 1975 with a history of a productive cough for some months, and recent mild haemoptysis. A recurrent bronchitis had been treated with antibiotics and she had been regularly followed-up at the tuberculosis clinic. Her effort tolerance and general state of health were good. She appeared generally well. Her chest showed diminished excursion, prolonged expiration, some scattered rhonchi bilaterally, and bronchial breathing at the right apex. An X-ray film showed bilateral apical aspergillomas (Fig. 4). A review of her X-ray films from the tuberculosis clinic showed that these features had been present since 1969. All skin prick tests were negative. Precipitins to *A. glaucus* were present in her serum. FEV_1/FVC 1 040/2 650 ml, a ratio of 39%, did not change after the use of bronchodilators (predicted vital capacity 3 500 ml). Her haemoptysis

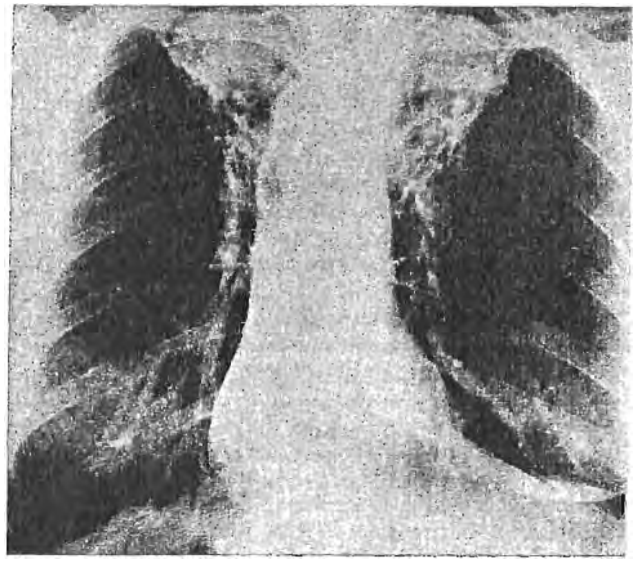


Fig. 4. Patient 1. Bilateral apical aspergillomas.

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TABLE II. PATIENTS WITH ASPERGILLOMAS

No.	Age (yrs)	Sex	Race	Clinical data	Precipitins	Skin prick tests	Eosinophil count (/μl)	Spirometry VC%P	Spirometry FEV$_1$%
1	44	F	Coloured	TB 24 yrs before. Asthmatic 6 years. Recent haemoptysis. CXR — bilateral apical aspergillomas	Positive AG	Negative	63	75	39
2	45	F	Coloured	Sarcoidosis 10 yrs before. Growth of AG from sputum repeatedly. CXR — right upper lobe aspergilloma	Positive AG	Multiple positives including AF, AN and AT	1 090	60	83
3	40	F	White	TB 25 yrs before. Haemoptysis. CXR — LUL aspergilloma	Positive AF	Positive to AF and AN	340	54	59
4	48	F	Black	TB 1 yr before. Diabetic. Haemoptysis. CXR—LUL aspergilloma	Positive AG	Not done	440	80	80
5	37	F	Coloured	TB 3 yrs before. Diabetic. Haemoptysis. CXR — LUL aspergilloma	Positive AN and AF	Not done	Not done	95	88
6	56	M	Black	TB 6 yrs before. Hypertrophic pulmonary osteo-arthropathy and purulent sputum for 6 months. CXR — LUL aspergilloma	Positive AF	Negative	Not done	60	65
7	41	F	Black	Diabetic. Treatment for TB 4 yrs before. Haemoptysis. LUL aspergilloma	Positive *A. flavus*	Negative	Not done	87	82

See footnote to Table I for explanation of abbreviations.

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settled without therapy and she has remained well, receiving treatment only for intermittent bronchitis.

Patient 6. A Black man of 56 years was treated for pulmonary tuberculosis at the age of 50 years. He had a relapse in October 1975, for which he was treated. He developed a grade II dyspnoea on exertion, and had a chronic productive cough. His condition had worsened over the preceding 6 months and the sputum had become slightly blood-stained. During the same time he had also complained of pain in his ankles and wrists and had lost approximately 18 kg in weight. He had smoked 10 cigarettes a day for some years. He was a thin, ill-looking man with marked clubbing of the fingers, but no other abnormal features on general examination. The thoracic excursion was markedly reduced, with signs of consolidation on the left side. An X-ray film of the lungs showed gross destruction of the left upper lobe with a sausage-shaped mass within a cavity. There was fibrosis on the left and a deviation of the trachea to that side. X-ray examination of his legs and wrists showed severe hypertrophic osteo-arthropathy. Sputum was negative for acid-fast bacilli and malignant cells. A perfusion scan showed no perfusion at all of his left upper lobe. Precipitins to *A. fumigatus* were present in his serum. Because of his severe osteo-arthropathy, his severely damaged left upper lobe was removed. *Aspergillus* was cultured from the cavitary mass.

Six of the 7 patients with aspergillomas had had tuberculosis and the seventh patient had had pulmonary sarcoidosis. Precipitins to various aspergilli were present (Table II). Skin prick tests were done using *Aspergillus* antigens in 5 of the 7 patients, and 2 were positive. Eosinophilia (>500/μl) was present in 1 patient. Ventilatory function was abnormal in 4 of the 7 patients. Lobectomy was performed in 4 patients, the indications being hypertrophic pulmonary osteo-arthropathy (1), haemoptysis (2), and repeated bacterial infections in the damaged lobe, resulting in poor control of diabetes in the 4th patient. The pleura was thickened and fibrotic with underlying chronic

marked inflammatory changes in the lung parenchyma, and the walls of the cavities consisted of granulation tissue lined with squamous epithelium. The cavitary contents of 2 patients were examined; *Aspergillus* was cultured from 1 specimen, and characteristic septate hyphae were seen in both.

Evidence of Aspergillus Allergy in Asthmatics without Bronchopulmonary Aspergillosis

Two hundred and fifty-eight patients with a diagnosis of asthma were tested with skin prick antigens and a control solution: 148 had positive reactions, 34 to a single antigen (usually the house dust mite) and 114 to more than 1 antigen. Positive reactions to the *Aspergillus* antigens were obtained in 69 of the 114 patients with multiple positive reactions and 5 of these 69 patients (with bronchopulmonary aspergillosis) have been described. Of the remaining 62 patients, 48 had positive reactions to *A. fumigatus*, 36 positive reactions to *A. terreus*, and 30 positive reactions to *A. niger* (Fig. 5); 26 patients were men and 36 were women. The duration of asthma was less than 5 years in 12 patients, 5 - 10 years in 17 patients, 11 - 20 years in 13 patients and more than 20 years in 20 patients. Only 1 patient had fewer than 3 positive skin prick tests, 40 had 3 - 8 positive, and 21 had more than 8 positive; 30 of the 62 patients were steroid-dependent.

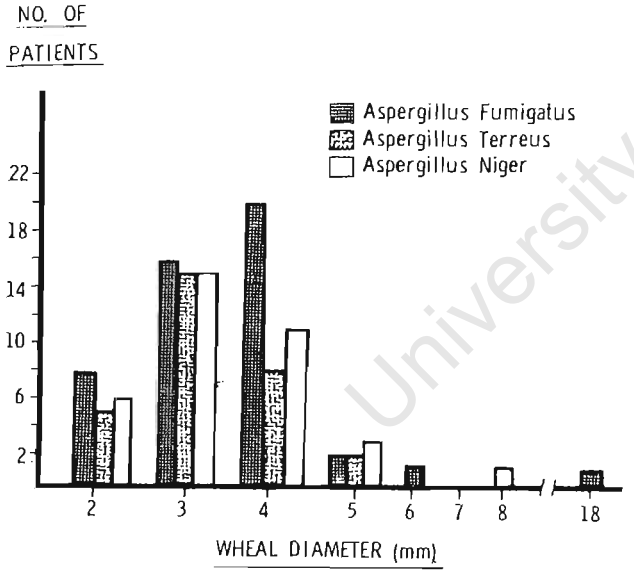


Fig. 5. Histogram showing sizes and numbers of wheal reactions to *Aspergillus* on skin prick testing.

Aspergillus Pneumonia

Pneumonia caused by *Aspergillus* infection occurred in 2 patients who were treated for haematological malignancies and in 1 patient who was on immunosuppressive therapy after having undergone a heart transplant operation. The diagnosis for the first 2 patients was only made post mortem, and ante mortem for the third. The first patient was a 21-year-old girl who had been in clinical remission for 9 months following treatment for acute granulocytic leukaemia. Relapse, treated by reinduction therapy, was complicated by a pyrexial respiratory illness, unresponsive to triple antibiotic therapy. Extensive *Aspergillus* pneumonia was found post mortem. The second patient, a 42-year-old man with leukaemic reticulo-endotheliosis, died after splenectomy. At autopsy disseminated candidiasis and *Aspergillus* pneumonia were found. *Aspergillus* precipitins were not looked for in the serum of these 2 patients. The third patient was on immunosuppressive treatment following a heart transplant operation when he developed pneumonia 2 months after the operation. *A. fumigatus* was repeatedly cultured from his sputum and precipitins to *A. fumigatus* were present in his serum. Serum stored prior to his heart transplantation contained no precipitins. He was treated with amphotericin and 5-fluorocytosine and received ventilatory support, but did not survive. Necropsy confirmed extensive *Aspergillus* pneumonia.

DISCUSSION

A high index of suspicion is needed to make the diagnosis of bronchopulmonary aspergillosis. It should always be considered in an asthmatic patient with pulmonary shadowing on X-ray films or with repeated attacks of asthma with increased sputum and fever, unresponsive to antibiotics and requiring steroid therapy. Eosinophilia of blood and sputum is invariably present (when the patient is not on steroids) and the skin prick test with reliable *Aspergillus* antigen is always positive in patients with bronchopulmonary aspergillosis. The shadows on X-ray films of patients with bronchopulmonary aspergillosis are very variable: fleeting shadows caused by peribronchial reactions, parallel line shadows caused by bronchial wall thickening, ring shadows suggestive of bronchiectasis, segmental consolidation with partial collapse from mucus plugging the bronchi, and dense shadows owing to fibrosis caused by recurrent untreated episodes. The upper lobes are affected more frequently by these changes than the lower lobes.[10-12] The radiographic features may resemble tuberculosis or carcinoma and these possibilities need to be excluded for therapeutic reasons (patients 3 and 4). Thirty-two per cent of 111 patients with bronchopulmonary aspergillosis reported by McCarthy and Pepys[1,2] were initially thought to have tuberculosis on the basis of shadows on X-ray films of the chest, but in no patient was the diagnosis substantiated after investigation. As mentioned above, the skin prick tests with *Aspergillus* antigen must be positive before the diagnosis of bronchopulmonary aspergillosis is made and it is therefore the most useful single investigation in patients with pulmonary eosinophilia with or without asthma. Many other features may be present in patients with bronchopulmonary aspergillosis and they need to be sought to confirm the diagnosis.

Precipitins to *Aspergillus* are usually present in the serum[5] but they are often in low titre and can easily be missed.[20] Sputum cultures may be positive for *Aspergillus* in 56% of patients,[1] although Pepys[8] has pointed at the difficulty of culturing the fungus from the sputum of

patients with bronchopulmonary aspergillosis. *Aspergillus* can be cultured from the sputum of normal people, patients with aspergillomas, and patients with invasive aspergillosis and, therefore, a positive culture alone is of little value unless accompanied by confirmatory clinical and immunological evidence. The skin prick test using the commercially available antigen may be followed by an Arthus-type skin reaction in 16% of patients with bronchopulmonary aspergillosis, and in as many as 26% of patients when the protein fraction prepared by McCarthy and Pepys[2] is used. Intradermal tests will, however, produce Arthus reactions in virtually all patients with positive type I reactions to skin prick tests, and precipitins, if the concentration of the protein fraction antigen used for intradermal injection is strong enough.[2] This observation contrasts with an earlier report that intradermal testing with commercially available antigen produces an Arthus reaction less frequently.[23] Clearly, the quality and concentration of the antigen used are important, and even with the best antigen some patients with undoubted bronchopulmonary aspergillosis failed to produce an Arthus reaction on intradermal testing.[2] It is not necessary to elicit an Arthus skin reaction to establish a confident diagnosis of bronchopulmonary aspergillosis and unless the protein fraction antigen is used, even intradermal injection may fail to produce a reaction in undoubted cases. Similar remarks apply to the use of inhalation challenge tests. Inhalation challenges in 21 of 111 patients with features of bronchopulmonary aspergillosis were positive in every case.[2] This investigation is time-consuming (3 - 4 days) and can be dangerous if excessive doses of antigen are inhaled. In general, they need play little diagnostic role in patients with other signs diagnostic of bronchopulmonary aspergillosis and should be done only in special laboratories and under careful supervision. The general physician can make a correct diagnosis of bronchopulmonary aspergillosis without the aid of inhalational challenges or intradermal injections.

The natural history of bronchopulmonary aspergillosis is variable and still uncertain. It is clear that recurrent episodes, symptomatic or not, can lead to progressive lung damage.[21,22] The 5 patients described in this article illustrate different stages in the natural history. Patient 2 presents the early disease characterized by fleeting shadows, good pulmonary function, and a rapid response to steroid therapy. Patient 5 illustrates long-standing, neglected, bronchopulmonary aspergillosis leading to persistent shadows in the lung fields, which represent bronchiectasis and fibrosis where shadows had previously been observed. Although the patient responded clinically to steroid treatment, the chest X-ray appearance did not change and there was much irreversible airways obstruction. Patients 1 and 3, similarly, showed areas of bronchiectasis in the upper lobes, the probable result of neglected bronchopulmonary aspergillosis. Patient 4 is an intrinsic asthmatic. Dense segmental shadows on X-ray films of the chest were initially misdiagnosed as tuberculosis and cleared only very slowly on steroid therapy. The characteristic proximal bronchiectasis is demonstrated by a persistent shadow (Fig. 3). Left undiagnosed and neglected, this would probably have progressed to severe pulmonary damage during succeeding years. The pathogenesis is thought to include a type III reaction in the bronchi, where the fungus is lodged, with a peribronchial, oedematous, eosinophilic reaction. The latter is potentially completely reversible, but the bronchial lesion leads to characteristic proximal bronchiectasis when it is not treated early.[21] The importance of the diagnosis of bronchopulmonary aspergillosis is that steroids are usually required to control the asthma and to prevent the recurrence of episodes of aspergillosis which could cause progressive lung damage. The usual lowest daily dose of prednisone is 7,5 mg, although many patients require more. The role of beclomethasone dipropionate in the treatment of bronchopulmonary aspergillosis is not clear, and it may have adverse effects.[19] Antifungal drugs play no part in the treatment of this disease.

When a prick test is positive for *Aspergillus* in an asthmatic patient without radiographic abnormality in the lungs or *Aspergillus* serum precipitins, then the significance of the reaction is the same as it would be for any other prick test reaction in an asthmatic patient: it reflects exposure to an antigen and the development of IgE antibody to that antigen. There is good correlation between the results of skin prick tests, specific IgE, and the results of nasal challenge tests, even with skin prick test reactions as small as 1 - 2 mm in size.[24] A good correlation between skin prick test reactions and the results of inhalation challenge studies is found only when the skin prick reaction is larger. The larger the skin prick reaction to any particular antigen, the greater the likelihood that this antigen has a role in the pathogenesis of the patient's asthma.[25] The incident of type I skin prick reaction to *Aspergillus*, without bronchopulmonary aspergillosis being present, in unselected extrinsic asthmatics in Britain varies from 10% to 20%. Patients with a greater degree of atopy are more likely to develop reactions. The high incidence of positive prick tests for *Aspergillus* in the present series could perhaps be related to the fact that patients referred to the Groote Schuur Hospital Respiratory Unit are a selected group of highly atopic asthmatics of long standing. Half the number of patients with positive prick tests for *Aspergillus* in this report were steroid-dependent. An alternative possible explanation is that these particular patients had been exposed to higher concentrations of *Aspergillus* spores in their home or working environment, but whatever the explanation, these reactions do indicate that the *Aspergillus* spores are present in the atmosphere or in the patients' homes in the Western Cape.

Dr E. Weinberg of the Red Cross Hospital has found *Aspergillus* spores in the atmosphere of Cape Town, although in a very much lower concentration than pollens and other fungi: he has determined the monthly *Aspergillus* spore counts in the atmosphere of Cape Town over a 2-year period (Fig. 6). As elsewhere, the counts are highest in winter.

The spore counts in Cambridge[26] are threefold the *Aspergillus* counts in Cape Town. However, this difference may be the result of different methods of trapping spores in the atmospheres.

The inhalation of *Aspergillus* spores by patients with healed tuberculous cavities could result in a significant incidence of aspergillomas in our community; the fact

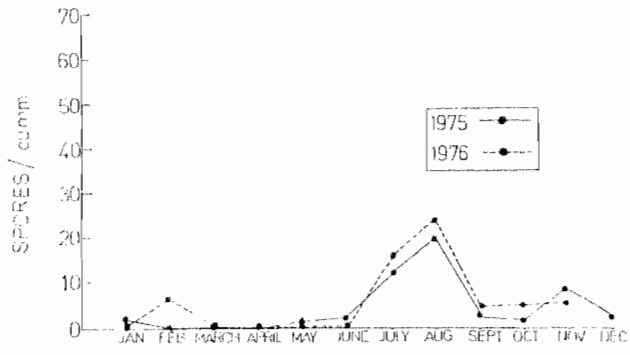


Fig. 6. *Aspergillus* **spore counts in Cape Town with a Hirst spore trap (courtesy of Dr E. Weinberg).**

that 7 patients with aspergillomas were detected in a relatively short time in one hospital where only a small percentage of the country's tuberculotics are admitted, should therefore not be too unexpected.

A survey of 544 patients with healed tuberculous cavities in 1964 and 1965 in the UK showed a radiological incidence of 11% of aspergillomas and 3% of probable aspergillomas.[2] Precipitins were present in 91,5% of patients with aspergillomas and in 42 % of patients with suspected aspergillomas. Precipitins were also present in 10% of patients without radiographic evidence of aspergilloma. A second survey of the same patients, done 3 - 4 years later, showed the disadvantages of an aspergilloma to be a chronic cough and haemoptysis which become more common than in patients without an aspergilloma, and that haemoptysis is likely to be more severe; 42% of patients with suspected aspergillomas at the first survey had definite aspergillomas at the second survey. The probability of developing an aspergilloma in 3 - 4 years in patients with precipitins but no evidence of aspergilloma at the first survey, was twice as great as in those who had no precipitins. Fifteen per cent of patients without precipitins at the first survey developed precipitins in the years between the surveys, and half of these patients acquired aspergillomas.[27] Comparative data are not available for patients with healed tuberculous cavities in South Africa, since the problem has not been systematically studied.

The natural history of an aspergilloma is to persist indefinitely or, less commonly, to disappear spontaneously, or to disappear after secondary bacterial infection. Many are asymptomatic and detected only on routine X ray examination. Haemoptysis is the most common indication for surgery, if the patient's pulmonary function allows this. Other treatments have included steroids, cavitary instillation of fungicides and the inhalation or endobronchial instillation of fungicides. These methods should be used only when there is an indication for treatment and surgical excision is not possible. Histological examination of the resected pathological specimen should always include examination of the cavitary contents, for the fungus may not be found in the wall of the cavity. Culture of the cavitary contents should also be done although only about 50% of cultures are positive.

Aspergillus pneumonia and invasive aspergillosis should be considered when immunosuppressed patients present with a respiratory illness unresponsive to conventional antibiotic therapy or which relapses after an initial response. Numerous recent reviews of pulmonary complications in immunocompromised patients emphasize this.[28,29] The only way of making a sure and early diagnosis ante mortem is by means of early lung biopsy, whereupon the best management available becomes possible.[30]

CONCLUSION

The *Aspergillus* fungus exists in the Western Cape and is associated with the same clinical manifestations reported elsewhere. The epidemiology of aspergillosis in South Africa has not yet been studied. According to Doige[31] *Aspergillus* has been isolated throughout South Africa and it would appear reasonable to assume that the various *Aspergillus* infections in Cape Town could also be occurring in other parts of South Africa. In the Western Cape the clinical assessment of many patients with chronic chest disease would be incomplete without consideration of *Aspergillus* infection in the differential diagnosis.

I should like to thank Professor W. du Toit Naudé of the Department of Virology, University of Cape Town, and Professor J. Pepys of the Cardiothoracic Institute, London, for doing the precipitin tests, and Dr E. Weinberg of the Red Cross Hospital for providing me with Fig. 6.

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Identification of the High-Risk Asthmatic Patient

Experience with 39 Patients Undergoing Ventilation for Status Asthmaticus

D. E. WESTERMAN, F.C.P. (S.A.)*
S. R. BENATAR, M.R.C.P.
P. D. POTGIETER, M.B., Ch.B., F.F.A. (S.A.)
A. D. FERGUSON, F.R.C.P.
Cape Town, South Africa

Thirty-nine asthmatic patients required mechanical ventilation (IPPV) for status asthmaticus over a seven and a half year period. We reviewed their clinical records with particular emphasis on the events leading to intermittent positive pressure ventilation (IPPV) and the long-term courses of those patients who survived IPPV.

Long delays by patients before seeking medical attention, incomplete assessment of acute attacks, underuse of corticosteroids prior to admission and overuse of sedation were important factors often influencing the necessity for IPPV.

Four patients died during IPPV. Of the 35 who survived, 32 were regularly followed in our Respiratory Clinic. Nine patients subsequently died, eight undoubtedly from asthma. Serial measurements of forced vital capacity (FVC) and forced expiratory volume in 1 second (FEV_1) were retrospectively analyzed to determine patterns of asthma. Of the 23 patients still alive, 14 have well controlled asthma, five have a pattern of persistent airflow obstruction, two have markedly labile asthma, and two have gradually deteriorating airflow obstruction. By contrast, seven patients who died sufficiently long after IPPV to enable categorization of their patterns showed either markedly labile asthma or gradually deteriorating airflow obstruction. None had relatively constant ventilatory function at either normal or suboptimal levels.

We suggest that patterns of asthma are useful guides in detecting patients at high-risk. Patterns characterized by markedly labile asthma or gradually deteriorating airflow obstruction appear to be associated with an increased risk of sudden death from asthma.

During acute asthmatic attacks, pulmonary function may be grossly impaired, and sudden death may occur. Intensive treatment of severe attacks with bronchodilators may return ventilatory function to almost normal levels within a few hours in some patients [1], whereas other patients require more intensive therapy including corticosteroids. Occasionally, patients with severe asthma require intubation and mechanical ventilation (IPPV) as a life-saving procedure [3], there are several reports in the literature describing the indications for such therapy, the technics of ventilation and the immediate outcome [2–6].

The long term follow-up of those patients who require intubation has not been adequately documented in the literature; in this report we examine this aspect in a group of asthmatic patients subjected to ventilation over a period of seven and a half years. Important differences in the clinical courses of those patients who are still alive,

From the Respiratory Clinic, Groote Schuur Hospital and the Departments of Medicine and Anaesthetics, University of Cape Town, Cape Town, South Africa. Requests for reprints should be addressed to Dr. S. R. Benatar, Respiratory Clinic, Groote Schuur Hospital, Observatory 7925, Cape R.S.A. Manuscript accepted October 23, 1978.

* Present address: Pulmonary Division, New England Medical Center Hospital, 171 Harrison Avenue, Boston, Massachusetts 02111.

TABLE I Characteristics of 39 Patients and Details of Acute Attacks for Which the Patient Required Intubation and Ventilation

	Characteristics of 39 Patients			Clinical and Biochemical Features of Acute Attacks Prior to Intubation					
	F:M Ratio	Age (yr)	Duration of Asthma	Duration Prior to Admission (days)	Heart rate (beats/min)	Pulsus Paradoxus (mm Hg)	pH	pO_2 (mm Hg)	pCO_2 (mm Hg)
	2:1								
Mean		38	15 yr	7	139	30	7.13	66	77
Range		15–70	1 wk–54 yr	Hours–28	110–180	10–60	6.89–7.33	35–130	48–150
Observations (no.)		39	39	41*	41	18	34†	34‡	34

* Attacks in progress for less than 24 hours on 12 occasions and more than 24 hours on 29 occasions.
† Astrup not recorded in five patients with sudden respiratory arrests, and data unobtainable in three cases.
‡ Approximately 40 per cent of measurements made while patients were receiving oxygen.

compared with those who have died in the months and years following IPPV, are emphasized. Preventilation clinical features and indications for ventilation are also reviewed, and events which we believe were, to a large measure, responsible for IPPV are discussed.

PATIENTS AND METHODS

In the period January 1970 to May 1977, 39 patients underwent ventilation on 42 occasions for status asthmaticus, three patients being subjected to ventilation on two occasions each. All patients fulfilled the criteria for a diagnosis of asthma as suggested by the CIBA Foundation Study Group No. 38 [7], and patients with significant associated chronic obstructive bronchitis (MRC Committee) [8] were excluded from this study.

Data relating to the period prior to, and during, ventilation were obtained from hospital records. All the patients had undergone ventilation in a Respiratory Intensive Care Unit. In 1971, Bird ventilators were used (Mark 8, 10 or 14); from 1972 onwards, either Bennet MA 1 or Veriflow PV 110 volume ventilators were used. During the period of ventilation, all patients received high dose intravenous hydrocortisone therapy (1 to 2 g daily), intravenous as well as wet nebulized bronchodilators and antibiotics. Sedation was used routinely and neuromuscular paralyzing drugs only when absolutely necessary to control ventilation. Bronchial lavage was used on only one occasion.

Of the patients who survived IPPV, all but eight were followed-up regularly at the Respiratory Clinic. Five of the latter eight were contacted and, with the patients regularly followed-up, interviewed by one of us (D.E.W.) to establish details of the clinical courses of their asthma prior to and, more particularly, subsequent to the episode of IPPV. Serial measurements of ventilatory function had been made over the years of outpatient attendance with either a dry spirometer (Vitalograph, or 570 Wedge Spirometer, Medical Science) or a wet spirometer (Vitalometer) and were corrected to body temperature pressure saturated. These measurements were retrospectively plotted graphically to establish whether different patterns of asthma could be detected and to assess the possible significance of such trends.

RESULTS

The characteristics of the 39 patients included in this study and the details of the acute attack for which they required intubation and ventilation are shown in **Table I.** Thirteen patients were treated for acute asthma on more than one occasion in the Casualty Department in the days and weeks prior to their admission. All were discharged within 24 hours of apparent improvement. Measurements of pulsus paradoxus or of ventilatory function had not been made on any of these occasions.

In 18 patients the attacks leading to IPPV were initially managed outside our hospital. Sixteen patients received intravenous bronchodilators, 11 were given steroids (eight intravenously and three orally), and six had been sedated. Following admission, a further 11 patients received sedatives, eight parenterally. One patient had a cardiorespiratory arrest within minutes of receiving intravenous Diazepam® and a further four patients needed intubation within a few hours of being sedated.

On 28 occasions intubation was necessary because of increasing drowsiness, confusion, exhaustion and carbon dioxide retention despite the intravenous administration of bronchodilators and hydrocortisone, and additional wet nebulized bronchodilators. Thirteen patients underwent intubation as emergency procedures; eight were moribund on arrival at the hospital and a further five had cardiorespiratory arrests soon after admission.

Four patients died while undergoing ventilation, giving an over-all mortality of 9.5 per cent. One patient died because of a tension pneumothorax, one because of inadequate ventilation on a pressure-cycled ventilator and one patient already had irreversible brain damage at the time of intubation. The fourth patient was prematurely extubated and died during a difficult re-intubation.

Complications during IPPV occurred in 15 other patients. These included major areas of atelectasis (nine

TABLE II Clinical Features of Patients Still Alive Following IPPV

Case No.	Age (yr) at IPPV	Sex	Total Follow-up Period (yr)	Best Ventilatory Function Following IPPV: VC (% pred.*)	FEV_1 (liters)	$\frac{FEV_1}{FVC}$ %	Pattern of Asthma (based on serial measurements of VC and FEV_1)	Clinical Severity of Asthma: Before IPPV	After IPPV	Present Maintenance Treatment
1	20	M	7	76	2.4	67	Well controlled asthma	11a	11a	B,C, SCG
2†	46	F	6 3/4	79	1.8	75	Persistent airflow obstruction	11a	111	B,C
3	49	M	6 1/2	138	4.4	86	Well controlled asthma	11a	1	B,C
4	54	M	6 1/2	120	3.12	65	Well controlled asthma	11b	11a	B,C
5	63	M	6 1/4	85	1.98	61	Well controlled asthma	11b	11a	B,C
6	29	F	5 1/2	91	2.58	86	Well controlled asthma	11b	11a	B,C
7	52	M	5 1/4	80	1.04	57	Well controlled asthma	1	11a	B,C
8	36	F	5	91	1.47	52	Persistent airflow obstruction	11b	11a	B,C
9	54	F	5	87	1.02	46	Persistent airflow obstruction	111	111	B,C
10	63	F	3 1/2	73	0.9	38	Persistent airflow obstruction	11a	11a	B,C
11	34	F	3 1/4	99	2.0	78	Well controlled asthma	11b	11a	B
12	25	F	3	106	3.66	70	Well controlled asthma	111	1	B,SCG
13†	31	F	3	94	2.4	69	Markedly labile asthma	11b	11b	B,C
14	20	F	3	97	2.4	61	Well controlled asthma	11a	1	B,SCG
15	18	F	2 1/2	82	2.2	93	Markedly labile asthma	11a	11a	B,C
16	59	F	2	79	1.3	57	Gradually deteriorating obstruction	111	111	B,C
17	48	F	2	61	1.2	54	Persistent obstruction	111	11a	B,C
18	13	F	1 1/4	102	3.3	88	Well controlled asthma	11a	1	B
19	17	F	1 1/4	97	2.9	77	Well controlled asthma	11b	1	B
20	61	M	1	112	2.97	62	Gradually deteriorating obstruction	111	1	B,C
21	27	F	1	119	3.2	86	Well controlled asthma	1	11a	B
22	23	F	1	97	2.9	77	Well controlled asthma	11a	11a	B,C
23†	22	F	3/4	100	3.2	88	Well controlled asthma	11a	11a	B

NOTE: B = bronchodilators; C = corticosteroids; SCG = sodium chromoglycate. 1 = asymptomatic or mild asthma; 11a = occasional acute episodes; 11b = frequent acute episodes; 111 = chronic asthmatic symptoms.

* Predicted normal values from Bates et al. [9].

† Patients underwent ventilation on two occasions; in Cases 2 and 23, between January 1970 and May 1977; in Case 13, during further follow-up in January 1978.

TABLE III Clinical Courses of Nine Patients Who Died During the Follow-Up Period

Case No.	Age at Death (yr)	Age at Onset of Asthma (yr)	Sex	Time from IPPV to Death (yr)	Best Ventilatory Function Following IPPV			General Trend of Serial Outpatient Measurements of Ventilatory Function	Maintenance Therapy
					FVC (% pred.)	FEV_1 (liters)	$\frac{FEV_1}{FVC}$ (%)		
24*	44	21	M	1	100	2.1	50	Gradually deteriorating obstruction	B,C
25	67	44	M	2 3/4	106	2.04	55	Gradually deteriorating obstruction	B,C
26	15	3	F	1	120	2.5	78	Markedly labile asthma	B,C
27	52	Early adult	F	4 1/4	117	1.84	58	Markedly labile asthma	B,C
28	47	21	M	2 1/2	95	2.16	57	Gradually deteriorating obstruction	B
29	20	Childhood	M	1 mo	71	1.89	58	Markedly labile asthma	B,C
30	16	Childhood	F	2 wk	45	1.03	64	—	B,C
31†	52	46	F	1	116	2.44	66	?	?
32‡	74	67	M	5 3/4	138	3.24	73	Well controlled then markedly labile asthma	B,C

NOTE: B = bronchodilators; C = corticosteroids.
* Ventilated twice.
† Poor outpatient attender, died on way to hospital following acute attack.
‡ Death from asthma likely, but not certain.

occasions), pneumothorax (five), pneumediastinum (three), arrhythmias (two) and pneumonia (one).

The duration of ventilation ranged from less than 24 hours to 19 days (mean three days). In 68 per cent of the patients ventilation lasted for 72 hours or less; the patients who needed longer periods of ventilation were usually those in whom complications had developed.

Follow-up of Patients Who Survived IPPV. Thirty-five patients survived the acute attack for which they required treatment with intubation and ventilation. Of these, 23 are known to be alive at the time of writing and have been followed for periods varying from nine months to seven years. Nine patients have died. Eight of these deaths were undoubtedly due to asthma and one likely due to asthma. Three patients have been lost to follow-up.

The clinical courses of the 23 patients still alive are shown in **Table II** and of those who died in **Table III**. Six patients who died were under the age of 50 years, and three were under the age of 20. Nine patients in the group still alive and two of the group who died during the follow-up period showed complete reversibility following IPPV (FVC greater than 80 per cent predicted and FEV_1:FVC of more than 75 per cent). The majority of the remaining patients in both groups showed fairly good reversibility with a normal FVC and moderately reduced FEV_1:FVC ratios (between 50 and 75 per cent), Tables II and III.

In graphically analyzing the serial follow-up measurements of FVC and FEV_1, four general patterns of asthma were apparent: (1) Well controlled asthma in which optimal measurements were maintained throughout the follow-up period with occasional episodes of acute deterioration responding well to drug therapy (**Figure 1**); (2) persistent airflow obstruction when measurements remained fairly constant but at significantly lower levels than the best measurements following IPPV (**Figure 2**); (3) markedly labile asthma, when measurements fluctuated widely (**Figure 3**), and (4) gradually deteriorating airflow obstruction (**Figure 4**).

Of the 23 patients still alive, 14 have pattern 1, five pattern 2, two pattern 3 and two pattern 4. One patient with pattern 4 now has more stable persistent airflow obstruction (pattern 2).

Of the nine patients who died in the follow-up period, adequate data were available in seven to categorize their patterns. Four had pattern 3 and three had pattern 4. Although in one patient pattern 3 was preceded by a period of well controlled asthma (pattern 1), in no patient who died of asthma in the follow-up period were constant measurements maintained whether at normal or suboptimal levels. The following case histories illustrate some of the problems encountered in those patients who died during the follow-up period.

Case 24 (Table III). This patient underwent ventilation on two occasions. Obstruction worsened over a period of about one

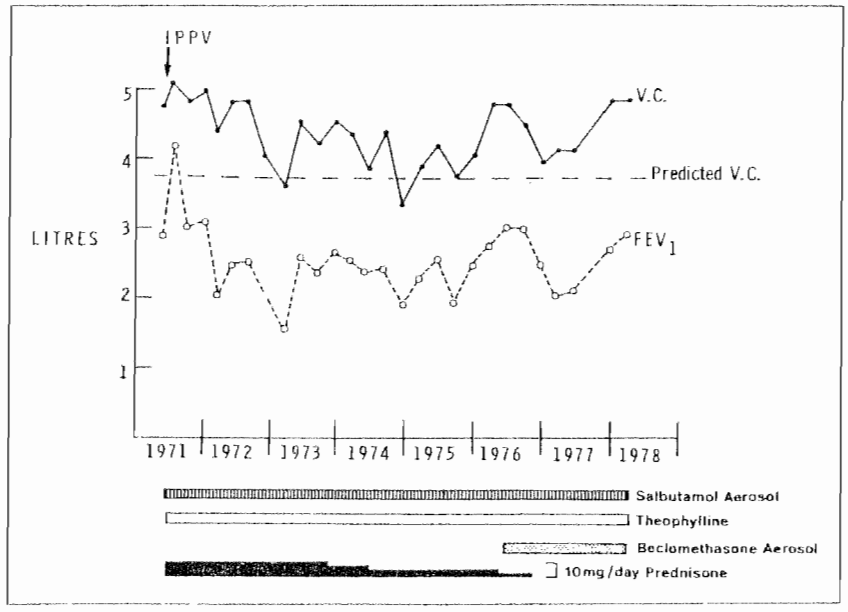


Figure 1. Generally well maintained measurements of vital capacity (VC) and forced expiratory volume in 1 second (FEV_1) in an asthmatic patient who underwent ventilation at the age of 49 years (Case 3, Table II).

year preceding the second episode of IPPV and again over the one year period preceding his death (Figure 4). Vigorous therapy to reverse the downhill trends was never attempted, probably because the patient remained relatively asymptomatic. He died at home shortly after the onset of an acute attack during the early hours one morning.

Case 25 (Table III). This patient, a nonsmoker, underwent ventilation at the age of 64. Ventilatory function returned to almost normal levels following IPPV. Eighteen months later, measurements began to gradually deteriorate, but the patient was never vigorously treated during the period of gradual deterioration. About one year after the downhill trend began he was admitted to a general medical ward with an acute attack of asthma. On discharge 10 days later, his FVC and FEV_1 showed little improvement and he was readmitted nine days later in a moribund condition following the onset of another acute attack. He died within a few hours of admission.

Case 26 (Table III). This patient, an asthmatic since early childhood, followed a widely fluctuating course despite regular bronchodilator and corticosteroid therapy (Figure 3). She underwent ventilation on one occasion and was treated for status asthmaticus in the Intensive Care Unit on another, yet, when seen at regular follow-up visits about two weeks before each admission, her ventilatory function had been perfectly normal. She attended the Casualty Department for intravenous therapy for acute asthma on numerous occasions but was completely well between attacks. She died suddenly at home of an acute asthma attack.

COMMENTS

Acute asthmatic attacks for which the patients require admission for 24 hours or more account for approximately 2,000 admissions per annum to our Casualty Department's "short-stay" asthma ward [10]. About six

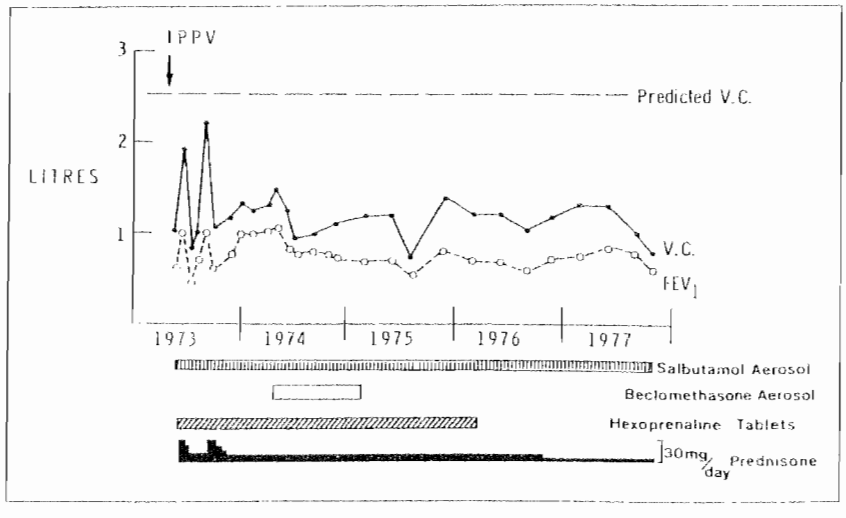


Figure 2. Relatively constant but low measurements in an atopic patient (Case 9, Table II) with a 35 year history of asthma. Further pulmonary function tests included a carbon monoxide transfer factor (single breath method) of 87 per cent predicted. There were no further severe attacks following the episode requiring IPPV.

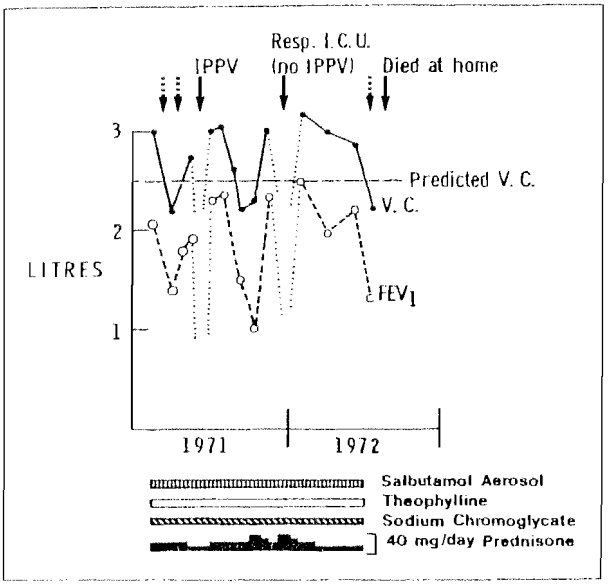


Figure 3. Markedly labile asthma in Case 26 (Table III) in which the patient died suddenly from asthma. See text. ↓ indicates intravenous therapy for acute attacks.

patients require assisted ventilation per year for life-threatening attacks, i.e., about 0.3 per cent of all admissions for asthma. Although mechanical ventilation is seldom required in the management of status asthmaticus, it is virtually certain that without such therapy almost all of our patients would have died. Our mortality rate during IPPV compares favorably with that in other reported series [4,5], but, with more widespread use of volume ventilators and a greater awareness of the possible complications, an even lower rate should be achieved.

As a group, the patients we describe (Table I) shared

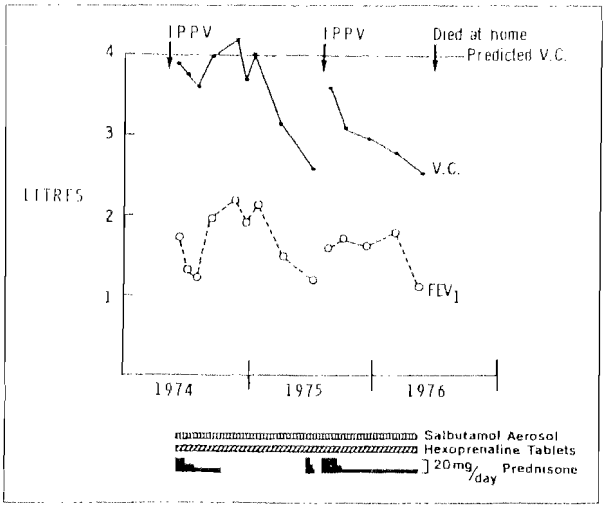


Figure 4. Pattern of gradually deteriorating airflow obstruction in Case 24 (Table III). See text.

many characteristics with previously described patients who needed assisted ventilation for status asthmaticus or who died from asthma [5,11,12]. Our patients were young, had a long history of asthma, many had previously been admitted to hospital wards for treatment of status asthmaticus, and many had recently been in our Casualty Department with acute attacks for which they required intravenous therapy. The majority of attacks had been in progress for more than 24 hours, often up to weeks, at the time of admission.

Factors which have been implicated in contributing to asthma deaths include overuse of sedation [13–15], underuse of corticosteroids [12,14,16] and, probably most important, poor assessment and management of acute attacks [12,14,16]. Our results suggest that these same factors can often be implicated when intubation and ventilation for status asthmaticus become necessary.

Although the value of measuring pulsus paradoxus and using simple ventilatory tests, such as the peak flow rate, have been repeatedly emphasized in the literature [17–22], these aspects of assessment of acute asthma are still unfortunately not widely used by clinicians [10,12,14,22]. They were never recorded in the patients attending our Casualty Department in the days or weeks prior to IPPV so that the condition in all these patients had been inadequately assessed and they were probably prematurely discharged. Poor assessment of many of the attacks for which IPPV was required was also likely since there was no mention of these measurements on any letter of referral accompanying the patients to the hospital. Pulsus paradoxus was recorded in only 18 patients in the hospital prior to IPPV (Table I), and simple measurements of ventilatory function had not been made following admission. The danger of inadequate assessment is that more effective therapy may be withheld. This is borne out in some of our patients by the fact that only 44 per cent of those initially managed outside our hospital received intravenous corticosteroids and 39 per cent received to corticosteroids at all. In the report by Speizer et al. [23] about 50 per cent of the patients who died of asthma did not receive corticosteroids for their terminal attacks, as these episodes were not thought severe enough to warrant steroid therapy. Although cardiorespiratory arrests occurred within minutes of sedation in one patient, intubation followed sedation sufficiently closely in a further four patients to suggest a direct causal relationship in these patients as well. This serves to further emphasize the danger of sedation in acute asthma, particularly when attacks have been incompletely assessed.

Widespread tenacious mucus plugging of the peripheral airways is an important feature in patients who die in status asthmaticus [24]. Such pathologic changes are likely to become increasingly prominent as acute attacks become prolonged, resulting in increasingly severe ventilatory disturbances. Thus, another factor

which may have influenced the courses of many of our patients requiring IPPV was the long delay (mean seven days) between the onset of the attacks and their admission to the hospital. In this regard a parallel can be drawn with a previous report of patients who died in the hospital from asthma in whom the mean duration of the final episode prior to admission was 11 days [12]. There is a clear need to educate patients to seek early medical attention when acute attacks do not respond rapidly to their usual bronchodilating agents.

In a condition such as asthma in which actual mortality far outweighs expected mortality [25], it is important to try to to detect patients particularly at risk of dying from acute attacks. McNicol and Williams [26] pointed out that children with severe chronic asthma appear to be in real danger of dying from the disorder, and it has recently been suggested that the risk is increased in those children who have been weaned from long-term systemic corticosteroids onto beclomethasone aerosols [27]. Hospital deaths from asthma have been shown to occur particularly during the night [14] and such deaths are often associated with diurnal variations in peak expiratory flow rate, marked falls occurring during the early hours of the morning [28]. Macdonald et al. [11] found that patients recently discharged from the hospital after an acute attack were particularly at risk of dying suddenly at home from asthma. Premature discharge before resolution of physiologic abnormalities may have been a critical factor in these patients.

Our study suggests that high-risk asthmatic patients may be detected by observing patterns of asthma made from serial recordings of simple ventilatory tests performed during outpatient attendance. Nineteen patients in the group still alive following IPPV have patterns of asthma in which measurements are relatively constant at either optimal or low levels (well controlled asthma or persistent airflow obstruction). Six of these patients are asymptomatic. In the entire group of patients still alive, 12 have had less trouble from asthma than they did before they had the severe episode for which they required IPPV, and only three have had symptomatic deterioration (Table II). By contrast, all patients who died of asthma showed patterns of either markedly labile asthma or steadily deteriorating airflow obstruction virtually throughout their follow-up periods. These latter patterns thus seem to be associated with a less favorable course and an increased risk of dying from asthma.

Gradually worsening airflow obstruction as an index of prognosis may at first glance seem obvious, but the significance of such deterioration is often not recognized in clinical practice as evidenced by the examples given. These errors are particularly liable to occur when patients are relatively asymptomatic despite moderately severe impairment of pulmonary function or when only a few recent measurements are reviewed rather than the patient's entire record documented graphically so that long-term trends can be studied. Energetic therapy, which may include the use of corticosteroids, should be considered during a "downhill" phase, whether patients are symptomatic or not, since this may be the most effective way of averting an acute life-threatening attack. Similarly, a low threshold for admission should be maintained for patients manifesting a markedly fluctuating course. These patients have markedly labile asthma and their condition may deteriorate over relatively short periods of time. A rapid admission service along the lines established in Edinburgh [29] should make a major contribution to their management. The need for such a service is further emphasized by the fact that almost 20 per cent of the patients who underwent ventilation were moribund on arrival at the hospital, and 80 per cent needed ventilation within 24 hours of their admission.

Analysis of patterns of airflow obstruction in asthma, using simple measures of ventilatory function (e.g. peak expiratory flow rate and FEV_1), and the clinical importance of these observations have only recently been documented. Turner-Warwick [30] described several different patterns in patients with chronic unremitting asthma and emphasized the usefulness of these patterns in rationalizing drug therapy. A further important observation is the association of sudden death from asthma with marked diurnal variation in peak expiratory flow rate reported by Hetzel et al. [28]. Our measurements were made at longer intervals than in Turner-Warwick's patients, but some parallels can be drawn between our observations and hers. For example, the high-risk pattern of marked fluctuation in some of our patients resembles the chaotic pattern of the "brittle" asthmatic patient who was found to be particularly resistant to stabilization. A similarity also exists between our patients with relatively constant but low measurements and some of Turner-Warwick's "irreversible" asthmatic patients. Furthermore, the pattern of gradually increasing obstruction in some of our patients and the very slow response to corticosteroid therapy in her "drifters," emphasizes the importance of recognizing the cumulative effects of minor changes in ventilatory function.

Although our observations were made in a highly selective group of patients (i.e., those needing life-saving IPPV), we believe that the two patterns found to be associated with an unfavorable prognosis may have the same significance if found in any asthmatic patient. Confirmation of this will need to come from careful prospective studies. We recommend that simple measurements of airflow obstruction (e.g., peak expiratory flow rate or FEV_1) be made not only during acute attacks but also at all follow-up visits. These measurements should be recorded graphically in order to identify patterns of asthma. Patients with gradually deteriorating airflow obstruction, or markedly labile asthma, should be treated more energetically in an attempt to reduce the risk of sudden "unexpected" deaths.

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A Respiratory Epidemiologic Survey of Grain Mill Workers in Cape Town, South Africa[1-3]

D. YACH, J. MYERS, D. BRADSHAW, and S. R. BENATAR

SUMMARY Exposure to grain dust may induce acute and chronic respiratory, nasal, and ocular symptoms. The prevalence of respiratory symptoms, atopic status, and lung function changes, as measured by pulmonary function tests (PFT) over the week in 582 grain mill workers and 153 control subjects not exposed to grain dust were studied in Cape Town. Atopic status, smoking habits, and baseline PFT did not differ significantly between grain workers and control subjects. Grain workers showed significant deterioration in lung function values over the week, with forced expiratory volume in one second declining on average by 4.8% compared with an increase of 3.3% in control subjects ($p < 0.001$). Forced expiratory flow during the middle half of the forced vital capacity declined by 14.8% in grain workers and by 0.8% in control subjects ($p < 0.0001$). Grain workers had significantly higher prevalences than did control subjects of regular cough (46 versus 30%), expectoration (35 versus 17%), wheeze (25 versus 11%), and watery eyes (25 versus 10%) ($p < 0.01$ for all). These symptoms were not related to the duration of employment. A dose-response relationship, independent of smoking habits, was demonstrated between reported dust exposure and symptoms as well as between dust exposure and PFT. These results have important implications for the grain mill industry in South Africa where there is insufficient legislation and worker compensation.

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Introduction

A variety of clinical manifestations related to occupational exposure to grain dust have been described since Bernadino Ramazzini, an 18th century Italian physician, reported a group of diseases afflicting the sifters and measurers of grain (1). A recent review included allergic asthma, chronic obstructive lung disease, grain fever, rhinitis, and conjunctivitis as possible sequelae of grain dust exposure (2). Grain workers are not only exposed to grain dust (wheat, barley, rye, oats, and maize) but also to several other materials (silica, fungi, insects, rodent hairs, and pesticides), many of which have the potential to induce disease (3).

In South Africa, it has been established that nearly 22,000 people were involved in the milling of grain at major mills during the mid-1970s (4). Many thousands more are occupied in the cultivation, handling, processing, and distribution of grain. With the exception of a study by Ordman (5) in 1958 documenting the occurrence of allergic symptoms among cereal grain handlers in South Africa, little information is available about the prevalence of respiratory disease among grain workers in this country.

This study was designed to compare the prevalence of respiratory abnormalities among grain workers in Cape Town and a control group of workers not occupationally exposed to grain dust. A further objective was to evaluate whether abnormalities found in grain workers were related to subjectively reported mill dust levels. Particular attention was directed to lung function variation during the working week.

Methods

Subjects

Workers at the 4 grain mills in the municipality of Cape Town were studied and compared with control subjects drawn from a paper packaging factory, which included subjects working with cardboard, brown paper, and plastic containers. None of the control subjects were at any time exposed to grain dust. Grain workers and control subjects lived and worked in the same geographic area of Cape Town and were of similar socioeconomic status. The grain workers studied represented 89% of 699 grain workers, and the control subjects represented 82% of 202 workers at the packaging factory. Insufficient numbers of white workers and women necessitated their exclusion from the analysis; the study included the remaining 582 grain workers and 153 control subjects. All grain workers were exposed to grain dust and most were exposed to flour also. Informed consent was obtained from all participants, and the study was approved by the Ethical and Research Committee of the University of Cape Town. Confidentiality of individual results was preserved. The mills and packaging factory operations were not significantly altered during the study. The surveys were conducted between August and November 1983 by the same survey team using the same survey procedures.

Study Design

Investigations were conducted on all participants during the same week and included an interview, skin prick tests, and pulmonary function tests at the start of the Monday shift and pulmonary function tests before and after bronchodilator at the end of the Thursday shift.

Questionnaire

The questionnaire recommended by the American Thoracic Society (6), with substantial modifications to industry-related and symptom questions and to smoking and past illness history, was used.[3] Symptoms surveyed related to respiratory and allergic diseases (shortness of breath, expectoration, cough, chest tightness, wheezing, chronic runny nose, eye irritation, and hay fever). Other data sought included a history of prior exposure to dust in the workplace (such as in mines, quarries, foundries, and dusty factories), past history of treatment for respiratory diseases (for example, tuberculosis, pneumonia, asthma, or bronchitis), smoking habits, and information about the main fuel source at home (paraffin, gas, electricity, or wood). There were 2 smoking categories: nonsmokers and smokers. Smokers were divided into those who smoked less than 10 cigarettes per

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[1] From the Industrial Health Research Group, Department of Sociology, and the Department of Medicine, University of Cape Town and Groote Schuur Hospital, Cape Town, and the South African Medical Research Council, Tygerberg, South Africa.

[2] Supported by the Guy Elliot Research Fund, Department of Medicine, University of Cape Town, the University of Cape Town, Staff Research Fund, and the South African Medical Research Council.

[3] Requests for reprints and for copies of the ATS questionnaire should be addressed to S. Benatar, Professor, Dept. of Medicine, University of Cape Town, Anzio Road, Cape Town, South Africa.

day, those who smoked 11 to 20 cigarettes per day, and those who smoked more than 20 cigarettes per day. Ex-smokers (a group with heterogeneous features and constituting less than 10% of all subjects) were excluded from the analysis. Workers were asked to rate the usual level of dustiness as very dusty, dusty, or not dusty at their work site at the time of the study.

Pulmonary Function Tests

Forced expiratory vital capacity (FEVC), forced expiratory volume in one second (FEV_1), and forced expiratory flow at 25 to 75% of vital capacity (FEF_{25-75}) were measured.

Forced expiratory maneuvers were measured within 2.5 h of the start of the Monday morning shift and within 2.5 h before the end of the Thursday shift, as well as after administering rimiterol (a short-acting selective $beta_2$-adrenoceptor agonist with time-saving advantages over salbutamol (7)). A pilot study was conducted during which pulmonary function tests were repeated twice daily for 2 wk, and no significant differences were found between the end of shift ventilatory function on Thursdays and those on Fridays. It was therefore decided, for practical reasons, to use Thursday's measurements. Workers were asked not to smoke prior to testing.

An Auto-spiror HI-498 electronic spirometer (Digital, Frederick C. Marcus and Co., Monte Carlo Building, Foreshore, Cape Town, South Africa) was used to perform pulmonary function tests. The largest of 3 acceptable FEV_1 and FVC readings recorded were used for analysis after a minimum of 5 forced expirations had been performed. The FEF_{25-75} reading from the forced expiration with the highest sum of FVC and FEV_1 was used for analysis (8). The spirometer was calibrated weekly for flow rates and volume using commercially available flow- and volume-calibrating syringes (Calibringe-Vacumed, Ventura, CA). All tests were performed by the same trained technician.

Skin Testing

The atopic status of participants was established by performing skin prick test using standard, commercially available, Bencard testing solutions. Six common allergens (mixed moulds, South African grasses, house dust, house-dust mite, *Aspergillus fumigatus*, and mixed feathers), 7 airborne grain dust allergens (maize pollen, cultured wheat pollen, wheat threshings, mixed flour, maize, grain, and mixed threshings) as well as negative (saline) and positive (histamine) controls were used. A wheal greater than 2 mm in diameter at 15 min was regarded as a positive reaction. All tests were performed by 2 nurses trained in the procedure.

Definition of Occupational Asthma

In our study, definitions of occupational asthma were those of Brooks (9). To meet these definitions workers with chest symptoms (regular cough, expectoration, wheeze, or chest tightness) and either a greater than 10% decline in FEV_1 over the week or a FEV_1/FVC ratio of less than 0.70 were defined as having occupational asthma.

Statistical Analysis

The results were analyzed using standard statistical packages (SAS (10) and BMDP (11)) on an IBM mainframe computer. Contingency tables were used to analyze relationships between categorical variables such as the category of dust exposure and the absence or presence of symptoms. In the case of the 2 times 2 contingency tables, Fisher's exact probabilities were calculated. Log-linear models were used to analyze multiway contingency tables that took the effect of smoking on dust levels and symptoms into account. Multiple regression analysis was used to investigate the relationship between certain variables (such as age, height, weight, and years of exposure) and baseline lung function values. Analysis of covariance was used to examine lung function change over the week. Analysis of variance was used to compare the lung function (relative to their predicted) values at the different dust and smoking levels, and the relevant Tukey's tests were performed when significant ANOVA results were found.

Results

Characteristics of the Workers

The characteristics of the 4 groups of mill workers are listed separately by mill and for all mills combined, along with the characteristics of the control subjects, in table 1. There were no significant differences in age, height, weight, years of exposure, or smoking habits between workers from all the mills combined and control subjects. Significant differences in these variables were noted for workers from individual mills when compared with control subjects (table 1). This also applies to atopic status. There were, however, significant differences between all mill workers and control subjects in the proportions of black and mixed race workers, in the extent of domestic stove use, and in a history of previous work in mines. A significant difference was observed between the ethnic groups for a past history of mining, with 35.4% of black workers and only 0.9% mixed-race workers having such a history.

Prevalence of Symptoms

The reliability of the questionnaire was assessed during the pilot and main studies by assessing interviewer intervariation and intravariation. No differences were noted between the proportions of responses to questions asked by the 2 interviewers. The same 2 interviewers conducted all interviews during the study. Responses were validated by using factory records to check variables such as age, job, and years of employment, and by comparing independent subjective assessments of dust levels by the survey team to workers' responses.

Grain workers had the highest prevalences of several symptoms. In particular, symptoms of regular expectoration and cough (for at least 3 months per year), wheezing, chronic runny nose, eye irritation, and hay fever occurred more frequently among grain workers (table 2). The difference in symptoms ob-

TABLE 1

CHARACTERISTICS OF PARTICIPANTS*

	Mill 1	Mill 2	Mill 3	Mill 4	All Mills Combined	Control Subjects
Sample size	186	83	147	165	582	153
Age, yr	33.3 ± 13.0	38.1 ± 14.5	40.3 ± 12.4†	37.3 ± 11.5	36.9 ± 12.9	36.1 ± 13.7
Height, cm	170.5 ± 10.0	169.8 ± 8†	170.5 ± 6.2	171.9 ± 6.4	170.7 ± 8.0	171.9 ± 7.2
Weight, kg	64.9 ± 11.1†	67.9 ± 14.1	72.6 ± 11.6†	71.6 ± 10.6‡	68.8 ± 11.1	68.3 ± 11.1
Exposure, yr	5.4 ± 7.1	8.5 ± 10.2‡	8.9 ± 9.2†	6.6 ± 6.1	7.1 ± 8.1	5.9 ± 6.5
Race: black/ mixed race ratio	0.72	1.87	2.65	2.97	1.66†	0.86
Current smokers§	69.4	69.5	55.8‡	74.9	67.5	68.4
Mining history§	14	36.1†	27.7†	26.7†	24.3†	11.3

* Values are mean ± SD

† Significantly different from control value ($p < 0.01$).

‡ Significantly different from control value ($p < 0.05$).

§ Values shown are the percentage of current smokers or those with a mining history.

TABLE 2

SYMPTOMS IN GRAIN MILL WORKERS AND CONTROL SUBJECTS*

	All Mills Combined	Intermill Range	Control Subjects
Sample size	582	83–186	153
Shortness of breath†	25.1	22–30	20.0
Expectoration	35.4‡	27–61	17.0
Cough	46.3‡	39–57	29.6
Tightness	23.2	18–30	17.3
Wheezing	24.5‡	18–32	10.5
Chronic runny nose	25.3‡	23–27	14.0
Eye irritation	25.7‡	23–28	10.3
Hay fever	22.1‡	15–30	11.3
Skin rash	12.9	5–16	15.2
Skin tests			
None	45.1	41–66	55.0
General§	22.4	7–43	20.1
Specific¶	10.0	4–13	6.0
Both	22.9	15–29	18.8

* Values shown are the percentages of workers with the symptom
† Shortness of breath = Grade 1-2 dyspnea, i.e., more dyspnea on moderate effort than expected for age.
‡ Significantly different from control value ($p < 0.01$)
§ At least 1 positive reaction (wheal ≥ 3 mm) to a general allergen
¶ At least 1 positive reaction (wheal ≥ 3 mm) to a specific allergen.

served were not related to differences in the racial composition of mills and the control factory. Chest symptoms (any one of regular expectoration, cough, wheeze, or chest tightness) occurred in 47% of all grain workers and in 30% of control subjects ($p < 0.01$). This difference was found to hold for all mills considered separately and together. Chest symptoms were found to be independent of change in lung function (FVC, FEV_1, and FEF_{25-75}) over the week.

Pulmonary Function Tests

The reliability of pulmonary function tests was assessed by repeating the measurements in a sample of workers 1 wk after the initial tests. These repeat test results were highly correlated ($r = 0.80$ for FVC, $r = 0.81$ for FEV_1; $p = 0.0001$), thus excluding the presence of a possible learner effect.

No significant differences were noted in baseline (Monday) height- and age-adjusted (12) values of FVC, FEV_1, and FEF_{25-75} between grain mill workers and control subjects. The results of baseline pulmonary function tests and the variation across the working week are shown in table 3.

Significant differences, however, occurred across the week for FVC, FEV_1, and FEF_{25-75} in grain mill workers compared with those in control subjects (table 3). Workers in all mills showed a decline in test values, with FEV_1 decreasing by an average of 4.8% and FEF_{25-75} by 14.8%. In contrast, control subjects showed an increase in FEV_1 values of 3.3% and a decrease in FEF_{25-75} values of 0.8%. A greater than 10% decrease in FEV_1 across the week was found in 23% of grain workers and 9% of control subjects ($p < 0.0001$). Larger decrements in FEV_1 (greater than 25%) during the week occurred in 7% of grain workers and 2% of control subjects ($p < 0.05$). Across the week, decreases in FEF_{25-75} of greater than 25% occurred in 25% of grain workers and in 10% of control subjects ($p < 0.001$).

The relative contributions of age, height, and weight in predicting baseline lung function values are shown in table 4. Analysis of covariance of height- and age-adjusted (12) values using 4 cut-off points for years of exposure (0 to 5, 6 to 10, 11 to 15, and longer than 15 yr), and analysis of covariance using age and years of exposure as covariables showed that weight and years of exposure did not influence FVC or FEV_1, whereas weight had a slight effect on FEF_{25-75}.

Dose-Response Relationships

A significant dose-response relationship was noted between subjectively reported dust exposure and symptoms of shortness of breath, chest tightness, wheeze, chronic runny nose, and eye irritation (table 5). In a multiway analysis, a three-way interaction between dust, smoking, and symptoms was not demonstrated, but significant two-way interactions between certain symptoms and dust, and between certain symptoms and smoking habits were observed. No interaction between smoking and dust was shown. In this analysis, it was thus found that the dust-symptom relationship occurred independently of smoking habits (table 6). Age and duration of employment were also not related to symptoms. By using analysis of variance a significant dose-response relationship was demonstrated between dust levels and FVC and FEV_1 values on Monday and Thursday ($p < 0.001$), but not for FEF_{25-75} values (table 7).

Significant differences between departments for some symptoms were noted in grain workers. More symptoms of expectoration, wheezing, and chronic runny nose were found in workers from the raw material intake and silo departments ($p < 0.01$), which were also reported as being the most dusty.

Confounding Variables

The effects of known confounders of lung function abnormalities such as smoking habits and a history of working in mines was examined.

Shortness of breath, regular expectoration, and wheezing were related to

TABLE 3

PULMONARY FUNCTION TEST RESULTS IN GRAIN MILL WORKERS AND CONTROL SUBJECTS*

	FVC Values and Percent Change			FEV_1 Values and Percent Change			FEF_{25-75} Values and Percent Change		
	Monday	Thursday	Change† (%)	Monday	Thursday	Change† (%)	Monday	Thursday	Change† (%)
All mills	3,810 ± 674	3,759 ± 687	−1.90 ± 10‡	2,640 ± 626	2,553 ± 640	−4.76 ± 16‡	2,345 ± 1,017	2,157 ± 1,027	−14.79 ± 36‡
Control subjects	3,851 ± 856	3,949 ± 809	+2.67 ± 10	2,647 ± 686	2,729 ± 685	+3.34 ± 12	2,413 ± 1,191	2,470 ± 1,189	−0.81 ± 33

Definition of abbreviations: FVC = forced vital capacity, FEV_1 = forced expiratory volume in one second; FEF_{25-75} = forced expiratory flow during the middle half of the FVC
* Values shown are mean ± SD
† Values represent the difference between Monday and Thursday readings as a percentage of Monday values.
‡ Significantly different from control values ($p < 0.0001$).

TABLE 4

REGRESSION EQUATIONS DERIVED FROM PULMONARY FUNCTION TESTS IN GRAIN MILL WORKERS AND CONTROL SUBJECTS

Functional Parameter	Y Intercept	Independent Variables: Age (yr)	Height (cm)	Weight (kg)	R^2	SEE
FVC All mills	−4.66	−0.013	+0.052	N/A	0.34	0.54
Control subjects	−3.27	−0.027	+0.047	N/A	0.38	0.67
FEV_1 All mills	−2.45	−0.023	+0.034	N/A	0.36	0.50
Control subjects	−1.13	−0.027	+0.028	N/A	0.40	0.53
FEF_{25-75} All mills	−0.15	−0.043	+0.019	+0.009	0.31	0.82
Control subjects	−0.09	−0.039	+0.021	+0.007	0.35	0.77

Definition of abbreviations: R^2 = residual mean square, SEE = standard error of estimate. For other definitions, see table 3.

smoking (table 8). This relationship was independent of reported dust levels (table 6). No significant differences were observed between either lung function changes over the week or baseline values and smoking habits, or between baseline values and smoking habits.

In view of the observed difference in the proportion of ex-miners among grain workers and control subjects, ex-miners and nonminers were compared with respect to symptoms, baseline values, and lung function changes. No significant differences were observed.

Response to Bronchodilators

An indication of the immediate degree of reversibility was assessed by determining the proportion of workers who showed a clinically significant response to bronchodilator (8), i.e., an increase greater than 15% in FEV_1 or an increase greater than 25% in FEF_{25-75} after showing a greater than 15% decline in FEV_1 over the week. Of workers who showed a significant (greater than 15%) decrease in FEV_1 over the week, 7% of 80 grain workers and none of 16 control subjects showed a greater than 15% response in FEV_1 after receiving rimiterol; 20% of 80 grain workers and 8.5% of 16 control subjects showed a greater than 25% response in FEF_{25-75} ($X^2 = 12$; df = 2; $p = 0.0003$).

Skin Tests

General atopy was defined as a positive reaction to at least one general allergen. In an examination of differences in reactivity to allergens among grain workers and control subjects, no consistent pattern emerged. Atopic subjects had a higher prevalence of expectoration and chest tightness than did nonatopic subjects ($p < 0.01$).

A relationship between eye irritation and nasal discharge and lung function changes over the week was not observed. Neither was a relationship between lung function change over the week and atopic status demonstrated. With regard to bronchodilator response in grain workers, 62% of atopic and 38% of nonatopic subjects ($X^2 = 4$; df = 1; $p = 0.05$) showed a significant FEF_{25-75} response to bronchodilator, whereas the FEV_1 response did not differ between atopic and nonatopic subjects.

Discussion

Our study demonstrated that grain workers in Cape Town have a greater prevalence of chest symptoms (cough, expectoration, wheezing, or tightness), eye irritation, or chronic runny nose than do control subjects. This is in agreement with reports from Chan-Yeung and coworkers and other investigators (13–15). A dose-response relationship similar to that described by Do Pico and associates (15) was found between symptoms and workers' perception of dust levels. This relationship was found to be independent of smoking habits and the duration of employment.

A limitation of our study was that dust levels were not measured using standard sampling techniques. However, Do Pico and associates (15) reported that workers' perception of dust levels correlated with measured dust levels, and in our study, dust levels reported by workers correlated with independent subjective assessments of dust levels by the survey team. A further limitation is that several workers had already been exposed to grain dust prior to having their baseline pulmonary tests. This probably resulted in an underestimation in the magnitude of lung function changes over the week.

Pulmonary function data was analyzed in several ways. First, no significant differences in baseline values between grain workers and control subjects were observed. Furthermore, there were no differences in baseline lung function values between smokers and nonsmokers. Significant differences were observed in grain workers for baseline values of FVC and FEV_1 at different subjectively reported dust levels. The second approach was to analyze the change in lung function values over the week. Using analysis of covariance and calculating the mean change over the week with each worker as his own control, yielded similar results. In all mills, analyzed separately and together, FVC, FEV_1, and FEF_{25-75} declined over the week, whereas control FVC and FEV_1 values rose, and FEF_{25-75} marginally declined. Grain mill workers were found to be 3.49 times as likely to have a significant FEV_1 decline over the week than were control subjects. Chan Yeung and coworkers (13) reported similar results, but the magnitude of the change was greater in our study. The 4.3% of grain workers in the Vancouver study (13) and the 16% of grain workers

TABLE 5

SYMPTOMS VERSUS REPORTED DUST LEVELS FOR ALL GRAIN MILL WORKERS*

Reported Dust Levels	Sample Size	Shortness of Breath	Expectoration	Cough	Tightness	Wheezing	Chronic Running Nose	Eye Irritation
No dust	79	12	24	39	10	12	9	15
Dusty	284	25	38	43	21	24	24	25
Very dusty	219	31	35	52	31	30	33	31
Chi-square value		22.27†	3.8	4.1	15.0†	10.3†	17.5†	7.4†

* Values represent the percentage of workers with symptoms at specific dust levels.
† Significant differences between dust levels ($p < 0.01$).

TABLE 6

THE RELATIONSHIP BETWEEN SYMPTOMS, SMOKING, AND DUST IN 582 GRAIN MILL WORKERS*

	Independent Effects†	
Symptom	Smoking Versus Symptom	Dust Versus Symptom
Shortness of breath	13.66‡	22.27‡
Expectoration	5.97§	3.99
Cough	1.36	6.27§
Tightness	1.18	18.12‡
Wheezing	7.33§	11.99‡
Chronic runny nose	0.45	20.46‡
Eye irritation	2.56	7.41§

* Chi-square values are derived from the two-way interaction between smoking and symptoms, or between dust levels and symptoms.
† Chi square value (2 degrees of freedom)
‡ Significant difference in symptoms between categories of smoking or dust levels ($p < 0.01$).
§ Significant difference in symptoms between categories of smoking or dust levels ($0.01 < p < 0.05$).

TABLE 7

STANDARDIZED PULMONARY FUNCTION VALUES FOR 3 REPORTED DUST LEVELS*

Reported	FVC		FEV_1		FEF_{25-75}	
Dust Levels	Monday†	Thursday†	Monday†	Thursday†	Monday	Thursday
Not dusty	84.7 A‡	83.5 A	76.6 A	73.5 A	62.3	57.2
Dusty	82.7 A	82.2 A	72.6 B	70.8 AB	58.7	54.3
Very dusty	78.9 B	77.7 B	69.5 B	66.9 B	56.6	51.0
Coefficient of variation	16.7	16.3	20.9	21.2	39.4	38.1

For definition of abbreviations, see table 3
* Standardized for height and age using equations of Morris and coworkers (12)
† Significant differences between the 3 reported dust levels ($p < 0.0001$)
‡ Significant differences for column pairs that have different letters ($p < 0.05$).

TABLE 8

THE RELATIONSHIP BETWEEN SMOKING AND SYMPTOMS IN ALL GRAIN MILL WORKERS

	Smoking Habits*				
Symptoms	Never Smoked	0–9 Cigs/Day	10–19 Cigs/Day	20 or more Cigs/Day	Chi-square Value
Sample size	112	197	138	30	
Shortness of breath	23.0	18.9	34.5	40.0	14.2†
Expectoration	20.0	41.5	34.3	43.5	11.7†
Cough	33.3	50.3	43.7	50.0	5.5
Tightness	22.1	21.4	22.3	36.7	3.6
Wheezing	17.1	21.4	31.8	43.3	14.0†
Eye irritation	25.0	21.8	28.3	37.9	4.3
Chronic running nose	24.8	25	25.6	34.5	1.8

* Values shown are percentages in each smoking category with symptoms. Ex-smokers were excluded.
† Significant difference between symptoms relative to amount smoked ($p < 0.01$)

in our study showed a decrease in FEV_1 of greater than 10% over the week. This contrasts with the response of control subjects, none of whom in Vancouver and 5% of whom in Cape Town showed similar changes in FEV_1. As in other studies (13, 15), these changes were independent of smoking habits and duration of exposure. Grain mill workers and control subjects were drawn from a similar socioeconomic background in order to minimize the effects of confounding influences on lung function (e.g., socioeconomic and ethnic differences). It is likely that the population we studied comes from a lower socioeconomic class than that of Chan-Yeung and coworkers (13). For example, 32% of our participants used paraffin as their main domestic fuel source, with 47 and 21% using electricity and gas, respectively, as their main fuel source. The difference in socioeconomic class may explain why relatively more control subjects in our study showed a deterioration over the week than did those in the study of Chan-Yeung and coworkers.

Several possible agents have been identified as being able to produce asthma (16–18), and in the United Kingdom, flour and grain dust are recognized as one of 7 groups of sensitizing agents for which compensation is payable once occupational asthma is diagnosed (19). In our study, we found that 37% of all grain workers as against only 20% of control subjects fitted the criteria of occupational asthma defined by Brooks (9).

We found no effect of atopy, as assessed by skin prick tests, on baseline pulmonary functions in grain workers or control subjects. Unlike Chan-Yeung and coworkers (13), who found no relationship between skin test results and symptoms, and Do Pico (20), who found that skin test results were related to symptoms of wheeze, we found a relationship between chest tightness, expectoration, and positive skin tests. The response to bronchodilators in both atopic and nonatopic subjects with acute obstructive changes was similar to that described by Chan-Yeung and coworkers (13). In addition, we found that significantly more atopic mill workers showed a response to rimiterol than did nonatopic workers. Our findings suggest that in most workers a nonallergic response occurs to the heterogenous constituents of grain dust. The true prevalence of asthma, however, has probably been underestimated in this study because, as in most industrial cross-sectional studies, a survival population was surveyed (13).

Internationally, dust standards are continually being revised downwards as evidence accumulates that symptoms are evident at dust levels as low as 5 mg/m^3 (19). In the United States, the American Conference of Governmental Industrial Hygienists standard for nuisance dust (with less than 1% quartz) is 10 mg/m^3 and 5 mg/m^3 for respirable dust (21), but in Canada that standard has been reduced to 10 mg/m^3 averaged over an 8-h day, 40 h/wk (22). The view has been expressed that these levels are poorly enforced, despite the availability of technology able to control dust, because economic factors are given greater consideration than is the health of the workers (3). At present, there are no statutory dust standards for industry in South Africa, and both legislation and compensation for occupational diseases are inadequate (23).

In conclusion, we found that workers

occupationally exposed to grain dust had an increased prevalence of respiratory and allergic symptoms, and, further, showed significantly greater deterioration in lung function over 4 days of the working week than did control subjects. These effects were strongly related to subjectively reported dust levels but only weakly related to smoking habits and atopic status. The reversibility of these effects has yet to be fully determined, but our observations suggest that a significant proportion of workers with obstructive changes would benefit from using a bronchodilator. Broder and coworkers (24) found air-flow obstruction to be partially reversible when workers were laid off, and Morgan (25) has suggested that the reversibility of industrial lung disease could be assessed in South African migrant workers after their long vacation.

Protective measures for workers exposed to grain dust are needed in South Africa. We recommend that dust levels be determined and statutory standards be set for the grain milling industry. In addition, we urge that adequate compensative legislation be introduced for grain workers.

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Immediate and long-term survival in patients admitted to a respiratory ICU

PETER D. POTGIETER, MBChB, FFA(SA); ERIC ROSENTHAL, MBChB; SOLLY R. BENATAR, MBChB, FFA(SA), FRCP(LOND)

Of 458 patients admitted to a respiratory ICU over a 1-yr period, 65% required positive-pressure ventilation and 10% received continuous positive airway pressure by face mask. The average ICU stay was 7 days. The overall mortality of 19% depended largely on the medical disease precipitating admission but also increased in patients over 60 yr of age. Of 359 patients discharged from the hospital, 226 were followed for at least 18 months. Of these, 65% made a full recovery, 21% partially recovered, and 13% died.

Critical care medicine is expensive in terms of equipment, time, and personnel, with the overall cost per bed estimated at 3.5 times the cost of a bed in a general medical ward.[1] In order to justify this continued expenditure, especially during the current economic crisis facing medicine, it is appropriate to evaluate the effectiveness of intensive care not only in prolonging life but also in restoring patients to their previous health status. Several studies[2-4] have examined the short-term outcome of patients admitted to ICUs and have provided evidence for improved immediate survival from several potentially fatal diseases. However, little attention has been directed to long-term survival or quality of life of patients discharged from ICUs,[5,6] even though this information is necessary to allow a clearer perspective of the contribution of intensive care to medical practice.

In this study we present an analysis of patients admitted to a respiratory ICU (RICU) during one calendar year (1980), with particular reference to immediate and long-term survival in relation to the disorders for which intensive care was provided.

PATIENTS AND METHODS

The RICU in our hospital consists of a six-bed unit and a four-bed unit in two geographically separate, open areas. This RICU serves a 1500-bed teaching hospital which also has a 12-bed coronary care unit, a six-bed cardiac surgical ICU, and 22 high-care surgical beds. Patients are referred to the RICU from all departments in the hospital, including medicine, surgery (including thoracic, cardiac, and neurosurgery), obstetrics and gynecology. They may be referred from emergency and trauma areas, the operating room, general wards, other ICUs or high-care areas, and occasionally directly from peripheral hospitals. All patients referred are evaluated by the RICU team and accepted if a bed is available and the patient is considered to have a potentially reversible disorder which cannot be adequately treated by the referring staff.

During 1980, most patients were admitted for acute or chronic respiratory illness requiring ventilatory support, although some were admitted for elective postoperative ventilation, hemodynamic monitoring, or close observation. Most patients were adults, although a small number of children were admitted after trauma when the severity of the injury precluded immediate transfer to a children's hospital. A few with respiratory failure were admitted for special procedures such as plasmapheresis. After discharge from the RICU, patients were routinely followed until the disease had resolved. In those with persistent pulmonary disorders, long-term follow-up was maintained in the respiratory outpatient clinic. The patients were reviewed 18 months or more after discharge to assess the extent and rate of recovery. Those who were unavailable for interview completed a questionnaire.

RESULTS

Of 458 patients admitted during 1980, 182 had medical diseases, 170 were surgical patients, and 106 had major traumatic injuries. Their average age was 45.3 yr and there was a predominance of males (63%), particularly in the trauma group (82%). There were 175 white patients, 223 of mixed origin, and 60 black patients. A total of 297 (65%) patients required ventilatory support with intermittent positive-pressure ventilation (82% with tracheal intubation, 18% with tracheostomy), while 48 (10%) received continuous positive airway pressure (CPAP) by face mask.

Diagnostic groups, ages, ventilatory therapy, and immediate mortality are shown in Table 1. Medical patients with the adult respiratory distress syndrome (ARDS) included those who had developed this complication after secondary drowning, primary sepsis, or

From the Respiratory Intensive Care Unit, Departments of Medicine and Anaesthetics, Groote Schuur Hospital and University of Cape Town, South Africa.

Address requests for reprints to: Dr. P. D. Potgieter, Respiratory Intensive Care Unit, Groote Schuur Hospital, Observatory 7925, South Africa.

TABLE 1. Classification by admission diagnosis, age, ventilatory therapy and mortality

Diagnosis	No. of Patients	Mean Age (yr)	Percent Receiving CPAP	Percent Ventilated	Mortality
Medical	182	44.3	13%	73%	26%
1. Asthma	33	37.8	3%	52%	(0)
2. COPD	17	62.6	6%	71%	11%
3. Pneumonia	25	56.6	16%	76%	52%
4. ARDS	19	36.1	21%	74%	42%
5. Overdose	27	36.1	(0)	96%	19%
6. Neurologic	23	44.1	(0)	83%	30%
7. Other	38	47.6	18%	66%	32%
Surgical	170	51.2	6%	55%	16%
1. Elective admissions	102	50.8	4%	73%	16%
Pre-existing disease	22	62	(0)	73%	8%
Thoracic surgery	67	45	6%	19%	4%
Vascular surgery	13	63	(0)	92%	23%
2. Emergency admissions	49	53.3	10%	78%	29%
3. Anesthetic complications	19	48.2	5%	74%	16%
Trauma	106	37.4	20%	68%	13%
1. Blunt chest	68	41	19%	72%	9%
2. Penetrating chest	18	27.8	6%	61%	11%
3. ARDS	20	33.9	35%	60%	30%
Total	458	45.3	11%	65%	19%

inhalation of toxic substances. Patients with pneumonia were grouped separately rather than in the ARDS group, even if they had clinical evidence of diffuse noncardiogenic pulmonary edema secondary to pneumonia. No patients were readmitted to the RICU for the same illness during a single hospital admission. Three asthmatic patients, one patient with a drug overdose, two patients recovering from different surgical procedures, and two patients who had undergone bronchopulmonary lavage for alveolar proteinosis were each admitted on two separate occasions. The mean duration of stay in the RICU was 7.1 days (range 1 to 90), and the bed occupancy rate was 89%.

A wide range of medical disorders was treated. The overall mortality of 19% depended predominantly on the underlying medical condition and ranged from no deaths in 33 patients with severe asthma to 71% mortality in the seven patients with major pulmonary emboli. Of the 170 postoperative surgical patients admitted to the RICU, 102 were elective admissions considered preoperatively to be at high risk of life-threatening postoperative complications, because of pre-existing cardiac or pulmonary disease, or by virtue of the magnitude of the anticipated surgery. The high mortality in the group with major vascular surgical problems was largely due to six patients with ruptured aortic aneurysms. The 19 patients with complications directly attributable to anesthesia included patients with prolonged muscle relaxation (eight patients), excessive narcosis, hypotension, aspiration and intraoperative cardiac arrest. The majority of trauma patients were admitted with blunt chest injuries after motor vehicle accidents. These included 50 patients with flail chest, previously reported.[7] Eighteen patients had penetrating chest injuries, predominantly knife stab wounds involving the heart and major vessels. Two patients had gunshot wounds of the chest. Twenty patients were admitted with ARDS after trauma, six of whom had clinical evidence of fat embolism syndrome. The overall mortality in traumatized patients was 13% with, as expected, the highest mortality in those with multiple trauma and ARDS.

Of the 458 admissions, 43 (9%) patients were diagnosed as having ARDS on the basis of conventional diagnostic criteria. These comprised 19 patients from the medical group, four from the surgical group, and 20 from the trauma group. All had severe hypoxemia and all except one required either CPAP by face mask or continuous positive-pressure ventilation (CPPV) to maintain adequate oxygenation. Levels of positive end-expiratory pressure (PEEP) required during CPPV ranged from 5 to 20 cm H_2O; most patients received 7.5 to 10 cm H_2O, and only three patients received PEEP of more than 15 cm H_2O. Indications for treatment with CPAP were persistent hypoxia despite oxygen by mask, persistent tachypnea above 40 breath/min, clinical and radiologic diagnosis of decreased functional residual capacity (FRC), and inability to protect the airway and clear bronchial secretions. All patients treated with CPAP alone survived. One received 10 cm

TABLE 2. Patients with ARDS related to initiating factors, age, mode of ventilatory support, and mortality

Diagnosis	No. of Patients	Mean Age (yr)	No. Receiving CPAP	No. Receiving CPPV (%)	No. Undergoing Tracheostomy (%)	No. of Deaths (%)
Shock	7	38	1	6 (86)	4 (57)	3
Septicemia	15[a]	40	2	13 (87)	3 (20)	8 (53)
Fat emboli	6	32	3	3 (50)	2 (33)	1 (17)
Pancreatitis	4	35		4 (100)	3 (25)	2 (50)
Drowning	7	34	2	4 (57)		
Inhalation	2	40	1	1 (50)		1 (50)
Aspiration	2	50		2 (100)	1 (50)	1 (50)
Total	43	38.1	9	33 (77)	13 (30)	16 (37)

[a] Of these 15 patients with septicemia, eight had nosocomial and seven had community-acquired infections. Gram-negative organisms predominated and cultures included *Proteus* sp. (three cases), *Klebsiella* sp. (two cases), *Escherichia coli* (one case), *Pseudomonas* sp. (one case), and *Staphylococcus aureus* (two cases). Blood cultures were positive in four patients, and in the remainder infected secretions were cultured.

H_2O of PEEP, whereas the others all received 5 cm H_2O of PEEP. Fresh-gas flow rates of up to 40 L/min were used. Only one patient failed on CPAP; this patient's respiratory failure progressed and he died on CPPV with 15 cm H_2O of PEEP. The mortality related to the major causative factors of ARDS is outlined in Table 2. Although numbers are small, this classification is useful as it emphasizes the need to consider outcome in relation to factors initiating the syndrome.

Ventilatory therapy in the RICU was complicated by the development of nosocomial pneumonia in 31 patients (67%), by major episodes of pulmonary atelectasis in 23 (5%), and by pneumothoraces in 10 (2%). Sixteen patients (3%) developed generalized sepsis while in the RICU.

Sepsis was the most common cause of death (Table 3) and related predominantly to infections precipitating admission, although one death was caused by a secondary infection acquired within the RICU. Causative organisms included *Klebsiella* sp. (three cases), *Staphylococcus aureus* (two cases), *Streptococcus pneumoniae* (one case), *Escherichia coli* (two cases), *Proteus* sp. (one case), *Pseudomonas* sp., *Salmonella typhi*, Mucoraceae, and *Mycobacterium tuberculosis*. Neurologic damage was the next most frequent cause of death and included head injury, hypoxic cerebral injury, and cerebrovascular accidents. In 12 of these patients, active treatment was discontinued when irreversible brain death had been diagnosed by accepted conventional criteria. Other major causes of death included respiratory failure, cardiac failure, and arrhythmias. Pulmonary emboli, surgical hemorrhage and gastrointestinal tract hemorrhage were less frequent causes. Two deaths were ascribed to completely avoidable complications occurring in the RICU, one relating to accidental extubation, and the other to inability to reintubate in an emergency.

Patients over the age of 60 yr had a significantly greater mortality than younger patients (Fig. 1). The majority of deaths occurred within the first week of

TABLE 3. Main cause of death in the ICU, in relation to admission diagnosis

Diagnosis	Cause of Death				
	Respiratory	Cardiac	CNS	Sepsis	Other[a]
Trauma	2	2	5	5	
Surgical	3	4	5	8	2
Anesthetic complications		1	2		
Medical					
Overdose			3		2
Neurologic			6	1	
Asthma					
COPD	2				
Pneumonia		2	1	10	
ARDS	2	1	1	4	1
Pulmonary embolism			1		4
Cardiac disease		3			
Cardiac arrests			3		
Miscellaneous	1				
Total	10	13	27	28	9

[a] Pulmonary emboli, surgical, etc.

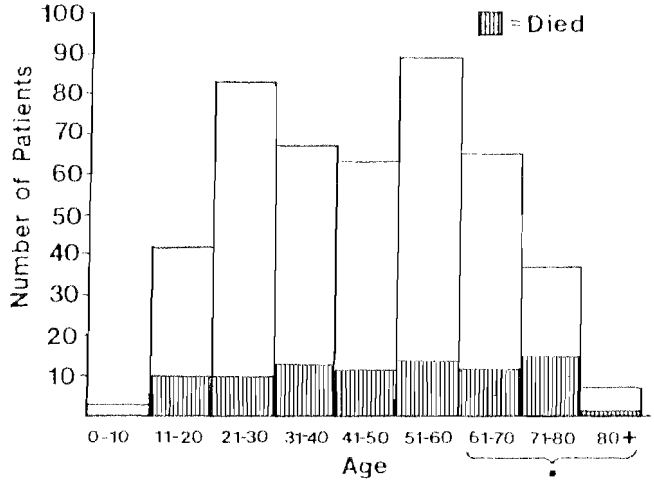


FIG. 1. Deaths in the ICU in relation to age. *$p < .05$ as compared with patients under 61 yr of age.

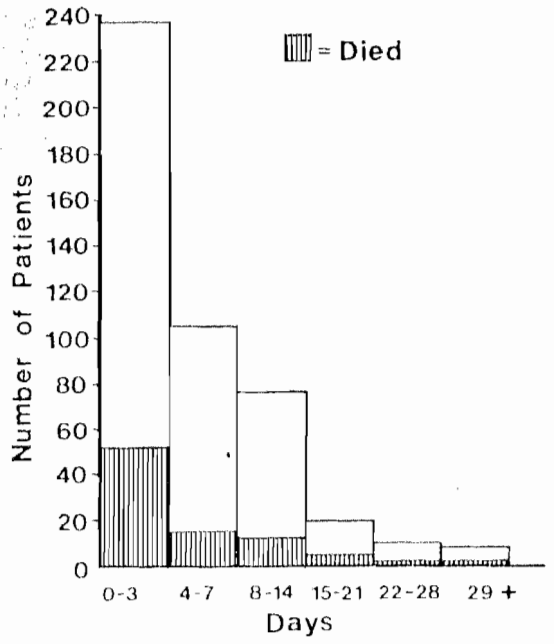


FIG. 2. Deaths in the ICU in relation to length of stay.

admission (Fig. 2). Eighty-six (19%) patients died in the RICU and a further 13 (3%) died in the hospital after discharge from the RICU—a total hospital mortality of 21%.

Of the 359 patients discharged from the hospital we obtained follow-up data for 226 (Table 4). The remaining patients could not be traced through the address in their hospital folder. After at least 18 months, 148 (66%) had recovered fully or to their preillness status. Of the 31 deaths after discharge from the hospital, the majority were unrelated to the disease causing admission to the RICU.

DISCUSSION

Accurate disease classification, and documentation and critical evaluation of short and long-term results are essential for assessing the effectiveness of ICU admission criteria and patient management in the ICU. The wide spectrum of diseases treated and results of our management in 1980 and in a previous unpublished analysis of 584 admissions to the same unit between 1973 and 1974 are similar to other published data.[6,8-10] Most patients admitted to the RICU would have succumbed without ventilatory support, and there is general consensus that such respiratory support can be more effectively provided in the ICU than in the general wards. In contrast to previous studies,[6,11] our in-hospital mortality rate of 21% was low in relation to the high number of patients requiring artificial ventilation; however, this difference may reflect our considerably younger patient population.[6,11]

Our major criterion for admission was the RICU team's clinical assessment of the need for intensive care, and we used our available facilities to their full capacity. Age alone was not a factor determining survival in patients under 61 yr old, but there was a significant increase in mortality in patients over this age. Mortality was not related to length of ICU stay. Nosocomial infections resulting from breakdown in natural defenses after endotracheal intubation or vascular invasion constituted an additional adverse risk factor. Most preventable deaths in our series were related to either

TABLE 4. Admission diagnosis and long-term outcome

Diagnosis	No. of Patients		No. of Deaths			Degree of Recovery					
						6 Months		12 Months		18 Months	
	Total	Long-Term Follow-up	ICU	Hospital	12 Months	Full[a]	Incomplete	Full	Incomplete	Full	Incomplete
Medical	182	86	47	5	7	49 (57)[b]	30 (34)	57 (66)	22 (26)	58 (67)	20 (23)
Asthma	33	27	0	0	0	17	10	19	8	19	8
COPD	17	10	2	0	1	4	5	4	5	3	5
Pneumonia	25	5	13	1	1	1	3	3	1	4	0
ARDS	19	3	8	1	0	3	0	3	0	3	0
Overdose	27	11	5	0	0	11	0	11	0	11	0
Neurologic	23	9	7	2	1	2	6	5	3	6	2
Other	38	21	12	1	4	11	6	12	5	12	5
Surgical	170	94	25	8	15	50 (53)	36 (38)	54 (57)	25 (27)	54 (57)	20 (21)
Elective admission	102	59	8	4	9	31	23	33	17	29	16
Emergency admission	49	26	14	3	5	14	10	16	5	19	2
Anesthetic complications	19	9	3	1	1	5	3	5	3	6	2
Trauma	106	46	14	0	2	32 (70)	12 (26)	35 (76)	9 (25)	36 (78)	8 (17)
Blunt chest	68	34	6	0	0	23	9	25	7	26	6
Penetrating chest	18	6	2	0	0	5	1	5	1	5	1
ARDS	20	6	6	0	0	4	2	5	1	5	1
Total	458	226	86	13	24	131(58)	78 (34)	146 (65)	56 (25)	148 (65)	48 (21)

[a] Return to preillness health status.

[b] Number in parentheses indicates percentage of patients for whom long-term follow-up available.

primary or nosocomial infection, the latter with a wide variety of organisms, many of which are only pathogenic in the ICU setting. A major difficulty in the ICU is the diagnosis of infection with organisms not generally recognized to be pathogenic. Meticulous attention to preventing such infections, with a combination of strict adherence to Listerian principles, minimal invasion of natural defense mechanisms, and careful bacteriologic monitoring in conjunction with considered use of antibiotics may reduce the risk of nosocomial infection and some deaths due to this complication. CPAP by face mask was used effectively in 11% of patients in this series, thus reducing the need for intubation of the trachea. This technique has recently been used effectively in patients requiring ventilatory support for respiratory failure due to a variety of causes.[12]

The small number of accidental deaths could be completely eliminated if ICUs were staffed by adequate numbers of trained personnel utilizing well-designed, reliable monitoring and life-support equipment. In our series, two deaths could be attributed to personnel or technical failures.

Of all patients discharged from the hospital, at least 41% were back at work or had attained their preadmission health status, and at least 12% were mobile and reasonably independent. Only 2% of all patients discharged were bed-bound or house-bound, and less than 9% died after discharge, many of these from unrelated causes. Thus, although 124 patients discharged from the hospital were lost to follow-up, at least one-third of the original study population were long-term survivors rehabilitated with return to full activity.

We conclude from these data that our RICU improves short-term survival and recovery from potentially fatal diseases, with a reasonably low in-hospital mortality and an impressive long-term improvement. The value of an ICU should, however, not be viewed only in this light. The training facility it provides for doctors and nurses also benefits other areas of the hospital. The ICU is also an ideal setting for clinical research. Advances in knowledge and care resulting from such work have, in our view, contributed significantly to improvements in the overall standard of medical care throughout the hospital.

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Serum Angiotensin Converting Enzyme in Sarcoidosis: Sensitivity and Specificity in Diagnosis: Correlations with Disease Activity, Duration, Extra-thoracic Involvement, Radiographic Type and Therapy

G. M. AINSLIE and S. R. BENATAR

From the Respiratory Clinic, Department of Medicine, University of Cape Town and Groote Schuur Hospital, Cape Town, South Africa

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SUMMARY

Serum angiotensin converting enzyme (SACE), despite certain limitations, has been found to be a useful adjunct to the diagnosis, assessment of disease activity, and management of sarcoidosis. The spectrofluorimetric assay was used to measure SACE in 50 normal controls, 76 patients with tuberculosis (42 pulmonary, 16 lymphatic and 18 miliary cases), 20 patients with cryptogenic fibrosing alveolitis, 50 patients with silicosis, three patients with extrinsic allergic alveolitis, 10 patients with Crohn's disease, two patients with Gaucher's disease, and 128 patients with sarcoidosis on 303 occasions (144 during periods judged as clinically active and 189 inactive). Our results show a normal range (mean ± 2SD) of 19–54 nmol/ml/min. The false positive rate is 2 per cent in normal controls, 9.2 per cent in tuberculosis (38.9 per cent in miliary but 0 per cent in the other forms), 48 per cent in silicosis, 100 per cent in Gaucher's disease, and 0 per cent in the other diseases. The sensitivity, specificity, positive and negative predictive values were 58.1, 83.8, 83.8 and 58.1 per cent respectively. The sensitivity rose to 85.9 per cent if only those samples taken from patients in whom sarcoidosis was suspected on initial presentation were included, and 92.1 per cent if only those with clinically active sarcoidosis were included. The sensitivity of SACE as a diagnostic test in sarcoidosis is thus influenced by the relative frequency of active and inactive sarcoidosis. The specificity is influenced by the prevalence of miliary tuberculosis and silicosis, but is uninfluenced by other common varieties of interstitial lung disease such as cryptogenic fibrosing alveolitis and extrinsic allergic alveolitis, or by other non-pulmonary granulomatous disease. There was no correlation of the SACE level with age, sex, population group, associated other illness or duration of sarcoidosis. Statistically, SACE levels were significantly higher in patients with Types II and III chest radiographs as compared to Type 1 and 0, and also in those with additional clinically evident extra-thoracic disease e.g. in lymph node, eye and especially multiple systems. SACE also reflected clinical activity with levels being statistically significantly greater in those patients assessed as having active disease, although 7.9 per cent of these had normal levels. Our observations indicate that SACE levels correlate well with disease activity longitudinally, both in relation to spontaneous remission and steroid therapy, and are thus helpful in patient management.

INTRODUCTION

Serum angiotensin converting enzyme (SACE) is a glycoprotein which acts by splitting off the terminal carboxypeptide histidyl-leucine from the decapeptide angiotensin I to form the active pressor octapeptide angiotensin II. It inactivates bradykinin by a similar mechanism (1–3). It is widely distributed throughout the body but is found particularly in the pulmonary capillary endothelium (4–9).

While investigating low blood pressure in chronic lung disease, Lieberman made the incidental observation that SACE was elevated in 70 per cent of a total of 390 cases of sarcoidosis, and in 90 per cent of those considered to have active disease (10). Other authors have reported elevated levels in 45–50 per cent of patients with sarcoidosis (11–14).

Angiotensin converting enzyme levels correlate fairly well with the estimated total bulk of granulomata in the body (15, 16), and while the source of production is not entirely clear, epithelioid and giant cells of sarcoid granulomata have been implicated (6, 14, 16–19). Small quantities of the enzyme are also produced by alveolar macrophages (20–22) and circulating monocytes (23). Using immunoperoxidase electron microscopy, it has been localised to the microvilli and pseudopod-like projections of the cell membrane (24).

The accepted diagnostic criteria for sarcoidosis include the demonstration of multi-organ non-caseating granulomata in tissue biopsies, or a positive Kveim test, in the absence of an infective agent, and in the presence of a compatible clinical picture. Clearly, a firm diagnosis often necessitates an invasive diagnostic procedure. While in some patients there is no doubt about disease activity, in others the assessment of activity is contentious and there is a lack of absolute criteria on which to base such assessment. A means of distinguishing active granulomata from residual fibrosis is required. Interest in SACE centres on the potential of the measurement for providing a non-invasive means of establishing a diagnosis of sarcoidosis, assessing the degree of disease activity and monitoring the natural history with or without treatment. In order to achieve these objectives, elevated levels should be specific for sarcoidosis and the test should be sensitive enough to identify all patients with active disease. Unfortunately, elevated SACE levels are not absolutely specific for sarcoidosis and markedly raised levels have also been detected in Gaucher's disease (25) and leprosy (26). While these diseases are easily distinguished clinically from sarcoid, raised levels have also been noted in diseases more likely to be confused with sarcoidosis including berylliosis (27), silicosis (28), asbestosis (28) and tuberculosis (12, 27). The distinction between sarcoidosis and tuberculosis is particularly important in South Africa where both disorders are common and may present with similar clinical pictures. Reported results of SACE levels in tuberculosis have been discrepant, with some observers reporting uniformly normal values (29) and others elevated levels in 3.5 per cent (30) to 87.5 per cent (31) of patients with miliary tuberculosis.

The variously reported sensitivity of the test relates to the assay method (10–12, 32), the selection of patients with regard to disease activity (15, 19, 33–39), duration of disease (10, 11, 13, 38), extent of the disease (38), and steroid therapy (12, 15, 22, 23, 27, 33, 36–39). Of the three commonly used assay methods, the spectrophotometric method of Cushman and Cheung (40) (modified by Lieberman (10)) has been used most widely but a three-fold inter-laboratory variation in control group mean values has been reported (30). The spectrofluorimetric method of Friedland and Silverstein (41) is a simple, quick, sensitive and reproducible test requiring only 10 μl of serum and, unlike the spectrophotometric method, is unaffected by lipaemia or haemolysis (39, 41).

The objective of our study was to use the more sensitive spectrofluorimetric assay (a) to assess the sensitivity and specificity of this test in diagnosing sarcoidosis in an environment where tuberculosis is common, and (b) to evaluate the levels of SACE in sarcoidosis in relation

to age, population group, duration of disease, clinical activity, radiographic type, extra-thoracic disease and natural history including spontaneous remission and therapy.

PATIENTS AND METHODS

Patient Selection

The patients studied had either been referred to the Respiratory Clinic at Groote Schuur Hospital for assessment and diagnosis, or were recruited into the study to broaden its scope (patients with tuberculosis and silicosis). The diagnosis of sarcoidosis was based on clinical and radiographic findings and supported in almost all cases by a tissue biopsy showing characteristic histological features and the absence of infective causes on direct staining and culture of biopsy specimens.

Clinical activity of sarcoidosis was judged using the criteria commonly applied in the outpatient department; i.e. an overall assessment based on symptoms (e.g. presence or absence of cough, dyspnoea, malaise, etc.), evidence of extra-thoracic activity (in skin, lymph node, upper respiratory tract, joint or bone, liver, spleen, parotid or nervous system), changing chest radiograph, and lung volumes or transfer factor for carbon monoxide of less than 75 per cent predicted or a change of at least 10 per cent from a previous value. This is similar to the '0, +, ' clinical index used by De Remee and Rohrbach (33) and Rohatgi *et al.* (15).

Response to treatment was categorised as either 'clinical' (improvement in symptoms and signs), 'radiographic' (clearing of the chest radiograph) or 'PFT' (increase in lung volumes of 10 per cent or more). Improvement in at least two of these categories was counted as 'overall' response.

Patients with tuberculosis included only those diagnosed by the demonstration of acid-fast bacilli either in secretions or biopsy specimens. Diagnosis of other diseases such as cryptogenic fibrosing alveolitis, extrinsic allergic alveolitis, Crohn's disease, Gaucher's disease, etc. was made on the basis of characteristic clinical features with supportive histology. Most of the patients with silicosis (42 of 50) had worked in the gold mines for many years, and had typical chest radiographs (predominantly 2/2; q/q by I.L.O. International Classification (42)), and a stable course which excluded tuberculosis or sarcoidosis.

Fifty healthy hospital workers and students of both sexes and all population groups; aged 22–65 years, constituted the control group from whom normal values of SACE for our laboratory were established.

Assay

The substrate used in the spectrofluorimetric method (41) is the analogue tripeptide hippuryl-histidyl-leucine dissolved in sodium hydroxide and mixed with phospho-saline buffer. This is incubated with the SACE-containing serum which splits off the histidyl-leucine from hippuric acid. Addition of *o*-phthaldialdehyde to the histidyl-leucine (reaction stopped by hydrochloric acid) yields a fluorescent adduct. The concentration of this is measured in a spectrofluorimeter at excitation wavelength 360 nm and emission fluorescence wavelength 500 nm. The result, expressed in nmols of SACE per ml serum per minute, is obtained by comparison with a standard curve utilising various set dilutions of histidyl-leucine plus *o*-phthaldialdehyde.

Statistics

Statistical analysis of the data was performed using the two-tailed Student's *t*-test.

RESULTS

Normal controls

The mean and standard deviation in the 50 normal controls was 36.5 ± 8.9 nmol/ml/min. This gave a normal range of 36.5 ± 17.8 or 19–54 nmol/ml/min. (mean ± 2 SD). One subject had a level of 62, giving a false positive rate of 2 per cent.

Other diseases

The number of patients in each group, together with the mean and standard deviation and the number and percentage of those with elevated levels, are expressed in Table 1 and Figs. 1 and 2.

TABLE 1. *SACE in other conditions*

Disease	No. of patients	Mean ± SD	Elevated SACE		p value*
			No.	%	
Tuberculosis					
Pulmonary	42	27.9 ± 8.9	0	0	< 0.001
Lymphatic	15	35.5 ± 8.1	0	0	NS
Miliary	18	48.1 ± 19.8	7	38.9	NS
Total	75	34.4 ± 14.8	7	9.2	NS
Cryptogenic fibrosing alveolitis	20	32.6 ± 10.0	0	0	NS
Silicosis	50	61.3 ± 20.3	24	48.0	< 0.001
Extrinsic allergic alveolitis	3	25.9 ± 3.4	0	0	
Crohn's disease	10	34.0 ± 8.5	0	0	NS
Gaucher's disease	2	130.6 ± 2.0	2	100	
Total no. of patients overall	160				

* vs. controls; NS = not significant.

Sarcoidosis

SACE estimations were performed on 303 samples from 128 patients. In many of these patients the SACE was measured serially at different stages in their disease course.

A summary of the data is expressed in Tables 2 and 3, and Fig. 3.

Correlations with disease factors

(a) *Age.* While SACE levels tended to be higher in the younger age groups (data not shown), this relates to disease activity rather than age.

(b) *Population Group.* There was no correlation noted with population group (data not shown) (17).

(c) *Other disease.* SACE levels were unaffected by co-existent renal disease, diabetes mellitus and hypertension (data not shown). However the number of patients with these diseases was very small (2–4 of each). SACE levels were also unaffected by the development of airflow obstruction or cor pulmonale.

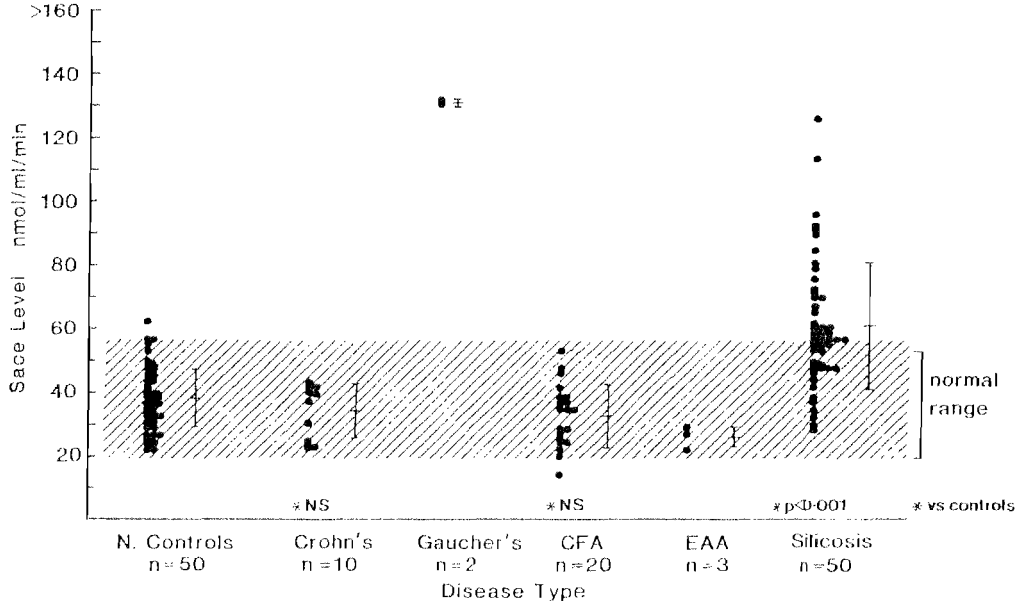


FIG. 1. SACE levels (mean ± standard deviation) in normals and patients with a variety of other conditions. (Abbreviations used: NS, not significant; N. Controls, normal controls; *n*, number of samples; CFA, cryptogenic fibrosing alveolitis; EAA, extrinsic allergic alveolitis.)

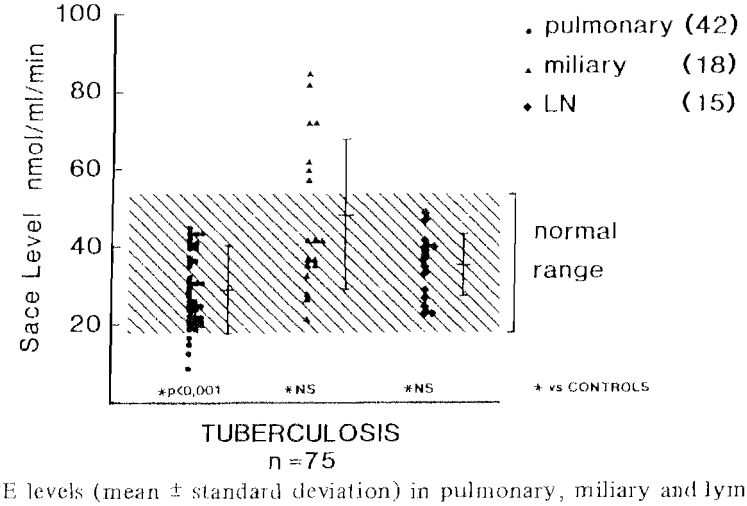


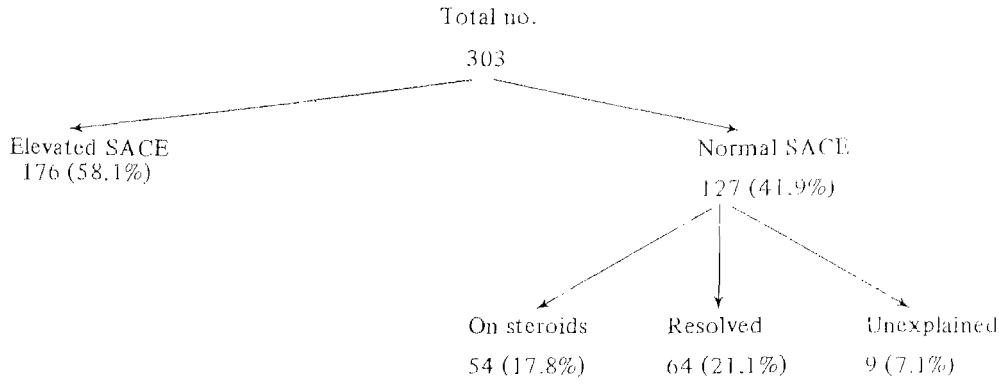
FIG. 2. SACE levels (mean ± standard deviation) in pulmonary, miliary and lymph node (LN) tuberculosis.

TABLE 2A. *SACE in sarcoidosis*

	No. of patients	No. of samples	Mean ± SD	Elevated SACE		*p* value*
				No.	%	
Active	78	114	100.4 ± 45.7	105	92.1	< 0.001
Inactive	99	189	51.9 ± 19.9	71	37.6	< 0.001
Total	128	303	69.9 ± 39.8	176	58.1	< 0.001
At presentation	64	64	103.9 ± 47.4	55	85.9	< 0.001

* vs. controls.

TABLE 2B. *SACE in sarcoidosis*



From the above figures, of the patients neither on steroids nor with inactive disease, 95.1 per cent have elevated SACE.

TABLE 3. *Sensitivity, specificity and predictive value of SACE measurements*

	Total no. samples analysed*	Sarcoidosis		Predictive value (%)
		Present	Absent	
	513	303 (64)	210 (210)	
SACE				
Positive	210 (89)	176 (55)	34 (34)	83.8 (61.8)
Negative	303 (185)	127 (9)	176 (176)	58.1 (95.1)
Sensitivity (%)		58.1 (85.9)		
Specificity (%)			83.8 (83.8)	

Figures in brackets are those of patients at presentation: * Include controls.

(d) *Disease duration.* This data is shown graphically in Fig. 4. No correlation was noted between SACE levels and the duration of disease. Levels were noted to be high with any duration if the patients were classified clinically as having active sarcoidosis.

(e) *Clinical activity.* This data is summarisied in Table 2 and Fig. 3. Whilst SACE levels in patients with both active and inactive disease were significantly different from controls ($p < 0.001$), there was also a significant difference between the levels in active and inactive disease ($p < 0.001$).

Nine of 114 samples in patients with clinically active disease had normal SACE levels, giving a false negative rate of 7.9 per cent. On the other hand, there were several patients who, despite being judged as having clinically inactive disease, had markedly raised SACE levels. Almost always these patients had even higher levels before treatment, or were about to show overt signs of clinical activity in the near future.

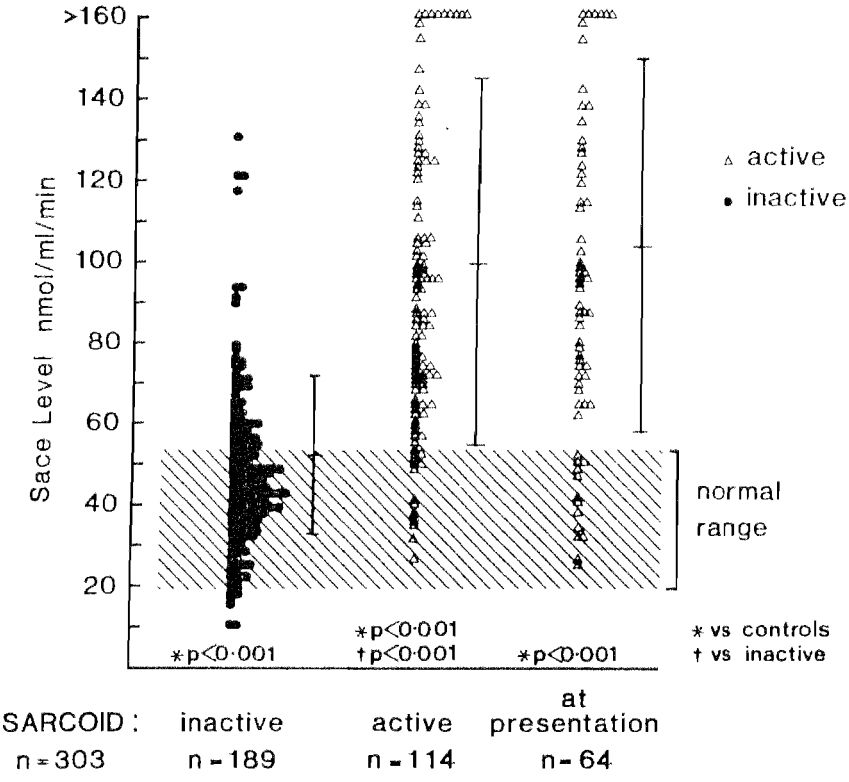


FIG. 3. SACE levels (mean ± standard deviation) in sarcoidosis — clinically active, inactive, and at presentation.

(f) *Extra-thoracic involvement.* SACE tended to be raised when there was evidence of involvement of the following systems: peripheral lymph nodes, skin, eyes, liver, spleen, nervous system, kidney, upper respiratory tract, or parotid glands. It was also raised in the presence of hypercalcaemia. There were no patients with bone, joint or cardiac disease in this series. As our patients were drawn from a respiratory clinic, all but three had pulmonary or hilar disease. Normal SACE levels were found in three patients with active erythema nodosum and bilateral hilar lymphadenopathy but no other evidence of disease. As extra-thoracic organ disease was one of the criteria used to judge clinical activity, most of these patients were judged to be clinically active. The data is shown graphically in Fig. 5 and summarised in Table 4.

(g) *Radiographic type.* This data is graphically expressed in Fig. 6 and also summarised in Table 4.

Type 0 (normal chest radiograph); three patients with a mean and standard deviation of 62.3 ± 12.7 nmol/ml/min:
Type I (bilateral hilar lymphadenopathy alone); 31 patients with a mean and standard deviation of 51.9 ± 16.8 nmol/ml/min:
Type II (bilateral hilar lymphadenopathy plus interstitial lung disease); 58 patients with a mean and standard deviation of 91.3 ± 49.5 nmol/ml/min:

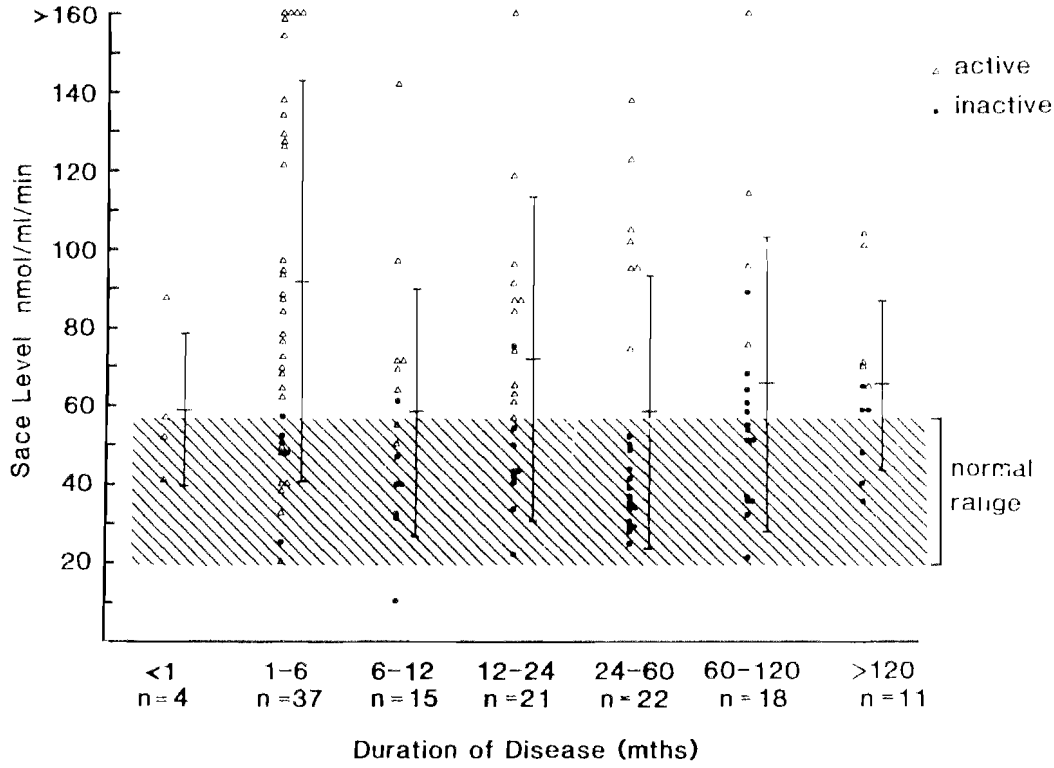


FIG. 4. SACE levels (mean ± standard deviation) in sarcoidosis correlated with different durations of disease.

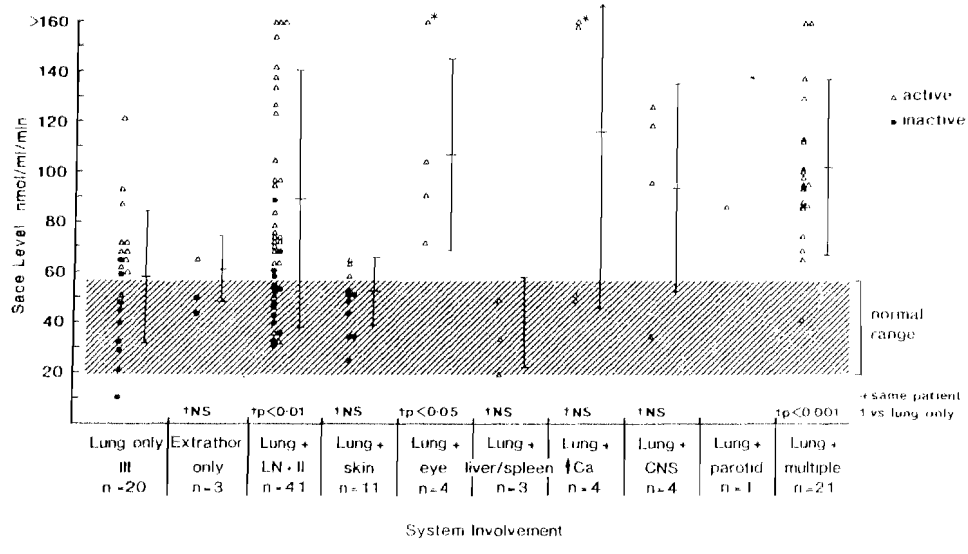


FIG. 5. SACE levels (mean ± standard deviation) in sarcoidosis correlated with extra-thoracic involvement. (Abbreviations used: Lung only III, parenchymal lung involvement only with Type III chest radiograph; Lung + LN + II, lung and lymph node involvement, including Type II chest radiograph. Ca, hypercalcaemia; CNS, central nervous system.)

TABLE 4. *SACE: radiological type and system involvement*

Affected system	Type 0		Type I		Type II		Type III		Total	
	Level	*n*	Level	*n*	Level	*n*	Level	*n*	Level	*n*
Chest only	–	–	47.6 ± 13.5	20	82.7 ± 47.8	28	59.8 ± 31.5	20	65.7 ± 38.6	68
p value (vs. Type I)	–		–		< 0.001		NS		–	
Extrathoracic										
Skin	63.5	2	58.6 ± 13.3	6	46.8	2	46.3 ± 4.0	3	54.7 ± 13.2	13
Lymph node	–	–	–	–	105.2 ± 62.5	11	123.7	2	108.1 ± 57.9	13
Eye	–	–	72.3	1	161.4*	1	97.5	2	111.8 ± 47.4	4
Liver/spleen	60.0	1	34.4	1	–	–	19.5	1	40.3 ± 17.4	3
Nervous system	–	–	34.3	1	111.2	2	119.4	1	93.8 ± 41.8	4
Parotid	–	–	84.3	1	–	–	–	–	84.3	1
Hypercalcaemia	–	–	–	–	96.0 ± 72.8	3	158.0	1	117.0 ± 72.8	4
Multiple	–	–	87.6	1	116.9 ± 63.1	14	119.6 ± 34.6	6	104.1 ± 35.8	21
Total extrathoracic	62.3 ± 12.7	3	60.4 ± 19.3	11	108.0 ± 59.7	31	101.6 ± 45.4	16	96.8 ± 53.1	60
p value vs. chest only	–		NS		NS		< 0.01		< 0.001	
p value vs. Type I	NS		–		< 0.001		< 0.01		–	

* Also hypercalcaemic.

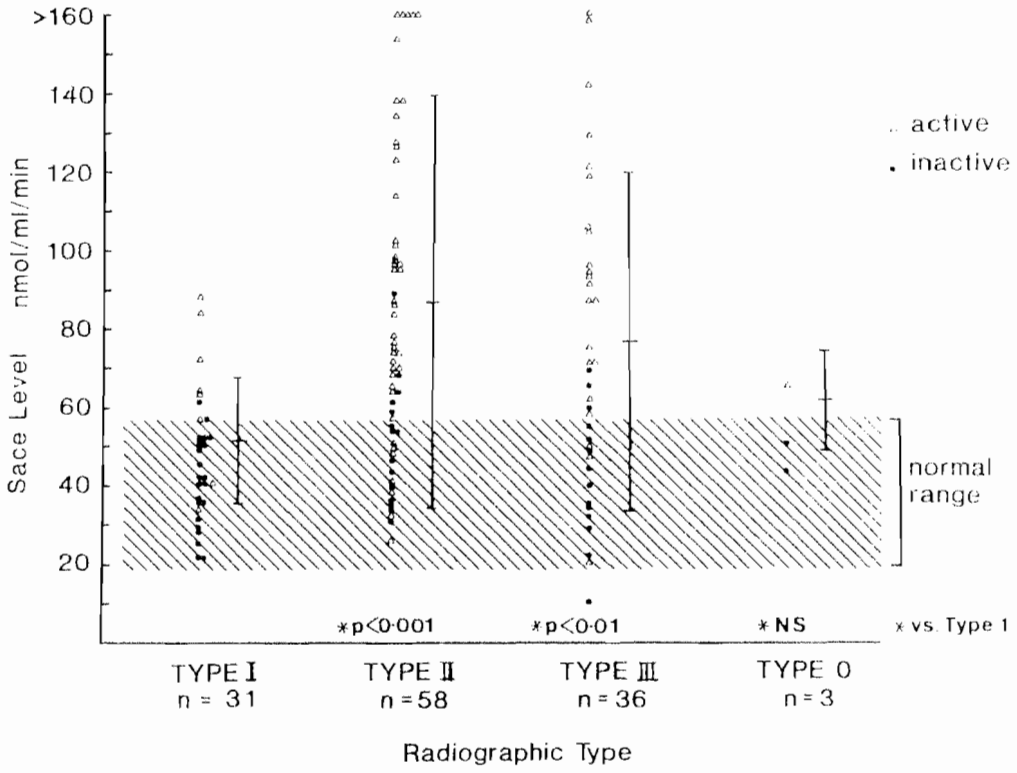


FIG. 6. SACE levels (mean ± standard deviation) in sarcoidosis correlated with radiographic type.

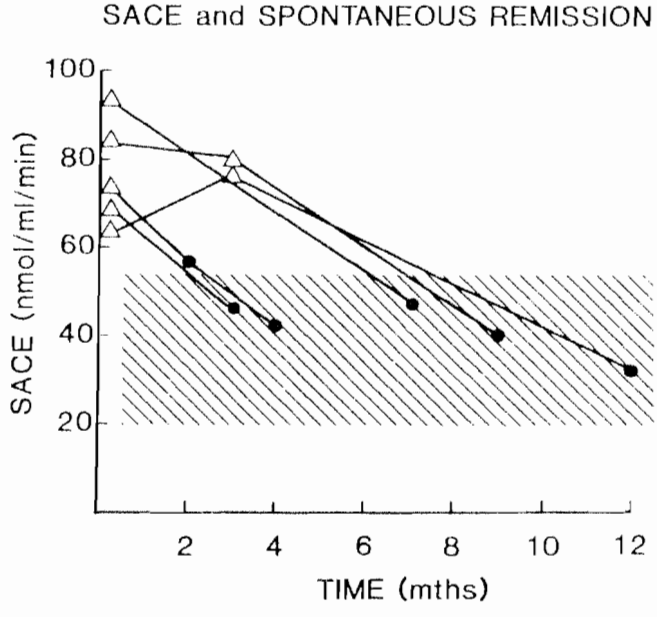


FIG. 7. Longitudinal changes in the SACE levels of five patients undergoing spontaneous remission.

Type III (interstitial lung disease alone); 36 patients with a mean and standard deviation of 77.3 ± 42.5 nmol/ml/min.

SACE levels were elevated more frequently, and to a greater degree, in patients with Types II and III chest radiographs. The levels in these patients were significantly greater than in patients with Type I or 0 chest radiographs (II vs. I or 0: $p < 0.001$; III vs. I: $p < 0.01$). There was no statistical difference between Types 0 vs. I or III, and II vs. III.

(h) *Spontaneous Remission.* This was observed in five patients, who are described graphically in Fig. 7. SACE levels decreased slowly as clinical activity resolved, and was accompanied by increasing lung volumes and improvement in transfer factor for carbon monoxide, and radiographic features. The SACE levels fell towards normal even in those patients in whom the hilar lymphadenopathy did not clear completely.

(i) *Response to Therapy.* The effect of corticosteroid therapy was observed in 36 patients: two classed as radiographic Type I, 19 with Type II and 15 with Type III.

Thirty four patients (94.4 per cent) had initially elevated SACE levels. There were three patients (8.4 per cent) who failed to show an 'overall' response: no improvement in clinical status and chest radiograph in one and no improvement in chest radiograph and pulmonary function tests in the other two. Of these, one patient remained with an elevated SACE level while levels of the other two patients dropped to normal. There were four further patients who had good 'clinical' and 'PFT' response but no change radiographically, and another four with good 'clinical' and 'radiographic' response but no increase in lung volume.

Of the 33 patients (91.6 per cent) who had an 'overall' response, including the two whose initial SACE levels were normal, all had a decrease in SACE level of at least 25 per cent or 2 SD of normal (17.8 nmol/ml/min.). Thirty patients (90.9 per cent of those responding) decreased their levels to within the normal range, while two patients' levels dropped to just above normal and the third patient's level reached normality four months later.

The varying times taken for response in the different categories (SACE level decrease of greater than 25 per cent, SACE level normalisation, 'clinical', 'PFT', 'radiographic' and 'overall') are summarised in Table 5. It can be seen that one to two months after corticosteroids were started, the SACE levels decreased, together with clinical improvement. Lung volumes and the chest radiographs tended to improve shortly after this with a higher percentage (20–25 per cent) of patients taking longer than three months to do so. The higher the original SACE level, the

TABLE 5. *Times taken for different categories of response to treatment**

Response time (months)	SACE		Clinical	PFT	Radiographic	Overall
	Lowered	Normalized				
1	25 (69)	20 (63)	18 (51)	7 (23)	4 (14)	6 (18)
2	8 (22)	7 (22)	12 (34)	10 (33)	14 (48)	15 (46)
3	1 (3)	1 (3)	3 (9)	7 (23)	4 (14)	9 (27)
4	1 (3)	4 (12)	–	2 (7)	4 (14)	1 (3)
6	1 (3)	–	2 (6)	4 (14)	1 (3)	1 (3)
8	–	–	–	–	2 (7)	–
12	–	–	–	–	–	1 (3)
Patient total	36	32	35	30	29	33
Mean time	1.5	1.7	1.8	2.7	2.8	2.6
Median time	1	1	1	2	2	2

* Percentages in parentheses.

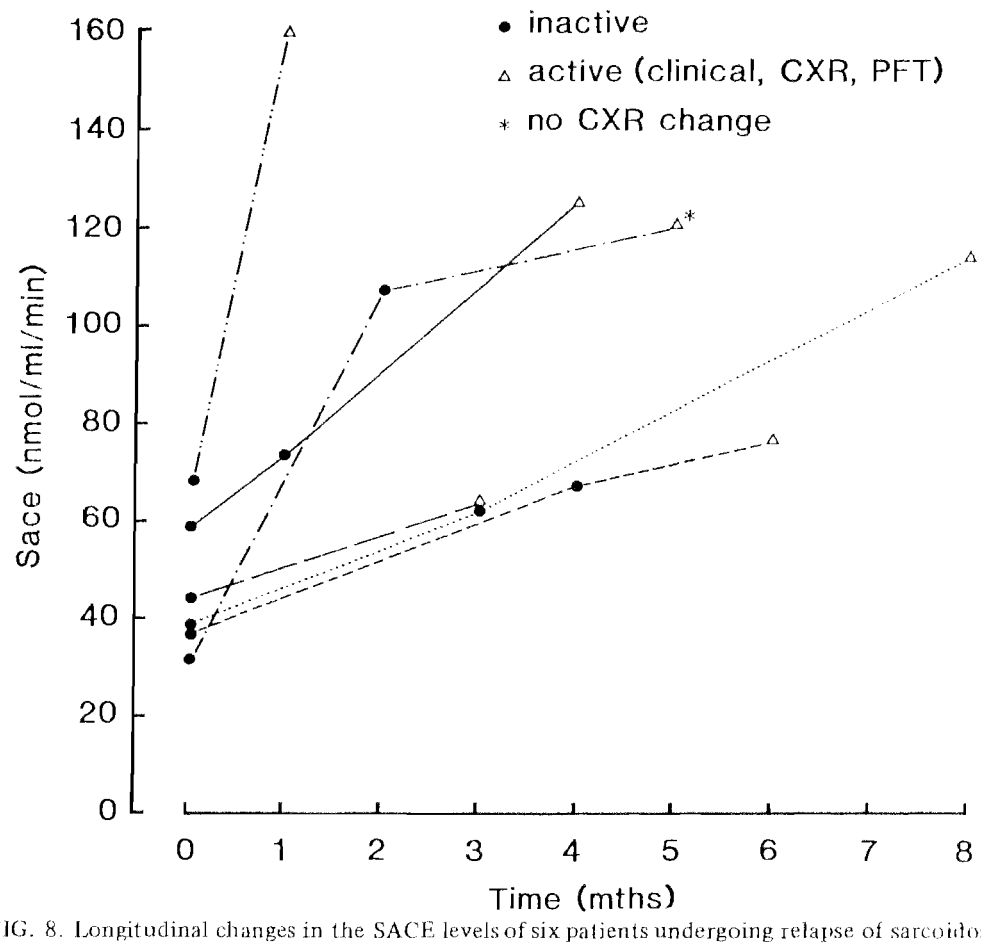


FIG. 8. Longitudinal changes in the SACE levels of six patients undergoing relapse of sarcoidosis while on decreasing doses of corticosteroids. (Abbreviations used: CXR, chest radiograph; PFT, pulmonary function tests.)

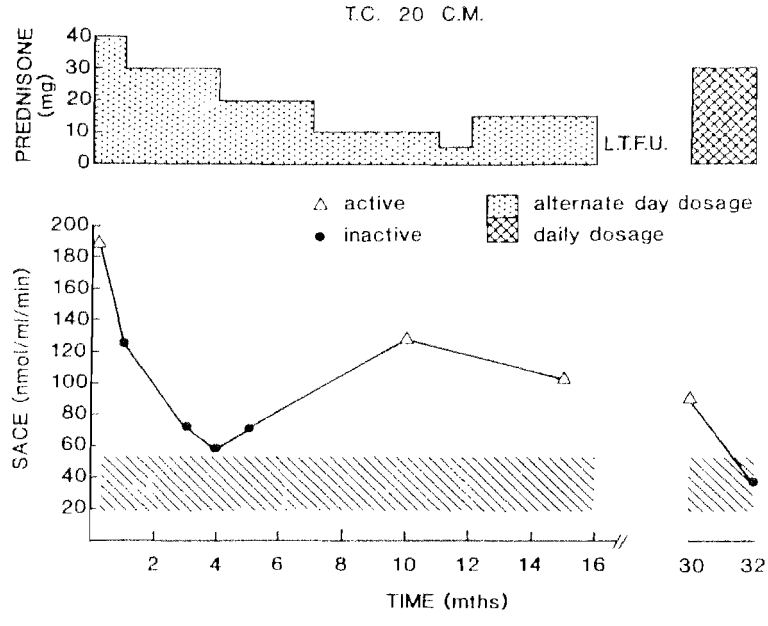
longer it took to fall within the normal range. This lag phase resulted in some patients being judged as having become clinically inactive while SACE levels were still raised.

Of the 36 patients, six (16.7 per cent) relapsed at a later date while their steroid therapy was being gradually withdrawn (Fig. 8). All of these had an associated elevation of their SACE levels (a rise of 25 per cent above the normal range). In one patient this increase predated 'clinical', 'radiographic' and 'PFT' deterioration by five months, in two patients by three months, in one patient by two months, and in the remaining two patients it occurred simultaneously. All patients were still on prednisone therapy at the time of relapse, with the dosage varying from 10 mg alternate days to 40 mg alternate days.

Fig. 9 illustrates graphically the course in one representative patient (T.C.), showing the variation in the SACE level with time in relation to simultaneous clinical, radiographic, pulmonary function test and prednisone dosage changes.

COURSE IN T.C.

This 20-year-old male was assessed as having clinically active sarcoidosis on the basis of a Type II chest radiograph associated with cough, dyspnoea and enlarged peripheral lymph nodes. The



CXR:	↓II ↓II	↓II	↑II	↑II	↑II
PFTs:					
FVC	3.3	3.8	3.4 3.7	2.9 3.9	3.3 3.7
TLC	4.3	4.9	4.6	5	4.8 5.4
TLCo	22.6	21	19.5	20.4	17.4 20
Clin:	SOB - cough ↑LN	- - - -	- min. SOB - -		SOB - cough ↑LN LOA,LOW

FIG. 9. Longitudinal changes in the SACE levels, clinical condition, chest radiograph and pulmonary function tests of *Patient T.C.*, in response to therapy. (Abbreviations used: 20 C.M., 20 year old Coloured male; L.T.F.U. lost to follow up; CXR, chest radiograph; ↓ II, improving Type II radiograph; ↑ II, deteriorating Type II radiograph; PFTs, pulmonary function tests; FVC, forced vital capacity; TLC, total lung capacity; TL_{CO}, transfer factor for carbon monoxide; Clin, clinical features; SOB, short of breath; LN, lymphadenopathy; LOA, loss of appetite; LOW, loss of weight.)

vital capacity (VC) was 3.3 l (predicted 5.3 l) and the total lung capacity (TLC) was 4.3 l, (predicted 6.9 l) while the transfer factor for carbon monoxide was 22.6 ml/min/mmHg. (predicted 35.8). His SACE level was 192 nmol/ml/min. He was initially treated with prednisone 40 mg alternate days. A month later he felt much better, the peripheral lymph nodes were no longer palpable, his SACE level had fallen to 125 nmol/ml/min, but pulmonary function tests and chest radiograph were unchanged. His prednisone dose was decreased to 30 mg alternate days and over the next two months he maintained his clinical improvement and SACE dropped to 71.4 nmol/ml/min. His chest radiograph and pulmonary function tests were now also improved (VC 3.8 l; TLC 4.9 l; transfer factor 21 ml/mm/mmHg). A month later he continued to feel well, his SACE level fell further to 59.2 nmol/ml/min and prednisone was thus decreased to 20 mg alternate days. The following month, however, although he still felt well and his pulmonary

function tests were unchanged, SACE had risen to 72.7 nmol/ml/min. Three months later, on 10 mg prednisone on alternate days, his cough and dyspnoea had returned and both his chest radiograph and pulmonary function tests had deteriorated (VC 3.7 l; TLC 4.6 l; transfer factor 19.5 ml/min/mmHg.). His SACE level had risen to 124.4 nmol/ml/min. The prednisone dose was increased to 15 mg on alternate days and he improved moderately over the next four months (VC 3.9 l. TLC 5.0 l; transfer factor 20.4 ml/min/mmHg) with his SACE level dropping slighty to 100 nmol/ml/min. He was then lost to the study, but 15 months later returned with recurrence of his previous symptoms and considerable deterioration in both his chest radiograph and pulmonary function tests (VC 3.3 l; TLC 4.8 l; transfer factor 17.4 ml/min/mmHg). His SACE level was still elevated at 90 nmol/ml/min. Commencement of prednisone 40 mg daily was followed by improvement in all parameters (VC 3.7 l; TLC 5.4 l; transfer factor 20 ml/min/mmHg) and a fall in his SACE level to 45 nmol/ml/min over a two month period.

DISCUSSION

Studdy and James, in their review of the use of SACE as a diagnostic test for sarcoidosis in 12 centres from six countries, documented an overall diagnostic sensitivity of 57 per cent, specificity of 90.5 per cent, positive predictive value (true positive over combined true and false positives) of 90 per cent, and negative predictive value (true negative over combined true and false negatives) of 60 per cent (30). In comparison we have found sensitivity, specificity, positive and negative predictive values of 58.1, 83.8, 83.8 and 58.1 respectively. These differences can be accounted for both by the large number of SACE measurements (189) made by us in 99 patients with clinically inactive disease and by the large number of patients with other diseases showing raised SACE levels. In those assessed as having clinically active sarcoidosis, the sensitivity of the measurement rose to 92.1 per cent. Data from the last group include measurements made serially in many patients, including some on treatment, and it is perhaps more clinically relevant in terms of diagnosis to consider the SACE levels at the time of initial clinical evaluation. Under these circumstances we observed a 85.9 per cent sensitivity, 91 per cent specificity, 61.8 per cent positive predictive accuracy and 95.2 per cent negative predictive accuracy. Thus, while the now recognised observation that SACE levels are usually within the normal range in patients with disease assessed as clinically inactive detracts from the potential overall diagnostic value of this measurement, when sarcoidosis is being considered in symptomatic patients – the usual situation except when the disease is suspected on routine chest radiographs – our data supports its use as a diagnostic test with a high degree of positive and negative predictive accuracy. However, it is important to realise that this accuracy is not only dependent on the test itself, but also on the particular spectrum of disease found in the area under study.

Miliary tuberculosis is an important condition to distinguish from sarcoidosis, especially in developing countries where this may be seen as frequently or even more frequently. It is clear from our data (38.9 per cent false positives) that in this case SACE estimations are of limited diagnostic value. A previous small (eight cases) study has described a false positive rate of 87.5 per cent in miliary tuberculosis (31). Our overall false positive rate of 9.2 per cent in 76 patients with tuberculosis is entirely accounted for by elevated measurements in patients with miliary disease. Other studies (which do not specify whether miliary disease has been included) have given false positive rates of 0 per cent (29, 38), 4.5 per cent (11), 7.3 per cent (10) and 9 per cent (12).

The other disorder which may be confused radiographically with sarcoidosis is silicosis. In our evaluation of 50 such patients we observed falsely elevated SACE levels in 48 per cent. In

previous reviews, false positive rates of 0 and 42 per cent have been reported in silicosis (27, 30). Thus the SACE level is not a reliable distinguishing feature between sarcoidosis and silicosis.

We have shown no relationship between the levels of SACE and age, sex, population group, development of other illness, or duration of disease *per se*. Patients who have had the disease for over 10 years still have raised SACE levels if the disease has remained active. Of our patients with sarcoidosis for more than 10 years 72.8 per cent had elevated levels.

We have observed that SACE is more likely to be elevated, and to a higher degree, in patients with Type II chest radiographs. Elevations also occur, but to a less marked degree, in patients with Type III radiographs. In both instances the levels in our patients were statistically higher than in patients with a Type I radiograph. Other workers have not reported a statistically significant difference in SACE levels in patients with Type II and III radiographs as compared with Type I, but have reported higher levels in patients with more extensive parenchymal lung involvement (11, 12, 43–45). One combined study has shown a statistically significant increase in SACE values in patients with Type II radiographs only (30).

We have also observed a correlation between raised SACE levels and the presence of extrathoracic sarcoidosis. Comparing SACE levels in patients with the different radiographic types but with chest disease only versus those with extrathoracic disease also (Table 4), shows that there are significantly higher SACE levels in those patients with Type III radiographs who also had extrathoracic involvement ($p < 0.01$), but not in those with Types I and II ($p < 0.1$). Patients with Type II radiographs have significantly higher SACE levels than those with Type I both when they have chest disease only and also when they have extrathoracic disease in addition ($p < 0.001$), but in those with Type III vs. Type I radiographs, statistical significance is only reached in those with extrathoracic disease ($p < 0.01$ vs. $p < 0.2$). Patients with lymph node, eye or multiple organ disease had particularly raised SACE levels with these being significantly higher than in patients with thoracic disease only (p values of < 0.02, < 0.05 and < 0.001 respectively). Patients with hypercalcaemia and nervous system disease also tend to have much higher levels (noted by others (24)) but this is much less consistent, with a wide scatter, and thus does not reach statistical significance. In addition, hypercalcaemia is almost always associated with involvement of at least one other system as well as the chest. Granulomatous skin lesions, but not erythema nodosum, are associated with only slight elevated levels. Unlike another study (24), we have not observed particularly high levels associated with disease of the liver and spleen. The higher levels of SACE in those patients with systemic and/or Types II and III disease would lend support to the theory that SACE spills over into the circulation and reflects the total bulk of granulomata in the body (15, 16). Certainly our patients with isolated ocular disease or mild bilateral hilar lymphadenopathy and erythema nodosum only, where the granulomatous load is probably small, have not had raised levels.

In addition to its value in the diagnosis of patients with suspected sarcoidosis, several studies suggest that SACE estimations are of potential value in assessing disease activity and assisting in therapeutic decisions (12, 15, 30, 33–36, 46, 47), while others have refuted this and attribute changes in SACE to the effect of steroids independent of disease response (32, 48). Our observations lend support to the utility of SACE measurements in assessing disease activity and in providing an early indication of response or relapse. There is a highly statistically significant difference between the levels found in clinically active as compared with inactive disease. However there remains 7.9 per cent of patients who, despite other clear indications of activity have normal SACE measurements. This is difficult to explain as many of these presumably have a considerable mass of diseased tissue. For some reason the granulomatous cells in these cases are either not producing significant amounts of ACE or the enzyme is not reaching the circulation. Measurement of ACE in broncho-alveolar lavage fluid or staining for intracellular ACE in biopsy specimens may shed some light on this. De Remee and Rohrbach found normal SACE levels in

17 per cent of patients with newly diagnosed sarcoid, especially in those with a Type I chest radiograph, and noted that normal levels correlated with a relatively good prognosis (49). They also found that SACE was occasionally normal in those with Type II and III radiographs, and that almost all of these responded clinically to corticosteroids with a further 40 per cent drop in the SACE value (compared with a 12 per cent drop only in the one patient that did not respond). This phenomenon has also been noted by Lieberman (46) and Lawrence (47). De Remee and Rohrbach suggest that SACE can be divided into two compartments: a normal or 'basal' portion derived from endothelial cell turnover, and a potentially elevated 'suppressible' portion secreted by active granulomata.

Although our number of patients is small, we have seen that the SACE level correlates well with the decline in disease activity seen in spontaneous remission. A steadily falling SACE level, together with clinical, radiological and functional improvement, may give extra confidence in observing these cases without intervention. If the SACE level later rises, the physician should be alerted to watch for other evidence of deterioration which may necessitate treatment. Particularly useful is the measurement of SACE in those patients with initially raised levels, who are then treated with steroids as outlined in the example cases. The falling SACE level usually coincides with subjective improvement and often predates by weeks radiological and pulmonary function test improvement. Of more value is the fact that, on gradually withdrawing treatment, a further elevation of SACE is an early indicator of relapse, often even occurring before other symptoms. This allows easier monitoring of therapy in a large proportion of cases. The fall of SACE on steroids is thought mainly to be due to suppression of disease activity with a decrease in the amount of granulomatous tissue secreting ACE. However Turton *et al.* (38) and Gronhagen-Riska *et al.* (43) have shown a direct effect of steroids on SACE in that they can decrease levels in both healthy controls and patients with other diseases. Baughman *et al.* feel that the fall in SACE levels in sarcoidosis patients receiving prednisone is related more to a direct steroid effect than a decrease in disease activity (47). However we have seen SACE levels remaining elevated when disease remains active despite steroid therapy, as well as levels falling when the disease becomes inactive both without any treatment or on diminishing doses of prednisone.

In summary, we conclude that SACE measurement offers a cheap, valuable, simple, non invasive test which can be used repetitively in the out-patient department as an aid in the diagnosis, assessment of activity and guide to treatment of sarcoidosis.

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MEDICAL PROGRESS

FATAL ASTHMA

SOLOMON R. BENATAR, M.B., CH.B., F.F.A. (S.A.), F.R.C.P. (LOND.)

ASTHMA has been recognized for more than 30 centuries,[1] but only in the past 50 years has death from the disease attracted much attention. Floyer reported sudden death from asthma in an 18-month-old child in 1698.[2] In 1784, Cullen wrote, "The asthma, though often threatening immediate death, seldom occasions it, and many persons have lived long under this disease. In many cases, however, it does prove fatal; sometimes very quickly and perhaps always at length."[3] In contrast, Laennec, who made many observations on asthma, including the occurrence of nocturnal attacks, did not recognize that it could be fatal. At the beginning of this century, William Osler taught that acute attacks of bronchial asthma never caused death.[4] In 1922, death as a complication of asthma was highlighted when Huber and Koessler described pathological evaluations of the lungs in 21 fatal cases.[5] An additional 176 deaths from asthma were reported in 1952, and a poorer prognosis was noted among patients whose asthma had begun after the age of 40 than among those who experienced their first symptoms before they were 25.[6] In 1953, Williams reviewed 41 deaths from asthma known to him and 140 from the literature. More than 80 percent of the patients were older than 30, and 50 percent of these had had asthma for less than five years.[7] Similar observations were made by Houston et al.[8] and Earle.[9] In both those series extensive mucous plugging was found to be an almost universal feature at autopsy, and widespread detachment of ciliated epithelium was also prominent.[8]

Until 1953, very few of the 200 reported deaths from asthma occurred in children. In the next decade, however, this situation changed. In the 1960s, an "epidemic" of deaths among young persons with asthma was observed in the United Kingdom,[10-12] New Zealand,[13] Australia,[14,15] and to a much lesser extent, in the United States.[11,16] In the United Kingdom, the reported mortality from asthma among patients who were 5 to 34 years of age tripled between 1959 and 1966 (rising from 0.74 to 2.18 per 100,000 persons per year). Among those who were 10 to 14 years old, the mortality rate increased sevenfold, and asthma became the fourth most common cause of death in this age group.[10]

Death from asthma has also been documented in several long-term studies. In a 20-year follow-up study of 648 asthmatic children, 23 died — 10 (1.5 percent) from asthma.[17] Blair described the natural history of asthma in 267 children who were under 12 years of age when they were first seen between 1941 and 1952 and whom he followed personally for more than 20 years (until December 1972).[18] Seven of the patients died during this period — three from asthma. Thus, 1.1 percent died from asthma during the study — a rate that can also be expressed as 50 deaths per 100,000 asthmatic patients per year.[18] Ogilvie reported a death rate of 7 percent among 1000 patients with asthma who were followed for an average of 10 years (range, 3 to 33).[19] Among the 80 patients followed for 10 to 12 years by McCracken, 10 percent died, half of them from asthma.[20]

Despite these findings, there is a surprising lack of information on death from asthma in a recent issue of a review publication on the disease.[21] References are made to three long-term follow-up studies of patients with asthma,[22] but not to the fatal outcome of the disease in 1.1 to 7 percent of patients.[17-19]

EPIDEMIOLOGY

Asthma is a common disease; it affects approximately 3 percent of the population and produces considerable morbidity. Deaths from asthma are relatively uncommon, but they occur often and "unex-

From the Respiratory Clinic, Department of Medicine, the University of Cape Town and Groote Schuur Hospital, Cape Town, South Africa, where reprint requests should be addressed to Dr. Benatar

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pectedly" enough to merit attention and careful evaluation, particularly in regard to prevention.

After a careful study, Speizer et al. concluded that a real increase in death from asthma among children occurred in the 1960s and could not be accounted for by changes in diagnostic criteria, certification, or coding practices.[10] This observation, and the sudden and unexpected nature of many of the deaths that occurred, gave rise to widespread anxiety and heated controversy in the medical literature about the factors that may have contributed to the increased death rate.[11,12,16,23-33] The "epidemic" of deaths from asthma began to subside in the United Kingdom and Australia between 1967 and 1968, but dissipated less convincingly in New Zealand, where a second epidemic began in 1975 and has not yet abated.[34]

More recent careful reviews of the effect of changes in the *International Classification of Diseases* from 1958 to 1982 on notifications of deaths from asthma in England and Wales,[35] and of the validity of such notifications for patients 15 to 44 years old in recent years,[36] have led to the conclusion that the published data on deaths in this age group are valid. Although there is evidence of a decrease in the rate of death from asthma among female patients in recent years, as compared with the rate among female patients before the epidemic in the 1960s, the mortality rate among male patients was higher in the early 1980s than it was before 1960.[35]

Between 1950 and 1978, there was a gradual decrease in the number of deaths from asthma in the United States that was not accounted for by the 1958 and 1969 revisions of the *International Classification of Diseases*.[36] After the ninth revision of the classification in 1978, a 39 percent increase in deaths occurred in 1979, but this could be accounted for by the alteration in coding. However, the revision could not have been responsible for the additional increase observed in 1980, when 2891 deaths from asthma occurred and the death rate from asthma among children rose more steeply than in any of the previous 30 years. This rise was three times higher among blacks than among whites.[36] On the basis of provisional data from a 10 percent sample of deaths in 1981 and 1982, as well as a 10 percent sample of deaths in the first six months of 1983, Sly estimated that the number of deaths from asthma increased to 3120, 3060, and 3460 in 1981, 1982, and 1983, respectively, and that increases in the death rate occurred in many states.[36] However, rates of death from asthma in the United States remain lower than those in many other countries (Table 1).

Although the prevalence of asthma appears to have increased in the United Kingdom[38] and New Zealand[39] during the past 10 to 15 years and the rate of admission to hospitals for treatment of asthma has increased in England[40] and doubled in New Zealand since 1974,[34] there is insufficient evidence to implicate increased prevalence or severity of the disease as factors that account for the rise in the death rate.

Many studies and reports have addressed the problem of fatal asthma, and now, 20 years after the onset of the epidemic of that disorder, there is some (but not complete) agreement that most (but not all) deaths from asthma can be attributed to inadequate assessment and treatment of the disease.[25,41-53] This is perhaps surprising in the light of the advances made in understanding pathogenic mechanisms and pathophysiology and in clinical assessment, and of the introduction of many "selective" and effective therapeutic agents. However, the possibility that the background prevalence and severity of asthma have changed cannot be excluded.

Pathophysiology of Severe Asthma

Currently, extensive research is focusing on bronchial hyperreactivity to a variety of stimuli, the most basic pathophysiologic abnormality identified in asthmatic patients.[54,55] Because the indexes of hyperreactivity are influenced by the geometric configurations of the airway, there is difficulty in comparing reactivity among asthmatic patients with various degrees of severity of airflow limitation. However, in spite of this problem, there is evidence that the degree of bronchial hyperreactivity shows some correlation with the severity of disease[56] and that it may be ameliorated by both reduced exposure to stimuli and regular effective therapy.[57]

During severe attacks of asthma, a marked impairment of cardiopulmonary function occurs, which is manifested by reduced airflow rates, air trapping, a ventilation–perfusion imbalance that leads to hypoxemia and hypercapnia, large changes in intrathoracic pressure, increased pulmonary vascular resistance, right ventricular systolic overload, and increased effort in breathing.[21,25,41,44,58-62] If airflow obstruction is not relieved, there may be progression to hypercapnia, metabolic acidosis, muscle fatigue, exhaustion, and death.[58-62] Airflow limitation in patients suffering a severe asthma attack results from a combination of smooth-muscle contraction, tenacious intraluminal mucoid secretions, and an inflammatory response in the airway walls — all of which may develop either in a short period or gradually (over days, weeks, or months). Many factors may be implicated in the development of this state in the predisposed patient, including allergen overload, nonspecific bronchial irritation, infection, or other triggering stimuli, and inadequate education of both patient and doctor with regard to assessment and management, resulting in complacency and delay in the recognition of the severity of an attack and in implementation of appropriate therapy.[41,60-62] Problems in management may be further complicated by poor patient compliance and a lack of access to adequate health care services.[63] Excessive doses of therapeutic agents that are commonly used in the treatment of asthma may have undesirable effects on cardiac or pulmonary function. Hypokalemia that results partly from beta$_2$ stimulant drugs has been proposed as a cause of potentially fatal arrhythmia in asthmatic patients.[41,64] Whether or not this

is the case (in the presence of the normal plasma epinephrine levels found in acute asthma[65]) needs to be established by Holter monitoring.

Causes of Death

In the light of the severe impairment of cardiopulmonary function that takes place during a severe asthma attack, it is perhaps surprising that death is not a more common consequence of such episodes. Controversy regarding the deaths that do occur has focused on two major issues: adverse reactions to bronchodilators, and asphyxia due to severe limitation of airflow.

Adverse Reactions to Bronchodilators

The increase in deaths from asthma among patients 5 to 34 years old in England and Wales in the early 1960s, which disrupted a mortality pattern that had been stable for 100 years, occurred in the absence of an identifiable increase in the prevalence of asthma and of alterations in diagnostic and certification criteria.[10,22] The hypothesis that abuse of aerosol bronchodilators may have been implicated in the increase[23,24] led to a formal investigation of this possibility. This study[11] provided support for the hypothesis that some of the increase in the rate of death from asthma could be directly attributable to the excess use of aerosolized bronchodilators. The study received widespread publicity and was further supported by reports from the United Kingdom[12,32] and the United States[28] that showed a positive correlation between deaths from asthma and national sales of bronchodilator aerosols, particularly those that delivered isoprenaline in a dose of 0.4 mg per puff (five times the concentration delivered in other inhalers).[28] These concentrated aerosols accounted for 30 percent of all sales of bronchodilator aerosol sprays in England and Wales during the epidemic of increased deaths from asthma.[28] Canada and the United States had not licensed the stronger aerosols, and neither country experienced the epidemic. It appeared that only two countries in which the concentrated dose was sold were spared the epidemic (Belgium and The Netherlands), and sales of the aerosols had been low in both these areas.[28]

The reports on sales of the aerosols and deaths from asthma received sensational coverage in *The New York Times* in July 1972,[66] and for many years the hypothesis that sudden death from asthma resulted from the use of aerosol bronchodilators was widely believed within the medical profession and the lay public, with a consequent reluctance to prescribe or use aerosol bronchodilators. Pharmacologic support for the "bronchodilator toxicity hypothesis" came from reports of rebound bronchoconstriction[67] and of arrhythmias induced by the action of fluorinated hydrocarbons[68,69] or sympathomimetic drugs on hearts that had been sensitized by hypoxia.[70] Subsequent studies refuted these reports.[71-75] The possibility that hypokalemia caused by beta$_2$ stimulant drugs[64] or theophylline[76] could give rise to potentially fatal arrhythmias requires further, careful evaluation.

Table 1. Mortality Rate from Asthma per 100,000 Population, According to Doctor–Patient Ratios and per Capita Expenditure on Health Care.

Country	Year			Doctor-Patient Ratio (1975)[37]	Per Capita Health Care Expenditure (1975)[37]
	1974	1978	1980		
	deaths per 100,000 persons				*U.S. dollars*
U.S.A.					
Total			1.3	1:599	607
Whites	0.8	0.8	1.2		
Blacks	1.6	1.4	2.1		
5–34 yr	0.2	0.2	0.3		
Canada					
Total			1.8	1:610	508
5–34 yr	0.3	0.4	0.4		
England and Wales					
Total			3.0	1:763	226
5–34 yr	0.5	0.7	0.9		
Australia					
Total			3.7	1:658	464
5–34 yr	1.4	0.9	0.9		
New Zealand					
Total			8.0	~1:699	
5–34 yr	1.3	3.0	4.1		
Sweden*					
Total	4.2	5.2	7.1	1:584	717
Denmark*					
Total	1.9	2.1	2.7	~1:560	
South Africa[63]					
Total			~8	~1:2100	~100

*Because neither Sweden nor Denmark implemented the ninth revision of the *International Classification of Diseases* in 1979, direct comparisons can be made between reported death rates in the early 1970s and those in 1980. The apparently higher death rate in Sweden was probably due to national differences in coding, since the death rate from bronchitis in Sweden was 8 per 100,000 in 1981, as compared with 30.6 per 100,000 in Denmark. Some deaths coded as asthma in Sweden would probably be included under bronchitis in Denmark.[36]

The epidemiologic evidence also revealed important discrepancies between the sales of aerosols and changes in the rates of death from asthma in some countries. Herxheimer[29] argued that the excess of asthma-associated deaths in Denmark, Sweden, Norway and Japan could not be accounted for by the "concentrated aerosol hypothesis," and Gandevia concluded from his epidemiologic studies that it was unlikely that the well-defined changes in the pattern of deaths from asthma in Australia in relation to age, sex, and geographic distribution could be correlated with the pattern of change in therapy.[31]

It is similarly improbable that the second epidemic of deaths from asthma in New Zealand after 1976[34] can be attributed to toxicity from bronchodilators, since the increase in such deaths began in 1975 and leveled off in 1979, whereas the increase in sales of drugs to treat asthma (which began to be observed in 1975) continued to rise unabated into the 1980s.[77] The suggestion that the combined use of

oral theophylline and beta$_2$ agonists may be implicated[78] has not been substantiated. Other causes, including the excessive use of home nebulizers, have been proposed[79,80] but not confirmed.

Increasing sales of bronchodilator aerosols could reflect a rise in the prevalence or severity of asthma in a community, or a trend away from prescribing oral bronchodilators. If the response to such therapy is inadequate, particularly in cases of severe asthma, increasing sales could be associated with a rising mortality rate. This would apply especially if patients and physicians were complacent in recognizing a failure to respond to bronchodilators. Alternatively, if increasing sales and use of bronchodilators were accompanied by the desired therapeutic response, the death rate would be expected to stabilize or fall.

Asphyxia Due to Severe Airflow Limitation

The popular view that asthma-related deaths were largely due to abuse of bronchodilator aerosols was strongly opposed by Read.[25] He made a forceful case for asphyxia as the cause of death in patients with severe asthma, basing his argument on the well-described pathological evidence of extensive mucous plugging of airways, with consequent hyperinflation,[5,8,9] and the gross disturbance of function documented during severe attacks.[59] He also noted that despite this evidence of severe airflow obstruction, information obtained from the family and medical practitioner often implied that the patient usually experienced only mild, uncomplicated episodes of asthma and that the fatal attack had not been considered severe. This led Read to conclude that clinical assessments of asthma may be not only inaccurate but misleading. His views had been voiced by others in the past,[9] and they have been upheld in subsequent reports that have also emphasized the value of signs such as tachycardia and pulsus paradoxus and of simple objective tests of airflow limitation in evaluating the severity of an asthma attack.[41-44,47,49-51,60]

It is now generally accepted that excessive bronchodilator aerosol use in association with death from asthma is not a cause of death but a reflection of the need for more effective therapy,[47] which is often unmet for several reasons. These include inadequate perception of the severity of the attack by the patient,[81] marked diurnal fluctuations in the degree of airflow obstruction,[44] poor control of asthma for some time before the fatal episode,[50,61] the rapidity with which the airflow obstruction may become very severe,[42,48] and the failure of the medical practitioner to assess and treat the patient adequately.[41-43,49-51]

Other Contributing Factors

Inappropriate sedation within hours of death[8,41,49,82]; pneumothorax from delivery of bronchodilator drugs by intermittent positive-pressure breathing[30]; adverse reactions to beta-blockers[83]; and hypersensitivity to hydrocortisone,[84,85] aspirin-like drugs,[86] sodium cromoglycate,[87] and ipratropium bromide[88] have also been implicated as precipitating factors in fatal or severe asthma attacks in a small number of patients, but these attacks account for only a small proportion of all deaths from the disease.

Circumstances Surrounding Death and Recognition of the Patient at Risk

Since Roe drew attention to the distinction between death after a prolonged attack of asthma and sudden unexpected death,[89] it has been well documented that death from asthma may occur suddenly (outside the hospital[42,45,48,49,51,61] or in the hospital[46,53]) without obvious earlier long-term deterioration or after a prolonged attack for which the patient has not been optimally treated (Table 2).[41,43,46,49] Most patients who die from asthma have had the disease for many years, have had previous admissions to the hospital because of severe attacks (often in the recent past), and have not had an adequate objective evaluation of the severity of their airflow limitation (even in the hospital during the fatal attack; thus, the therapy they receive has usually been inadequate).

Potentially avoidable factors were identified in up to 82 percent of the deaths from asthma that were evaluated in a carefully planned study.[51] A weakness of this type of study, however, is the absence of case controls to show that the avoidable factors are present significantly more frequently among patients who die than among those who survive.[52] Whether lung function is ever normal shortly before the fatal attack (rather than reduced) but is not perceived as such by the patient ("subclinical" chronic asthma) is also not known.[46,52,53,61]

Circadian Rhythm

The well-recognized increased frequency of death from asthma at night or in the early morning[41,44,63] has been linked to a pronounced diurnal variation in airflow limitation.[44,61] However, other factors, including sleep-related hypoxemia, may also be involved.[90] Detailed study of circadian variation in airflow limitation in patients with asthma has eliminated sleep itself, atopic status, and exogenous factors such as posture as major contributors to the development of nocturnal asthma.[91] Sudden death in asthmatic pa-

Table 2. Circumstances Associated with Fatal Asthma.

Very sudden death
Often occurs outside the hospital and at night[42,44,49,51,63]
May occur during recovery from an acute attack[42,44]
Not necessarily related to a prolonged severe attack[44,48]
Patients with a large diurnal variation in airflow obstruction are at greatest risk[44,48,61]
Less sudden death
May occur outside or in the hospital[42,43,46,61]
Poor control of asthma, often for weeks[41,43,46,49]
Inadequate assessment and treatment[41-43,49,51]
Clinical picture characterized by prolonged attack, exhaustion, muscle fatigue,* rising partial pressure of carbon dioxide, and sometimes hypokalemia[41,61,62]

*Physical signs of muscle fatigue may precede the onset of respiratory failure and may be useful in early diagnosis of need for ventilatory support.[61]

tients with large-amplitude circadian variations in airflow limitation does not appear to be related to the severity of an associated attack of asthma, and in fact, it often occurs during recovery from a mild to moderate episode.[44] Marked diurnal variation is a manifestation of bronchial hyperreactivity, the basic cause of which remains unknown. Treatment that reduces diurnal variation may decrease the risk of sudden death.[57]

Quality of Care

The increasingly accepted view that many deaths from asthma are due to inadequate or delayed treatment and are therefore potentially preventable is supported indirectly by the extent to which rates of death from asthma in different countries can be related to the availability of health care, which is crudely assessed by a survey of the per capita expenditure on health and the doctor–patient ratio (Table 1). The increased mortality from asthma among blacks in the United States[36] and South Africa,[63] and the disparity between expenditure on health and deaths from asthma in the United Kingdom and Australia may both reflect variations in the availability and quality of medical care for patients of differing socioeconomic status.

Prevention of Fatal Asthma

Although it has been stressed repeatedly that avoidable factors can be identified retrospectively in many patients who have died of asthma and that early institution of adequate therapy may save some lives, no definitive data are available to support these contentions. However, in the most detailed and well-planned evaluation of deaths in patients with asthma, avoidable factors were identified in the events that led to 82 percent of deaths.[51] When all the circumstances surrounding death were considered retrospectively by the investigating panel, death was considered to be unavoidable in only 11 percent of patients, either because the fatal attack was so sudden and progressed so rapidly that appropriate medical help could not be summoned in time or because there was an unavoidable delay in the arrival of such help.[51,52] In a few cases, death was attributed to a failure of response to adequate treatment. Other reports have emphasized that up to one quarter of deaths from asthma occur within 30 minutes of onset of the attack and that almost two thirds occur within eight hours.[42]

Because of these findings and the knowledge that many patients who die of asthma have not received adequate instruction about their disease or optimal therapy for it and that medical practitioners (even when they see the patient before death) often underestimate the severity of asthma attacks,[41,42,49] it is difficult to avoid the conclusion that improved patient and physician education about asthma is needed. If such education leads to a wider application of objective assessments of the severity of airflow limitation, the institution of appropriate therapy, and careful monitoring of response, it could have a major impact on mortality and morbidity from asthma. However, it remains possible that some deaths from asthma are unavoidable, that the prevalence of severe asthma may be increasing, and even that modern therapy may be one of several factors involved in some deaths.

Conclusions

Despite advances in knowledge about the pathophysiology, pathobiology, and other aspects of asthma and its treatment, death rates from asthma are increasing again.[34,36] This may reflect better recognition and reporting, a change in prevalence and severity, or both. It is clear from many reports, however, that good treatment is still being denied to many patients, especially those with limited access to medical care. These deficiencies are compounded by a failure[51,92] or a reluctance[93] among medical practitioners to diagnose asthma. Better education of patients and doctors, regular objective assessment of airflow obstruction (including the use of a home peak-flow meter) and its response to treatment, as well as self-admission services for patients suffering from acute exacerbations that do not respond to home therapy, may narrow the gap between what is known about the assessment and effective treatment of asthma and the application of this knowledge to patient care.[42,44,51,52,62,94] Available evidence, albeit indirect, suggests that such measures are effective.[95-97] For example, during a 10-year period, the rate of death from asthma among patients with access to the Edinburgh emergency asthma service was substantially lower (0.3 percent) than that among asthmatic patients who used other asthma services in Edinburgh (0.9 percent). In addition, intubation and mechanical ventilation were required less frequently.[97] In the absence of a controlled trial, which would probably be considered unethical, this circumstantial evidence is strong enough to encourage more widespread development of similar services.

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Pulmonary sarcoidosis – old problems and new insights

S.R. Benatar

Department of Medicine, University of Cape Town and Groote Schuur Hospital, Observatory 7925, Cape, South Africa.

Introduction

When Hutchinson described the skin disorder which he called Mortimer's malady (1869), Besnier coined the term 'lupus pernio' (1889) and Boeck that of 'sarkoid' (1899), they were describing what they considered to be a skin disease. By 1905 Boeck had recognized the generalized nature of the disease with its histological characteristic of tuberculoid granulomata, but it was not until the advent of mass radiographic surveys in the 1940s that the extent of pulmonary involvement became clear. Since then attention has increasingly focussed on this, the most common, manifestation of sarcoidosis. The fascinating historical background of sarcoidosis reviewed in several papers at the 5th International Sarcoid Conference in Prague[1] and the summary of historical landmarks in the first century of sarcoidosis[2] provide an interesting backdrop to our, as yet incomplete, perspective of this enigmatic disorder. The proceedings of the ten International Conferences on Sarcoidosis and recent books[3,4] are excellent reference sources on all aspects of this disease. In this brief review attention will be focussed on only some aspects of current interest.

Epidemiology

Sarcoidosis has a worldwide distribution, but is most often recognized in Westernized communities,[5] in which the estimated prevalence varies from less than 10 to over 100 per 100,000 population.[5,6] Despite lack of precise epidemiological data it is generally accepted that sarcoidosis is more common in Blacks than in Caucasians and that its incidence also differs markedly in neighbouring countries, such as Finland and Sweden. The clinical expression is also variable in different population groups; skin, joint and eye involvement are more common and more florid in Blacks than in Caucasians,[7–9] and cardiac sarcoidosis appears to be more common in the Japanese.[10] Sarcoidosis may occur at any age but is uncommon under the age of 15 years or over the age of 65 years. In a worldwide series, 68% of patients were under the age of 40 at the time of diagnosis. Women are slightly more often affected than men.[6]

The report of the Uppsala study, a milestone in our knowledge of the epidemiology of sarcoidosis in a community setting, highlighted the frequency, age and sex distribution of sarcoidosis and its generally benign course.[11] Triennial chest radiographs form part of the routine health screening procedure for people over 15 years of age in this county of Sweden (population ±250,000) and between the years 1963 and 1980 there was a 64% attendance. Five hundred and ninety five cases of sarcoidosis were identified between 1966 and 1980, 57% during routine health screening, 10% by chance and 32% in symptomatic patients. The overall incidence was 19 new cases per 100,000 population per year with a lifetime accumulative risk (between 20 and 70 years of age) of 0.9% in males and 1.3% in females.

Natural history

In the Uppsala study it was observed that, of patients with stage 1* sarcoidosis (61% of the total), 45% resolved spontaneously within one year, 50% by 15 months after diagnosis and 82.4% by 5 years. At the time of diagnosis 25% of patients had stage 2 chest radiographs and of these 21.7% resolved within the first year, 15% by 3 years and 68.3% by 5 years. Of the 10% of patients with stage 3 X-rays only 33% resolved within 5 years. During the 15 year follow-up period 17 of the 595 patients died, 4 due to respiratory failure resulting from sarcoidosis and 11 from cardiovascular disease.[11]

In a 10 year follow-up study of 147 patients in Italy, 81% of patients with stage 1 chest radiographs recovered and 19% developed stage 2 or 3 radiographs. Of these one third subsequently resolved completely. Complete chest X-ray recovery was noted in 48% of 53 white and 99 black patients

Correspondence: S.R. Benatar, F.R.C.P.

*Stage 1 = bilateral hilar lymphadenopathy. Stage 2 = bilateral hilar lymphadenopathy and parenchymal infiltration. Stage 3 = parenchymal infiltration.

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in a 9 year follow-up study in Philadelphia; this occurred more commonly when there was only lung involvement without extrathoracic disease and more frequently in whites than in blacks.[12] Because many selection factors may influence the spectrum of disease seen in hospitals and clinics,[13] the natural history of sarcoidosis is most accurately defined by observations in community based studies.[11]

Pathogenesis (Figure 1)

Although the aetiology of sarcoidosis remains unknown, the frequency of pulmonary and intrathoracic lymph node involvement suggests that an inciting agent acts initially on the lungs. Bronchoalveolar lavage and the use of modern immunological techniques have greatly enhanced our insight into pathogenetic mechanisms. The earliest cellular events include activation of pulmonary alveolar macrophages and T-lymphocytes.[14,15] These activated cells play a central role in directing the proliferation and activation of lymphocytes and fibroblasts, as well as contributing to metabolic features such as hypercalcaemia and elevated levels of serum angiotensin converting enzyme (SACE). Activated alveolar macrophages spontaneously release interleukin-1 which, in company with the HLA DR gene products expressed on their surface, stimulate chemotaxis and proliferation of T-helper cells within the lung.[15,16] T-helper cells further amplify the inflammatory response by secreting interleukin-2, which enhances the proliferation of further clones of T-helper cells,[17] increases the macrophage response by attracting blood monocytes into the lung through the release of a monocyte chemotactic factor, and stimulates B cells nonspecifically to produce immunoglobulins. Spillover of these into the systemic circulation gives rise to hypergammaglobulinaemia.[18]

The enhanced immune functions of T-lymphocytes are confined to the lung (and other sites of disease activity) and are not reflected in the peripheral blood where there is a relative lymphopenia with reduced T-helper cell numbers and a reduced T-helper/suppressor cell ratio.[17] This, together with a serum humoral lymphocyte inhibitory factor, is thought to account for cutaneous anergy.[19] The localization of T-suppressor cells mainly at the periphery of sarcoid granulomas, with T-helper cells predominating in the centre,[20] is thought to reflect an effective host response to foreign antigen, and is also observed in granulomas of tuberculosis and tuberculoid leprosy. By contrast in lepromatous leprosy where the host response is ineffective, T-helper and suppressor lymphocytes are distributed throughout the granuloma.[21] (see Corrin, this issue, *Postgrad Med J*, **64** (Suppl. 4) 17–25.

The events which may lead to fibrosis, initially within the granuloma and later more widespread, include the release by activated macrophages of fibronectin, alveolar macrophage derived growth factor, gamma interferon and other substances which enhance fibroblast chemotaxis and proliferation, and promote the synthesis of collagen and other constituents of fibrosis.[14] These processes, involving reciprocal activation of macrophages and T-helper/inducer lymphocytes, are subject to negative feedback control by such products as prostaglandin E, also secreted by activated alveolar macrophages.[22] Why fibrosis occurs in some

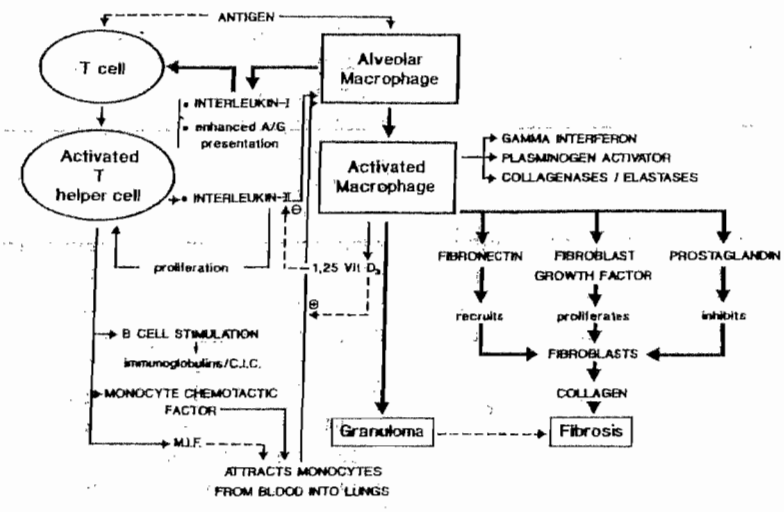


Figure 1 Pathogenesis of sarcoidosis. Reproduced with permission from Benatar, S.R. Pulmonary manifestations of sarcoidosis. *Medicine International* 1986, 2, 1483–1486. A/G = antigen; MIF = macrophage inhibiting factor: CIC = circulating immune complexes.

patients but not in others remains unexplained. There is some evidence to suggest that inherited host factors may influence the immune response and hence the clinical expression of sarcoidosis and its outcome.[23]

It is also now recognized that the disorder of calcium metabolism in sarcoidosis can be attributed to the acquisition by blood monocytes and granuloma macrophages of the unrestrained capacity to convert 25-hydroxy vitamin D_3 into the active 1,25-dihydroxy vitamin D_3, a reaction which in normal subjects is substrate limited and occurs only in the kidneys.[24,25] In addition to its metabolic effects on calcium metabolism, 1,25-dihydroxy vitamin D_3 also appears to have the ability to induce maturation of circulating monocytes into macrophage/epithelioid cells[26] and to inhibit interleukin-2 production by T-helper cells.[24] The influence of these actions on the course and natural history of sarcoidosis is not yet clear.

Indications for treatment and the influence of therapy on the natural history

Hypercalcaemia, severe constitutional upset, life-threatening organ involvement (e.g. central nervous system, heart or lungs) are undisputed indications for treatment with corticosteroids. Failure to resolve, in particular in association with the development of new lesions or progressive organ dysfunction, are also good reasons for instituting treatment. Because the majority of patients, in particular those with stage 1 or 2 chest radiographs, resolve spontaneously despite some clinical and biochemical evidence of 'activity' and because the few control studies which have been done suggest that the proportion of patients undergoing spontaneous resolution is not influenced by treatment,[27] the role of steroid therapy is unclear in patients with 'chronic stable disease'.[28,29] Clearly some are destined to resolve spontaneously while others will progress. The clinician is interested in identifying these sub-groups and in instituting treatment early in the hope that this will facilitate resolution and prevent the development of irreversible lung damage. This group constitutes the grey area between newly diagnosed asymptomatic patients with minimal organ dysfunction who clearly need no treatment in the first instance, and those with symptoms due to impaired organ (commonly lung) function where treatment is clearly indicated and is well known to influence favourably the adverse effects of the disease on lung function and symptoms.[28–30]

Important questions facing the clinician with regard to patients in the grey area are when to start treatment, what dose of corticosteroids to use, how long to continue, and how to monitor response.[28,29] Conventionally the progress of symptoms, extrathoracic manifestations (e.g. skin lesions), the chest radiograph and simple measures of pulmonary function have guided the clinican in prescribing and monitoring corticosteroid treatment.

More recently the advent of bronchoalveolar lavage, gallium-67 lung scanning and the recognition that SACE is elevated in sarcoidosis has led to great interest in determining whether these biochemical markers are of added value in identifying which patients to treat and in monitoring response. Although there have not been definitive studies capable of settling these questions, data is gradually accumulating to clarify the role of these investigations in the evaluation of disease activity, in monitoring the natural history and in influencing the institution or modification of steroid therapy.

Evaluation of 'activity'

Bronchoalveolar lavage (BAL)

The observation that patients with initial lymphocyte counts above 28% in BAL fluid have a greater propensity to develop progressive lung dysfunction than patients with lower lymphocyte counts,[30] has not been confirmed by subsequent investigators.[32,33] It should seem that elevated lymphocyte counts are common and are not necessarily predictive of progressive disease. Similarly, normal lymphocyte counts have been associated with subsequent radiographic improvement, suggesting that activity is not always reflected in BAL lymphocyte counts.[32,33]

Serial studies of BAL fluid in 73 young non-smoking patients with recent onset sarcoidosis (normal chest radiograph within the 3 months prior to the diagnosis), have shown that the initial BAL lymphocyte count was not of predictive value. However, if still elevated 12 months after the initial study, this was predictive of failure to resolve spontaneously over the subsequent 12 months as compared with patients whose BAL lymphocyte count has returned to normal in the first year.[33]

Costabel found that of 15 patients with normal T_4/T_8 lymphocyte ratios in initial BAL studies, 10 patients improved, 3 remained stable and 2 deteriorated over an 18-month period. In comparison, of 16 patients with elevated T_4/T_8 ratios (over 3.5) followed up over 21 months, 3 improved, 3 remained stable and 10 deteriorated. Increased T_4/T_8 ratios were associated with more deterioration regardless of the initial chest radiograph stage.

Increased T_4/T_8 ratios provided an 83% sensitivity in detecting deterioration but only 68% specificity. When coupled with elevated Ia antigen-positive activated T-cells the specificity of a raised ratio increased to 89% but the sensitivity fell to 75%.[34]

Serial studies of BAL fluid in patients exposed to foreign antigens but without clinical, radiographic or lung function evidence of extrinsic allergic alveolitis have also shown that there may be continuing active alveolitis for several years on BAL criteria without the development of clinical disease.[35]

The relevance of BAL lymphocytosis and of altered subset ratios in relation to the natural history of sarcoidosis and extrinsic allergic alveolitis, will remain unclear until data from further longitudinal studies are available.

The level of neutrophils in BAL fluid has been found to correlate with increased radiographic profusion scores in particular in patients with long-standing sarcoidosis and evidence of fibrotic distortion of lung.[32,36] High neutrophil counts also correlate with reduced vital capacity and carbon monoxide transfer factor.[32,36]

^{67}*Gallium uptake*

The uptake of gallium into the lungs is by no means specific for sarcoidosis and hence is of little value diagnostically.[37,38] Extrathoracic uptake may, however, be helpful in identifying potential biopsy sites.[39] There is conflicting data regarding the use of gallium uptake for predicting the natural history of sarcoidosis. In their serial studies of 32 patients with persisting pulmonary sarcoidosis, Turner-Warwick and colleagues observed that initial gallium uptake measurements were not predictive of the subsequent course.[32] They observed that in some symptom-free patients with normal or stable radiographic appearances no clinical deterioration occurred despite persistently elevated gallium uptake (as well as abnormal lavage lymphocyte counts and elevated SACE). They did, however, observe that with radiographic clearing, gallium uptake tended to diminish and that, conversely, radiographic relapse was commonly associated within increasing gallium uptake. Others have confirmed a strong correlation between gallium uptake and elevated SACE levels.[40]

In a study of 25 black patients followed for a mean $4\frac{1}{3}$ years (range 1 to 10 years) it was observed that initially low gallium uptake was associated with subsequent reduction in vital capacity of 2.6% (range −22% to +21%) as compared with strongly positive initial gallium uptake which was associated with a mean reduction in vital capacity of 12.7% (range −42% to +24%). When gallium uptake became normal during treatment, there was a mean increase in vital capacity of 16.5%.[38]

Serum angiotensin converting enzyme (SACE)

SACE is commonly elevated in patients with sarcoidosis and less commonly in patients with other interstitial lung diseases such as silicosis and miliary tuberculosis.[41–43]. It is rarely elevated in cryptogenic fibrosing alveolitis, extrinsic allergic alveolitis or non-miliary forms of tuberculosis.[42] The sensitivity, specificity and predictive value of elevated SACE levels as a diagnostic test for sarcoidosis are dependent on several factors, including the prevalence of sarcoidosis in the community being studied and the incidence of other diseases resembling sarcoidosis in which elevated levels may occur.[42,43]

Regarding the value of SACE in predicting the natural history and monitoring therapy, the following broad generalizations can be made. Many patients with asymptomatic or mild sarcoidosis have elevated levels at presentation. Spontaneous remission is usually associated with falling levels. On the other hand symptom-free patients with normal or stable radiographic appearances may retain persistently abnormal SACE levels. The significance of this is not yet clear, and may reflect non-pulmonary granulomatous load.[43] Longer periods of follow-up will allow interpretation of the significance of persistently elevated SACE levels in the absence of clinical deterioration. Monitoring SACE levels during therapy may be helpful in that as therapy is tapered clinical deterioration may be pre-empted by rise in SACE.[43–45] This has been observed more consistently by some authors[43,45] than others.[32,41]

Correlation of BAL, ^{67}*gallium uptake and elevated SACE*

Turner-Warwick and colleagues studied 32 asymptomatic patients with sarcoidosis but persisting radiographic changes for 12–18 months, and in whom therapy was instituted because of failure of spontaneous radiographic improvement during this time.[32] Serial BAL, gallium and SACE studies were performed. The results were not used to influence therapy and were subsequently analysed to determine their correlation and predictive value. Of the 32 patients, 12 showed complete clearing of the chest radiograph, 7 showed partial clearing but with persisting profusion score and 13 showed partial clearing but with persisting linear shadows and evidence of contraction. Eleven of these latter patients also had a persistent profusion score. There was no statistical difference in the degree of abnor-

mality of SACE, gallium uptake and BAL lymphocyte counts in these patients at the onset or during treatment and follow-up and it was concluded from this study that none of these measurements are more sensitive than serial high quality chest radiographs and standard lung function tests in monitoring patients with sarcoidosis during treatment.[32]

This is an important study, but as indicated by the authors was not designed to fully answer all 3 questions commonly asked, i.e.: (1) does activity as indicated by these indices imply the need for treatment? (2) can abnormalities in these measurements be used to titrate the dose of steroids during treatment? and (3) do they provide an early and sensitive indicator of reactivation during withdrawal of treatment?

The study does, however, make it clear that it is not possible, on the basis of currently available data, to consistently rely on these measurements to answer such questions and that at best abnormalities need to be interpreted together with clinical and radiographic information, rather than in isolation.

Implications for the practising clinician

Sarcoidosis is a common disease which resolves spontaneously in most patients. Initial measurements of SACE, gallium uptake and BAL lymphocytes are often abnormal but these do not predict that spontaneous resolution will not occur. On the contrary, most cases resolve spontaneously and this will generally be associated with falling levels of SACE, normalization of gallium uptake and reduction in bronchoalveolar lavage lymphocyte counts. Persisting abnormalities in patients undergoing radiographic resolution are of uncertain significance. A small group of patients will fail to resolve, retain stable radiographic abnormalities, and persisting abnormalities of SACE and/or gallium uptake and/or BAL lymphocytes. There is some evidence to suggest that such persisting abnormalities, like failure of clinical resolution, are associated with less freqent subsequent complete resolution. Whether they provide additional prognostic information over and above clinical features is still not absolutely clear but they have shown less promise than anticipated from some of the earlier studies. Patients with progressive disease almost invariably have persisting abnormality of at least some of these measurements. These generally improve on treatment, and relapse on withdrawal of treatment may be predicted by recurrence of abnormalities. Gallium uptake is unlikely to be used serially in clinical practice because the dose of radiation precludes frequently repeated measurements. Bronchoalveolar lavage is too invasive for routine evaluation of progress. By contrast, measurement of SACE is simple, cheap, and easily repeated and there is accumulating evidence to suggest that it is a useful adjunct to clinical assessment, chest radiographs and pulmonary function tests in following the natural history and titrating treatment with corticosteroids.[43,45]

Atypical pulmonary manifestations of sarcoidosis[46–50]

Less common but well recognized pulmonary manifestations of sarcoidosis are listed in Table I. Care must be taken to distinguish these unusual appear-

Table I Less common pulmonary manifestations of sarcoidosis[46–50]

Pleural sarcoidosis
Present in 5–7%
Effusions occur in ±2%, usually small and painless – other causes must be excluded
Pneumothorax
Uncommon – can result from necrosis of a subpleural granuloma or rupture of a bulla
Nodular lesions
Occur in 2–4%
May be poorly or well defined – sometimes resembling metastases
Unilateral infiltrates
Occasionally – other more common causes must be excluded
Bronchial stenoses
Occur in less than 2% and may be in main, lobar or segmental bronchi (non-stenosing mucosal granulomas are very common)
Bullae
Small or moderate size in ±5% of patients. More rarely large
Pathogenesis
destruction of lung tissue, and ischaemic necrosis
coalescence of smaller bullae
ball valve effect from endobronchial lesions
Vascular involvement
Rare
necrotizing sarcoid granulomatosis involving pulmonary arteries
involving pulmonary veins and simulating pulmonary veno-occlusive disease
Cor pulmonale
Usually results from extensive fibrosis in long-standing sarcoidosis
Occasionally results from involvement of the pulmonary vessels in the absence of extensive fibrosis

ances in sarcoidosis from their other more common causes. It is, however, also important to recognize them as part of the spectrum of this disease.

Treatment

There is general agreement that corticosteroids have a suppressive effect on sarcoid granulomas and may hasten resolution in those patients with acute sarcoidosis destined to resolve spontaneously. Corticosteroids also alleviate symptoms and slow progression of the disease in patients with chronic sarcoidosis.[28–30] There remains controversy as to whether the development of fibrosis can be prevented and whether the long term outcome can be modified by the institution of early corticosteroid treatment. When treatment is indicated an initial dose of prednisolone, 40 mg/day, is usually adequate and can be reduced to the usual maintenance dose of 10–15 mg/day within a few months. There is an increasing tendency to use alternate day therapy either after an initial period of daily treatment or *ab initio*. The duration of treatment may be short in patients with hypercalcaemia or severe systemic symptoms in acute sarcoidosis, but needs to be continued for 1 to 2 years or even indefinitely in patients with chronic progressive disease.[30] Measurements of forced expiratory volume in one second, vital capacity and transfer factor in conjunction with symptoms and radiographic changes are the standard guides for assessing response. Of the new indices of disease activity only measurement of SACE can be recommended as of possible additional value for the practising physician. The other investigations remain experimental and *sub judice*.

Prognosis

Almost 80% of patients with sarcoidosis who present with an acute illness characterized by bilateral hilar lymphadenopathy, erythema nodosum, arthralgia and fever, will recover spontaneously over 2 to 3 years. The remainder will either fail to resolve or show progressive organ dysfunction. The latter course may also be seen in patients in whom no initial acute illness has been recorded. While most patients with such chronic sarcoidosis have, as their major abnormality, progressive pulmonary fibrosis sometimes with, but often without, associated sarcoid skin lesions, bone cysts and chronic uveitis, a minority will have central nervous system, cardiac or other organ involvement as the major abnormality.[6–9] Long term follow-up studies have confirmed that spontaneous resolution is less likely to occur in patients with extrathoracic disease than in those with intrathoracic disease only.[12] About 2% of patients will die directly as a result of sarcoidosis. Respiratory failure, cor pulmonale and haemoptysis in association with aspergillomas are the commonest causes of death, with myocardial sarcoidosis and central nervous system involvement accounting for a small proportion.[47] Careful studies are needed on well classified groups of patients and, if possible, in the community setting, to further clarify the role of gallium uptake, BAL data and SACE in predicting outcome, determining the need for, and the influence of treatment on short and long term prognosis.

Addendum

Attention is drawn to three papers published subsequent to completion of this manuscript; a detailed report on current concepts of pathogenesis of sarcoidosis,[51] further follow-up BAL studies in patients with farmer's lung showing that neither high lymphocyte alveolitis nor lymphocyte subsets are predictive of the development of extrinsic allergic alveolitis,[52] and a report of the role of HLA-DR antigens in Japanese patients with sarcoidosis.[53]

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Miliary Tuberculosis: Rapid Diagnosis, Hematologic Abnormalities, and Outcome in 109 Treated Adults

GARY MAARTENS, M.B., Ch.B., F.C.P.(S.A.), PAUL A. WILLCOX, M.B.Ch.B., M.R.C.P.(U.K.), SOLOMON R. BENATAR, M.B., Ch.B., F.F.A.(S.A.), F.R.C.P., *Cape Town, South Africa*

PURPOSE: **The purpose of this study was to determine the clinical and laboratory characteristics, diagnostic methods, and prognostic variables in adults treated for miliary tuberculosis in the rifampicin era.**

PATIENTS AND METHODS: **Computerized records of our community-based university teaching hospital over a 10-year period (1978 to 1987) were analyzed. A total of 109 patients were identified, including 12 who did not have miliary nodules on the chest radiograph (all of whom were shown to have hematogenous dissemination). Predisposing conditions were present in 46 patients.**

RESULTS: **Clinical features were similar to those of previously reported series. Hematologic abnormalities were common: leukopenia (less than 4×10^9/L) was present in 16 of 107 patients (15%), thrombocytopenia (less than 150×10^9/L) in 24 of 104 (23%), and lymphopenia (less than 1.5×10^9/L) in 82 of 94 (87%). Pancytopenia was found in six patients, three of whom recovered. Disseminated intravascular coagulation occurred in four patients, all of whom died. Adenosine deaminase levels were elevated in only seven of 11 serosal exudates and in seven of 12 samples of abnormal cerebrospinal fluid. Fiberoptic bronchoscopy was diagnostic in 44 of 51 patients (86%), bone marrow examination in 19 of 22 (86%), and liver biopsy in all 10 patients. Twenty-six patients (24%) died of miliary tuberculosis a median of 6 days after starting treatment. Survivors were followed up for a median of 51 weeks. Stepwise logistic regression identified age (greater than 60 years), lymphopenia, thrombocytopenia, hypoalbuminemia, elevated transaminase levels, and treatment delay as independent predictors of mortality.**

CONCLUSIONS: **Miliary tuberculosis commonly causes hematologic derangements, some of which are helpful prognostically. Fiberoptic bronchoscopy compares favorably to liver and bone marrow biopsy in sputum smear-negative cases. Mortality remains high and treatment should be begun as soon as the diagnosis is suspected.**

Miliary tuberculosis is defined as hematogenous dissemination of *Mycobacterium tuberculosis* resulting in widespread visceral tubercles, usually the size of millet seeds (1 to 2 mm) and frequently caseating [1,2]. Miliary nodules may not be visible on the chest radiograph, leading to delayed or missed diagnosis with fatal consequences [3,4]. This form of the disease has been termed cryptic miliary tuberculosis [5], and is a diagnostic challenge even in areas where tuberculosis is common and physician awareness consequently high [6,7]. Acid-fast bacilli (AFB) are found in the sputum in about one third of cases [8], and biopsy specimens of liver or bone marrow are frequently needed to make a rapid diagnosis [9]. High yields have also been obtained with bronchoscopy [10].

Developed countries have recently experienced an increased incidence of tuberculosis. In the United States, epidemiologic evidence indicates that this is largely due to human immunodeficiency virus infection [11]. Disseminated tuberculosis, often with a cryptic presentation, is particularly common in the acquired immunodeficiency syndrome (AIDS) [11]. In South Africa, AIDS is still uncommon [12], but tuberculosis is very common, with annual notification rates ranging between 312 and 370/100,000 population from 1981 to 1985 in Cape Town [13].

This retrospective study was undertaken to analyze the clinical and laboratory characteristics, methods of diagnosis, and outcome in patients with miliary tuberculosis in an endemic area in the pre-AIDS era.

PATIENTS AND METHODS

The records of patients over 12 years of age diagnosed as having miliary tuberculosis and treated for this at Groote Schuur Hospital in the 10-year peri-

From the Department of Medicine and Respiratory Clinic, Groote Schuur Hospital and University of Cape Town, Cape Town, South Africa. Requests for reprints should be addressed to Solomon R. Benatar, M.B.Ch.B., F.R.C.P., University of Cape Town, Department of Medicine, Medical School—Observatory 7925, Cape Town, South Africa.

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TABLE I

Predisposing Conditions

Condition	%	Remarks
Alcoholism	16	2 with confirmed cirrhosis
Pregnancy/postpartum	8	Within 1 month of delivery
Diabetes mellitus	4	All non-insulin-dependent
Iron overload*	4	Includes 1 diabetic and 1 alcoholic
Steroids	6	3 transplant recipients receiving other immunosuppressives
SLE	3	2 receiving steroids
Hematologic	4	2 myelofibrosis, 1 lymphoma, 1 myelodysplasia
Miscellaneous	3	Resolving glomerulonephritis, chronic active hepatitis (both receiving steroids), chronic renal failure
Total	42	

SLE = systemic lupus erythematosus.
* Dietary iron overload of a type that is common in Southern Africa [14].

od between 1978 and 1987 were reviewed. Miliary nodules on chest radiograph were considered indicative of hematogenous dissemination. When this radiographic feature was not present, autopsy or biopsy evidence of miliary organ involvement was the criterion for inclusion in this retrospective study. When available, the chest radiograph was reviewed by the authors. In all other cases, the recorded reports of radiologists and chest physicians were used. All bacteriologic and histologic attempts to confirm the diagnosis were noted. Details of follow-up were obtained from records of the local tuberculosis hospital and tuberculosis clinics, or by correspondence with referring centers.

Statistical Analysis

Clinical characteristics of patients dying of miliary tuberculosis were contrasted with those of the survivors. To investigate the association between outcome and the categoric variables (e.g., presence of a certain symptom), the chi-square test was used. When the expected number of cases in the cells was less than five, Fischer's exact probability was calculated. Student's t-test (two-tail) was used to determine whether the levels of the continuous variables (e.g., age) were different in the two groups; in cases in which the distributions were extremely skewed or in which there were a few outlying variables, the Mann-Whitney U test was used. If, in addition to a skewed distribution, there were many tied observations, the median test was used. Univariate analysis was performed with SAS software. Stepwise logistic regression using BMDP software was then done, excluding those variables (tuberculin skin tests and cerebrospinal fluid [CSF]) that were only available for small numbers of patients.

RESULTS

Patient Characteristics

One hundred nine patients met the inclusion criteria; 53 were women and 56 men, with a mean age of 44 years (range: 13 to 80 years). Seven patients were white, 53 of mixed race, and 49 black. Thirteen patients had previously had tuberculosis and 13 were in recent contact with tuberculosis. Predisposing conditions are outlined in **Table I.** Forty women were of child-bearing age, of whom eight had other predisposing conditions and nine were pregnant.

Clinical, Hematologic, and Biochemical Data

Symptoms, physical signs, and the results of laboratory investigations are summarized in **Table II.** The median symptom duration was 4 weeks (range 1 to 52 weeks). Tuberculin skin tests were positive in 20 of 47 recorded cases (43%). Pancytopenia occurred in six patients, three of whom recovered hematologically. Disseminated intravascular coagulation (DIC) occurred in four patients, all of whom died. Adenosine deaminase levels were elevated in seven of 11 serosal exudates and in seven of 12 samples of CSF. Serum angiotensin-converting enzyme was mildly elevated in 10 of 22 patients.

TABLE II

Clinical and Laboratory Data

	% Present	No. Tested
Symptoms		
Constitutional (weight loss, fever, malaise)	92	109
Respiratory	72	109
Central nervous system	25	109
Abdominal	21	109
Musculoskeletal	13	109
Signs		
Fever prior to onset of treatment	96	107
Lymphadenopathy (localized)	21	109
Chest signs (predominantly crackles)	72	109
Neurologic	20	109
Hepatomegaly	52	109
Splenomegaly	15	109
Serositis (clinical and ultrasonic)	38	109
Choroidal tubercles	<2	109
Other (epididymo-orchitis, subcutaneous abscess, arthritis)	13	109
Hematology		
Anemia (Hb <13 g/dL in males, <11 in females)	52	107
Leukopenia ($<4 \times 10^9$/L)*	15	107
Leukocytosis ($>11 \times 10^9$/L)	14	107
Neutrophilia ($>7 \times 10^9$/L)	20	94
Neutropenia ($<2 \times 10^9$/L)	7	94
Lymphopenia ($<1.5 \times 10^9$/L)	87	94
Monocytosis ($>0.8 \times 10^9$/L)	6	94
Thrombocytopenia ($<150 \times 10^9$/L)	23	104
Thrombocytosis ($>400 \times 10^9$/L)	24	104
Biochemistry		
Hyponatremia (<135 mmol/L)	78	105
Hyperbilirubinemia	15	104
Hypercalcemia (after correction for albumin level)	0	102
Mild transaminitis	42	104
Elevated alkaline phosphatase	83	104

Hb = hematocrit.
* Includes three Africans with white blood cell counts at the lower limit of normal for race [16], but all increased to greater than 4×10^9/L with treatment.

Chest Radiographs

We personally reviewed 54 chest radiographs, paying particular attention to the rib spaces [15]. Our observations concurred closely with the original reports. The miliary infiltrate was atypical (predominant reticular pattern or variable size of nodules) in 21 patients. Twelve patients did not have miliary nodules on the chest radiograph.

Other common features included pleural reactions in 30 patients (bilateral in three), hilar or mediastinal lymphadenopathy in 10, previous tuberculosis in nine, confluent shadowing in eight, cavities in two, and one spontaneous pneumothorax. In 20 patients, follow-up chest radiographs to resolution were available. Resolution was complete in 17 patients and virtually complete in three. The mean time to resolution was 18.7 weeks (range: 1 to 44 weeks). In four patients with normal chest radiographs on admission, miliary nodules developed within a few weeks.

TABLE III

Bacteriologic Analysis of Body Fluids

Specimen Type	Ziehl-Neelsen Stain: Patients	Ziehl-Neelsen Stain: AFB Present (%)	Mycobacterial Culture: Patients	Mycobacterial Culture: Positive (%)
Sputum	64	21 (33)	13	8 (62)
Gastric lavage	7	3 (43)	4	4 (100)
Urine	22	3 (14)	6	2 (33)
CSF*	24	2 (8)	20	12 (60)
Serosal exudate†	18	1 (6)	18	8 (44)
Bronchial brushings/lavage	51	14 (27)	44	24 (55)
Pus swab	3	1 (33)	3	3 (100)
Joint	2	0	2	1 (50)

* Stains and culture done only on abnormal CSF.
† Nine ascites, seven pleural, and two pericardial.

Diagnostic Investigations

Bacteriologic and histologic attempts at confirming the diagnosis are outlined in **Tables III** and **IV**. Lumbar puncture was performed in 36 patients. There was no clinical evidence of meningitis in 15 patients and 10 of these had normal CSF. In the 24 abnormal CSFs, the median white blood cell count was 76 cells/mm^3 (range: 6 to 520/mm^3). Lymphocytes predominated in only 50%. Glucose was normal in only one CSF and the protein was normal in six.

Fiberoptic bronchoscopy in 51 patients gave a rapid diagnosis (AFB and/or the presence of granulomata) in 76%. Five more cases were positive on culture only, and the overall yield of the procedure was 86%. Bone marrow biopsy in 22 patients gave a rapid diagnosis in 82%, with an additional case positive on culture only (overall yield 86%). Granulomata were found in all 11 patients with leukopenia and/or thrombocytopenia.

Overall, a rapid diagnosis was achieved in 83%. Five more patients were diagnosed by means of culture only and seven at autopsy. Seven patients diagnosed on clinical grounds were included in the study; all had classical miliary nodules on chest radiograph and three had abnormal CSF. The six survivors all had a good clinical response to treatment.

Treatment and Outcome

All patients received therapy, which consisted of isoniazid, rifampicin, and pyrazinamide—and virtually all received a fourth drug as well (ethambutol or streptomycin). Median duration from admission to commencement of treatment was 2 days (range: 1 to 36 days). Temperature response could be adequately assessed in 55 patients. Median duration for complete resolution of pyrexia was 7 days (range: 1 to 55 days) and 76% were afebrile within 14 days. Twenty-eight patients died while receiving treatment; this was due to miliary tuberculosis in 26. Median time from commencement of treatment to death was 6 days. Twenty-two patients died within 2 weeks of the start of treatment. The 83 survivors were followed up for a median of 51 weeks (range: 1 to 435).

Tables V and **VI** show the characteristics of the survivors as compared with those who died of miliary tuberculosis. Meningitis, as defined by abnormal CSF, did not predict mortality. Even when central nervous system (CNS) signs, symptoms, and abnormal CSF were considered together, mortality

TABLE IV

Biopsy Results

Specimen	Number	Granulomata (%)	Caseation	AFB	Culture Positive/ Number Analyzed
Transbronchial	48	30 (63)	20	13	12/23
Bone marrow	22	18 (82)	9	0	3/14
Liver	11†	11 (100)	5	3	2/4
Lymph node	9	9 (100)	9	5	1/1
Serosal*	9	5 (56)	5	2	ND
Spinal	5	3 (60)	2	1	ND

AFB = acid-fast bacilli on Ziehl-Neelsen stain; ND = not done.
* Six pleural, two pericardial, and one peritoneal
† Includes one postmortem biopsy

TABLE V

Comparison of Continuous Variables in Survived/Died Groups

Variable (Number of Patients Tested)	Survived (n = 83) Mean (± SD) or Median (25th–75th centile)	Died (n = 26) Mean (± SD) or Median (25th–75th centile)	p Value
Age (109)	41.5 (± 16.3)	50.8 (± 15.3)	0.012
Temperature (107)	38.9 (± 0.9)	38.6 (± 1.1)	0.149
Symptom duration (106) (weeks)	4 (2.8–12)†	5 (3.25–12)†	0.917‡
Hemoglobin (107) (g/dL)	11.7 (± 2.4)	11.3 (± 2.8)	0.51
White blood cell count (107) ($\times 10^9$/L)	7.4 (5.3–8.9)†	6.7 (3.9–8.7)†	0.399
Lymphocytes (94) ($\times 10^9$/L)	0.87 (0.54–1.22)†	0.31 (0.19–0.49)†	0.001
Neutrophils (94) ($\times 10^9$/L)	5.8 (3.6–7.1)†	6.0 (3.1–7.8)†	0.731
Platelets (104) ($\times 10^9$/L)	302 (± 155)	181 (± 116)	0.001
ESR (93) (mm/hour)	60 (40–102)†	20 (12–60)†	0.001
Sodium (105) (mmol/L)	132 (± 5.2)	129 (± 7.2)	0.03
Albumin (104) (g/L)	29 (25–32)†	23 (20–27)†	0.003‡
Transaminase* (104)	1 (1–2)†	2 (1–3)†	0.012‡
Alkaline phosphatase* (104)	2 (2–3)†	2 (2–5)†	0.441‡
Days to treat (106)	1 (1–6)†	3 (1–6.5)†	0.057‡

* Expressed as x normal.
† Median.
‡ Denotes median test; see Patients and Methods.

was not significantly increased. The statistically significant finding of increased mortality in the patients with cryptic miliary tuberculosis is presumably due to diagnostic difficulties and consequent treatment delay (median time from admission to treatment was 5.5 days in the cryptic group compared with 1 day in the remainder; p = 0.02 by median test).

Relative risks (RR) and 95% confidence intervals (CIs) were determined on the categoric variables. The results for those variables showing a p value <0.05 are as follows: abdominal symptom RR 2.35, CI 1.23 to 4.44, and non-miliary chest radiograph RR 2.98, CI 1.59 to 5.55.

Stepwise logistic regression revealed six independent predictors of mortality: age (greater than 60 years), lymphopenia, thrombocytopenia, hypoalbuminemia, elevated transaminase levels, and treatment delay. Alcoholism was not significantly related to mortality, and elevated transaminase levels were thus not an indicator of this predisposing condition.

TABLE VI

Comparison of Categoric Variables in Survived/Died Groups

Variable	Survived (n = 83) (% Present)	Died (n = 26) (% Present)	p Value
Predisposing condition	41	46	0.64
Constitutional symptom	92	92	1*
Respiratory symptom	72	69	0.763
CNS symptom	27	19	0.453
Abdominal symptom	16	38	0.013
Musculoskeletal symptom	13	12	1*
Lymphadenopathy	23	15	0.413
Chest signs	67	85	0.091
CNS signs	22	15	0.485
Hepatomegaly	51	58	0.528
Splenomegaly	13	19	0.527*
Serositis	33	54	0.05
Non-miliary chest radiograph	6	27	0.007*
Abnormal CSF	70†	56	0.443*
Negative tuberculin skin test	51‡	100	0.031*

* Denotes Fischer's exact test (two-tail); see Patients and Methods.
† CSF was abnormal in 24 of 36 patients in whom it was examined.
‡ Tuberculin skin testing was done on 47 patients, only 6 of whom came from the group who died.

Complications

Ten patients had CNS complications (eight with seizures and three with hydrocephalus requiring shunting). The adult respiratory distress syndrome occurred in seven patients, deep vein thrombosis or pulmonary embolism in five, pericardial tamponade in two, and Addison's disease in one. One patient presented with acute renal failure before the onset of therapy, two patients had septicemia, and one patient (with pancytopenia) had autopsy-diagnosed disseminated candidiasis.

COMMENTS

Tuberculosis notifications in our area by race [13,17] were similar to the racial distribution in our series. This does not support the view that blacks are at risk for hematogenous dissemination [8,18]. We have been able to confirm previous observations that pregnancy is a predisposing factor [1,8,18]. Iron overload is also known to cause susceptibility to a variety of infections [19]. A higher incidence of tuberculosis has been suggested in dietary iron overload [14], and the presence of this disorder in four of our patients is of interest.

Clinical data in our patients were similar to those in other series [7,8,18], but we recorded a higher incidence of serositis. Many of these cases were, however, detected only by chest radiograph, ultrasound, or autopsy, and the frequency we found was similar to that of postmortem series [2,20]. Choroi-

TABLE VII

Bone Marrow and Liver Biopsy in Miliary Tuberculosis

	Liver Biopsy			Bone Marrow Biopsy			
	Granulomata	Caseation	AFB	Granulomata	Caseation	AFB	Reference
	12/13 (92)*	NS	3	15/21 (71)	NS	5	[7]
	21/23 (91)	11	11	13/25 (52)	2	6	[9]
	31/38 (82)	14	NS	2/2 (100)	2	2	[43]
	5/5 (100)	NS	NS	4/5 (80)	NS	2	[15]
	3/4 (75)	NS	3	5/8 (63)†	NS	1	[42]
	15/17 (88)	10	5	3/6 (50)	2	3	[44]
	11/11 (100)	5	5	18/22 (82)	9	3	This study
Total	98/111 (88)	40/89 (45)	27/68 (40)	60/89 (67)	15/55 (27)	22/89 (25)	

AFB = acid-fast bacilli on culture or Ziehl-Neelsen stain; NS = not stated.
* Values in parentheses are percentages.
† Nine biopsies were performed, but one was inadequate.

dal tubercles are frequently found in children [21] but seldom in adults [2,8,18].

Hematologic abnormalities in miliary tuberculosis are well recognized but of controversial significance [22]. The anemia of chronic disorders is frequently found, and leukopenia and thrombocytopenia are not uncommon [6–9,18,20,22]. DIC may occur [23], often in association with the adult respiratory distress syndrome [24–26]. There are isolated case reports of patients recovering from pancytopenia [23,27–29], but serious hematologic disorders subsequently developed in two cases [28,29], raising doubts about whether miliary tuberculosis is a cause of reversible pancytopenia. However, an immune-mediated mechanism of bone marrow suppression has been demonstrated [30], and our observations support the contention that miliary tuberculosis can cause reversible pancytopenia. The few recorded survivors with pancytopenia and the high mortality when DIC occurs, emphasize the severity of disease when these are present and reflect their prognostic value. Lymphocyte and platelet counts were both significantly lower in those who died of miliary tuberculosis in this study. In pulmonary tuberculosis, cytopenias are uncommon while reactive thrombocytosis and leukocytosis are frequently present [31].

Biochemical derangements (Table II) are common [7,8]. Hypercalcemia has been recorded in miliary tuberculosis [32], but is clearly uncommon. Some studies have suggested high sensitivity and specificity of adenosine deaminase levels in tuberculous serosal exudates [33,34] and CSF [35], but this is not supported by other investigators [36,37] and the test proved disappointing in our series. Modestly elevated serum angiotensin-converting enzyme activity has been reported in disseminated but not localized tuberculosis [38].

We have shown that delayed treatment in miliary tuberculosis is associated with increased mortality. There is thus a need for rapid diagnosis, but treatment should be begun in severely ill patients as soon as the diagnosis is considered. Sputum and urine are smear-negative in the majority of cases. Lumbar puncture should be done if clinically indicated. Abnormal CSF is a strong pointer to the diagnosis and AFB can often be seen if large volumes are centrifuged [39]. Biopsy of accessible lymph nodes or serosal surfaces has a high yield (Table IV).

Frequently, however, these sources are unavailable or not diagnostic. In this situation, biopsy specimens of liver or bone marrow, or fiberoptic bronchoscopy, have a high yield. When other causes of diffuse chest radiograph abnormalities are likely, particularly in immunocompromised patients, fiberoptic bronchoscopy is clearly the investigation of choice. The procedure has a low mortality of 0.01% [40] (similar to that of Menghini needle liver biopsy [41]). Bone marrow and liver biopsy are more widely available, and studies reporting both investigations are shown in **Table VII** [42–44]. Liver biopsy has the highest yield, but bone marrow biopsy should be considered first, as it has a lower morbidity and mortality. We and others [9] have shown that granulomata are usually found in the bone marrow if leukopenia or thrombocytopenia is present. The yield of bone marrow aspirate culture is low [8,9,18], but one study reported a yield of 89% [45].

There are many causes of granulomata in bone marrow, liver, or lung [46–48], but the presence of caseation or AFB is virtually diagnostic of tuberculosis. In pulmonary tuberculosis, granulomata are found in 25% of liver biopsy specimens [49], but not in bone marrow [31].

This is the first large series examining the response of miliary tuberculosis to treatment that includes rifampicin. The introduction of isoniazid led to a dramatic reduction of mortality in miliary tuberculosis, largely due to its efficacy in meningeal involvement [50]. The impact of rifampicin on mortality is more difficult to assess, as the series are not comparable, but response (as reflected by time taken to defervesce) was faster than with older treat-

ment regimens [18]. Most deaths in our series occurred within 2 weeks of admission, re-emphasizing the fact that patients often present late in the natural history, and so there is a need to institute treatment as rapidly as possible.

New radiometric methods of mycobacterial culture dramatically shorten the time to positive cultures [51], and this may obviate the need for obtaining histologic proof as frequently as was necessary in this study. Unfortunately, expense will preclude widespread use of this technology in the Third World, where tuberculosis is endemic.

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3. Asbestos-induced lung disease

S. R. Benatar E. D. Bateman

INTRODUCTION

The word asbestos derives from the Greek word 'asbesta' which means unextinguishable or inconsumable. Asbestos has been known and used by man for thousands of years, but large scale production only commenced during the industrial revolution when the discovery of extensive deposits, coupled with the need for efficient insulation of the newly invented steam engine, led to its greater exploitation. Annual world production rose from 50 tons per year in 1877 to over five million tons by the mid-1970s.

The great value of asbestos is based on its fibrous nature and heat-resistant properties. It exists in two forms with different physical and chemical properties. Serpentine asbestos (chrysotile, or white asbestos — predominantly hydrated magnesium silicate), found in seams close to the earth's surface, constitutes 93% of world production. Its long, pliable fibres make it suitable for weaving and it is used extensively in the textile industry. In contrast, the amphiboles, which include crocidolite (blue asbestos), amosite (brown asbestos), anthophyllite and tremolite (all hydrated, predominantly ferrous-ferric silicates), constitute only 7% of world production. The major world producers of asbestos are Canada (42%), the USSR (26%), Europe and other countries (18%), South Africa (6%) and the USA (4%), while major users are the USSR (33%), the USA (27%) and Europe (26%) (Becklake, 1976).

Although 70% of all asbestos produced goes into cement production, it is put to almost 3000 other uses, the most important of which are fire-proofing, manufacture of brake linings and other friction materials, paper products, textiles, pressure pipes, plastic reinforcements, filters in the chemical industry and insulation in the shipbuilding industry. Crocidolite and amosite, (mined almost exclusively in South Africa), are used for marine insulation because of their resistance to sea water, acids and alkalis.

Pulmonary fibrosis was the first health hazard of asbestos exposure to be suspected in the early 1900s, and this association was confirmed over the next 25 years. The relationship of asbestos exposure to lung carcinoma and mesothelioma, suspected in the late 1920s and 1930s, was confirmed in 1950 and 1960 respectively. Suspicion of these associations originally arose from astute clinical, pathological and epidemiological observations, and their confirmation resulted from large-scale epidemiological studies (Becklake, 1976).

PATHOGENESIS

Asbestos fibres which are inhaled may be optically visible or sub-microscopic. Their entry, deposition and retention in the lungs are determined by their aerodynamic

behaviour, the dimensions of the respiratory tract (including airway resistance), pattern of breathing and pulmonary clearance mechanisms. Fibres tend to accumulate peripherally in the lung bases. Some retained fibres become coated, but those reaching the pleura remain uncoated. The coat comprises acid mucopolysaccharide and ferritin granules, and coating occurs inside the macrophage. Coating and dissolution is a continuous process, the ratio of coated to uncoated fibres remaining fairly constant.

Asbestos bodies

To investigate the pathological effects of asbestos the fibre load in the lungs must of quantitated. Most studies have concentrated on light-visible bodies and fibres. With more sensitive techniques it has become apparent that the ratio of fibres and fibre fragments to asbestos bodies may be as great as 1000 to 1, depending on fibre type. The relevance of fibres of less than 0.5 micron in diameter has not yet been established.

The concentration of asbestos bodies shows some correlation with the degree of exposure, and a distinct urban-rural concentration exists (Churg & Warnock, 1981). They are only found in the sputum when exposure has been considerable. In a cytologic study of sputum reported by Gupta & Frost (1981) ferruginous bodies were found in 0.3% of over 500 cigarette-smoking males over 44 years, in 1% of 682 people with a history of previous exposure to asbestos, in 7.8% of 102 asbestos workers with current minimal exposure and in 33% of 554 formerly heavily exposed asbestos workers.

Non-occupational exposure to asbestos in urban air has been clearly demonstrated, but concentrations are usually less than one-tenth of that in asbestos industries. Occasionally more significant levels are found in the vicinity of factories utilizing asbestos, in buildings where unenclosed spray-on insulation has been used, in sites where demolition or damage to building material occurs and during domestic contact with asbestos workers. Such exposure results in the presence of asbestos bodies in lungs of almost all urban dwellers, in concentrations of up to 100 asbestos bodies per gram of lung tissue. Surveys of buildings containing asbestos-based materials have shown 'peak' levels of 0.08 fibres/ml, i.e. only 1/20th of the proposed control limit for occupational exposure. It is unlikely that this exposure leads to either pulmonary fibrosis or malignancy (Liddell, 1981). Asbestos has been found in small amounts in drinking water, food, beverages and in parenteral drugs, but there is no evidence to suggest that this is hazardous to health.

Although more than 90% of all asbestos used is chrysotile, the fibre core of most asbestos bodies found in the lungs of urban dwellers is amphibole asbestos. This may result from a greater tendency of the lung to coat amphiboles, and the lesser penetration and greater elimination of chrysotile from the lungs by clearance and dissolution.

Factors determining asbestos-induced lung disease

Important factors in determining the development of disease following inhalation of asbestos particles include the biologic effects of different fibres, the precise conditions under which the fibres are released into the atmosphere during mining or manufacturing processes, the degree of coating (which may reduce fibrogenicity); and host factors

influencing the retention of inhaled fibres, the presence of co-carcinogens, and constitutional susceptibility. The importance of constitutional factors is suggested by the observation that only approximately half of heavily exposed subjects develop asbestos-related disease. Studies of HLA phenotypes, in an attempt to define genetic associations have produced conflicting results. Turner-Warwick (1979) has concluded that there is no signficant difference in HLA phenotypes on the A, B or C loci in subjects with asbestosis as compared to case controls. No immunological basis for susceptibility has been established.

Carcinogenesis

It is not clear how asbestos and other fibres cause mesothelioma and lung cancer. Most of the many hypotheses which have been suggested have been effectively challenged. Early suggestions were that the chemical constituents of the native fibre, or metal ions either forming part of its structure or adherent as contaminants were responsible for carcinogenesis (Harington, 1981). A critical event in initiation of carcinogenesis is DNA damage, usually the result of electrophilic properties of chemical carcinogens. Asbestos fibres have an electrostatic surface charge, which, by imparting a catalytic function to the fibre surface, may perturb the structure of DNA. Alternatively, asbestos might act as a promoter in company with powerful polycyclic aromatic hydrocarbon carcinogens like benzpyrene, and by one of several mechanisms enhance their activity (Hart et al, 1980). Polycyclic aromatic hydrocarbons may be present on fibres treated with oils during industrial processing or in tobacco smoke and polluted atmosphere.

A second body of information has built up in support of a 'foreign body' or 'solid state' hypothesis, according to which the physical dimensions of asbestos determines its carcinogenic effects (Harington 1981). This hypothesis proposes that any durable fibre ≤ 1.5 microns in diameter and > 8 microns in length can be expected to produce mesotheliomas. This explains why mesotheliomas can be produced by fibres other than asbestos (e.g. attapulgite, sepiolite and fibrous zeolites). The properties peculiar to fibres of this dimension and their cellular and molecular effects have yet to be discovered.

Fibrogenesis

Asbestosis is characterized by a low-grade mononuclear cell infiltration in alveoli and alveolar walls, and by increased polymorphonuclear leucocytes in bronchoalveolar lavage fluid. The dominant pathogenetic mechanisms which operate in asbestos-induced fibrogenesis are not fully understood, and several mechanisms probably operate concurrently. Important interactions exist between asbestos, alveolar macrophages, polymorphonuclear leucocytes and the interaction of phagocytes with the lymphoid series, and also with cells involved in the repair process (the fibroblast and Type II pneumocyte) (Bateman et al 1981).

Although asbestos fibres are not usually thought to be antigenic, recent interest has focused on changes in complement and IgG receptor sites on macrophages exposed to asbestos, and on the T-cell proliferation which follows the direct contact of these two cell types, (Miller & Kagan, 1977). These features might account for some of the immunological abnormalities observed in asbestosis, although these appear to play only a minor role in the pathogenesis. These include changes in T-lymphocyte

numbers and their response to both mitogens and antigens (Kagan et al, 1977a,b), the presence of circulating auto antibodies in some patients (Haslam et al, 1975), and elevation of serum immunoglobulins.

EPIDEMIOLOGY

The effective dose of asbestos in individual subjects depends on atmospheric level and proportion retained. As only the former can be measured, and then with limited accuracy, calculation of exposure in populations is relatively crude. Despite these difficulties various dose-response relationships have been documented for pleural and lung fibrosis, mesothelioma and carcinoma of the lung (Becklake, 1976). Of the several potential types of dose-response relationship (i.e. threshold, linear, quadratic, sub-linear and accumulative normal), it seems that the linear relationship with no safe threshold limit is likely for mesothelioma (especially with amphiboles) and for carcinoma of the lung, whereas for asbestosis there is probably a threshold dose, below which asbestosis is unlikely to develop (Acheson & Gardner, 1980).

The increasing recognition of the adverse effects of even low doses has led to progressively stringent standards of permissible atmospheric levels to ensure protection of industrial workers. Since 1933 the British standard has been progressively reduced from 15 fibres per ml atmosphere, to the current standards of 1 fibre per ml for chrysotile, 0.5 fibres per ml for amosite and 0.2 fibres per ml for crocidolite (Newhouse, 1981). In the USA the level is 2 fibres per ml for all fibre types. The full effect of control measures will take 50 years to become apparent because of the long delay between the onset of exposure and development of disease. The incidence of adverse effects is low within 15 years of exposure; lung cancer peaks at 30–35 years from onset of exposure, mesothelioma at 35–40 years and asbestosis at 40–45 years (Selikoff et al, 1980).

BENIGN PLEURAL DISEASE

Pleural plaques

Pleural plaques, the commonest benign pleural manifestation of asbestos exposure, develop slowly 20–30 years after initial exposure and may calcify. They are discreet, raised, white-grey lesions with cartilage-like consistency and although usually distributed irregularly, may be bilateral and symmetrical. They may follow or cross rib lines but tend to spare rib cartilages, costophrenic angles and the apices. For some unknown reason pleural adhesions are not found. Ferruginous bodies are also absent but uncoated fibres may be detected with polarized light or electron microscopy.

Radiographic demonstration of plaques is best achieved on postero-anterior and 45° oblique radiographs of the chest wall, utilizing high KV techniques with appropriate grid and film screen combinations (Solomon, 1981). Computerized tomography (CAT) is more sensitive than the plain chest radiograph for early pleural lesions. Calcification occurs most commonly in plaques on the diaphragm and in the paravertebral gutters, and does not appear to relate to pleural thickness.

The prevalence of plaques correlates with degree of asbestos exposure, and is lowest in rural communities. Hillerdal (1981) found 827 patients with pleural plaques in a study of serial chest radiographs from 75% of people over age 45 in Uppsala County, a

poorly industrialized area with no dockyards, asbestos factories or other heavy users of asbestos (population 250 000). 80% of these patients could recall occupational exposure to asbestos.

Sheers & Templeton (1968) reported a prevalence of 28% in continuously exposed workers, as compared to 1.9% in subjects with less exposure, whilst pathological studies have confirmed the greater frequency of plaques in subjects with high lung asbestos fibre content.

Lewinsohn (1974) reported a rare event—the development of malignant mesothelioma at the edge of a plaque. Circulating rheumatoid factor and anti-nuclear factor are no more common in patients with plaques than in non-exposed subjects.

Pleural effusion

Asbestos-related pleural effusions are far less common than pleural plaques. In the Uppsala study only 22 cases were observed. Most patients have a history of exposure to asbestos and the effusions appear 5 to 30 years after initial exposure (Robinson & Musk, 1981). They may develop rapidly, causing pain, fever and an elevated ESR, or be chronic and relatively asymptomatic. Up to 10% may have finger clubbing. The effusions are frequently blood-stained and associated with a variable degree of underlying interstitial fibrosis. Most disappear spontaneously, but some recur and may progress to pleural fibrosis. In follow-up for 30 years some patients have been shown to subsequently develop mesotheliomas (Hillerdal, 1981). Respiratory function may be more impaired after asbestos pleurisy than previously suspected (Wright et al, 1980). Before this diagnosis is accepted other causes of pleural effusion must be excluded.

Thickening of visceral pleura

In contrast to pleural plaques, thickening of the visceral pleura is rare (Hillerdal, 1981), usually occurs in association with asbestosis, is only slowly progressive and rarely calcifies. The thickening can result of local atelectasis of lung and 'folded lung' resembling a tumour mass (pseudotumour), and may occur in association with pleural plaques.

Benign mesothelioma

This usually presents as a solitary, circumscribed lesion at the periphery of the lung, occasionally with an associated effusion. Unlike malignant mesothelioma it is more common in women and there is usually no associated interstitial fibrosis. Clubbing develops in up to 20% of patients and hypertrophic pulmonary osteoarthropathy may occur. The lesion can be cured with wide resection but sometimes recurs locally.

MESOTHELIOMA

Mesothelioma is the best known and most feared complication of asbestos exposure. The overall world incidence is estimated at 1 per million people per year. This needs to be seen against the approximately 400 per million incidence for carcinoma of the lung. The association between asbestos exposure and mesothelioma first established by Wagner et al (1960) in a report of 33 asbestos workers from the North-Western Cape crocidolite mines, has subsequently been confirmed in many parts of the world.

(Kannerstein et al, 1978). Although it was initially believed that mesothelioma only occurred following exposure to crocidolite, nine cases have been reported in Canadian chrysotile workers (Peto, 1978). However, crocidolite is the most dangerous fibre, over 100 mesotheliomas being reported in personnel manufacturing crocidolite-containing military gas masks in Britain and Canada during World War II, whereas only one mesothelioma was recorded in the workers making far greater numbers of civilian gas masks which contained chrysotile (Elmes, 1980). Amosite appears to be the fibre next most likely to produce mesothelioma, followed by chrysotile. Although casual, non-occupational and even household exposure has been clearly implicated as a cause of mesothelioma (Epler et al, 1980), it seems clear that the risk is related to the intensity of exposure. The death rate from mesotheliomas was 243 per 100 000 in people who were severely exposed for more than two years, as compared to 93 per 100 000 in persons with only low or moderate exposure for less than two years (Newhouse, 1981). Patients with mesotheliomas also have much higher asbestos fibre counts in their lungs than do control subjects (Whitwell et al, 1977). A careful history from patients who have apparently had only minimal exposure often confirms a short, intense exposure in the past. This validates the view that such exposure is relevant (Whitwell et al, 1977).

As the majority of people exposed to low-levels of asbestos do not get mesotheliomas, individual susceptibility factors must be important (Borow et al, 1973). In support of this Risberg et al (1980) reported fatal mesotheliomas in a father, three brothers and one sister, four of whom had had random occupational exposure in an area with a low incidence of mesothelioma. Increasing attention is being directed to the potential adverse effects of non-asbestos fibres, following reports of mesotheliomas developing after such exposure (Baris, 1980; Suzuki, 1981).

Clinical features

Most cases of mesothelioma present between 50 and 70 years, but may occur at any age and even in childhood. The presenting symptoms are usually dull, aching, non-pleuritic chest pain and progressive dyspnoea, less often cough, haemoptysis and loss of weight. Occasionally a history of pleural effusions, haemo- or pneumothoraces is obtained. Often the patient does not appear ill and the cause of the pain is misdiagnosed for several months. Clubbing occurs in about 10%, but hypertrophic pulmonary osteoarthropathy or profound hypoglycaemia are rare presentations (Elmes & Simspon, 1976; Antman, 1981). Infiltration of adjacent tissues may cause pain, paraplegia, superior vena caval obstruction, Horner's syndrome, dysphagia and bronchial obstruction. Spread can also occur to the peritoneum, pericardium and, rarely, along needle tracks. Thoracotomy or thoracoscopy is usually required for a definitive diagnosis. Haematogenous spread is rare and usually asymptomatic.

Pathology

The tumour is a bulky, lobulated mass which involves parietal and visceral pleura, encasing the lung and invading the fissures. Two-thirds show an epithelial pattern on light microscopy, further sub-divided into tubular and tubulo epithelial patterns (both of which may be confused with adenocarcinoma), and a sheet-like undifferentiated polygonal cell type resembling poorly differentiated squamous carcinoma. In 10% a mesenchymal appearance, (fibrous, sarcomatous or spindle cell) is seen, but a

mixed epithelial and mesenchymal picture occurs in one-quarter. Hyaluronic acid levels are generally higher than in other tumours, and quantitation of glycosaminoglycans may help to differentiate mesotheliomas from secondary carcinoma.

Diagnosis by light microscopy is often difficult and electron microscopy provides additional useful information. The identification of surface microvilli, intracytoplasmic crypts or vesicles, cytoplasmic filaments and intracytoplasmic accumulation of glycogen, although not pathognomonic are highly suggestive (Uys, 1979; Suzuki, 1981).

Prognosis, staging and therapy

It is not generally appreciated that the prognosis for mesothelioma is better than that for inoperable carcinoma of the lung (Whitwell & Rawcliffe, 1971). The median survival from the onset of symptoms is about one year and most deaths are due to respiratory failure, arrhythmias and myocardial involvement, and cachexia (Antman, 1981).

In Stage I disease the lesion is confined to the parietal pleura of one hemithorax. In such cases radical pleuropneumonectomy may give good results, particularly in epithelial tumours. De Laria et al (1978) reported a 27% two-year survival, with zero operative mortality in 11 such patients, but others have reported operative mortality rates up to 31%, with only 10% surviving two years (Butchart et al, 1981). Many reported results of pleuropneumonectomy are difficult to evaluate because of failure to describe the stage and/or histology. Pleuropneumonectomy involves the removal of the diaphragm as pleura cannot be stripped from this structure.

Invasion of the chest wall, mediastinal structures, or intrathoracic lymph nodes indicates Stage II disease; peritoneal involvement, bilateral chest disease or extrathoracic lymph node involvement, Stage III; and haematogenous spread, Stage IV.

Radiotherapy is occasionally of value for chest pain, but the large doses needed are often impractical because of the vulnerability of the lungs and oesophagus to radiation damage (Brady, 1981). Chemotherapeutic drugs, either alone or in combination, have been of minimal value (Aisner & Wiernick, 1981).

ASBESTOSIS

Asbestosis is the term applied to diffuse interstitial pulmonary fibrosis resulting from inhalation of considerable amounts of asbestos fibres, usually over a long period of time. The term should not be used for all asbestos-related disease of lungs and pleura. The fibrotic process is persistent, slowly progressive and characterized by asbestos bodies and fibres in large numbers in the lung. All forms of asbestos are fibrogenic and similar pathologic findings are seen with all types (Becklake, 1976). However, the fibrogenicity of asbestos types declines from chrysotile to amosite, at least in experimental animals. In practice mixtures of amphibole and chrysotile have been used for most industrial purposes and few workers have been exposed to a single fibre type.

Epidemiological surveys of asbestosis have been less satisfactory than those of asbestos-induced cancers, because radiological, physiological and clinical criteria for the diagnosis are incompletely validated, and there is considerable subject and intra and inter-observer variation. Despite this some correlations have been observed, and a

dose-response relationship between the fibre content of lungs and asbestosis has been established, at first, in experimental animals. Secondly, although estimations of inhaled asbestos load are crude, being based on the duration of exposure in a particular industry, number of years since first exposure, and estimates of dustiness of jobs by a single worker or group of workers, these estimates have shown a consistent relationship with symptoms (McDonald et al, 1974), lung function, and radiographic changes (Becklake, 1976). Thirdly, pathologic severity correlates with the asbestos fibre content of lungs (Becklake, 1976), as measured by a digestion technique with phase-contrast microscopy (Whitwell et al, 1977) and by electron microscopy (Pooley, 1975).

Diagnosis

The diagnosis of asbestosis presents no difficulties when X-ray changes are profuse and a definite history of exposure is obtained. The demonstration of asbestos bodies in sputum confirms the diagnosis. Pleural plaques and a restrictive ventilatory abnormality with impaired carbon monoxide transfer provide additional support.

The diagnosis in persons at risk before radiological abnormalities become evident poses a problem, but it has been suggested that the presence of asbestos fibres and siderocytes in sputum, crackles at the lung bases, a restrictive ventilatory abnormality and impaired gas transfer are of value. A combination of all five provides a 93% predictive value; four, 86% and three, 81% (Chiappino & Bertazzi, 1980). Lung biopsy is usually not necessary for diagnosis. Computerized tomography may be a more sensitive method of detecting early changes, but has not been systematically investigated (Katz & Kreel, 1979).

The detection of asbestosis by means of pulmonary function tests before symptoms develop is controversial. Although a decrease in lung compliance, an increase in calculated upstream resistance and abnormalities in closing volume have been noted in asbestos workers in this category, they have as yet no practical application. Recent epidemiological studies have disputed suggestions that changes in vital capacity and CO transfer are more sensitive than chest X-rays for early detection of asbestosis (Becklake, 1976).

Natural history and clinical course

The symptoms and signs of asbestosis are no different from those of other forms of diffuse interstitial fibrosis. Slowly increasing breathlessness is noted first and a dry or productive cough may occur. Fine, late inspiratory crackles, are usually present over the mid or lower lung zones and finger clubbing is present in up to 75% of patients (Parkes, 1973). The earliest radiographic features are a homogeneous (background) opacification in the middle and lower zones, or an apparent increase in the number of fine vessels. Other abnormalities include irregularly linear and/or rounded opacities, honeycomb shadows, and short horizontal septal lines above the costophrenic angles (Kerley's B lines) (Solomon, 1981). In about half the cases pleural changes are evident. A UICC/Cincinnati classification, adopted by the ILO U/C for epidemiological purposes is also useful for compensation boards and follow-up of individual patients, and has been validated, in specific groups of readers (Liddell, 1980).

The main application of pulmonary function tests is in the diagnosis and assessment of disability, the follow-up of disease evolution, and in pre-employment screening for

those at risk. The characteristic features in an established case are restriction of lung volumes, well preserved FEV_1/FVC, a low CO transfer, hyperventilation and an increased A-a oxygen gradient which widens on exercise. Airflow obstruction, usually thought not to be part of asbestosis, is commonly present, but is not more frequent than in the general population (Becklake, 1976). This may reflect a combined, independent effect of smoking and asbestos exposure. Because of the poor relationship between dyspnoea, pulmonary function tests and radiographs, a progressive exercise test is useful to define disability (Becklake, 1976). Deterioration is as reliably reflected in tests of vital capacity as by other measures of lung function. The course of asbestosis does not appear to be influenced by treatment and removal from exposure has not been shown to arrest progression. Furthermore, the disease may appear and progress many years after exposure ceases.

Smoking, in spite of its effect on cancer risk has not been taken into account in selection of workers. Patients with asbestosis are at increased risk of death from several causes. In a study in England and Wales, Berry (1980a) observed a relationship between mortality and the severity of asbestosis, as reflected in the amount of compensation awarded by the pneumoconiosis medical panels at the initial assessment. These patients had a 2.6 times increased risk of death from all causes, and an 8.5 times risk of death from lung cancer.

LUNG CANCER ASSOCIATED WITH ASBESTOS EXPOSURE

The association between lung carcinoma and asbestos has been known for more than three decades. In 665 men with asbestosis certified between 1952 and 1976, 283 had died by 1979; 36% from carcinoma of the lung, 9% from mesotheliomas and 20% from asbestosis. With the passage of time more deaths from these causes can be expected (Berry, 1980a). The mortality from carcinoma and mesothelioma may become even more significant in the future, as improved working conditions reduces the deaths from asbestosis.

The considerable variability in observed relative risk of lung cancer, (number of observed deaths divided by the expected deaths), in different studies arises from different methods in some instances, but also from differences in the composition or nature of the risk group, the size of the series, fibre type encountered, and the smoking habits of the group. A large, longitudinal study of Quebec chrysotile production workers (McDonald et al, 1980) confirmed that a linear dose-response relationship exists and that there is no 'safe' or threshold dose (Henderson & Enterline, 1979). There was no relationship between the dose of asbestos inhaled and the latent period before lung cancer developed, the average interval from first asbestos exposure to death being nearly 40 years.

Smoking and asbestos exposure interact to give a greatly increased risk of lung cancer, the association being multiplicative rather than additive. In a study of insulation workers who smoked, the relative risk was calculated as almost 40 times that of US males who did not smoke (Enterline, 1980).

The clinical features, prognosis and treatment of asbestos-related lung cancer are the same as for cancer not associated with asbestos exposure, although both diagnosis and treatment are complicated by the co-existence of severe asbestosis (Becklake, 1976). The differential diagnosis of such peripheral lung masses, includes nodular

areas of asbestotic fibrosis, pleural fibrosis, pleural 'pseudo tumours' of folded lung, circumscribed mesotheliomas and non-asbestos-related lung disorders. The reduction in lung function which is associated with moderate or severe asbestosis frequently excludes any potential of surgical resection (Becklake, 1976), and radiotherapy is poorly tolerated by asbestotic lungs.

COMPENSATION FOR ASBESTOS-RELATED DISEASE

It is arguable whether occupationally acquired asbestos-related disease can be fully prevented, even in developed countries where strict preventative regulations are comprehensively enforced. Failure results from deficiencies in these regulations, apathy and human error, by both employer and employee. Modern society is firmly committed, (at least in theory), to protecting workers from occupational hazards and to compensate appropriately when these disable or impair health.

Legislation on compensation varies in different countries. A guide to those in the United Kingdom has recently been published. (Britton et al 1981). Two forms of compensation are available: the first for 'prescribed disease' (in the case of asbestos either pneumoconiosis or diffuse mesothelioma) acquired in a 'prescribed occupation'; the second by the worker suing employers where he can show that his disability results from his employer's negligence in maintaining the legal standards. However such awards are made in 'final settlement' and frequently do not make adequate provision for those cases in which further deterioration and death will occur.

PREVENTION OF ASBESTOS-RELATED DISEASE

It is clear that alternatives to asbestos for use in industry and building should be sought. These substitutes must be safe, and it seems that the best substitutes may have similar physical and chemical properties to asbestos, and are thus liable to produce similar adverse health effects. In Europe and in the USA crocidolite has largely ceased to be used through stringent regulations. Amosite should probably be treated in the same way. Regrettably much crocidolite and amosite is still produced in South Africa.

The establishment of scientifically sound preventative regulations for asbestos in developed countries has been complicated by the increasingly polarized views of industrialists who have justifiably been blamed for placing financial gains before human health, whereas environmentalists have used quasi-scientific or distorted facts to 'inflame political passions against environmental carcinogens' (Peto, 1980). Part of the reason for these divergent views is genuine scientific uncertainty as to the health risks of low asbestos exposures, which has led to inactive conservativism (Peto 1980, Liddell, 1981). By all assessments, however, with current control limits the cancer risk is small and needs to be seen in perspective against non-occupational factors affecting health. For example, it has been estimated (from Quebec data) that the United Kingdom control limit for chrysotile has the equivalent carcinogenic potential of smoking only three or four cigarettes per week (Liddell, 1981). Peto (1978) has suggested that 3% of workers exposed to 1 fibre/ml for 20 years, and 10% of those exposed to 2 fibres/ml for 50 years will die from asbestos-related disease. Furthermore, whereas all types of occupational hazards form major contributing

factors in 2% of all cancer deaths, tobacco plays a major role in 30% of such deaths (Doll & Peto, 1981).

Standards for working with asbestos in industry have been laid down in most countries. In Britain these include regulations for its storage and transport, its use under special conditions such as spraying, ventilation in the work place, the use of protective clothing and respirators, methods for monitoring airborne dust, and disposal of waste.

If and until such time as asbestos is replaced, the control limits laid down in the United Kingdom should be rigidly enforced, and occupationally exposed people should be strongly advised not to smoke.

The increasingly strict requirements for asbestos fibre levels in the working atmosphere has forced some factories in Europe to close, only to be relocated in developing countries, where inadequate occupational health regulations and supervision allow continued manufacture of asbestos products at considerable risk to workers (Myers, 1981). Inadequate compensation is a further disadvantage to workers in these countries. The price paid in terms human health for the continued use of asbestos is thus considerably greater than that suggested by estimates based only on statistics from developed countries.

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6

Recent advances in venous thromboembolism

S. R. Benatar

Pulmonary embolism is a well-recognized (and much feared) cause of sudden death, especially in the postoperative period but also in debilitated and immobilized patients, in pregnancy and the puerperium. How commonly does this occur, which patients are most at risk and how often is pulmonary embolism the cause of death in patients not destined to die soon of other severe disease? How can non-fatal pulmonary emboli be accurately diagnosed so that treatment can be implemented early enough to prevent subsequent death from further embolus? Thrombosis in the deep veins of the legs, the usual source of pulmonary emboli, is often asymptomatic and unaccompanied by physical signs. How can deep venous thrombosis be accurately and safely diagnosed? Are there any differences in the natural history of symptomatic and asymptomatic deep venous thrombosis? How does treatment influence the natural history of deep vein thrombosis and pulmonary embolism? When is treatment with thrombolytics preferable to using heparin? What should be the duration of anticoagulant treatment? Does this differ from symptomatic deep vein thrombosis as compared with pulmonary embolism?

Asymptomatic calf vein thrombosis occurs in up to 50% of patients undergoing major surgery. Most resolve spontaneously with no short or long-term sequelae. A range of prophylactic measures are available which can reduce the incidence of postoperative deep calf vein thrombosis. But do these reduce the incidence of more dangerous proximally extending thrombi which give rise to significant pulmonary emboli? Should surgeons be using these prophylactic measures on a routine basis? Do they? If not, why not? If they did, what would be the costs and benefits?

These and other questions on venous thromboembolism remain controversial despite numerous studies during the last three decades which have contributed to advances in our understanding. The purpose of this chapter is to provide guidelines, based on current knowledge on the management of patients with venous thromboembolism. Historical aspects and details of therapy have been dealt with in greater detail in previous review (Hyers 1984, Benatar et al 1986).

EPIDEMIOLOGY AND NATURAL HISTORY

Venous thromboembolism may present either with symptoms in the region of thrombosis or with symptoms resulting from emboli to the lungs. Pulmonary embolism or deep vein thrombosis may be accompanied by 'silent' pathology at the other site and therefore both deep vein thrombosis and pulmonary embolism need to be considered in every patient, regardless of the clinical presentation.

The inaccuracy of clinical diagnosis of deep vein thrombosis and pulmonary embolism is now well recognized (Dalen et al 1971, Hull et al 1981, 1983a). This fact coupled with the knowledge that clinically recognizable deep vein thrombosis and pulmonary embolism are the tip of the venous thromboembolism iceberg, explains why only inaccurate estimates can be made of the size of the iceberg itself from studies which do not adequately sample the tip and which have not used accurate diagnostic methods. Controversy regarding many aspects of the epidemiology and natural history of thromboembolism results from lack of community studies, from difficulties in diagnosing deep vein thrombosis and pulmonary embolism and from the questionable validity of pulmonary embolism mortality rates derived from limited autopsy and death certification data (Benatar et al 1986).

Dalen and Alpert (1975) estimate that in the USA each year 630 000 people have a pulmonary embolus which is fatal in 200 000. Of these, pulmonary embolus is thought to be the sole cause of death in 100 000. These figures are based on the assumption that 15% of deaths in acute general hospitals, 25% of deaths in nursing homes or chronic care institutions and 5% of all non-cardiovascular, non-accidental deaths can be attributed to pulmonary emboli.

Goldhaber et al (1982) have contested this on the basis of a study of 1455 autopsies performed on 2372 consecutive patients (61% autopsy rate) who died at the Peter Bent Brigham Hospital between 1973 and 1977. This study showed that only 9 of 54 patients with a major pulmonary embolus suffered from diseases with a good prognosis. A review of death certification and hospital discharge data in a sample of acute care hospitals led to the conclusion that pulmonary embolism was an important event in only 0.4% of hospitalized patients (Goldhaber & Hennekins 1982). The potential flaws in the data are acknowledged by the authors but they raise the possibility that the estimates of Dalen and Alpert could be substantially inaccurate.

A retrospective hospital study of all autopsy reports and associated hospital records in Sheffield (autopsy rate 47%) showing that pulmonary embolism was the cause of death in 10% of patients (Sandler & Martin 1989) lends support to the assumptions made by Dalen and Alpert. Less than 15% of patients dying from pulmonary embolism were under 60 years old but only a third of patients had underlying carcinoma. Eighty-three per cent of

patients with fatal pulmonary embolism had evidence of deep vein thrombosis at autopsy but the diagnosis was only suspected clinically in 19.5% and diagnosed objectively before death in 2.6%. Twenty-four per cent of patients who died from pulmonary embolism had undergone surgery a mean of 6.9 days previously.

Another similar study, however, supports the findings of Goldhaber. In an attempt to determine the accuracy of antemortem diagnosis of pulmonary embolism Rubinstein and colleagues reviewed 1276 autopsy records in an acute care, teaching hospital in Toronto (Rubinstein et al 1988). During the study period (1980–1984) the autopsy rate was 36.3%. Forty-four patients (3.4%) were identified in whom pulmonary embolism was the cause of death or a major contributing factor. The diagnosis was suspected before death in 14 (31.8%) and there were no distinctive features separating these patients from those in whom pulmonary embolism was not suspected before death.

There are many remaining gaps in our knowledge of the incidence of deep vein thrombosis and pulmonary embolism and the frequency with which they give rise to clinical episodes. It is, however, certain that many clinically significant episodes are not recognized before they are fatal and that a significant proportion occur in patients who might otherwise have a good prognosis.

AN APPROACH TO THE PATIENT WITH SUSPECTED PULMONARY EMBOLISM

When considering the diagnosis of pulmonary embolism in an individual patient, the major questions that need to be addressed are:

1. To what extent is the patient haemodynamically impaired and how much of this is due to pulmonary embolism as distinct from pre-existing cardiopulmonary disease?
2. Is it appropriate to pursue a definitive diagnosis of pulmonary embolism and its source in this patient by using pulmonary angiography and/or bilateral ascending venography?
3. If not, with what degree of confidence can the diagnoses of pulmonary embolism and deep vein thrombosis be made using lung scans and non-invasive venous studies?
4. Is there residual thrombus in the deep venous system which may pose risk of a further, perhaps fatal, pulmonary embolism?
5. Which of the therapeutic options should be chosen — embolectomy, fibrinolytic drugs or heparin?
6. How should progress be monitored and for how long should treatment continue?
7. What are the options if there are absolute contraindications to the use of thrombolytic or anticoagulant drugs?

Diagnosis of pulmonary embolism

The symptoms and signs of pulmonary embolism are dependent on the size and number of emboli, possible humoral and reflex mechanisms including pulmonary vasoconstriction, the patient's cardiopulmonary status, and the rapidity of clot fragmentation and lysis. Bedside diagnosis of pulmonary embolism is often difficult; pulmonary angiography has shown that clinical diagnosis is inaccurate in over 50% of patients (Dalen et al 1971, Poulose et al 1970). The classical triad of dyspnoea, pleuritic pain and haemoptysis is present in only 25% of patients and may occur with other chest diseases (Wenger et al 1972). Chest radiographic findings (useful in ruling out other disorders such as pneumothorax) and biochemical abnormalities such as increased lactic dehydrogenase, aspartate aminotransferase, bilirubin and fibrinogen degradation products are also non-specific for pulmonary emboli. ECG and blood gas abnormalities lack specificity as well as sensitivity and their interpretation may be further compounded by pre-existing cardiopulmonary disease.

Pulmonary angiography, the reference standard for the diagnosis of pulmonary embolism, requires considerable expertise both in its performance and interpretation (Goodman 1984). Diagnostic criteria include constant intraluminal filling defects in several films and sharp cut-offs in vessels greater than 2.5 mm in diameter. Reduced perfusion, peripheral pruning, oligaemia and loss of filling of small vessels are non-specific. Although in experienced hands both the morbidity and the mortality of pulmonary angiography are low, the invasive nature of angiography and the expense, time and expertise required are beyond the resources of many general hospitals. There has therefore been great interest in the development of non-invasive isotope lung-scanning techniques.

Lung scanning is a simple, safe and effective non-invasive technique for assessing regional pulmonary blood flow. However, it is not specific for pulmonary embolism because intraluminal vascular obstruction is not the only cause of reduction in blood flow. Other causes include reduced local ventilation due to airway obstruction, extraluminal vessel obstruction and bronchopulmonary anastomoses. The addition of four-view ventilation scanning, using krypton-81m, enhances diagnostic accuracy and is necessary to exclude areas of reduced ventilation as the cause of perfusion defects. Over 80% of patients with multiple segmental mismatches and almost 100% with multiple lobar mismatches have angiographically confirmed pulmonary emboli. However, this falls to less than 30% with single mismatches (Hull et al 1983a, Biello et al 1979, McNeil 1980, Cheely et al 1981, Polak & McNeil 1984, Branch & McNeil 1983). These predictions can be used in conjunction with clinical data to help make therapeutic decisions and to establish the need for definitive angiography in a small subset of patients (Benatar et al 1986) (Table 6.1). Some current recommendations regarding the use of lung scanning and angiography and the implications for treatment are summarized in Table 6.2. A recent large

multicentre study emphasized that a normal ventilation perfusion scan virtually excludes the diagnosis of pulmonary embolism, whereas only a minority of patients with angiographically confirmed emboli had a high-probability scan. In addition, diagnostic accuracy of scans was reduced in patients with a history of previous pulmonary embolism. This study emphasizes the importance of careful interpretation of all positive scans in the light of the clinical context (PIOPED 1990).

In a prospective study of 173 consecutive patients presenting to emergency services with pleuritic pain, 36 (21%) had angiographic or autopsy-proven pulmonary embolism. Of patients with an abnormal perfusion scan, 50% had angiographically proven pulmonary emboli as compared with none of the patients in whom the perfusion scan was normal. Of patients with positive results on impedance plethysmography, 77% had pulmonary emboli as compared with 17% of those with negative impedance plethysmography. The use of ventilation scanning together with impedance plethysmography allowed a 50% reduction in the need for angiography (Hull et al 1988).

Table 6.1 Approximate percentage post-test probabilities of pulmonary embolism on the basis of combined clinical (pre-test) and scintigraphic (test) criteria (Havig 1977, Branch & McNeil 1983, McNeil 1980, Polak & McNeil 1984). Figures in parentheses relate to multiple scan defects in each category

	Clinical assessment of probability of pulmonary embolism		
Probability of pulmonary embolism on basis off lung scan	Low (%)	Medium (%)	High (%)
Perfusion scan			
Low-subsegmental defect(s)	1	2 (10)	10 (25)
Medium-segmental defect(s)	10	25 (75)	65 (85)
High-segmental defect(s)	25	55 (90)	85 (95)
Ventilation–perfusion scan			
Low-matched defect(s)	2	2	2
Medium-mismatched subsegmental defect(s)	1	3 (22)	40 (70)
High-mismatched segmental or lobar defect(s)	55	80 (95)	95 (100)

Table 6.2 Recommendations for ventilation–perfusion lung scanning based on diagnostic studies

- Normal six-view perfusion scan. Pulmonary embolism excluded
- Low-probability ventilation–perfusion scan. Either no treatment or proceed to definitive venous studies or pulmonary angiography before treatment, to avoid unnecessary anticoagulation
- High-probability ventilation–perfusion scan. Proceed with treatment
- If anticoagulants contraindicated, pulmonary angiography should be considered to confirm the diagnosis before undertaking vena cava interruption procedures
- Low-probability scans with positive venogram. Proceed with treatment

What is the origin of the pulmonary emboli and is there a risk of further embolization?

Deep vein thrombosis in the legs is the source of pulmonary emboli in over 90% of patients (Hull et al 1983a, Havig 1977). Deep vein thrombi have been demonstrated with venography in up to 70% of patients with angiographically proven pulmonary embolism in one series (80% of patients with deep vein thrombosis having no physical signs in the legs) (Hull et al 1983a) and in 87% of patients with high-probability pulmonary emboli in another (Corrigan et al 1974). A normal venogram does not exclude pulmonary embolism; the whole thrombus may have embolized or in some patients pelvic veins or upper limb veins may be the source of the embolus. If it is not possible to obtain appropriate investigations to verify the clinical diagnosis of pulmonary embolism, it is appropriate to try to make a definitive diagnosis of deep vein thrombosis, as the presence of the latter will provide the basis for treatment with anticoagulants. Bilateral ascending venography utilizing a well-established safe technique is the gold standard for diagnosing deep vein thrombosis (Rabinov & Paulin 1972). The demonstration of deep vein thrombosis will provide not only the evidence required to institute therapy but may also influence the decision whether to use anticoagulants or fibrinolytics. In patients presenting with pulmonary embolism, anticoagulants should be given even if thrombus is confined to the calf on venogram, as the proximal portion may have embolized and proximal extension may occur if no treatment is given. The treatment of symptomatic deep vein thrombosis in the absence of clinical pulmonary emboli is discussed below.

What are the therapeutic options and which should be chosen?

Acute massive pulmonary embolism often leads to death within an hour or two of the event, before effective therapy can be instituted. In those who survive long enough to receive medical attention, therapeutic options include pulmonary embolectomy, fibrinolytic drugs and heparin. While in the past embolectomy has been recommended as the treatment of choice for patients surviving in a shocked state for more than 2 hours, accumulating experience with fibrinolytic therapy has shown a survival rate of 75% — a rate which compares favourably with embolectomy (Miller et al 1977). Fibrinolytics have the advantage of being less traumatic for the patient, more widely applicable, less expensive and effective in lysing both pulmonary emboli and deep vein thrombi, thus reducing the risk of recurrent embolization. Embolectomy should therefore probably be reserved for those patients in whom there is a contraindication to thrombolytic therapy or for situations where the facilities and expertise make embolectomy the ideal procedure.

Inferior vena cava procedures

Many techniques are available to occlude or compartmentalize the inferior vena cava, and so prevent recurrent pulmonary emboli. The role of these procedures remains controversial (Greenfield 1984, Bomalski et al 1982). In some countries, such as the UK, they have never been popular, while in the USA they have been extensively used in the past. Reduction in their use is largely the result of better use of heparin and fibrinolytic drugs. When inferior vena cava interruption is necessary the transvenous use of a Greenfield filter is generally preferred (Kanter & Moser 1988). The experience of the operator is possibly more critical in determining the choice of procedure and the outcome than the device used.

AN APPROACH TO THE PATIENT WITH SUSPECTED DEEP VEIN THROMBOSIS

Diagnosis

When a patient presents with pain, swelling and tenderness in the lower limb, deep vein thrombosis must be considered. Thrombosis of the deep calf veins and proximal extension of non-occlusive thrombus seldom produces symptoms or signs above the knee, and clinical diagnosis is notoriously inaccurate if the symptoms are confined to the calf (Hull et al 1981, Browse et al 1988). Occlusive proximal thrombosis produces oedema of the whole leg and can be more confidently diagnosed clinically. Venography, which confirms the clinical diagnosis is less than 50% of all clinically suspected cases, is the gold standard against which all other techniques must be judged. ^{125}I isotope scanning is a cheap, simple and accurate means of diagnosing asymptomatic calf vein thrombi in the postoperative period. The delay required for the isotope to be incorporated into the developing thrombus and the insensitivity of the technique to proximal thrombi make it unsuitable for diagnosing symptomatic deep vein thrombosis. Other available methods to diagnose deep vein thrombosis (Browse et al 1988) have not been as widely adopted as impedance plethysmography, which is gaining popularity as a simple, safe and reliable means of diagnosing clinically significant proximal deep vein thrombosis. Its use in the out-patient clinic allows a definitive diagnosis to be made in up to 95% of patients with proximal deep vein thrombosis. Although less than 30% of calf thrombi are detected by impedance plethysmography unless these extend (which can be detected by serial impedance plethysmography) they pose little risk. The out-patient use of this diagnostic procedure can obviate unnecessary admission and anticoagulant therapy. An approach to the diagnosis of deep vein thrombosis (Hull et al 1983b) and recurrent deep vein thrombosis (Huisman et al 1986) using impedance plethysmography is illustrated in Figs 6.1 and 6.2.

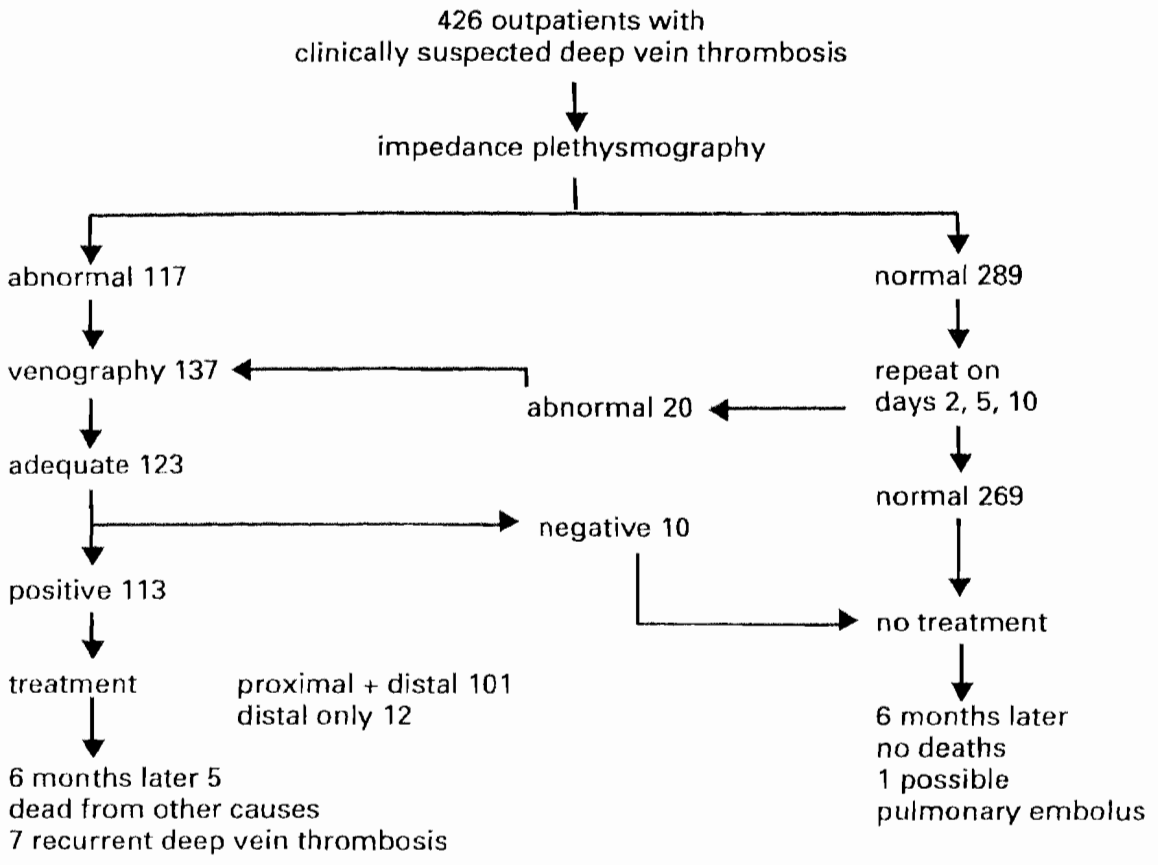


Fig. 6.1 Impedance plethysmography in the out-patient diagnosis of deep vein thrombosis. (Huisman et al 1986.)

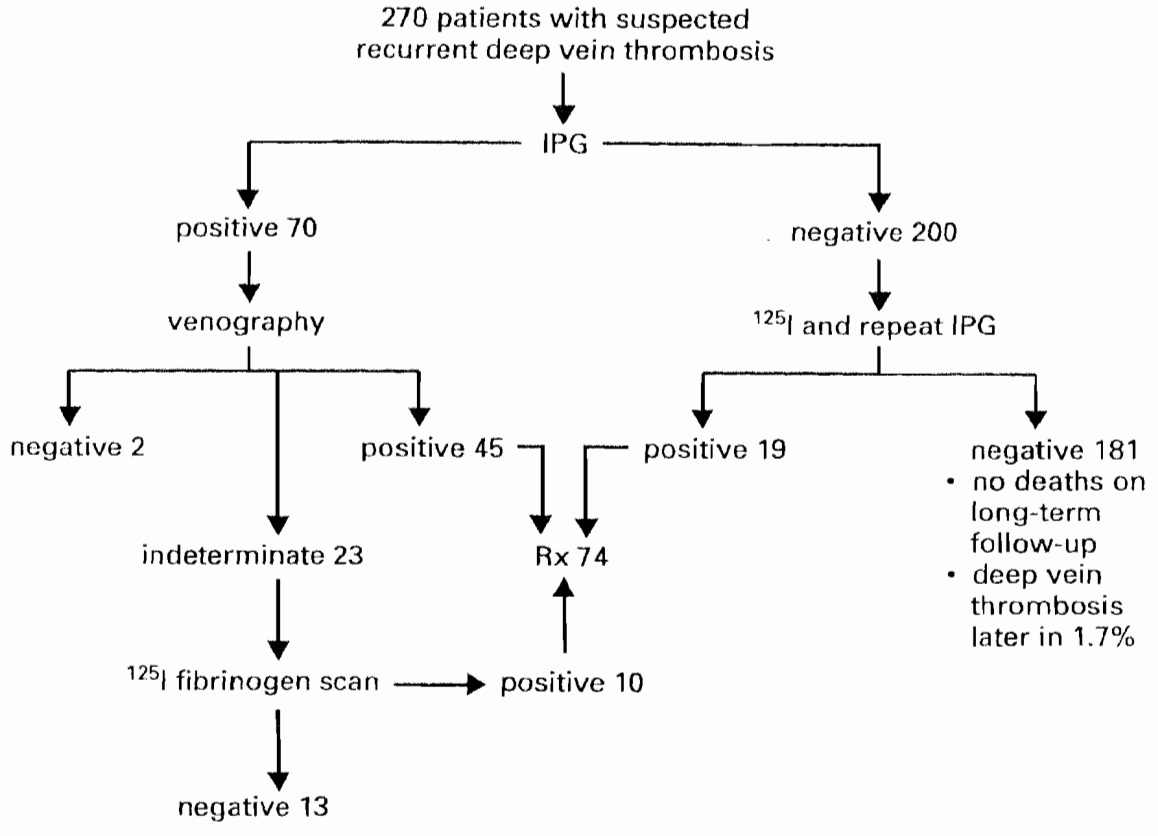


Fig. 6.2 Investigation of patients with suspected recurrent deep vein thrombosis. IPG, impedance plethysmography. (Hull et al 1983b.)

Why did the patient develop a deep vein thrombosis?

Well-established risk factors for thromboembolic disease are shown in Table 6.3 (Benatar et al 1986). When there is no obvious risk factor, an important consideration is whether to search for an underlying abnormality in the coagulation process. A wide variety of disorders of coagulation have been described in which the risk of venous thrombosis and embolism is increased (Table 6.4). Careful search for these abnormalities in selected patients with no other apparent risk factor is necessary to identify families at risk. It has been suggested that one of these abnormalities may be detected in up to 15% of patients with otherwise unexplained venous thromboembolism (Moser 1990).

Treatment

Asymptomatic calf deep vein thromboses developing in the postoperative

Table 6.3 Risk factors for venous thromboembolism

Previous episodes of venous thromboembolism
Underlying cardiac disease
Carcinoma
Trauma — including surgery
Pregnancy, puerperium, oral contraceptives, oestrogens
Immobility
Obesity
Blood group A
Gram-negative sepsis
Myeloproliferative disorders
Ulcerative colitis, Cushing's disease, homocystinuria, Behcet's syndrome

Table 6.4 Coagulation disorders predisposing to venous thrombosis

Deficiency of
antithrombin III
protein C
protein S
Defective
plasminogen
release of plasminogen activator
Increased
circulating coagulation protein factors 5, 7
Hyperreactive
platelets

period have a benign natural history without therapy. It has commonly been thought that this may also apply to symptomatic calf vein thrombi. While the embolic risk from deep veins of the calf is less than from more proximal thrombi, a controlled trial has shown that treatment of symptomatic calf vein thrombosis for 3 months favourably influences the natural history by preventing propagation of the thrombus and reducing the frequency of pulmonary embolism (Lagerstedt et al 1985). Standard initial therapy for deep vein thrombosis comprises i.v. or s.c. heparin to prolong the activated partial thromboplastin time (APTT) to twice normal for approximately 7 days, and 5 days of overlap with a coumarin derivative. As occlusive iliofemoral deep vein thrombosis often leads to troublesome post-thrombotic symptoms which may be reduced in frequency if venous damage is reduced by early thrombolysis, fibrinolytic therapy is increasingly being considered appropriate therapy for this subgroup of patients (Rogers & Lutcher 1990).

MONITORING PROGRESS AND DURATION OF TREATMENT

Angiographic and lung scan evaluation of the rate of resolution of pulmonary emboli have shown that the rate and degree of resolution are related to the underlying cardiopulmonary status, and to the size and age of the emboli (Goldhaber et al 1982, Sasahara & Hyers 1973, Tow & Simon 1975). Ten to twenty per cent improvement in perfusion occurs within the first 24 hours and complete resolution can occur in 2 weeks, but is more commonly delayed for up to several weeks or even months (Sasahara & Hyers 1973). Scan abnormalities may persist for up to one year (MacIntyre & Sasahara 1975). Haemodynamic abnormalities resolve in proportion to improvement in the lung scan (Sasahara & Hyers 1973, MacIntyre & Sasahara 1975).

Resolution of emboli, assessed angiographically, is more rapid in patients treated with fibrinolytics than with heparin, but the advantage is largely confined to more rapid resolution within the first 24 hours, with later results being similar in patients treated with fibrinolytics or heparin (Sasahara & Hyers 1973, Tow & Simon 1975).

When fibrinolytic drugs are used, these are given for 48–72 hours and it is rational to monitor therapy both to ensure an adequate lytic state and to prevent haemorrhage. Measurement of the thrombin time and its maintenance at two to four times normal is probably the most widely available suitable laboratory investigation. In many centres, however, monitoring is not attempted and standard doses of fibrinolytics are used (Benatar et al 1986). On completion of 48 or 72 hours of thrombolytic therapy, heparin should be started without a loading dose 4 hours later or when the thrombin time has fallen to less than twice the normal value. For optimum effect the dose of heparin should be adjusted to achieve an APTT at 1.5–2.5 times the control value. This is most safely achieved using a constant i.v. infusion. Seven days is an adequate duration of i.v. heparin

therapy, with coumarin derivatives overlapping for at least 5 days prior to stopping heparin.

The need for continued anticoagulation in order to prevent recurrent thromboembolism is well established (Hull et al 1979, O'Sullivan 1972). This is most conveniently achieved using oral warfarin sodium, although adjusted s.c. heparin therapy is also effective (Hull et al 1982). The recommended duration of anticoagulation ranges from a minimum of 3 months in uncomplicated first episodes of deep vein thrombosis or pulmonary embolism with a definite non-recurrent precipitating cause, to indefinite treatment in patients with recurrent life-threatening thromboembolism (Lagerstedt et al 1985, O'Sullivan 1972).

Both the short and long-term prognosis following major pulmonary embolism have been studied by several groups. Approximately 8–20% of patients with a confirmed diagnosis of pulmonary embolism die early in the course of the disease, with 20–50% of these deaths being due to the embolus itself. There is a late mortality of 15–30% following discharge from hospital, with most deaths being due to other underlying disease rather than to recurrent pulmonary emboli or thromboembolic pulmonary hypertension (MacIntyre & Sasahara 1975, Paraskos et al 1973, Hall et al 1977, MacIntyre et al 1982).

In a study of 60 patients (mean age 59) with acute, angiographically confirmed emboli, 58 survived hospital admission. During a 1–7-year follow-up period (mean 29 months) 19 patients died, 18 due to underlying disease (usually cardiac) and one from chronic cor pulmonale. Thirty-nine patients were long-term survivors. Recurrent embolism was suspected during follow-up in 3 patients, but confirmed in only one. Lung scans in the survivors showed complete resolution in 65%. Persistent unresolved emboli were present in only 5 patients at postmortem, including the patient with chronic cor pulmonale. Of the 60 patients in this study 40 had been subjected to inferior vena cava interruption procedures and 10 treated with long-term anticoagulants (Paraskos et al 1973). These results contrast with a large British series of 56 patients surviving acute massive pulmonary embolism (in none of whom were vena cava procedures performed) and followed up for 1–9 years, with 23% taking long-term anticoagulants. Of 46 patients without underlying cardiopulmonary disease, 67% were asymptomatic and only one patient had suffered recurrent pulmonary embolism. Patients with underlying cardiopulmonary disease had a poorer long-term prognosis (Hall et al 1977). MacIntyre has reported 53 patients who had acute pulmonary embolism without underlying cardiopulmonary disease and were followed for 5–9 years after the acute event. Of these patients with an initial predisposing factor for pulmonary embolism (e.g. surgery, leg injury, immobilization), 24% died during the follow-up period as compared with 55% of patients in whom no predisposing factor was identified (60% of these died of malignant disease) (Macintyre et al 1982).

It is evident that the long-term prognosis is worst in those patients with underlying severe cardiopulmonary disease which, rather than recurrent emboli, is the cause of death in many. The prognosis is also poor for those patients without a definitive, transient predisposing cause such as surgery or immobilization, and who may have an occult malignancy or defective coagulation mechanism. An extensive work-up for malignancy in patients with unexplained deep vein thrombosis or pulmonary embolism is not, however, productive (Griffin et al 1987), but close follow-up is justified, especially in patients under the age of 50 years (Goldberg et al 1987).

Recurrent pulmonary embolism leading to chronic pulmonary hypertension and cor pulmonale is relatively uncommon and probably occurs in less than 2% of patients following pulmonary embolism (Dalen & Alpert 1975, Paraskos et al 1973, Benotti et al 1983, Sutton et al 1977, Riedel et al 1982). A recent advance in the management of these patients has been the development of late embolectomy or endarterectomy, which in carefully selected patients have produced promising results. Moser (1990) has seen more than 200 patients with chronic thromboembolic pulmonary hypertension since 1970 and has subjected many to pulmonary thromboendarterectomy. Diagnosis and management of such patients have been documented in several reports (Chitwood et al 1985, Moser et al 1987).

Criteria for offering thromboendarterectomy are the presence of significantly raised pulmonary vascular resistance at rest (>300 dynes/sec cm^{-5}), evidence of thrombus in main, lobar or segmental arteries, no other serious coexisting disease and sufficient disability for patients to justifiably be willing to undergo the procedure, which carries significant mortality and morbidity rates. Bilateral phrenic nerve palsy, reperfusion pulmonary oedema and psychiatric disturbance have been the most common postoperative complications.

PREVENTION OF DEEP VEIN THROMBOSIS AND PULMONARY EMBOLISM IN SURGICAL PATIENTS

The recognition that calf vein thrombosis is a common postoperative event and that its incidence can be reduced by a variety of prophylactic measures has led to the hope that these same measures may reduce the frequency with which thrombi extend into the proximal portions of the deep venous system, from which they may embolize and cause sudden death in the postoperative period. Because proximal venous thrombosis is present in only 25% of patients with postoperative calf vein deep vein thrombosis and only a proportion of these give rise to significant pulmonary emboli, very large numbers of patients need to be studied to show a statistically significant effect of any prophylactic regimen. The conflicting results from many

published trials have led to the performance of meta-analysis (Collins et al 1988), the results of which need to be interpreted cautiously. Collins et al have pointed out that, while only 500 patients would need to be studied in order to demonstrate a reduction in the incidence of postoperative deep vein thrombosis from 20% to 10%, 5000 patients would need to be studied to show a reduction in the incidence of postoperative pulmonary embolism from 3% to 1.5%, and 20 000 patients would have to be studied to show a reduction in postoperative death due to pulmonary embolism from 0.8% to 0.4%. In their review of more than 70 randomized trials involving almost 16 000 patients, the perioperative use of low-dose s.c. heparin reduced death attributed to pulmonary embolism from 55 out of 7486 controls to 19 out of 8112 patients (Collins et al 1988). This 50% reduction in mortality from pulmonary embolism is to a considerable extent (42%) accounted for by the International Multicentre Trial (which contributed only 27% of patients in the meta-analysis) in which, despite a 100% reduction in fatal pulmonary emboli, there was no reduction in total mortality and the methodology employed attracted criticism (Sherry 1975). The dilemma facing the practising surgeon is illustrated by clearly spelling out the logistics involved in prophylaxis. Assuming a 0.5% incidence of fatal postoperative pulmonary embolism and that a prophylactic agent could reduce this by 50%, then the routine use of this agent in 1000 general surgical patients could result in preventing fatal pulmonary embolism in 2 or 3 patients. As a significant proportion of fatal pulmonary emboli occur in patients with metastatic malignant disease, the net saving of patients who would otherwise have recovered may be as low as one or two patients. The remaining 998 patients would have received unnecessary prophylaxis. If prophylaxis were of proven value, inexpensive, easily applied and devoid of side effects, then such a policy could be justified. Side effects, however, remain a matter of concern even if their incidence is low, and thus the benefit-to-risk equation for routine prophylaxis remains doubtful. These observations account for the fact that low-dose s.c. heparin or other prophylactic regimens have not become well established in routine clinical practice (Collins et al 1988, Sherry 1975, Terblanche et al 1982).

A promising area for future research would be the development of predictive indices to identify patients at greatest risk, with a view to limiting effective prophylaxis (which may comprise a combination of agents) to this group, or to routinely using non-invasive techniques such as impedance plethysmography to make an early postoperative diagnosis of proximal deep vein thrombosis and then instituting full anticoagulation.

An exception to the above is the well-established fact that the incidence of clinically significant thromboembolism following hip surgery can be reduced using warfarin anticoagulation perioperatively. This form of prophylaxis is, however, not suitable for patients undergoing abdominal surgery.

VENOUS THROMBOEMBOLISM IN PREGNANCY

The risk of deep vein thrombosis in pregnant or puerperal woman has been estimated to be about $5^1/_2$ times the risk in control females who are not taking oral contraceptives (Vessey & Doll 1968), and in a community study venous thromboembolism was clinically diagnosed in 1 : 200 pregnancies (Coon et al 1973). Obstetric complications and previous venous thromboembolism characterize up to a third of patients with postpartum thromboembolism (Aaro & Jurgens 1974). Some of the increased risk during the puerperium may be attributable to the (previous) use of oestrogens to suppress lactation (Vessey 1980). Death from pulmonary embolism occurs rarely, 1–2 per 100 000 pregnancies, but is always a tragic event (Vessey & Doll 1968).

Treatment of venous thromboembolism in pregnancy remains problematic. Untreated, almost 20% of patients with deep vein thrombosis develop pulmonary embolism, and of these nearly 30% are fatal (Villasanta 1965). Although heparin does not cross the placental barrier (and cause embryopathy like warfarin) a review of the world literature led to the conclusion that its use was nevertheless associated with a similar (30%) chance of an adverse infant outcome (Hall et al 1980). A more recent retrospective review of 100 pregnancies, in which heparin was given in 43 for treatment of venous thromboembolism, in 55 for prophylaxis and in 2 for prosthetic heart valves (mean duration of treatment 18 weeks), has provided much more encouraging data (Ginsberg et al 1989). The rates of prematurity, abortions, stillbirths, neonatal deaths and congenital abnormalities were similar to those in the normal population. The study of unselected consecutive patients reduced the potential for selection bias, one of the deficiencies inherent in the study of a historical cohort. Although the risk of heparin-associated osteoporosis was not studied and this remains of major concern, this study provides information which reduces the uncertainties involved in managing venous thromboembolism in pregnancy.

CONCLUSIONS

Major strides have been made in the accurate non-invasive diagnosis of deep vein thrombosis and pulmonary embolism. The invasive techniques of pulmonary angiography and bilateral ascending venography have been used to establish the accuracy of non-invasive tests such as ventilation–perfusion scanning and impedance plethysmography in the diagnosis and serial evaluation of progress and resolution of these disorders. Although our knowledge of the natural history of venous thromboembolism remains incomplete it is now possible to plan therapy and monitor progress more rationally than in the past.

Although asymptomatic postoperative deep vein thrombosis can be prevented using a variety of prophylactic techniques, the incidence of

significant thromboembolic events is so low that the use of prophylactic regimens to reduce (but not prevent) these has not yet reached the level of clinical applicability on a wide scale. Despite improvements in understanding the hypercoagulable state, no cause can be identified in a large proportion of such patients, and much remains to be learned about why some patients are more prone than others to venous thromboembolism.

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CHAPTER 6

Tuberculosis in adults

S R Benatar

Mycobacterium tuberculosis is a hardy organism capable of surviving in all climatic conditions, and it is therefore found worldwide and in all peoples. The disease it causes has plagued mankind for many centuries (see Chapter 1). Tuberculous lesions have been found in the vertebrae of neolithic man in Europe and in Egyptian mummies dating back to 3700 BCE. Hippocrates described the symptoms of an illness he called 'phthisis' (meaning 'to waste away'), and he recognized nodules in the lung as being features of the disease. The Latin name 'tubercula' for such nodules led to the introduction in 1834 of the term tuberculosis for the clinical and pathological description of the disease.[13]

Tuberculosis, as the 'great white plague' in Europe from the seventeenth to the nineteenth centuries, accounted for 20 per cent of all deaths. In Britain tuberculosis reached its peak in the late eighteenth century, at which time the annual death rate from tuberculosis was approximately 500 per 100 000 population per year. This had fallen to 200 per 100 000 population by 1882 when Robert Koch discovered the tubercle bacillus, and to 50 per 100 000 just before anti-tuberculosis drugs came into general use in the 1940s and subsequently down to approximately five per 100 000 per year.[18]

Despite major advances in our understanding of the disease and the development of new, potent anti-tuberculosis drugs, it remains a problem worldwide and especially in developing countries. It is estimated that of three million deaths every year throughout the world from tuberculosis, 75 per cent are in the developing world. The AIDS epidemic and its association with tuberculosis have given a re-emphasis to this disease, both in the developed and developing worlds.

PATHOGENESIS

Tuberculosis is transmitted by the airborne spread of one to three bacilli of *Mycobacterium tuberculosis* suspended in droplet nuclei 1–5 μm in diameter — produced during coughing or speaking by persons with active (open) pulmonary tuberculosis. However, the relatively low infectivity rate requires fairly prolonged and close contact for high levels of transmission. Approximately one-third of close contacts of tuberculous patients are found to have evidence of infection (positive tuberculin skin test).

Inhalation of droplets into the mid- and lower zones of the lung results in the development of a small area of bronchopneumonia. Antigen-activated macrophages sensitize T-lymphocytes which accumulate at the site of infection and release a range of lymphokines. In the weeks preceding the development of natural acquired immunity the organisms proliferate, drain into regional lymph nodes and subsequently proceed through the lymphatic system into the systemic circulation which then distributes them to many organs throughout the body. The inflammatory reaction generated and maintained by activated macrophage and T-lymphocyte secretion of a range of cytokines leads to natural acquired immunity which both defends the host against proliferating organisms and damages tissues through the cytotoxic and other effects of the mediators of inflammation (see Chapter 14). The small area of bronchopneumonia with its regional lymphadenopathy constitutes the primary complex, and subsequent calcification of this complex is common.

This, usually asymptomatic, sequence of events is associated with the development of acquired immunity to *M. tuberculosis* which results in the death of most of the bacteria in the primary focus and other sites throughout the body. However, a few bacilli remain alive and dormant following the primary infection (particularly in areas of high PO2 such as the apex of the lung, cortex of the kidneys, and vertebrae). This primary infection confers partial immunity to subsequent re-infection by inhaled bacilli. The development of immunity is associated with development of a positive hypersensitivity skin reaction to tuberculin within four to six weeks of infection. Although natural acquired immunity and the positive hypersensitivity reaction develop simultaneously they are mediated by independent clones of lymphocytes.

It is estimated that approximately 5 to 15 per cent of patients infected by the tubercle bacillus will ultimately develop tuberculous disease, and it is possible that a greater percentage may do so in the very adverse circumstances found in some developing countries. The untreated, but infected, person carries the risk of developing tuberculosis for a lifetime and reactivation can occur at any stage after the primary infection, although the risk is greatest in the first two years. Factors determining who will develop tuberculous disease are complex and include the interaction of a variety of host characteristics, the virulence of the infecting strain and environmental influences. Although there is some evidence for genetic susceptibility to tuberculosis, such as the excess risk observed in monozygotic as compared with dizygotic twins and in blood relations as compared with non-relations living in the same close contact,[7] extraneous factors, such as malnutrition, overcrowding, silicosis, malignant disease or the use of immunosuppressive drugs, are all much more important in determining the progression of infection to disease and in causing later reactivation.

EPIDEMIOLOGY

Tuberculosis is not uniformly distributed throughout the world or through different population groups in individual countries. It is therefore necessary to have a surveillance programme to monitor tuberculosis trends in defined areas so that effective programmes for control of the disease can be designed and the efficacy of these assessed.

There are four methods of surveillance to monitor tuberculosis trends:

- the mortality rate;
- the incidence of disease (the notification rate);
- prevalence surveys; and
- estimates of the annual risk of infection.

The mortality rate was a useful indicator of trends in the pre-chemotherapeutic era of high mortality, but, with the current much lower rates, it is an inadequate measure.

The second method of monitoring tuberculosis — the recording of the incidence of disease — suffers from the defect that there are different standards of notification in different areas, as a result of which the notification rate is influenced by many factors other than the true incidence of disease.

Prevalence surveys undertaken to identify all cases of tuberculosis in defined communities reveal many more with active disease than does routine case notification. Prevalence surveys in the Transkei suggested that in that community less than one-third of all cases of open tuberculosis were diagnosed and notified. As prevalence surveys are difficult and expensive to conduct and need to be repeated to assess trends within communities, alternative means of assessing trends in tuberculosis have been sought.

The annual risk of infection, an index calculated from the rate of tuberculin conversion in a defined representative group of children, is recognized as being a more sensitive method of expressing the status of tuberculosis in any community as it reflects the rate of spread of tuberculosis infection. It has the advantage that it is a generation ahead of notification data in its ability to monitor tuberculosis trends. Studies in South Africa have shown great variation in trends of the annual rate of infection in different population groups and also in the same groups within different parts of the country (see Chapter 4).[1, 10, 32]

In many parts of the world today, and in the United States less than 50 years ago, most people become infected with *Mycobacterium tuberculosis* in childhood. In an autopsy study of more than 1 000 New Yorkers who died suddenly and unexpectedly between 1944 and 1947, 88 per cent of those aged 60 years or older, and 80 per cent of those between 40 and 59 years of age had evidence of previous tuberculous infection.[13] The incidence of disease remains very variable within and between countries. For example, in the United States the notification rate ranges from 8,8 per 100 000 per year in Wichita to 54,5 per 100 000 per year in San Francisco. Death rates from tuberculosis in 1973 ranged from one per 100 000 population in Australia, 1,8 in the United States, 6,3 in France, to 11 in Japan and 27,7 per 100 000 in Hong Kong.[13] The wide variations in South Africa are well known and are described in Chapter 4.

CLINICAL FEATURES

Primary tuberculosis is seldom associated with significant clinical symptoms, although a small percentage of patients may have peripheral manifestations such as erythema nodosum or phlyctenular conjunctivitis. The diagnosis in asymptomatic contacts is usually made from a chest radiograph or by observing Mantoux skin test conversion. Progressive primary tuberculosis in Africa is often associated with massive enlargement of mediastinal and cervical lymphadenopathy, which can result in compressive effects and sinus formation.

Post-primary tuberculosis may be due to either reactivation or exogenous re-infection, but these two mechanisms are not easily distinguished clinically. Although apical and sub-apical regions of the lung are classically considered to be the common sites, any portion of the lung can be involved and it is well recognized that lower lobe, endobronchial and pleural tuberculosis are quite common in the elderly.[19] Most cases of tuberculous disease seen in adults represent reactivation of previous dormant foci, although in institutions such as shelters for the homeless (where overcrowding and malnutrition are common) exogenous re-infection is more common than had previously been thought to be the case.[20] The incidence of tuberculosis is also extremely high in such shelters — up to 150–300 times the national average. This is further complicated by the high incidence of infection with primary drug resistant organisms.

Reactivation and organ tuberculosis

The proportions of reactivation tuberculosis affecting different organs in South Africa (obtained from notification data) and in the United States are difficult to compare as they are recorded using different sub-categories. Pulmonary tuberculosis accounts for the vast majority of all cases in all countries, but especially in developing countries. In developed countries the rate of decline of notified organ tuberculosis has been lower than that of pulmonary tuberculosis, and this pattern may also be influenced by the frequency of extra-pulmonary tuberculosis in patients with AIDS. The frequency with which some investigations are helpful in the diagnosis of organ tuberculosis is summarized in Table 6.1.

Pulmonary tuberculosis

The clinical manifestations of reactivation pulmonary tuberculosis are very variable. They range from a low grade inflammatory process, with minimal acute local or systemic manifestations, which may, over a long period of time, lead to unilateral or bilateral upper lobe fibrosis with considerable impairment of lung function, to a very rapidly progressive form of cavitating lung disease associated with pronounced local symptoms and systemic manifestations. This spectrum reflects the variable relationship between the virulence of the organism and the host response.

Symptoms due to the local effects of the disease process include cough, haemoptysis (which can range from recurrent minor to major life-threatening haemoptysis), chest pain and dyspnoea. General symptoms include malaise, lethargy, fever, weight loss, night sweats, and anorexia. Physical signs may be minimal or pronounced according

Table 6.1
Range of results of investigations in patients with organ tuberculosis

	PLEURAL TUBERCULOSIS	PERITONEAL TB (WITH ASCITES)	MENINGEAL TB	PULMONARY TB	GENITO-URINARY TUBERCULOSIS
Positive Mantoux	70%	<65%	<65%	±80%	±80%
Fever	>85%	100%	100%	40%	<10%
AFB's					
— direct stain	—	>5%	<20%	±50%	±80%
— culture	<50%	±80%	>85%	±95%	±80%
— biopsy plus culture	>85%	>85%	—		

to the degree and the nature of local damage produced, such as pleural effusion, lobar consolidation, cavitation or fibrosis.

The range of usual and unusual radiographic features[22] is described in many publications and in detail in Chapter 13. The differential diagnosis of radiographic abnormalities will depend on the pattern of the abnormality but common considerations include carcinoma, sarcoidosis, allergic broncho-pulmonary aspergillosis, pneumoconiosis, pneumonia due to a variety of agents (including fungi), pulmonary vasculitis, lymphoma, and extrinsic allergic alveolitis. As the definitive diagnosis of pulmonary tuberculosis rests on finding *Mycobacterium tuberculosis* in the sputum, every attempt should be made to identify the organism on direct stains or culture. Cowie and Escreet, in their study of 300 patients with newly diagnosed pulmonary tuberculosis in the gold mines of the Orange Free State, showed that in the presence of a suspicious radiograph, a normal erythrocyte sedimentation rate, a negative Heaf test and the absence of symptoms are not reliable factors for excluding the diagnosis.[6]

When tuberculosis is suspected and the direct sputum smear is negative, an alternative to waiting six weeks for the results of sputum culture or to treating the patient until these results are available, is to perform fibre-optic bronchoscopy and obtain brushings and biopsies from the involved area of the lung. Several workers have shown the value of this approach in making an early definitive diagnosis, but it should be noted that, even with this technique, the diagnosis is not made in all patients in whom tuberculosis is subsequently proven.[29, 31]

As indicated above, the evolution of tuberculosis lesions in the lung is very variable. Hence in some patients, in whom the host response is adequate, the disease remains localized and may even resolve without treatment, leaving some destruction of lung tissue and a few persisting viable organisms which may again reactivate at a later date. If disease is progressive, the lesion spreads through the lung by destruction of tissue (caseation and cavitation), may rupture into a bronchus and spread to other parts of the lung, or disseminate widely via the lympho-haematogenous route to involve many organs. Endobronchial involvement can result in bronchial obstruction and bronchiectasis. Rupture of a cavity or large caseous lesion into the pleural space results in a pyopneumothorax with bronchopleural fistula. Acid-fast bacilli are usually evident on direct examination of aspirated material and surgical drainage is often required.

Slight and recurrent haemoptysis is usually the result of mucosal involvement, but massive and life-threatening haemoptysis can occur when a pulmonary artery traversing a tuberculous cavity is eroded.

Residual, open healed cavities have a tendency to become colonized with fungus of the Aspergillus species, the growth of which can lead to the formation of an aspergilloma (fungal ball). This local growth is accompanied by the development of circulating IgG antibodies to the aspergillus fungus. A British Thoracic Association survey in the United Kingdom showed that 30

per cent of patients with open healed tuberculous cavities had positive serology but no clinical evidence of aspergillomas.[2] Another 15 per cent had chest radiograph appearances of fungus balls, and in 10 per cent of these patients the course was complicated by recurrent, severe or life-threatening haemoptysis. The role of surgery in such cases is often debated, in particular where lung function is severely impaired. In those patients with adequate lung function surgery is associated with a better long term prognosis than is conservative treatment.[9]

Lymph node tuberculosis

In Britain 75 per cent of patients with lymph node tuberculosis are African or Asian immigrants. Cervical lymphadenitis makes up 50 per cent of non-pulmonary tuberculosis in this group but is often associated with tuberculosis of the lungs or other organs. Clinically the onset is usually insidious, but progression to chronic discharging sinuses and ultimately to unsightly scars (scrofula) is a common outcome in the absence of treatment. The bacilliary load is usually low and positive cultures are obtained in about 60 per cent of patients. Lymph nodes may enlarge in size, new glands may enlarge on therapy in up to 25 per cent of patients, and breakdown may even occur in some while on treatment. Excision or aspiration after the start of chemotherapy may be required in up to 20 per cent of patients. Long term results are good although up to 13 per cent of patients still have enlarged (asymptomatic) nodes at the end of successful treatment.[3]

Mediastinal lymphadenopathy is less common than cervical or axillary lymphadenopathy and is transient in some patients. In others it is more persistent and conditions such as sarcoidosis, lymphoma and metastatic carcinoma enter the differential diagnosis.

Pleural tuberculosis

Once considered to be almost always a manifestation of primary tuberculosis affecting predominantly children and young adults, pleural tuberculosis is now a recognized manifestation in older patients with concomitant pulmonary tuberculosis. A distinction needs to be made between tuberculosis effusions and effusions due to other diseases (cirrhosis with ascites, cardiac failure, rheumatoid arthritis, and lymphoma) in these patients. Pleural biopsy (with culture of fluid and biopsy material) is needed to make a definitive diagnosis.[8]

Pleural tuberculosis and its complications comprised 4,3 per cent of general thoracic surgical patients seen at the Natal University Cardiothoracic Unit during the 20 years between 1966 and 1985. Odell has reported and reviewed the role of the thoracic surgeon in the investigation and surgical management of such patients.[21] On those few occasions when pleural effusions do not resolve on medical therapy, decortication is only recommended if the pleural fibrosis is significantly impairing lung function. It is not recommended until patients have received chemotherapy for at least four months or sputum results, previously positive, have been negative for four months.[21] The surgical management of pleural complications of tuberculosis, only rarely seen in developed countries, is demanding and requires considerable experience and skill. It is well described by Odell.[21]

Genito-urinary tuberculosis

Reactivation of dormant organisms in the cortex of the kidney leads to the spread of infection into the renal pelvis and from there into the ureter and bladder. Twenty per cent of patients are asymptomatic. Ulceration and fibrosis in the urethra result in hydronephrosis and impairment of renal function, and in the bladder causes shrinkage in size with consequent urinary symptoms.

Clinical manifestations include frequency, dysuria, microscopic haematuria, ureteric colic, loin pain, backache, chronic renal insufficiency and extension of cold abscesses to the loin. Two-thirds of patients have abnormal chest radiographs.

The diagnosis should be suspected in the context of sterile pyuria or microscopic haematuria. Bacteriological studies are required for confirmation. Intravenous pyelography reveals the site and extent of involvement and may show both non-specific abnormalities such as cortical scarring,

dilatation of calyces, papillary cavities and other more specific features, including renal calcification, cavitation and urethral strictures with a classical beaded appearance.

In the male, painless or symptomatic scrotal swelling occurs with nodular swelling of the epididymis, vas deferens or seminal vesicles. Prostatic involvement may also occur, and the development of skin sinuses is common.

In the female, infertility arising from the involvement of the Fallopian tubes and endometrium is the most common result. Dyspareunia, pelvic pain, menstrual disturbances and vaginal discharge are other manifestations.

Abdominal tuberculosis[11, 17, 25, 28]

Although any part of the gastrointestinal tract may be involved, the most common sites of tuberculous involvement are the distal ileum and ileocaecal regions. Small bowel, ileocaecal and colonic tuberculosis account for about 40 per cent of all cases of abdominal tuberculosis; tuberculous ascites and plastic peritonitis for about 50 per cent; and mesenteric tuberculous lymphadenitis for the remaining 10 per cent. Prior to the chemotherapy era autopsy data showed that there was involvement of the bowel in up to 80 per cent of patients who died of TB, and radiological studies showed that the incidence of bowel tuberculosis was directly proportional to the extent of pulmonary tuberculosis. In more recent studies less than 50 per cent of patients presenting with intestinal tuberculosis have had radiographic evidence of active pulmonary disease. Reactivation of organisms previously spread by the haematogenous route to the bowel, rather than by infection of the bowel from swallowed organisms, now seems the more likely pathogenic sequence under these circumstances.

Marks and colleagues have described the clinical features of abdominal tuberculosis as being 'varied, deceptive and generally non-specific', the wide spectrum of presentation ranging from relatively mild abdominal symptoms to an acute life-threatening emergency. In a twenty-year experience of 242 patients at Cape Town's Groote Schuur Hospital weight loss, abdominal pain and fever were the most frequent findings, occurring in 60–80 per cent of patients, with diarrhoea as a symptom in about 30 per cent, and vomiting and constipation in 20 per cent. An abdominal mass was palpable in 25 per cent and ascites was a feature in almost 50 per cent of patients. Routine investigations were usually non-specific, with the ESR being normal in 22 per cent of patients and the Mantoux test positive in only 57 per cent of patients tested. Active pulmonary disease and/or pleural effusion were present in less than 40 per cent of patients on whom a chest x-ray had been performed.[17]

Dysphagia is usually the presenting symptom of oesophageal tuberculosis, although this is the least common site in the gastrointestinal tract. Tuberculosis of the stomach is also rare but the clinical, radiological and even gastroscopic features may simulate peptic ulceration or malignant disease. Pyloroduodenal obstruction due to extrinsic compression by massive caseating glands is unusual but is the commonest cause of pyloroduodenal obstruction in the South African black and may be confused with carcinoma of the pancreas.

Small bowel tuberculosis, which accounts for 36 per cent of patients with abdominal tuberculosis, may present either with malabsorption syndrome or with features of small bowel obstruction. Ileocaecal tuberculosis presenting as a tender abdominal mass needs to be differentiated from Crohn's disease, caecal carcinoma, amoeboma and appendix abscess.

Patients with colonic tuberculosis may present with features of a dysenteric illness, a colonic mass, an anorectal lesion, or any combination of these.

Tuberculous mesenteric adenitis in the absence of obvious bowel involvement may simulate a variety of disorders, including pancreatic carcinoma and abdominal lymphoma. Presentation may be with weight loss, abdominal pain, and variable constitutional symptoms, while in approximately 80 per cent of cases there will be a palpable mass in the epigastrium, central abdomen or right iliac fossa.

Tuberculous peritonitis may present either with clinical ascites or with the

chronic, plastic variety of the disease. Weight loss, abdominal distension, abdominal pain and tenderness are common clinical features. Most complications of abdominal tuberculosis are related either to malabsorption or to the effects of obstruction and/or perforation of the bowel.

Diagnosis is dependent on knowledge of the protean manifestations of abdominal involvement in tuberculosis, the consideration and possibility of tuberculosis in the differential diagnosis of a wide variety of disorders, and the use of appropriate investigations. Radiology, although non-specific, plays an important role and the chest x-ray may provide a clue in up to 40 per cent of patients. As in other forms of organ tuberculosis, routine haematological and biochemical tests are of little diagnostic value. The diagnosis rests on finding acid-fast bacilli on direct staining or culture, or on the typical histopathological picture in an appropriate tissue biopsy.

The distinction between tuberculosis and Crohn's disease and the diagnostic criteria for abdominal tuberculosis are discussed in detail by Marks and colleagues.[17]

The diagnostic value of measuring adenosine deaminase levels (ADA) in ascitic fluid has been reported by Voigt and colleagues.[28] In a retrospective case control study the sensitivity and specificity of ADA above 32,3 u/l were 98 per cent and 95 per cent respectively. In a follow up prospective study of 64 patients with ascites (11 found to have tuberculosis), ADA had a sensitivity of 100 per cent and specificity of 96 per cent in discriminating tuberculosis from other causes of ascites.[28] False negative results were noted in only two patients, both alcoholics with tuberculosis. False positives occurred in two patients with malignant ascites and one with pancreatitis.

Modalities of therapy which may need to be considered over and above conventional antituberculous drugs include parenteral chemotherapy and intravenous hyperalimentation in patients with diffuse bowel involvement, surgery for bowel perforation, acute intestinal obstruction, or (in some patients) to establish the diagnosis. There is probably little place for extensive resection of bowel, although limited resections may be justified in some patients.

The appreciable mortality in patients with abdominal tuberculosis, despite the advent of safe and effective antituberculous drugs, is largely due to serious complications, such as perforated bowel, and the late presentation of many desperately ill patients, many of whom suffer from predisposing conditions such as cirrhosis or alcoholism. Patients with uncomplicated abdominal tuberculosis usually respond dramatically to appropriate drug therapy.

Disseminated tuberculosis[16, 23]

Disseminated tuberculosis may result from the haematogenous spread of tubercle bacilli that directly follows a primary infection (usually in children), from the rupture of a reactivated old focus into the lymphatic or blood-streams, or as a terminal event in a patient with extensive organ tuberculosis. The outcome of such dissemination, clinically and pathologically, varies with the size of the bacillary load and the state of the host defences, and ranges from the very rare acute fulminating form of non-reactive tuberculous septicaemia to the more common classic miliary tuberculous picture. The acute non-reactive form is characterized by extensive tissue necrosis containing numerous mycobacteria and little cellular response, whereas the more chronic reactive type shows a marked cellular response with numerous well-formed tubercles and fewer organisms. Between these extremes lies a spectrum of pathological features. Clinically, the cases closest to the non-reactive end of the spectrum are the ones most likely to be missed in life because of the absence of the miliary chest radiograph.

There have been many reports of disseminated tuberculosis that have only been diagnosed at necropsy, and this form of the disease has been labelled 'cryptic disseminated tuberculosis'. It is also well documented that miliary lesions in the lung are not always accompanied by a miliary pattern on the chest radiograph, although careful inspection of an under-penetrated film may reveal miliary shadows in such patients. Patients with miliary lung lesions may also have an atypical radiographic

pattern with unevenly distributed, irregularly shaped nodules, unlike the classic miliary pattern of evenly distributed lesions of less than 2 mm in diameter. Therefore, neither the apparently normal chest radiograph nor the atypical miliary-like picture should be considered to exclude the diagnosis of disseminated tuberculosis in an appropriate clinical setting.

In a retrospective study of 62 cases of disseminated tuberculosis seen over a six-year period in a large teaching hospital, approximately a quarter of the patients had a short history of less than a month, but 17 per cent had had symptoms for longer than six months.[23] The clinical presentations were non-specific. Respiratory symptoms were common, two-thirds of the patients having had a cough (half of these productive) and one-third complained of dyspnoea. Adventitious chest sounds and tachypnoea were frequently found in association with these symptoms. Fever, usually low grade, was almost always present (95 per cent), hepatomegaly was a common finding (62 per cent), but splenomegaly was uncommon (12 per cent) as in other series. The systemic effects and chronicity of the illness were evident from the loss of appetite and weight, with physical evidence of wasting (50 per cent), hypo-albuminaemia (89 per cent), hyponatraemia (51 per cent) and haemoglobin of less than 10 g/dl (35 per cent). As in other series, headache had a high degree of specificity for meningeal involvement. Negative responses to tuberculin skin tests shortly after admission to hospital were recorded in 62 per cent. Previous series have reported negative reactions in 40 per cent of patients with cryptic tuberculosis and in over 30 per cent of patients with miliary tuberculosis. The diagnosis of disseminated tuberculosis was suspected in life in 94,7 per cent of patients with a miliary or miliary-like chest radiograph, and a definitive diagnosis was made during life in 74 per cent. Of the patients without radiographically visible miliary lesions, 15 had other lesions on the chest radiograph. Tuberculosis was considered during life in only 67 per cent of patients without a miliary pattern, while a definite diagnosis of tuberculosis was made during life in only 25 per cent.

None of the patients in this series had gross haematological abnormalities, such as pancytopenia, aplastic anaemia, lymphocytosis or leukemoid reaction. Haemoglobin levels less than 10 g/dl were found in 34,5 per cent, white cell count of less than $4x10^6/l$ in 12,3 per cent and a similar percentage had white cell counts above $12x10^6/l$. A third of the patients had abnormal differential white counts and all had neutrophilia. Only four patients showed an absolute lymphopenia and only three had a platelet count of less than $100x10^6/l$. The ESR ranged from 4 to 150 mm in the first hour, and almost a third of the patients had an ESR of more than 100 mm. Although there were no patients with pancytopenia, three had a combination of relatively low haemoglobin levels, white cell and platelet counts. Bacteriological confirmation of the diagnosis was obtained most frequently from sputum (31 per cent of 39 patients), bronchial brushings (100 per cent of three patients), pleural biopsy (50 per cent of four patients) and lung biopsy (100 per cent of two patients).

Twenty five of the 62 patients (40 per cent) had associated conditions which could have predisposed them to the development of severe tuberculosis. These included alcoholism, malnutrition, diabetes, and cytotoxic or deep x-ray therapy for malignant disease. Of the 38 patients with a miliary-like pattern on the chest radiograph, 53 per cent died, as compared with 83 per cent of patients without miliary shadowing.

In a more recent study of 109 patients with miliary tuberculosis treated in the rifampicin era (1978–87), predisposing conditions were present in 42 per cent of patients.[16] Clinical features were similar to previously reported series. Fibre-optic bronchoscopy was diagnostic in 44 of 51 patients (86 per cent), bone marrow examination in 19 of 22 patients (86 per cent), and liver biopsy in all 10 patients in whom this investigation was done. Twenty four per cent of patients died of miliary tuberculosis, a median of six days after starting treatment. Stepwise logistic regression identified age (over 60 years), lymphopenia, thrombocytopenia, hypo-albuminaemia, elevated transaminases and treatment delay as

Table 6.2
Frequency of positive diagnosis of tuberculosis in patients with disseminated disease[16]

	SPUTUM (n64)	BRONCHIAL BRUSHINGS (n51)	TRANS-BRONCHIAL BIOPSY (n48)	BONE MARROW BIOPSY (n22)	LYMPH NODE (n9)	LIVER BIOPSY (n11)
AFB stain (Ziehl-Neelsen)	33%	27%	27%	0	56%	27%
AFB culture*	62%	55%	52%	21%	100%	50%
Histology-						
Granulomata	—	—	63%	82%	100%	100%
Caseation	—	—	42%	41%	100%	45%

* Culture not obtained in all patients in each group

independent predictors of mortality. Tuberculin skin tests were positive in 20 of 47 recorded cases (43 per cent). Twelve patients, all of whom were shown to have haematogenous dissemination, did not have miliary nodules on the chest radiograph. Other common radiological features included pleural reactions, hilar or mediastinal lymphadenopathy, evidence of previous tuberculosis, confluent shadowing, cavities, and spontaneous pneumothorax. In 20 patients in whom follow-up chest radiographs to resolution were available, the mean time for resolution was 18,7 weeks (range 1–44 weeks). Bacteriological analysis of body fluids and biopsy results are shown in Table 6.2.

The temperature response to therapy could be adequately assessed in 55 patients and the median duration for complete resolution of pyrexia was seven days (range 1–55 days), while 76 per cent were afebrile within 14 days. Twenty eight patients died whilst receiving treatment, and this was due to miliary tuberculosis in 26. Median time from commencing treatment to death was six days and 22 patients died within two weeks of commencing treatment.

Complications in this group of patients included central nervous system complications (seizures and hydrocephalus requiring shunting), the adult respiratory distress syndrome, deep vein thrombosis or pulmonary embolism, pericardial tamponade, and Addison's disease.

It is clear from both these series of patients at Groote Schuur Hospital that delayed treatment in miliary TB is associated with increased mortality. There is thus a need for rapid diagnosis, but treatment in severely ill patients should be commenced as soon as the diagnosis is considered.

HIV INFECTION AND TUBERCULOSIS

In the 31 year period from 1953 to 1984 the number of reported cases of tuberculosis in the United States decreased by 73,6 per cent, but this reduction was much greater among whites than among other races.[24] The ratio of the annual risk of tuberculosis among other-than-whites to the risk among whites rose continuously from 2,9 in 1953 to approximately five in 1984.

Beginning in 1985, the decline in the number of reported cases has been reversed and an increase in the number of cases of tuberculosis is being reported. Although such recent increases have been reported from many localities in the United States, the increase in New York city has been most marked. In 1978 tuberculosis in New York city accounted for 4,6 per cent of all cases of TB in the United States, but by 1987 the proportion had more than doubled to 9,8 per cent. The observation that this increase is almost exclusively limited to non-Hispanic blacks and Hispanics in the 20 to 54 year-old age group has been interpreted as evidence that endogenous reactivation of a latent tuberculous infection is caused by a factor that is particularly prevalent in this group of young adults. Infection

with the human immunodeficiency virus is a strong contender, and matching of tuberculosis and AIDS registries has shown that in New York city four per cent of patients and in Florida 10 per cent of patients with AIDS had histories of tuberculosis. Tuberculosis preceded the diagnosis of AIDS in a large proportion of cases (up to 50 per cent) suggesting that this infection arises at the point where there is a milder degree of HIV-induced immune deficiency than later in the natural history when this is more profound, and less virulent organisms commonly produce clinical disease.[24]

The hypothesis that tuberculosis in HIV-infected persons results from reactivation of a primary infection is supported by data from a follow-up study of a cohort of drug abusers whose HIV and tuberculin skin test status were known. Of those who were both HIV and tuberculin positive, approximately 14 per cent developed tuberculosis as compared with 0,3 per cent of those who were only HIV positive.[26]

Immigration of people to the United States from countries with high tuberculosis prevalence, as well as poverty and homelessness, are other contributing factors to the reversal in the trend of tuberculosis in the United States.[24]

The implications of these observations are potentially very serious for the African continent where tuberculosis remains a major and growing problem and HIV infection is on the increase. It has been estimated that two per cent of Zairians develop active tuberculosis during their adult lives. HIV sero-prevalence surveys in adults in Kinshasha showed a positive rate of four to six per cent in the general population, 17 per cent in a 1987 sero-survey of 509 consecutive patients with an initial diagnosis of pulmonary tuberculosis seen at an outpatient TB diagnostic centre, and up to 40 per cent in hospitalized sanatorium patients. The death rate was 21 per cent in 84 HIV sero-positive sanatorium patients in 1987 who were followed for two months after admission, as compared with nine per cent in 128 HIV negative patients.[5] In Uganda, one of the first countries in Africa to collaborate with the WHO in setting up a national AIDS control programme, 8 000 cases of AIDS had been reported by 1989.[12] The gravity of the AIDS problem in Africa is reflected in the very high rate of seropositivity in some groups (e.g. 67 per cent in barmaids and 32 per cent in truck drivers in Uganda).[12] It has been estimated that there could be 40 000 to 50 000 new cases of HIV-induced tuberculosis each year in addition to the usual 16 000 new cases that had been reported annually in Uganda before the HIV epidemic.[12]

Studies of mycobacterial disease among adult patients with AIDS have shown that many have severe and unusual manifestations of infection with *Mycobacterium tuberculosis* which often includes extrapulmonary and disseminated disease.[4, 14, 27] This picture is complicated by the fact that many patients with AIDS were also drug abusers. Although the diagnosis of tuberculosis most commonly precedes the diagnosis of AIDS, in some patients both diagnoses may be made concurrently while in others the diagnosis of AIDS may precede the development of tuberculosis. In 29 patients with AIDS who also had tuberculosis, 72 per cent had predominantly extrapulmonary tuberculosis, 55 per cent had disseminated disease, 35 per cent had peripheral lymph node and 27 per cent bone marrow involvement.[27] In another study more than 50 per cent of intravenous drug abusers with AIDS and clinically significant lymphadenopathy, had tuberculous adenitis on biopsy.[14] Hilar, mediastinal and paratracheal lymphadenopathy are more common in association with tuberculosis in AIDS patients than in those without. Histiologic non-reactive tuberculosis with poor or absent granuloma formation is relatively common.

Radiographically most patients with AIDS and tuberculosis have a disease suggestive of progressive primary tuberculosis and only a minority have the classical apical infiltrates of reactivation disease. Lower

lobe infiltrates, considerable lymphadenopathy and air-fluid levels in cavities are common features. The presence of extrapulmonary tuberculosis in 72 per cent of patients is at least three times higher than in patients without AIDS. Despite the state of the immune system, most patients with AIDS respond well to conventional anti-tuberculous treatment: a small proportion do not respond adequately and the death rate, as mentioned above, is higher in patients with AIDS.

Recent descriptions of endobronchial tuberculosis in patients with AIDS adds another dimension to the presentation and natural history of tuberculosis in these patients.[30] Despite involvement of the bronchial mucosa, sputum is often negative for acid-fast bacilli and biopsies often fail to reveal granulomas. Cultures are important as bronchoscopic appearances closely resemble those of bronchogenic carcinoma.[15] Despite rapid progression of disease prior to diagnosis, patients usually respond well to anti-tuberculous chemotherapy and this again emphasizes the need for prompt and accurate diagnosis.

TUBERCULOSIS AND MALIGNANCY[7]

Carcinoma may complicate tuberculosis by developing in a scar of previous disease. Similarly, tuberculosis may complicate carcinoma by reactivation due to immune suppression. Patients with tuberculosis have up to a twenty-fold increased risk of carcinoma and this applies in particular to patients with carcinoma of the lung, in whom the diagnosis of tuberculosis often ante-dates the diagnosis of carcinoma. Tuberculosis may also occur with Hodgkin's and non-Hodgkin's lymphomas and in particular after immunosuppressive treatment.

CONCLUSION

Tuberculosis remains a major scourge throughout the world, but most especially in developing countries. The range of clinical manifestations it produces are protean, but knowledge of these combined with early diagnosis and appropriate modern management have greatly transformed the prognosis for the individual patient over the last 50 years.

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CHAPTER 16

The evolution of anti-tuberculosis chemotherapy

S R Benatar

The history of anti-tuberculosis chemotherapy begins in the 1940s, when streptomycin was discovered and introduced into clinical medicine at a time when statisticians were beginning to play an important role in the design of clinical trials. The British Medical Research Council led the way with a series of controlled studies that first involved streptomycin and later para-amino-salicylic acid (PAS) and isoniazid (INH). These resulted in the establishment, by the early 1950s, of a combined chemotherapy regimen that used the three drugs to achieve an anticipated 100 per cent cure rate with only rare relapses. By the mid-1950s the characteristics of contemporary management and therapy of pulmonary tuberculosis, as summarized by Fox,[21] were as follows:

- the combined use of PAS, streptomycin and INH for two years or more;
- administration of these drugs in divided doses, two to four times per day;
- many months of in-patient treatment in rural sanatoria with careful attention to diet, rest, and fresh air;
- monthly chest radiographs and frequent tomographic examinations;
- sputum examination — direct smear and culture — on a monthly basis;
- routine sensitivity tests and adjustments made to drug therapy if resistant strains were grown;
- a decline in the use of surgery although many indications for surgery remained. In 1962 the MRC established the optimum duration of therapy for cavitary tuberculosis, thus eliminating the need to resect cavities which remained after adequate chemotherapy. Subsequent to this the decline in surgery for tuberculosis became more marked; and
- follow up on a regular basis, both clinically and radiographically, after completion of chemotherapy, often for many years.

This treatment programme was expensive and made major demands on patients, their families and the health services. During the 1960s it became clear that such programmes, which aimed at achieving 100 per cent cure, were becoming too expensive and too difficult to implement in most developing countries, and so the search began for shorter courses of chemotherapy that would be designed to achieve less than 100 per cent cure rate with the savings on shorter duration of treatment being traded off against lower total (but still high and acceptable) cure rates. With the introduction of rifampicin in the late 1960s, and advances in understanding the mechanisms and actions of the anti-tuberculosis drugs in experimental murine tuberculosis, the British Medical Research Council and others embarked on large controlled clinical trials in several countries; the results of which form the basis of modern anti-tuberculosis chemotherapy. Some historical milestones in the development of chemotherapy since 1944 are briefly outlined in Table 16.1.

ACTIONS AND EFFECTS OF FIRST-LINE ANTI-TUBERCULOSIS DRUGS

Mycobacterium tuberculosis is an obligate aerobe which grows at a rate proportional to the oxygen tension of its environment. As a result the bacillus multiplies most rapidly in the high oxygen tension

Table 16.1
Some historical milestones in the development of chemotherapy[13, 36]

1944	Discovery of streptomycin.[34]
1948	British MRC report on a controlled trial of streptomycin in tuberculosis.[4]
1950	British MRC report on treatment of tuberculosis with streptomycin and PAS[5] (combined therapy became established).
1952	Isoniazid introduced, British MRC trial showed emergence of resistant bacilli in almost 75 per cent of patients treated with INH alone.[6]
1952	Pyrazinamide introduced as a 'secondary' drug but its bactericidal action was not exploited.[28]
1956–59	Trials showed decisively that chemotherapy eliminated the need for rest and that patients could be treated at home.[30, 38]
1960	High cure rate, low relapse rate of prolonged, combined chemotherapy well established.[12]
1962	Medical Research Council trial established optimum duration of therapy (two years) for cavitary tuberculosis (thus eliminating the need to resect cavities which remained after adequate chemotherapy).[7]
1966	Rifampicin introduced.[39]
1967	Basis for short course chemotherapy (with regimens containing RIF and INH) established in experimental murine tuberculosis.[3, 26, 39]
1968	Ethambutol introduced.[25]
1969	Effectiveness of supervised intermittent chemotherapy (without RIF) established.[32]
1970–7	Effectiveness of 12 and 9 month regimens (without RIF) established.[27, 29]
1973	British MRC trial demonstrated superiority of RIF containing regimens.[8]
1974–81	East African/British MRC trials established effectiveness of short (six months) and ultra-short (four months) courses.[14–20, 35, 37]
1980	American Thoracic Society approval of nine month courses which included RIF and INH.[1]
1990	British Thoracic Society recommendations for chemotherapy and management of tuberculosis in the United Kingdom.[10]

environment of pulmonary cavities and more slowly in solid caseous foci. This feature, together with its overall slow growth rate (mean replication time 20 hours as compared with 20 minutes for *Escherichia coli* and *Staphylococcus aureus*) and its high rate of mutation to drug resistant forms, are characteristics which have important implications for therapy.[24]

Although tuberculosis is the classic model of infectious disease with intracellular bacterial multiplication, the process of caseation releases bacilli into the extracellular compartment where rapid multiplication

takes place when liquefaction and cavity formation result in favourable oxygen tensions. At least three populations of bacilli can be identified: one large and made up of actively multiplying bacilli at neutral pH in liquefied caseous material lining cavity walls, and two others, both similar populations with slower growth rates — (i) organisms within macrophages and at an acid pH, and (ii) organisms within solid caseous areas where, despite neutral pH, low oxygen tension permits only intermittent multiplication. A fourth very small, completely dormant, population of bacilli may also exist.

The bacteriological basis of short course chemotherapy for tuberculosis is founded on this concept of there being several populations of mycobacteria on which anti-tuberculosis drugs have differing actions. These data, which have been fully reviewed by Grosset,[24] are briefly summarized in Table 16.2 together with considerations of tissue penetration.

Isoniazid, rifampicin and streptomycin (in that order of potency) act on the large population of actively multiplying extracellular bacilli in aerobic cavitary lesions. Although this large bacillary population contains a significant number of mutants resistant to any single drug, adequate treatment with this combination is strongly bactericidal and contributes to lasting cure by eliminating all extracellular bacilli. Inadequate treatment

Table 16.2
Effects of first-line drugs on various populations of tubercle bacilli and tissue penetration

DRUG	ACTIVITY	TISSUE PENETRATION
	BACTERICIDAL	
Isoniazid	Against populations* (1),(2) and to some extent(3)	Good (including CSF)
Rifampicin	Against populations (1), (2) and especially(3)	Good (but not as well into CSF)
Streptomycin	Against population (1) (at neutral or alkaline pH)	Good into ECF, pleura and peritoneum Decreased into pericardium and CSF when active inflammation has subsided
Pyrazinamide	Against population (3) predominantly (acid milieu)	Good (including CSF)
	BACTERIOSTATIC	
Ethambutol	Against populations (2) and (3)	Good but decreases into CSF when active inflammation has subsided

* Populations of tubercle bacilli:
(1) Large ($1x10^{7-9}$) actively dividing, extracellular population in aerobic cavitary lesions. Contain significant number of mutants resistant to any single drug.
(2) Small ($1x10^{2-5}$) intermittently dividing, extracellular and intracellular population in closed (anaerobic) caseous areas.
(3) Small ($1x10^{2-5}$) occasionally dividing, intracellular population ('persisters').

Table 16.3
Various chemotherapy regimens and some recommendations[11]

		TOTAL DURATION	COMMENTS
	DAILY THROUGHOUT		
1.	• SHR_2 HR_7	9 months	
	• EHR_2 HR_7	9 months	Avoids unpleasantness and toxicity of streptomycin
2.	• $SHRZ_2$ HR_4	6 months	Pyrazinamide provides advantage in situations where initial INH resistance is high
	• $EHRZ_2$ HR_4	6 months	Avoids unpleasantness and toxicity of streptomycin
3.	• $SHRZ_2$ HT_6	8 months	Advantage of much reduced cost
4.	• SHT_{1-2} HT_{12-18}	12–18 months	High non-compliance rate in developing countries (22–72% failure to complete course)
	• SHE_{1-2} HE_{12-18}	12–18 months	
	• SHP_{1-2} HP_{12-18}	12–18 months	
	PARTIALLY INTERMITTENT		
5.	• SHRZ daily for two months SHZ 2 x week	8 months	Suitable for use where in hospital treatment can be given for at least two months and there are only sufficient facilities for intermittent supervision at clinics.
6.	• SHRZ daily for two months HR 2 x week	6 months	
7.	• SHT daily for two months SH 2 x week	12–18 months	
	• SHP daily for two months SH daily 2 x week	12–18 months	
	INTERMITTENT THROUGHOUT		
8.	• SHRZ 3 x week for four months HRZ 3 x week for two months	6 months	Suitable for environments which lack hospital facilities and can only provide supervised therapy less frequently than on a daily basis.
9.	• EHRZ 3 x week for six months	6 months	

S = Streptomycin H = Isoniazid R = Rifampicin Z = Pyrazinamide
T = Thiacetazone E = Ethambutol P = Para-amino-salicylic acid

leads to treatment failure either as a result of outgrowth of the original sensitive organism or of resistant organisms.

Rifampicin, INH and pyrazinamide (in that order of potency) act on slowly multiplying intra- and extracellular organisms within macrophages and in closed caseous lesions. Adequate treatment contributes to lasting cure by sterilizing the lesion through the elimination of 'persisters', which are slow or intermittently growing organisms.

It is important to note that adequate treatment is dependent both on the *dose* of drugs used and on the *duration* of therapy. Using higher doses of drugs does not permit a significantly shorter duration of treatment (see below), and with adequate doses good results can be achieved, even with intermittent treatment, if given for an adequate period of time. Inadequate treatment leads to the late growth of 'persisters' and consequent clinical relapse.

Isoniazid and rifampicin are the two most useful drugs for the prevention of the emergence of resistant organisms, while rifampicin and pyrazinamide are the two most important sterilizing drugs as they kill semi-dormant organisms which are not affected by INH. The excellent (or at least adequate) tissue penetration of all the first-line drugs (Table 16.2) ensures the potential to cure tuberculosis in any organ with the delivery of adequate doses of drugs in appropriate combinations for an adequate period of time.

TREATMENT REGIMENS

Advances in the understanding of the pathobiology of tuberculosis and of the effects of anti-tuberculosis drugs *in vitro*, together with the results of many carefully designed and well-conducted clinical studies form the basis on which recommendations regarding modern treatment

Table 16.4
Recommendations of the Joint Tuberculosis Committee of the British Thoracic Society for the treatment of tuberculosis in the United Kingdom[10] (reproduced with permission.)

	INITIAL PHASE		CONTINUATION PHASE		TOTAL
	DRUGS	MONTHS	DRUGS	MONTHS	MONTHS
ADULTS					
Pulmonary	RHZE	2	RH	4	6
Non-pulmonary					
Meningitis	RHZ	2	RH	10	12
Pericarditis	RHZ	2	RH	4	6
Lymph node	RHZ	2	RH	4	6
Bone, joint					
Other sites	RHZE	2	RH	4	6
	or RHE	2	RH	7	9
CHILDREN					
Pulmonary	RHZ	2	RH	4	6
	or RH	2	RH	7	9
Non-pulmonary as for adults					
Chemoprophylaxis*	H	6		6	
	RH	3		3	

* The author is not aware of any studies adequately documenting the effectiveness of 6 or 3 month regimens of chemoprophylaxis.

S = Streptomycin H = Isoniazid R = Rifampicin Z = Pyrazinamide
T = Thiacetazone E = Ethambutol P = Para-amino-salicylic acid

regimens are made. The sources of information for all these regimens include the various East African/British Medical Research Council Trials, the Hong Kong/British Medical Research Council Trials, the Singapore/British Medical Research Council Trials and the Madras Study. These studies explored the effects of varying drug combinations and of schedules of treatment on the rate at which sputum was rendered smear and culture negative, the proportion of patients who relapsed after stopping treatment and the effect of treatment on natural and acquired resistance. The extent to which the duration of treatment could be shortened and the implications of intermittent drug therapy were also examined. Although his work was not based on scientific study, Pearson drew attention in 1978 to his gratifying four year experience with fully supervised short course chemotherapy in field conditions in the Cape Divisional Council jurisdiction. In successfully applying this regimen he was clearly at the forefront in translating modern advances in knowledge into practical benefit for patients.[31]

The daily, partially intermittent and completely intermittent regimens recommended by Citron and Girling[11] are shown in Table 16.3, and the more recent recommendations of the Joint Tuberculosis Committee of the British Thoracic Society[10] in Table 16.4. It is recommended that all drugs should be taken in a single daily dose half an hour before breakfast.

The standard regimens currently recommended and used in the United Kingdom and other developed countries are often too expensive for many developing countries. An effective and cheaper regimen recommended for use under these circumstances is a combination of streptomycin, pyrazinamide, INH and rifampicin for two months, continuing with INH and thiacetazone for a further six months (total duration of treatment, eight months). Longer courses without rifampicin and with longer duration of INH and thiacetazone are less effective because of poor compliance with longer courses. This is illustrated by surveys of results obtained by routine chest services when treating pulmonary tuberculosis with standard regimens of chemotherapy for twelve months or longer in India and Kenya. These showed that 50 and 72 per cent of patients respectively had stopped attending at one year.[11]

In his review of short course chemotherapy, Fox has emphasized that the role of streptomycin as a fourth drug is relatively minor, and that neither thiacetazone nor ethambutol (both of which are bacteriostatic) contribute much to either bactericidal or sterilizing activity within short course chemotherapy regimens. He also points out that for regimens not containing PZA nine month courses are better than six month courses.[22] The elimination of streptomycin saves considerable resources (drugs, personnel, syringes, and needles) and avoids the unpleasantness of repeated intramuscular injections.

Currently recommended regimens of treatment in South Africa are shown in Table 16.5. The rationale for using rifater is to reduce the number of tablets which need to be taken and to ensure that all three drugs are taken. Given the fact that all treatment should be given under supervision, it is not evident that the greater expenditure on this combination preparation is warranted.

As many developing countries have very much smaller health budgets than developed countries, the use of shorter courses of chemotherapy must be considered despite the fact that the overall cure rate will be lower. Fox points out that while courses of four-and-a-half to five months' duration may be associated with a three per cent relapse rate (compared with one or two per cent for the best regimens), shortening the duration of treatment to four months increases the relapse rate to approximately 12 per cent and shortening the course further to three months (even using streptomycin, INH, rifampicin and pyrazinamide) results in at least a 13 per cent relapse rate. The savings in expenditure may, however, warrant accepting this lower cure rate in some environments.

Where it is anticipated that patients may default and that adequate treatment may only be taken for the initial phase, the combination of rifampicin, INH and

Table 16.5(a)
Recommended regimens for treating adults in South Africa (Dept. National Health and Population Development 1990)

DRUG	DOSE	DURATION	TOTAL COST OF COURSES
REGIMEN 1			
Rifater	1 tablet/10 kg Average adult dose <50 kg 4 tabs >50 kg 5 tabs	Once daily Monday to Friday 6 months	 R304 R383
REGIMEN 2*			
Rifampicin	<50 kg 450 mg >50 kg 600 mg	As above	R139 R171
Isoniazid	300 mg		
Pyrazinamide	1,5 g		
REGIMEN 3*			
Rifampicin	600 mg		
Isoniazid	20 mg/kg body mass	3 (or 2) x/week for 6 months	R120 (R80)
Pyrazinamide	3 g		

* In areas with known high incidence of INH resistance, Ethambutol may be added.

Table 16.5(b)
Recommended regimens for treating children 6 years of age and younger (Department of National health and Population Development 1990)

	DOSE	DURATION
Rifampicin	10 mg/kg body mass	Once daily, Monday to Friday, 6 months
Isoniazid	8–10 mg/kg body mass	Once daily, Monday to Friday, 6 months
Pyrazinamide	20–25mg'kg body mass	Once daily, Monday to Friday, 6 months

For children 7 years of age and older the following doses apply:

Regimen 1	Rifater 1 tablet/10 kg body mass
Regimen 2	Isoniazid 8–10 mg/kg Rifampicin 10 mg/kg Pyrazinamide 20–25 mg/kg Ethambutol 20 mg/kg
Regimen 3	Rifampicin 10–15 mg/kg Pyrazinamide 30 mg/kg Isoniazid 20 mg/kg Ethambutol 30 mg/kg

pyrazinamide should be given. Both the large, rapidly dividing and the smaller, slower and intermittently dividing bacillary populations are susceptible to this combination and it is the only regimen capable of producing at least an 80 per cent cure rate if given for three months. This combination of drugs also has the potential to prevent bacteriological failure resulting from the emergence of resistant bacilli during treatment. It has the further advantage of being as effective against strains of bacilli initially resistant to INH, streptomycin (or both) as against organisms that are fully sensitive. If relapse occurs after such a regimen has been given for an inadequate duration, the same drugs can usually be safely used for re-treatment, as this combination does not result in the outgrowth of strains with additional resistance.

Table 16.6
Doses and side-effects of anti-tuberculosis drugs

DRUGS AND SIDE-EFFECTS	DAILY DOSE		INTERMITTENT DOSE (3 x PER WEEK)	
	ADULTS*	CHILDREN	ADULTS*	CHILDREN
Isoniazid (Hepatitis, Peripheral neuritis, Skin reactions)	300 mg	10 mg/kg	15 mg/kg	15 mg/kg
Rifampicin Hepatitis, Febrile reactions, Enhanced metabolism of other drugs, Stains urine and soft contact lenses pink/orange	450 mg 600 mg	10 mg/kg	600 mg 900 mg**	15 mg/kg**
Pyrazinamide Hepatitis Hyperuricaemia Arthralgia Anorexia	1,5 g 2,0 g	35 mg/kg	2,0 g 2,5 g 2,5 g+ 3,0 g+	50 mg/kg 75 mg/kg
Streptomycin Eighth nerve damage Nephrotoxicity, Skin reactions	750 mg 1 g	15–20 mg/kg	750 mg 1 g	15–20 mg/kg
Ethambutol Optic neuritis (rare 15 mg/kg)	25 mg/kg for two months followed by 15 mg/kg or 15 mg/kg throughout		30 mg/kg 35 mg/kg+	30 mg/kg 35 mg/kg+
Ethionamide GIT disturbances in adults Well tolerated by children	750 mg/kg 1 000 mg	15-20 mg/kg given in 3 doses daily		

* Lower doses for adults <50 kg, high doses >50 kg.
\+ When given 2 x weekly.
** There remains some controversy regarding the need to use higher doses of rifampicin in intermittent regimens.
NB. Doses must be adjusted in children as they gain weight.

TUBERCULOSIS CONTROL PROGRAMMES IN DEVELOPING COUNTRIES

Aquinas and Todd have outlined some of the particular problems which face tuberculosis control programmes in developing countries.[2] They recommend that tuberculosis programmes should be nationwide, and they express the view (with which the author concurs) that this can only be achieved through the infrastructure provided by an overall general health service which is adequately organized to effectively deal with other common diseases such as malnutrition, malaria, and parasitic infection. The need for government commitment to the programme is emphasized, but the importance of community participation to ensure success is also highlighted. Support from the World Health Organization, the International Union Against Tuberculosis and other organizations makes a major contribution in some countries.[2]

The Department of National Health and Population Development in South Africa recommends that supervised ambulatory care and compliance may be improved by providing a service characterized by:

- *courtesy:* creating a good first impression and maintaining this through friendliness and encouragement;
- *communicativeness:* letting the patient know what is expected and allowing two way communication;
- *continuity:* reinforcement of clear messages through repetition;
- *consistency:* follow-up by the same staff member if at all possible;
- *client orientation:* listening to clients' (patients') feelings about the diagnosis and the problems it may cause; discussing barriers to compliance and helping the patient overcome these;
- *clear contractual arrangements:* preferably in writing with explicitly stated expectations on both sides;
- *community orientation:* eliciting social support for those patients with impaired access to tuberculosis services;
- *convenience:* short clinic waiting times and an appointment system if possible;
- *contact maintenance:* follow-up of non-attendance as soon as possible;
- *caring relationship;*
- *cleanliness* in the clinic as a mark of respect for patients and for the service being offered.

DRUG DOSES AND SIDE-EFFECTS

Doses of drugs recently recommended in the United Kingdom and their side-effects are shown in Table 16.6.[10] The current costs (1990) of anti-tuberculosis drugs in South Africa are listed in Table 16.7.

Adverse drug reactions are relatively uncommon (in less than five per cent of patients), most are mild, but some are potentially life-threatening. Management of such adverse reactions, of relapse, of acquired

Table 16.7
Cost of anti-tuberculosis drugs in South Africa (October 1990)

DRUG	DOSE PER UNIT	PRICE PER DOSE LISTED	PRICE PER DAILY DOSE
Isoniazid	100 mg	1c	3c
Rifampicin	150 mg	24c	72–96c
Pyrazinamide	500 mg	10c	30–40c
Streptomycin	1 g	139c	139c
Ethambutol	100 mg	3c	20c
	400 mg	6,7c	
Rifater	R 120 mg H 80 mg Z 250 mg	58c	230–290c

resistance and the use of second line drugs, have been adequately covered elsewhere,[11, 23] and are not discussed in this chapter.

RECOMMENDED TREATMENT FOR SPECIAL GROUPS OF PATIENTS[9, 10]

Recommendations for chemotherapy in patients with diabetes, liver and other diseases are summarized in Table 16.8. In general terms, few modifications need to be made to the standard recommended chemotherapy, but patients with tuberculosis and other diseases do require closer medical and psychological attention. It should be noted that the British Thoracic Association Trial showed that the addition of PZA to rifampicin and INH does not increase morbidity in patients with underlying liver disease. It is, however, recommended that liver function be regularly monitored in these patients. The induction of microsomal hepatic enzymes by rifampicin reduces the serum half-life of several drugs including warfarin, phenytoin, sulphonylureas, oestrogen oral contraceptives and corticosteroids. Corticosteroid doses should be doubled and other drugs monitored either by serum levels or measurement of their therapeutic effect. Treatment of patients with silicosis and tuberculosis is covered in Chapter 12.

CHANGES IN CHEMOTHERAPY AND THE MANAGEMENT OF TUBERCULOSIS OVER THE LAST FIFTY YEARS

The progressive introduction of the drugs currently used in the treatment of tuberculosis, coupled with a deeper understanding of the pathobiology of tuberculosis and

Table 16.8
Recommendations for treatment of special groups of patients[10, 11]

Diabetes	Standard treatment recommended. RIF interacts with some oral hypoglycaemic drugs; additional care in control of diabetes.
Liver disease	Standard treatment recommended. Addition of PZA to RIF and INH does not increase morbidity. Monitoring of liver function recommended.
Pregnancy	Avoid streptomycin and other aminoglycosides. Ethionamide and prothionamide may be teratogenic. Normal breast feeding recommended while on Rx. Some oral contraceptives have diminished effect when given with RIF.
Renal disease	Reduce dose of aminoglycosides and ethambutol and monitor serum levels. Rifampicin use necessitates doubling dose of steroids if these are being used to treat renal/systemic disease. Drug dose modification required for patients on dialysis.
AIDS	Standard Rx, but duration may have to be prolonged.
Unconscious patient	INH and RIF syrup available. PZA tablets can be crushed and given via nasogastric tube. RIF, INH available for IV infusion. INH, streptomycin can be given IM.
Alcoholics	Standard chemotherapy. Additional attention via Alcoholics Anonymous or other facilities to stop the patient from drinking.

Table 16.9
Comparison between chemotherapy and management of tuberculosis in the 1950s and the 1980s

	1950s	1980s
• Basis for treatment	Early clinical trials	Bacteriological and pharmacological insight and sophisticated clinical trials
• Place of treatment	In hospital and sanatoria	At home or at work
• Duration	Two years or longer	Six months or less
• Drugs	Streptomycin, PAS, INH, Unsupervised	INH, rifampicin. pyrazinamide Supervised
• Surveillance during treatment	Monthly sputum smear, and culture and CxR sensitivity routinely evaluated	Sputum smear/culture CxR at diagnosis and after completion of treatment
• Compliance	A major problem in view of need for prolonged treatment	Remains problematic but with intermittent, supervised short course regimens, this problem can be minimized
• Surgery	Becoming less frequent	Rare
• Follow up	Prolonged	Minimal after adequate treatment
• Social attitude	Stigmatized Little role for education and community involvement	Accepted Education and community involvement valued and widely practised

of the action of individual drugs, have led to a series of changes in the management of tuberculosis between the introduction of anti-tuberculosis drugs in the late 1940s and the establishment of efficacious short-course chemotherapy in the early 1980s. The evolution in management strategies to which these advances have led is striking (Table 16.9). Hospitalization is now only required for a small proportion of patients (those too ill for outpatient treatment, where cooperation or supervision is inadequate, for miliary, meningeal or other complicated cases, drug toxicity or resistance, or when surgery is being considered); high cure rates can be achieved with *supervised* short courses of therapy at relatively low total cost and given to patients while they continue to work; the stigma associated with the disease is considerably reduced; health education plays an important role in the management programme; and long term follow-up is much less necessary. These advances have been more effectively achieved in developed countries, and the challenge to do the same in developing countries remains high.

The search for new drugs, however, continues and is mandated by both increasing resistance to conventional drugs and the potential need for additional drugs in the treatment of tuberculosis complicating AIDS. It has been estimated that in a population of tubercle bacilli, 1 in 10^5 bacilli are resistant to INH, 1 in 10^6 to streptomycin, and 1 in 10^8 to both drugs.[24] The frequency with which drug resistance emerges is determined by the origin of the infecting

organism, the size of the bacillary population, the combination of drugs used in treatment and the drug concentration achieved in tuberculous lesions.

Table 16.10
Newer antituberculous drugs[33]

GROUP	DRUGS
4-Quinolones	• Ciprofloxacin • Ofloxacin
Rifamycin	• Rifapentine • Rifabutin
Macrolides	• Roxithromycin
Phenazines	• Clofazimine
β Lactams	• β Lactamase stable cephalosporins
Miscellaneous	• Fusidic acid • Gangamicin • Dihydromycoplanecin A

This emphasizes the need for appropriate combinations of drugs in adequate doses especially when treating patients with large bacillary loads. The drugs listed in Table 16.10 are still in early stages of development and use. *In vitro* data is available on their activity but clinical experience with their use is limited.

Further advances in treating tuberculosis in developing countries are more likely to come from effective implementation of current knowledge than from new drugs or different therapeutic regimens. It is important to conclude by stressing that for effective implementation of efficacious regimens *direct supervision* of drug ingestion is *vital.* Such supervision can be arranged at the workplace, school or a community centre using trained (often volunteer) key persons.

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SPECIAL REPORT

MEDICINE AND HEALTH CARE IN SOUTH AFRICA

THE invitation to describe briefly health and medical care in South Africa — a large country that has inhabitants with a wide range of socioeconomic, educational, and cultural backgrounds and that is torn apart by internal strife and internationally vilified for its immoral policies — is a daunting challenge. The policies of apartheid pervade and taint every aspect of life in this country, including all efforts and achievements of individuals and institutions toward eliminating racially discriminatory practices and delivering health care equitably. Apartheid is indefensible. It has had serious adverse effects on health and human dignity.[1-3] This much is beyond dispute, but it is unrealistic to attribute to apartheid alone all the disparities in health and other areas of South African society.[4,5] If apartheid were abolished, certain major structural changes would still be required to ensure adequate health and medical care. The purpose of this paper is to identify inadequacies of the present system — some of which are clearly caused by apartheid, others not obviously so — and to propose certain options that could take us beyond our present medical impasse.[6]

STRUCTURE OF THE HEALTH CARE SYSTEM

The many acts of Parliament concerning health-related matters, promulgated since the 1919 Health Act, culminated in the 1977 Health Act, which clarified the responsibilities of the various authorities providing health services.[7] The State Health Department (since renamed the Department of National Health and Population Development) is responsible for overall coordination of public health services, promotion of health through planning, health education and family planning, the establishment of a national laboratory service, prevention and treatment of communicable diseases, and provision of long-term psychiatric services.

The administrations of South Africa's four provinces (Cape, Transvaal, Natal, and the Orange Free State) provide facilities for personal medical care in their public hospitals, outpatient and maternity departments, and day clinics. Approximately 800 local authorities are responsible for maintaining their districts in clean and hygienic conditions, for preventing water and air pollution, for providing services for the prevention and treatment of communicable diseases, and for promoting health and rehabilitation in the community. The Black National States ("homelands")* within the borders of South Africa manage their own departments of health.

All these health services are funded predominantly by the state, which provides 87 percent of all hospital beds and employs 54 percent of doctors and 75 percent of nurses in the country (including the "homelands").

Dovetailing with these public services is the private-practice sector, which delivers personal health services in the home, consulting room, and hospital to patients covered by medical insurance or able to pay directly. Private practitioners also undertake part-time duties in the public health services. In the large cities these duties may include clinical and teaching functions in teaching hospitals, whereas in small towns and rural areas they usually include medical care for the indigent, the police force, and prisoners. There are also many voluntary bodies — for example, the South African Tuberculosis Association — that contribute to health care.

EXPENDITURE ON HEALTH SERVICES

Accurate information regarding total expenditures on health is not readily available. From data in the official yearbooks of South Africa, the percentage of

*The "bantustan" policy of the South African government aims at forming independent homelands on an ethnic or tribal basis. Four of the Black National States have acquired political "independence" (Bophuthatswana, Ciskei, Transkei, and Venda), and six others are "self-governing" (Gazankulu, Kangwane, KwaZulu, Lebowa, and QwaQwa). All are economically dependent on South Africa and none has been internationally recognized.

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the gross national product spent on health has been estimated to have been 4.2 percent in 1976, declining to 3.4 percent in 1980[8] and to 3.2 percent in 1981.[9] Recent (unpublished) data from the Department of National Health suggest that expenditure on health was 4.5 percent of the gross national product in 1976, rising to 5.2 percent in 1984 (excluding estimated sales of over-the-counter medications). This included expenditure on health in the "homelands" and totaled R1,172 million in 1975 and R5,190 million in 1984.[4] During this time the population increased by 31 percent, from 24.4 million to 32 million. The annual per capita expenditure on health was R48 in 1975, rising to R162 in 1984 (R55 in 1975 values).

Government expenditure on health increased from R767 million in 1975 to R3,301 million in 1984. Of this, 3 percent was allocated to health services in the "homelands" in 1975 and 12.3 percent in 1984. In 1984 the total government expenditure of R25 billion constituted 25 percent of South Africa's gross national product. Of this amount, 13.2 percent was allocated to health, of which 80 percent was spent on personal health services delivered through provincial hospitals and clinics. In 1984 5.3 percent of government funds were spent on welfare, 22.5 percent on defense, police, and prisons, 17.4 percent on education, and less than 1 percent on housing.

Thirty-six percent of all expenditure on health is accounted for in the private sector. Medical insurance and private expenditure on health increased from R405 million in 1975 to R1,890 million in 1984. Approximately 30 percent of whites and 2 percent of other population groups belong to 1 of the 215 registered medical-insurance plans in the private sector. Seventy percent of all members are white. Membership fees increased by 500 percent between 1975 and 1985 (the consumer price index rose 387 percent). Of funds paid out by these plans in 1985, 14 percent went to general practitioners, 22 percent to specialists, 19 percent to hospitals, 22 percent for drugs, 15 percent to dentists, and 8 percent for ancillary services.[10]

Medical Training and Remuneration

The seven medical schools in South Africa (1 per 4 million people) were graduating approximately 900 doctors annually by 1985 (80 percent were white). At the current rate of population growth, the need for a new medical school every three years to maintain the present ratio of medical schools to the population is unlikely to be met. All schools are heavily subsidized by the state, and medical students pay approximately R2,500 per year for tuition.

After a six-year medical course (begun directly after high school) and a year of internship, graduates are eligible for registration as general practitioners. Specialization requires an additional five years of recognized training, as well as passing a higher examination (a college fellowship or university examination). Subspecialization (e.g., cardiology) requires a further two years of senior registrarship (fellowship). Those aspiring to academic faculty positions are encouraged to devote an additional one to two years to formal research.

In the 1940s the ratio of family practitioners to specialists was 7:1; this has gradually fallen to 3:1 in the 1980s (1:1 in Western Europe). Of the approximately 20,000 registered doctors in 1985 (there were 7939 in 1960), 93 percent were white and 85 percent male. Although the numbers of black and female graduates have increased over the past five years, much remains to be achieved to establish a balance uninfluenced by privileged selection.

The doctor:population ratio has improved from 1:2157 in 1960 to 1:1800 in 1982 (urban, 1:875; rural, 1:12,700) (in 1982 the ratio was 1:650 in the United Kingdom, 1:520 in the United States, and 1:10,500 in Kenya). By comparison, the doctor:population ratio in the "homelands" ranges from 1:19,000 in Transkei to 1:116,000 in QwaQwa.[11] The number of dentists doubled between 1960 and 1980, but the dentist:population ratio improved only from 1:13,000 to 1:10,870 (1:1926 in the United States in 1977).[11]

Salaries in the public sector range from R31,500 per year for first-year residents to R58,700 per year for heads of departments. Salaries in the public sector are uniform in all medical specialties at each level of appointment, including professors and chairmen of departments (i.e., salaries are not influenced by the marketplace). Salaries of residents have increased by 13 percent, and those of heads of departments by 4.5 percent, in real terms over the past 10 years. Earnings in the private sector may exceed those in the public sector by two to four times or more, are determined by market influences, and are higher among surgeons, radiologists, and pathologists than among "noninvasive" specialists, such as pediatricians, internists, and psychiatrists.

Although our medical schools have a proud record of training competent, compassionate, and dedicated doctors — many of whom, in the finest medical tradition, practice their profession altruistically, for the benefit of all patients entrusted to their care — many believe that training medical personnel in the Western tradition, which encourages specialization and private practice, is inappropriate to the needs of Africa. Blacks need and demand access to more primary and community-based health care services than are being provided by "Western"-trained doctors. In addition to setting standards that send doctors in directions that deprive many of care, our medical schools can never graduate enough for all the needs of a rapidly expanding population. Suggested solutions include opening new medical schools in rural areas, with entry criteria and curricula designed to produce physicians oriented toward family practice, and developing the concept of health care teams, with auxiliary health workers of various types under medical or nursing leadership. Political and economic changes

[4] R denotes the rand of South Africa. At the current exchange rate, approximately $1 equals R2.2, but the equivalent purchasing power of the rand earned and spent within South Africa is about $1 earned and spent in the United States.

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will be the most powerful forces influencing the direction in which our health services will develop, but the foresight of medical educators should also play a part.[9,12,13]

Hospitals

Of the 729 hospitals in South Africa (including the "homelands") in 1985, 495 (70 percent) were public and 234 (30 percent) private.[14] Many of the private hospitals receive assistance from the state. Of the 161,261 beds, 87.5 percent are in public hospitals, and the total bed:population ratio is 3.2:1000.[14] Officially, beds are allocated predominantly on the basis of race. At present, 25 percent are for whites, 49 percent for Africans, 3 percent for persons of mixed race ("coloureds"), and 1.5 percent for Asians (these classifications are used by the South African government under the Population Registration Act); 21.5 percent are unclassified. The bed:population ratio in South Africa, excluding the "homelands" — 5.5:1000 — contrasts with the range elsewhere — from 3.3:1000 in the Transkei, to 1.6:1000 in QwaQwa, to 8.3:1000 in the United States.[11]

Less than 10 percent of the operating costs of teaching and other provincial hospitals are paid by patient fees. The remainder is paid through state (province) subsidy. Fee schedules based on income have been extremely modest — a maximum of R50 per day — until this year. Recent restructuring of the fee schedules in an attempt to increase income has created a potential economic burden for families emerging from poverty and earning R5,400 to R13,800 per year, while still protecting those earning less than this amount. Patients can obtain partial or even complete rebates by providing data on income and expenditure and their level of income-tax payment, but the mechanism is cumbersome. The maximum ceilings are unrealistically low and protect middle- to upper-income groups since a uniform fee is charged to all who earn more than R13,800 per year. Pressure is being exerted on the provincial administrations, by teaching-hospital academic staff, to revise these harsh new schedules and to implement a fee structure that will still protect the poor, reduce the burden on middle-income earners, and require appropriate fees from higher-income earners, many of whom have medical insurance.

Nursing and Paramedical Services

Of 55,022 registered nurses* in South Africa in 1980, 53 percent were white, 38 percent African, 7 percent "coloured," and 2 percent Asian. The distribution of enrolled nurses* is different: 7 percent are white, 50 percent African, 35 percent "coloured," and 8 percent Asian. The nurse:population ratio is 6.4:1000 for whites, 1.6:1000 for "coloureds," 1.4:1000 for Africans, and 1.2:1000 for Asians. However, these figures are misleading, since a large proportion of nurses (about 40 percent), especially whites, are not practicing. Furthermore, care is not provided only by nurses of the same population group as the patients. Many black patients are cared for by white nurses, and white patients by black nurses.

Paramedical services are also poorly developed and almost exclusively serve major hospitals and the private sector. The approximate numbers of practicing paramedical personnel in the country are 2250 physiotherapists, 3000 medical technologists, 3000 radiographers, 1775 psychologists, 800 optometrists, 1000 occupational therapists, 750 speech therapists and audiologists, and 425 dieticians.

Access to Health Care Facilities

Medical services in South Africa are concentrated in urban areas and are to a large extent characterized by an emphasis on capital-intensive technology geared to dealing with degenerative diseases in tertiary care hospitals. Primary health care and community hospital services are poorly developed, and only 4 percent of the total health budget is allocated to preventive medicine,[1,15] although the government's stated intention is to increase this to 15 percent by the year 2000.[8]

The proportion of doctors working in metropolitan areas is 76.5 percent, and that in small towns is 18 percent. Johannesburg and Cape Town contain 11 percent of the population, three medical schools, and 40 percent of the country's doctors. Fifty percent of the population live in rural areas, where only 5.5 percent of doctors practice. This maldistribution has been aggravated by forced shifts in population toward the rural "homelands" and by the rapid growth rate of the black population (Table 1). In 1950, 40 percent of the population lived in the "homelands," and by 1980 this figure had increased to 53 percent. Ancillary medical services — inadequately developed even in the cities — are almost nonexistent in rural areas.[3,11,15]

As a result of this maldistribution of health services, access to them is extremely poor in rural areas, particularly for blacks. Some rural patients (in all population groups) find their way to the health services provided in the cities, either on their own initiative or by formal referral. In the latter case, provincial authorities often sponsor payment of travel costs, particularly for blacks. Some teaching hospitals send staff members in several medical specialties to satellite departments in country hospitals on a regular, monthly basis. This provides teaching for the medical and nursing staff, a consulting service, and a mechanism for arranging and coordinating referrals. In this way teaching hospitals make a small contribution to medical care in outlying hospitals, provide some academic stimulation for medical staff, and facilitate access of rural patients to the inpatient facilities of modern hospitals. Although the racial segregation imposed by restricting hospitals to different population groups (everywhere except in Cape Town) contributes further to the disparity in health care facilities,[8,16] all people living within reach of major hospitals have rel-

*Registered nurses train for three to four years, toward a diploma or university degree; enrolled nurses train for two years.

atively easy access to the medical care that the hospitals offer.[2] Care is provided at minimal or no cost to the poor, and no patients are denied medical attention, even the most sophisticated care, if they cannot pay. Rural blacks remain disadvantaged because of the logistics of traveling to major centers and by the social and economic disadvantages incurred during treatment far from their homes and families.

In the private sector, "discrimination" is based almost entirely on the ability to pay for services. For those who can afford to pay directly or who have medical insurance, access to care in the home, consulting room, and hospital is unrestricted.

Faced with an enormous backlog in health services (as a result of inadequate planning and investment in medical services) and with an expanding demand for health care by a burgeoning population, the South African government is attempting to reduce its own responsibility for health by encouraging privatization and personal responsibility for medical care costs.[17] Health services, already fragmented by the "homelands" policy, are at risk of further fragmentation within the framework of the Constitution Act of 1983. The implications of the tricameral parliament include the creation of separate bureaucratic organizations, with a minister of health for each population group (excluding the "homelands," each of which has its own department and minister of health). This would be not only morally unacceptable[6] but also economically and logistically unjustifiable.[6,15,18] The need for a national health service, justified and outlined in detail by the Gluckman Commission in 1944,[19] has recently been reiterated,[6,15,18] and there is a growing consensus about the need to develop a unitary national health service for the whole country (including the "homelands") as the basis for health care,[20,21] without denying a place for private medicine.[6,15]

Occupational Health

South Africa is the most industrialized country in Africa. Of its more than 8 million workers, about 750,000 are employed in the mining industry and more than 1.5 million in a wide variety of other, modern industries. The 1975 Erasmus Commission of Enquiry on occupational health emphasized that, with the exception of the mining industry, management lacked commitment to industrial health and the prevention of industrial diseases. The commission noted that the lack of statistical data on the incidence of occupational diseases in South Africa and the dispersion of legislation pertaining to industrial health through at least 11 government departments had led to ineffectiveness, confusion, and waste of money and manpower; it recommended that a single act be promulgated to incorporate all aspects of industrial health under the Department of Health. Because of this report and the apparent lack of acceptance of its recommendations by the government, a unitary legislative and functional framework for dealing with occupational disease was formulated and proposed in 1983.[22] Since then there has been little progress toward developing such legislation.

Profiles of Disease and Health

The total annual mortality of 25 per 1000 among Africans and "coloureds" and 17 per 1000 among Asians in the 1940s has fallen steeply (Table 1). The mortality rate among whites has changed little during this time. The birthrate among Africans has changed minimally over this period, whereas that among "coloureds" has fallen from 45 per 1000 to 28 per 1000, that among Asians from 38 to 24, and that among whites from 25 to 16. Infant mortality among Africans and "coloureds" has fallen from 175 per 1000 live births in 1940 to 95 among Africans and 65 among "coloureds" in 1980. During this time the rate among Asians fell from 45 to 25, and that among whites from 50 to 17.[23]

The current main differences in birthrate, mortality, and disease profiles in the various population groups are shown in Table 1. The disease profile and mortality patterns in whites closely resemble those in industrialized countries, whereas those in Africans and "coloureds" approximate those in developing countries or in the Western world

Table 1. Profile of Health and Disease in South Africa, According to Population Group.[1,3,23]

	South African Population Group*				U.S./U.K.
	Asian	African	"Coloured"	White	
No. (percent) (1980)	821,000 (3)	20,692,000 (71)	2,613,000 (9)	4,528,000 (17)	
Growth rate (percent) (1970–1980)	2.68	3.04	2.42	1.84	
Birthrate (per 1000) (1980)	24	40	28	17	17‡
Mortality					
Infant (per 1000) (1980)	25	95	65	17	16‡
Total (per 1000)	5.9	11.0	9.2	8.3	8‡
% <5 yr (1970)	—	55	49	7	
% >65 yr	—	12	18	52	
Life expectancy (yr) (1980)					
Men	62	54	55	67	
Women	67	58	60	73	
Tuberculosis (1970)					
Incidence (per 100,000)	≈200	≈300	≈300	≈20	≈10‡
Percent of all new cases	1.5	78	18.5	1.4	
Ranking of 5 main causes of death (1976)†					
Cardiovascular diseases	1 (259)	3 (131)	2 (252)	1 (399)	1 (≈330)§
Neoplasms	5 (43)	5 (161)	5 (99)	2 (132)	2 (≈150)§
Respiratory diseases	2 (76)	4 (120)	3 (206)	3 (100)	3 (≈104)§
Accidents, violence, poisoning	3 (69)	2 (174)	4 (150)	4 (80)	4 (≈38)§
Gastrointestinal diseases	—	—	—	5 (26)	5 (≈15)§
Infectious or parasitic diseases	4 (48)	1 (175)	1 (165)	— (≈16)	— (≈6)§
Causes of death, as percentages of all deaths					
Cardiovascular diseases	42	≈5	24	48	50§
Infectious or parasitic diseases	7	24	22	2	0.6§
Accidents, violence, poisoning	9	15	11	9	4§

*According to population registration by the South African government.[24]
†Figures in parentheses are rates per 100,000 population.
‡U.S., 1977.
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South Africa is the most industrialized country in Africa. Of its more than 8 million workers, about 750,000 are employed in the mining industry and more than 1.5 million in a wide variety of other, modern industries. The 1975 Erasmus Commission of Enquiry on occupational health emphasized that, with the exception of the mining industry, management lacked commitment to industrial health and the prevention of industrial diseases. The commission noted that the lack of statistical data on the incidence of occupational diseases in South Africa and the dispersion of legislation pertaining to industrial health through at least 11 government departments had led to ineffectiveness, confusion, and waste of money and manpower; it recommended that a single act be promulgated to incorporate all aspects of industrial health under the Department of Health. Because of this report and the apparent lack of acceptance of its recommendations by the government, a unitary legislative and functional framework for dealing with occupational disease was formulated and proposed in 1983.[22] Since then there has been little progress toward developing such legislation.

Profiles of Disease and Health

The total annual mortality of 25 per 1000 among Africans and "coloureds" and 17 per 1000 among Asians in the 1940s has fallen steeply (Table 1). The mortality rate among whites has changed little during this time. The birthrate among Africans has changed minimally over this period, whereas that among "coloureds" has fallen from 45 per 1000 to 28 per 1000, that among Asians from 38 to 24, and that among whites from 25 to 16. Infant mortality among Africans and "coloureds" has fallen from 175 per 1000 live births in 1940 to 95 among Africans and 65 among "coloureds" in 1980. During this time the rate among Asians fell from 45 to 25, and that among whites from 50 to 17.[23]

The current main differences in birthrate, mortality, and disease profiles in the various population groups are shown in Table 1. The disease profile and mortality patterns in whites closely resemble those in industrialized countries, whereas those in Africans and "coloureds" approximate those in developing countries or in the Western world

Table 1. Profile of Health and Disease in South Africa, According to Population Group.[1-3,23]

	South African Population Group*				U.S./U.K.
	Asian	African	"Coloured"	White	
No. (percent) (1980)	821,000 (3)	20,692,000 (71)	2,613,000 (9)	4,528,000 (17)	
Growth rate (percent) (1970–1980)	2.68	3.04	2.42	1.84	
Birthrate (per 1000) (1980)	24	40	28	17	17‡
Mortality					
Infant (per 1000) (1980)	25	95	65	17	16‡
Total (per 1000)	5.9	11.0	9.2	8.3	8‡
% <5 yr (1970)	—	55	49	7	
% >65 yr	—	12	18	52	
Life expectancy (yr) (1980)					
Men	62	54	55	67	
Women	67	58	60	73	
Tuberculosis (1970)					
Incidence (per 100,000)	≈200	≈300	≈300	≈20	≈10‡
Percent of all new cases	1.5	78	18.5	1.4	
Ranking of 5 main causes of death (1976)‡					
Cardiovascular disease	1 (259)	3 (131)	2 (252)	1 (399)	1 (≈330)§
Neoplasms	5 (43)	5 (161)	5 (92)	2 (132)	2 (≈150)§
Respiratory diseases	2 (76)	4 (120)	3 (206)	3 (100)	3 (≈104)§
Accidents, violence, poisoning	3 (69)	2 (174)	4 (150)	4 (80)	4 (≈38)§
Gastrointestinal diseases	—	—	—	5 (26)	5 (≈15)§
Infectious or parasitic diseases	4 (48)	1 (178)	1 (165)	— (≈16)	— (≈6)§
Causes of death, as percentages of all deaths					
Cardiovascular diseases	42	≈5	24	48	50§
Infectious or parasitic diseases	7	24	22	2	0.6§
Accidents, violence, poisoning	9	15	11	9	4§

*According to population registration by the South African government.[23]

†Figures in parentheses are rates per 100,000 population.

‡U.S., 1977.

§U.K., 1970.

earlier in this century.[2,8,16] The effect of these differences (degenerative diseases and neoplasms predominate among whites, and contagious and parasitic diseases and trauma among the other groups — especially Africans) lies not only in the different manifestations and the natural history of the diseases but also in the strikingly disparate ages at which they affect the population. The loss of years of life because of Third World diseases, which tend to afflict the young, is much greater than is apparent from simple mortality data.[2] Although disparities in health and other areas are not unique to South Africa,[4,5,24,25] the racist dimension of the human tragedy in this country evokes our moral indignation.

South Africa in the Context of the African Continent

The African continent is characterized by having the lowest income, the lowest economic growth rate, the lowest rate of literacy, the lowest life expectancy, and the most severe environmental problems of all continents.[26] While the population is growing at 3.3 percent per year and will double to more than 1 billion in the next 25 years, the Sahara desert is advancing at the rate of 27,000 square miles (70,000 km^2) per year, and only 50 percent of the food required is produced locally. Ninety-one percent of the people live in poverty (82 percent in 1974); 5 million children died and another 5 million were disabled by malnutrition and disease during 1984.[26] This is in stark contrast to life in high-income countries, which contain 25 percent of the world population and account for 80 percent of the "gross world product."[25]

This global maldistribution of health and wealth[8,9] is reflected in microcosm in South Africa, where 50 percent of the population is crowded into 13 percent of the land, 66 percent of all income is at the disposal of 17 percent of the population, and the average per capita income of Africans is 10 percent of that of whites.[3,5]

According to the historian and journalist Paul Johnson, South Africa resembles all countries on the African continent, in having complex racial problems and a population explosion with mass migration toward cities and the consequent creation of shanty towns and peri-urban violence. Johnson and others cite social engineering and discriminatory practices, which create suffering among the majority of people at the hands of their politically minded intellectual leaders, as other common features of life on this continent.[27-29]

Johnson also emphasizes several important differences between South Africa and other African countries: its wealth, particularly its mineral wealth, which has become the basis of its modern economy; its growth in the per capita income of blacks over the past 25 years; and its greater freedom of press and speech, as compared with most other African countries.* South Africa is the wealthiest and most technologically advanced country on the African continent. It generates 25 percent of the "gross continental product" and produces 90 percent of all steel and 50 percent of all electricity on the African continent. The South African gross domestic product has increased by 4.8 percent per year in real terms since World War II. Many countries in southern Africa are dependent on South Africa's transport system and its economy.[27,30] The average annual per capita income of $2,000 in South Africa in 1984 was considerably higher than in most Third World countries ($400) but much lower than in developed countries ($14,000). The wages of blacks in South Africa have increased in real terms from 16 percent of the wages earned by whites in 1973 to 26 percent in 1983. The percentage of households living in poverty has fallen from 75 percent in 1960 to 50 percent in 1980, and appreciable progress has been made in providing education and housing for Africans. However, recent events in South Africa are agonizing testimony to the dissatisfaction with these limited achievements and to the long neglected aspirations for more rapid advancement.

Despite these advances (which are to some extent masked by the rapid growth of the black population) and the fact that many other regimes are discriminatory and brutal,[27-29] South Africa has been singled out for general opprobrium because it is unique — a state still dominated by an oligarchy defined by race, which with its apartheid policy has perpetuated gross economic and health inequalities and has degraded human dignity. This *deliberate* failure to couple social and political progress with economic success while identifying as a member of the Western family of nations has caused South Africa to be judged by First World rather than Third World standards:

> Many third world countries have irresponsible oligarchies with as little conscience about their landless and unemployed as South Africa's white elites; sometimes in truth much less. But none of them while preaching reform, create refugee camps in the midst of prosperity as a matter of state policy.[31]

The Future

Over recent years, and in particular over the past year, racial discrimination has been reduced somewhat because of changes both in attitudes and in legislation. Such change, however, has occurred too slowly, to a limited extent, and without meaningful political progress.

Institutions, such as the University of Cape Town (and others), with strong social consciences and egalitarian aspirations have endeavored to set high academic and humanitarian standards and provide impetus for social reform. The University of Cape Town Medical Faculty, at its main teaching hospital, Groote Schuur, is progressively reducing de facto the racial discrimination imposed by apartheid. Its staff, intensive care units, general wards, emergency department, and outpatient and other facilities are almost completely integrated and used for all patients (75 percent of whom are black), the larger proportion of whom

*This paper was written before the declaration of a "State of Emergency" on June 12, 1986.

are from the lower socioeconomic strata. Whatever we have achieved, however, remains inadequate, and greater efforts must be made. Medical services generally remain discriminatory throughout the country and are particularly inadequate for the nonwhite and rural poor. Recently restated views on the need for a nondiscriminatory, unitary national health service[1,5] framed within the concept of medical morality[6] are shared by many and reflect long felt concern regarding the inadequacy of overall medical services in South Africa and the injustices in our society.[18,30,32-34] Notable changes in attitude and practice are urgently needed.

Stifling of the political aspirations of blacks has led to widespread frustration, anger, and disillusionment, and to the emergence of a radical view that now the only solution lies in rendering the country ungovernable, in complete "socialization" of the economy, and in the realization of "rule by the people." At the other end of the political spectrum lies the extreme conservatism of a small group of "laagered" Afrikaaners. An idealized evolutionary process characterized by the rapid implementation of peaceful progress on political, social, and economic fronts, accompanied by expansion of the economy, more equitable distribution of resources, and reduction in the growth rate of the population, has been the goal of many. The Nationalist government's failure to perceive the need for such change and its unwillingness to recognize the rate and mechanisms for its implementation have been stumbling blocks to progress over many years and have reduced (or even destroyed) the potential for the realization of this dream. The turmoil, despondency, and despair that accompany the current political radicalization must be tempered by the hope that solutions can still be found that will foster peaceful progress toward a just society. Willingness and determination are needed to seek the means to achieve this through peaceful negotiations rather than through violence.

In the first major publication from the Second Carnegie Enquiry into Poverty and Development in Southern Africa, the pathos of the tragedy that characterizes our society is concisely conveyed:

> South Africa herself is the cordoned heart, and her people, oppressed and oppressors together, are imprisoned by the fetters with which one group seeks to bind the other. The debate about how to break free continues to rage — with a heightened sense of urgency.[35]

Conclusions

Racial discrimination, the creation of economically unviable "homelands" with rapidly increasing populations, the inadequate development of primary health care services and community hospitals, the inadequate allocation of resources to health, the maldistribution of medical personnel, and other political regulations and injustices combine to contribute to the prevailing disparity in health and access to medical care among the people of South Africa.[1,3,9,11,15,16] Such disparities will be reduced only when apartheid is abolished, a bill of rights established, and urgently needed political, social, and economic progress made toward a more just society.

University of Cape Town
Cape Town, South Africa S.R. Benatar, F.R.C.P. (Lond.)

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Van die Redaksie/Editorial

Privatisation and medicine

The rising costs of modern medical care, in part due to technological advances in medicine and the cost of training and employing personnel to deliver highly personalised services but also to rapid growth of the population and increased demands for health care, have led to great interest in resource allocation and cost containment in recent years.[1,2]

In most Western countries the percentage of the gross national product (GNP) allocated to health has progressively increased, whereas in South Africa the increase has been only marginal. Although there is a lack of accurate information regarding total expenditure on health, it would appear from various estimates that between 1976 and 1984 it ranged from 4,5% to 5,2% of the GNP (36% of this in the private sector) (cf. between 7% and 11% of GNP in most Western countries). The increase in annual per capita expenditure on health in South Africa, from R48 in 1975 to R162 in 1984, is also unimpressive when it is recognised that the 1984 expenditure amounted to R55 in 1975 monetary values.[3]

Although numerous letters and articles have been published drawing attention to the wide disparities in the health status of our different populations, and to the dilemmas facing medicine in South Africa, concern and discussions regarding health care costs in South Africa have eclipsed more important questions regarding the overall adequacy of our health services and the appropriateness and equity with which they are provided. Despite widespread support for a unitary health care system,[4-13] there is a continuing trend towards fragmentation in the name of self-determination and privatisation. Whatever plans are being made for privatisation, they have not as yet been divulged to medical schools or the public. There is, however, widespread concern that health will be included in the 26 public services for which the government has recently approved privatisation. The precise nature of the activities which will be privatised, how this will be implemented and what the implications could be for future health care planning have not yet been made known.

The article by Naylor in this issue of the *SAMJ* (p. 673) concisely and systematically demolishes all the arguments which have been advanced in favour of privatisation of health. He points out that the proposals used to propagate the marketplace method for delivery of health care are seriously flawed on the grounds that: (*i*) market forces are markedly distorted by the nature of medicine; (*ii*) there would be serious public health consequences of free trading in health; (*iii*) health care is a public good and therefore requires equitable distribution; and (*iv*) there are perverse incentives for privatisation. He examines the hypothesis that public systems are more expensive and less efficient than private health care facilities and advances convincing opposing arguments. The impossibility of applying privatisation within poor areas is obvious and there can be little doubt that this would further aggravate existing disparities in health. The claim that imposing direct charge and user fees can reduce abuse of medicine is only superficially correct. Such schemes predominantly act as deterrents for the poor and the elderly, result in increasing medical fees to recoup losses and ultimately only redistribute costs rather than effecting savings. He also exposes the flawed rationale of the concepts that it is more efficient to subsidise private persons than institutions and that privatisation will diminish the load on the taxpayer and de-politicise health care. His insightful article merits careful attention because of the potentially very serious adverse short- and long-term effects of privatisation on the overall delivery of health care in South Africa and on academic centres charged with the responsibility of training medical personnel.

It is also worth examining some of the effects of the British Government's decision to give the private sector a share of the National Health Service's laundry, catering and domestic services. In England 43% of such services have been taken up privately (less in Scotland and Wales), and this has resulted in a 20% saving. While this has been achieved to some extent by an increase in productivity there have also been systematic cutbacks in staff conditions by employing part-time staff, lowering salaries, reducing sick pay and holiday time, and scrapping bonuses. The initial disruptive effects of such privatisation on the NHS were enormous and were compounded by the unnecessary costly process of checking and investigating the activities of contractors. The result has been to increase unemployment, to reduce tax revenue and to increase treasury expenditure on unemployment benefits. The NHS patient has consequently gained little benefit from the savings. This, together with the disruption and turmoil within the labour market, raises serious doubt regarding what saving has really been achieved.[14]

Many of the schemes proposed in South Africa (and which are now being instituted through a proliferating number of private hospitals) indicate a preference for the US fee-for-service system.[15] This is administratively unwieldy and incurs unnecessarily heavy expenditure on administration — 22% of all health care costs in the USA in 1983 (cf. UK 6%, Canada 6%).[16] Between 1970 and 1982 there was a 171% increase in health care administrators in the USA compared with only a 48% increase in medical manpower and a 50% increase in total health care personnel.[16]

It is important to understand why government expenditure (on health) tends to increase progressively because it would seem that this is the demotivating factor for the State.[17] When public programmes are created to aid a limited group of disadvantaged people, this eventually leads to greater demands from the beneficiaries and lobbying from 'near' beneficiaries for inclusion in the offered services. Expansion of public services is driven further by employees within the system and from the private sector, which also

flourishes in the context of increased government expenditure (construction contracts, etc.). These mechanisms add momentum to the expenditure of government funds and the direction of stimulus is such that expenditure can only increase. Governments are motivated to reduce expenditure predominantly by the desire reduce their commitment rather than by any real desire to improve the quality of the service or to ensure its more equitable distribution. The methods they use to deflect their responsibility for providing health care include tactics aimed at weakening the public sector and those aimed at fostering growth of the private sector. Weakening of the public sector is achieved by decentralising administrative and financial control closer to the point of delivery and in this way placing the burden of costs and control on a smaller group in the hope that they will have a greater resistance to spending. The application of ever-increasing user charges for public services is another means used to deflect people into the private sector. Resistance to privatisation from within the public sector is facilitated by attempting to 'buy out' key elements, e.g. giving major 'perks' to key personnel.

Tactics aimed at strengthening private sector coalitions include: (*i*) deregulating government monopolies and increasing free-market opportunities; (*ii*) providing subsidies directly to lower-income citizens and in this way facilitating their ability to buy private services; and (*iii*) providing tax incentives to encourage growth of the private sector. These processes used by government are aimed at gradually changing its role from a provider to a facilitator. Rather than frustrating demands for spending it tries to deflect these into the private sector.[17] Sound arguments can be advanced for privatising many national structures, e.g. transport systems, and using the described strategies to achieve this but, as Naylor has made so clear, the same rationale cannot be applied to health services.

The net effect of privatisation in health services is movement towards a US-type fee-for-service system. Although the USA spends more money than most other countries on health, its health statistics are no better and are indeed in some instances worse than in countries which spend far less on health.[18] Another indictment of the US health care system is the increasing population without access to health care – at present over 35 million people.[19] Because of these failings the US health care system is coming under increasing criticism and there is growing awareness of the need to consider alternatives based on the Canadian and British health services as better models for delivering and financing health care.[16,20,21] Ginzberg,[22] a prominent medical economist states that: 'The competitive market is an opponent, not an ally, of cost containment. When capacity increases, advertising and marketing increase, the boundaries of the system are expanded, duplication of costly services is encouraged, and the public is pushed to consume more health care services than it needs.' This has the effect of destabilising health care services.

If privatisation is failing in the USA where the percentage of disadvantaged in the population is small (± 15%), it requires little imagination to project the outcome of privatisation for the masses of deprived people in South Africa. There is an appalling lack of awareness and understanding of the needs of so many people in South Africa and a shameful inadequacy of national priorities directed towards their benefit. These medical problems cannot be separated from sociological, economic and political factors that continue to delegitimate South African society. Creation of a unitary health service with an injection of resources to develop it effectively would be one way of showing good intentions towards resolving the tremendous inequities and disparities in our society.

S. R. Benatar

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Van die Redaksie/Editorial

Apartheid and medical care

The ideals espoused in the Hippocratic Oath, updated and renewed in the Declaration of Geneva and reflected in many other codes, serve to remind us of the spirit in which the skills of medical practice should be used to serve the physical and mental well-being of fellow humans in their time of need and when their existence is threatened.

The spirit of the Declaration of Geneva, which does 'not permit considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my patient', can be interpreted narrowly or broadly. The narrowest interpretation circumscribes this within an established doctor/patient relationship to ensure that personal differences between doctor and patient do not influence medical care. There is little dispute at this level. The broadest interpretation would oblige doctors (in all countries) to accept and look after all patients (from any country) equally who present to their private rooms or to their hospital regardless of the patient's nationality, social standing (which would include ability to pay), etc. It is clear that this broad interpretation does not apply (although many would like it to). For example a South African presenting to a National Health Service hospital in the UK or to a physician in Canada or the USA would be unlikely to receive access to appropriate care unless payment could be guaranteed (except possibly in an emergency). Not belonging to the National Health insurance scheme or coming from a financially insecure, lower socio-economic class would regrettably prejudice access to the undiluted duty of a medical practitioner.

The extent of attempts to give credence to the spirit of the Declaration within national boundaries is reflected in the structure of health care services in various countries. For example, the British and Canadian health care systems endeavour to meet these ideals for their own citizens. Until recently even visitors to Britain could be treated in the National Health Service at no cost. This can be contrasted with the USA where millions of American citizens have little or no guaranteed right of access to health care.

In South Africa it is beyond dispute that health services are discriminatory. Racial discrimination imposed by the law and by the structure of our public and private health care services, combined with economic disparities, ensure that the spirit of the Geneva Declaration cannot be met at the national level. Separate is certainly not equal. The need to change this is clear and the weight of opinion in favour of a fairer health care system is growing. Many individual practitioners in the private and public sectors and even some hospitals try (with some success) to overcome the constraints of the society in which we live and to render medical services to their patients in the spirit of the Geneva Declaration. This is evident from Dr Jamieson's[1] study, which showed that 90% of doctors in the Johannesburg area and 84% on the East and West Rand would see any patient and that 61% of doctors did not have separate waiting rooms and/or use different examination rooms for their black and white patients. That so many doctors are striving for and perhaps even meeting the ideals of the Geneva Declaration in our country, with all its discriminatory laws and institutions, is cause for celebration. Medical practitioners sensitive to the aspirations of our profession cannot fail to admire their many colleagues who over generations have tried so hard and often succeeded in preserving personal and professional integrity in this way.

But we must not be complacent and it is appropriate to be critical of those who do not aspire to, or meet, these standards. We should also emphasise the role of the councils, associations, colleges, university faculties and other professional organisations who in various ways represent the medical profession at broader levels nationally and internationally. It is necessary to state unequivocally that their first responsibility is to uphold the universal ideals of the profession and only secondly to represent the particular ideals of their local members. While credit must be given to many of these bodies for upholding and striving towards these ideals, it must also be openly conceded that there have been serious deficiencies in their efforts to seek the achievement of international standards of human rights in medicine consistently and that they have allowed their parochial views of the national self-interest to prevail. This unacceptable tendency has perhaps been aggravated by the opprobrium directed towards South African medicine by some international medical organisations, which have never offered support or helped their South African colleagues to meet mutual professional obligations. We must, however, rise above this and in our efforts to eliminate discrimination, join others[2] in urging the Medical Association of South Africa, the South African Medical and Dental Council and other prestigious medical bodies in the RSA to state unequivocally their principled support for an interpretation of the ideals espoused in the Declaration of Geneva and other codes, which will make racial discrimination unacceptable both in the public and the private sectors of medicine in this country. More extensive data are not needed for the MASA[3] or other bodies to acknowledge fully and unequivocally their responsibility towards taking such a stand.

S. R. Benatar

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Van die Redaksie/Editorial

The Tuberculosis Control Programme — a time to re-evaluate?

More than 280 million of the 600 million persons inhabiting the African continent are infected by *Mycobacterium tuberculosis*.[1] In South Africa alone there are up to 10 million infected persons.[2] It is estimated that overt tuberculous disease will manifest in at least 15% of the pool of infected persons who are at lifetime risk. The enormous task of controlling this disease should therefore not be underestimated. Current policy and control procedures in South Africa are determined by the Department of National Health and Population Development's Tuberculosis Control Programme (TBCP) drawn up in 1979. The size of this programme is well described in an article in this issue of the *SAMJ* (p. 676). Concern has previously been expressed about the effectiveness of the TBCP in this country,[3,4] often with particular reference to the ability of a fragmented health service to meet the challenge.[5,6] It should be noted that the programme does not cover the homelands.

Members of the health team who have had contact with the staff of the TBCP are impressed by their commitment to the task at hand. Contact-tracing and attention to the motivation of poor compliers are given high priority. As a general rule BCG vaccination and the most modern drugs in up-to-date treatment regimens are available at all clinics. Superficial analyses of outcomes suggests that the programme is satisfactory. Tuberculosis morbidity is reported to be on the decrease[7] and the death rate among known cases is similar to that of developed countries such as West Germany;[8] the South African case fatality rate of 5,3% certainly compares favourably with the experience of developing countries who have a rate of 10%.[9] In addition, the programme appears to be sufficiently funded compared with programmes in developing countries.[10] However, there is no cause for complacency. As South Africa awaits the full force of the AIDS pandemic, several questions must be asked of the TBCP in view of an anticipated increase in the number of tuberculosis cases. For example: why has the policy, as envisaged in 1979 by the Department of Health and by Glatthaar, not being fully implemented? Why does the western Cape have a rate of pulmonary tuberculosis which is 170% higher than the national figure? Why is the rate of increase of the disease in the coloureds in the western Cape more than double the rate of population increase in that group?[11]

A comprehensive assessment of the situation is required, and an evaluation of the TBCP should include at least the following questions: (*i*) what is the coverage of the programme? (*ii*) how are the available resources (finance, equipment and manpower) determined and allocated? (*iii*) is the programme efficient and cost-effective? (*iv*) what are the measured outcomes? (*v*) is the programme acceptable to the community? and (*vi*) to what degree is there community participation?

Only a few of the answers to the above questions are readily available. It is estimated that less than 50% of new cases are diagnosed annually[12] and only a proportion of all infectious patients are at present undergoing treatment. BCG coverage has been estimated at between 80% and 96%.[13,14] Within the programme approximately two-thirds of the budget is allocated to hospitalisation.[15] This pattern of expenditure is typical of tuberculosis control budgets two decades ago in developed countries,[9] where the situation has changed dramatically with only a minority of patients now hospitalised. It is of interest to note that the hospitalisation rate for tuberculosis is lowest in the western Cape, which has the highest prevalence of the disease in the country (see p. xxx). The efficacy and cost-effectiveness of these patterns of expenditure need to be analysed in specific communities.

On the basis of one of the few cost-effectiveness studies[16] performed in South Africa on the TBCP by an economist it could be suggested that more resources should be allocated in the direction of secondary chemoprophylaxis and BCG vaccination, to investigation of contacts and suspects, and to the ambulatory treatment of tuberculosis patients. The programme's present efficiency must certainly be compromised by the fragmented nature of the overall health system and by large-scale cross-border flow from the homelands, some of which have programmes different from the TBCP as evidenced by the lack of uniform data from these regions. A vertical programme (with tight central control but peripheral fragmentation) directed at such a widespread disease has fallen into disrepute. In 1986, an expert committee of the World Health Organisation described this approach as 'unproductive' and recommended the integration of tuberculosis control activities within primary health care, since, in practice, 'no developing country can afford to fund a vertical programme heavily enough to ensure thorough countrywide coverage'.[17] Outcome measures of the TBCP cannot be realistically addressed, there is massive undernotification of tuberculosis[4] and even figures issued by the Department of National Health and Population Development differ by as much as 30% (see p. xxx). The acceptability of the TBCP to communities has also been questioned.[18,19] Supervision of treatment of all patients by health care professionals results in lost productivity and has the psychological effect of infantilisation. Surely some

patients can be entrusted with their own treatment, perhaps via a 'buddy' system, thus leaving valuable personnel free to track down the poor compliers? Community participation in the TBCP would appear to be poor and fundamental political change will be required before this issue can be adequately addressed. Many unanswered questions remain. Present research efforts by the Tuberculosis Research Institute of the South African Medical Research Council and others must address priority issues such as cost-effectiveness and operations research.

We are of the opinion that a clear and comprehensive strategy for the whole of South Africa must be developed and implemented, with measurable goals in terms of process and outcome. An intensified effort is required to meet the challenge ahead, and this effort would be most efficient if fragmentation of the health services were eliminated and the TBCP was fully integrated into adequately structured and funded primary health care programmes. Together with improved socio-economic and environmental circumstances, a coherent TBCP will accelerate control of tuberculosis and contribute to reducing the extensive human misery that accompanies this disease.

S. P. Taylor
S. R. Benatar

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A unitary health service for South Africa

S. R. BENATAR

Summary

Medicine throughout the world is facing many critical challenges. In South Africa these are exacerbated by the effects apartheid has had on the structure, funding, distribution and delivery of health care. The demographic, economic, political, ethical and management problems facing our health services and the arguments in favour of privatisation are briefly reviewed. The case against privatisation of health care is buttressed by moral, economic and sociological justification for developing a unitary national health service/insurance system. In a rapidly changing South Africa medical care could become the leading edge of an enlightened social policy, which may facilitate peaceful progress towards a better future for all in our country and sub-continent.

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The explosion in scientific knowledge, its application to medicine and health care, coupled with rapid population increase during this century, have led to major debates throughout the world on the structure and funding of health care services. No perfect solution has been found and most health care systems are indeed of a hybrid nature. By tending to focus on polar extremes, such as completely socialised medicine or medicine controlled by free-market principles, the debate obfuscates the reality that most health care systems, certainly in developed countries, must inevitably include elements of both private and public services. The rhetoric and polemic of the debate is such that proponents of the extremes tend to buttress their own views by attempting to discredit the political basis for their opponents' views. For example, those who are critical of any form of socialised medicine scorn the failure of socialism as a political ideology, while those who are opposed to any form of private enterprise in medicine reject a capitalist approach as entirely self-interested and exploitative of the poor.

The debate in South Africa is further complicated by the structure of our society and the justified rising tide of revulsion for racism and its legacy. Meaningful discussions designed to try to find an appropriate solution to such a highly complex problem demand great intellectual honesty and a realistic view of what has been achieved in other countries. There is great danger that excessive focus on the short-term aspirations of polar groups will frustrate the enduring progress that could be made through finding and developing the middle ground. The challenge for the people of South Africa is to find ways of coupling immediate aspirations for reversal of discriminatory policies to structures and processes that will contribute to the advancement of our country and place it firmly on a path of progress, which will enable it to propagate the welfare and interests of all its people as well as play a meaningful role in the further development of the African continent. This could contribute to the growing movement towards the world peace necessary for survival in a world in which the nuclear threat and environmental pollution potentially jeopardise all human life.

I hope that this brief review will adequately serve as a synoptic backdrop to the case I shall endeavour to make for a unitary national health service structure, which could both symbolically and materially contribute to the progress necessary for peaceful transition into an economically viable post-apartheid South Africa.

Development of the health care system in South Africa

Before the second decade of this century all South African medical practitioners were trained abroad and health care services were provided predominantly privately or through philanthropic organisations. A landmark event, which was to have a major impact on the development of health care services in this country, was the first Health Act (1919) passed in the wake of the 1918 influenza epidemic that claimed so many lives.

Since then 7 medical schools (which between them now graduate approximately 1 000 medical practitioners each year) have been developed and the population of South Africa has grown from 5 million (25% urbanised) to over 36 million (over 50% urbanised).

Over 40 years ago there was already clear recognition that health care could not effectively be provided for the growing and diverse South African population merely by allowing the haphazard development of entrepreneurial medical services in an unco-ordinated and unplanned fashion. The views of the President of the MASA in his Presidential Address of 1931, in which he called for a state medical service, were reiterated in the visionary report of the National Health Services Commission in 1944.[1] Disregard for these recommendations and the implementation of apartheid policies has led to the present 14 ministries of health overseeing an unplanned irrational mix of private and public health facilities, which is patently damaging to the economy and to health care.

Despite the economic boom in the late 1960s and early 1970s and the acknowledgement at that time of the need to develop primary and community health services (Health Act of 1977 and National Health Facilities plan of 1980), insufficient resources were being injected into a badly planned health care system. As a result, today the resources and facilities in even our best hospitals are being outstripped by population growth and by the demands for health care that with better planning could have been met more cheaply and more efficiently at primary and secondary health care levels. Moreover costs are rising so rapidly in the private sector that its survival is also threatened.

Our current health care system can be accurately described as maldistributed, poorly funded and co-ordinated, fragmented and duplicated, discriminatory on a racial basis, hospital-based, and supported by very poorly developed ancillary services. All this is underpinned by a medical education system that has not been adequately moulded to cater for the diverse needs of the population. Documentation in support of all these points have been detailed in a series of publications.[2-17]

Department of Medicine, University of Cape Town and Groote Schuur Hospital, Cape Town
S. R. BENATAR, M.B. CH.B., F.F.A. (S.A.), F.R.C.P.

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Problems facing medicine and health care in South Africa

Demographic

Rapid population growth (almost 3% per annum) has resulted in the expansion of the South African population from 5 million at the beginning of this century to well over 30 million in the 1980s. A further doubling of the population is projected over the next 25 - 30 years. Simultaneously, there has been rapid influx into urban areas with resulting growth of peri-urban settlements for which totally inadequate health care facilities have been created. Ageing of the population, poverty, and disruption of the family pose additional medicosocial challenges to the delivery of health care. Population growth has outstripped the development of educational and other social facilities and also the employment so necessary for healthy living.

Economic

Between 1960 and 1974 the South African economy grew at the rate of 5,5% per annum. There has subsequently been economic decline and the progressive isolation of South Africa from the rest of the world. The rate of economic growth has slowed to 1 - 2% per annum since 1974.[13] These trends have not been evenly distributed across all population groups. The extent of the effect of decades of discriminatory policies is reflected in the household incomes per year — for whites in the region of R23 000, while for Asians, coloureds and blacks it is approximately R13 000, R5 000 and R4 000, respectively. With economic decline, the annual creation of new jobs since 1974 has fallen to approximately 60 000 per year (compared with 160 000 between 1960 and 1974).[13] Expenditure on health has increased very slowly; it is now slightly more than 5% of the gross national product (GNP). These structural inequalities, low growth rates and rising unemployment have had a marked negative impact on living conditions and thus on the health status of the population.[12]

Although South Africa is the wealthiest and most technologically advanced country in Africa, generating 25% of the 'gross continental product' and producing 90% of the steel and 50% of all the electricity in Africa, its stagnating economy — with inadequate growth of the proportion of the GNP devoted to health care — has contributed to a grossly underfunded health care service.

Political

South Africa's economic and other successes — in comparison with the rest of Africa — have been totally eclipsed by the effects of its racially discriminatory political and social policies. These have stultified and degraded the lives of millions, engrained hatred, cynicism and despair into many, silenced or driven to other countries innumerable talented citizens and isolated the country internationally. The political challenge for South Africa is to establish a cohesive integrated community in the form of a social democracy in which wealth, talent and resources can be fully developed and used for the benefit of all its people. This will require not only political change with democratisation of the development process, but also a deep commitment to human rights coupled with rapid expansion of the economy and re-incorporation of South Africa into the world market.[13,14] Recent developments have greatly encouraged expectations that the journey along the path has at last begun. The road ahead will not be easy. Mistrust and alienation between groups will have to be overcome by an active programme aimed at promoting understanding and creating opportunities for peaceful progress.

The elimination of apartheid is the first and most important step towards reducing the very wide disparities between different groups in this country. Other major social and economic changes will, of course, also be required and there is considerable debate on whether these can, or should, take place within a Western liberal paradigm or whether alternative ideological paradigms, such as socialism, offer greater potential for success. While the failure of the health care system in an African country which has been independent for over a quarter of a century has been attributed to capitalism and the solution proposed is socialism,[15] recent events in Eastern Europe have emphasised the failure of pure socialism. The need to couple political aspirations to economic structures that will provide the resources to sustain modern communities is now becoming more universally acknowledged.

Ethical

Modern developments in science, technology and medicine have resulted in unprecedented interest in ethical and moral issues in the practice of medicine. Key issues in such ethical debate include the nature of the doctor/patient relationship, patient participation in ethical decision-making, informed consent, withholding and withdrawing treatment, ethical decisions in the initiation of life, experimentation on humans, and the allocation of health care resources. The focus in South Africa has been on the doctor/patient relationship (stimulated to a considerable extent by the Biko affair and medical care for prisoners and detainees) and on the allocation of resources (given the wide disparities and discrimination in our society). The need for more equitable access to health care facilities and for greater patient autonomy, at both individual and societal levels, will generate intense debate on the ethics of collective decision-making and the process of democratic accountability in the restructuring of our health care services.

Management

Medicine and health care services in South Africa are characterised by a depressing history of inadequate planning, control and management. A major challenge in the management context is to develop structures through which appropriate health care planning, co-ordination, audit and control, *with accountability*, can be efficiently and effectively achieved at national, regional and local levels.

The case for privatisation

Economic motivation

A major argument used by those in favour of privatisation is that the market is the only efficient method of redistributing resources and accumulating means. Several underlying assumptions are made about marketplace medicine in the argument for this form of health care. These include the assumption that all citizens are rational and knowledgeable; that the consumer is supreme with protected autonomy and freedom; that health care is an individual responsibility and privilege; that marketplace competition creates incentives for increased productivity, encourages cost-effectiveness in the allocation and use of scarce resources, improves efficiency of the public sector, reduces taxation and inflation and prevents unnecessary overuse of services.[16,17] It is also argued that marketplace medicine stabilises the economy and that the marketplace equilibrium between producers and consumers facilitates the creation of wealth for all. While these assumptions may indeed apply to many marketplace transactions, it is clear that the economic behaviour of the health care market does not correspond to the

idealised rules of the free market. Given the nature of health care as a 'public good', there is, moreover, little reason to expect it to do so.[17]

Political motivation

Political arguments in favour of privatisation are that this will depoliticise decisions regarding resource allocation by subjecting the decisions to market forces and by reducing the power of collective bargaining. It is also argued that privatisation will limit the burgeoning inefficient bureaucracy that can be a feature of a national health service and that it will, by increasing personal responsibility for health, counteract dependence on the state, and reduce the state's welfare burden.[16-18]

It is also important to understand why government expenditure (on health) tends to increase progressively, since it would seem that this is the demotivating factor for the state.[19] When public programmes are created to aid a limited group of disadvantaged people, this eventually leads to greater demands from the beneficiaries and lobbying from near-beneficiaries for inclusion in the services being offered. Expansion of public services is driven further by employees within the system and by the private sector, which also flourishes within the context of increased government expenditure (construction, contracts, etc). These mechanisms add momentum to the expenditure of government funds and the direction of stimulus is such that expenditure can only increase. Governments are motivated to reduce expenditure predominantly by the desire to reduce their financial commitment rather than by any real desire to improve the quality of the service or to ensure its more equitable distribution.[19]

The government's strategy is to deflect its responsibility for providing health care. The tactics it uses are aimed at weakening the public sector and at fostering growth of the private sector. Weakening of the public sector is achieved by decentralising administrative and financial control closer to the point of delivery and in this way placing the burden of costs and control on a smaller group in the hope that they will have a greater resistance to spending. The application of ever-increasing user charges for public services is another means used to deflect people into the private sector. Resistance to privatisation from within the public sector is reduced by attempting to 'buy out' key elements, e.g. by giving major 'perks' to key personnel.[19]

Tactics aimed at strengthening private-sector coalitions include: (*i*) deregulating government monopolies and increasing free-market opportunities; (*ii*) reducing state services by providing subsidies directly to lower-income citizens and in this way encouraging them to buy private services; and (*iii*) providing tax incentives to stimulate growth of the private sector. These processes used by government are aimed at gradually changing its role — from being a provider to being a facilitator. Rather than frustrating demands for spending, it tries to deflect these into the private sector.[19] Sound arguments can be advanced for privatising or deregulating many national structures, for example, transport systems, but there is little evidence that this rationale can be applied to health services without leading to a situation in which a large segment of the population will be denied access to health care.

The case against privatisation

Sociologists Van Rensburg and Fourie[16] have suggested that privatisation has many adverse social effects: on the one hand it increases self-interest, personal gain, specialisation, fragmentation, duplication, maldistribution, inequities, mal-utilisation, conflicts of interest, exploitation and social conflict; on the other it decreases altruism, egalitarianism, democracy, planning, control, co-ordination, community interest, social responsibility and the common good.

Moral reasons[16] advanced for distancing oneself from privatisation of health care include the randomness, social insensitivity and exploitative nature of the marketplace, which leads to dominance of the profit motive with the result that health is monopolised for the élite. Economic discrimination replaces racial discrimination, with the same effect, and the needs of distributive justice are not met when social objectives are given less legitimacy than economic objectives.[16] In the context of a country with an unenfranchised majority, these considerations have major adverse political implications.

Naylor[17] has emphasised that health care is a public good requiring equitable distribution and that the perverse incentives for privatisation and lack of correspondence of the economic behaviour of the health care market to the idealised rules of the free market leads to serious public health consequences when there is free trading in health.

Brock and Buchanan[20] have recently clarified and debated the nature of ethical issues in 'for-profit health care' and have suggested that six serious ethical criticisms need to be addressed:

1. ***Exacerbation of problems of access to health care.*** In the highly privatised American system 20 - 25 million people have no health care insurance coverage and another 20 million have coverage that is inadequate by any reasonable standard.

2. ***Unfair competition.*** For-profit health care services 'skim the cream' and gain competitive advantage by failing to bear their fair share of the costs of care of indigent patients.

3. ***Treatment of health care as a commodity*** to be bought and sold in the marketplace rather than considered as a right of every citizen. Brock and Buchanan[20] point out that on virtually any general theory of distributive justice no one in a reasonably wealthy country ought to go without access to at least a minimally adequate level of health care. This level does not constitute a ceiling above which no one else is permitted to rise.

4. ***Conflicts of interest created*** by incentives and organisational controls adversely affect the physician/patient relationship, diminish the quality of care and erode the patient's trust in his physician and the public's trust in the medical profession. Brock and Buchanan[20] express concern that neither the perspective of the self-interest of the physician nor altruism should be over-emphasised and that there is a need for a balance to be achieved.

5. ***Medical education is undermined.*** The increasing focus on private medicine threatens the existence and the further development of academic centres of excellence that serve as the basis of the educational programme, undertake medical research and provide care for the poor, the aged and the sickest members of society. (The threat of privatisation to academic medicine in South Africa has been of concern also to the College of Medicine of South Africa.[21])

6. ***Public policy is jeopardised*** by the threat of undue influence exerted by the economic power of the medical industrial complex.

Brock and Buchanan[20] provide detailed discussion on these criticisms and conclude that the debate could more profitably concentrate on the need for a co-ordinated societal response to the serious injustices in access to health care that now exist, and that the most serious ethical concern with growth of 'for-profit health care' is potential adverse effects on the physician/patient relationship and on the quality of care.

The economic arguments against privatising medicine have been encapsulated by Ginsberg:[22] 'The competitive market is an opponent, not an ally, of cost-containment. When capacity increases, advertising and marketing increase, the boundaries

of the system are expanded, duplication of costly services is encouraged, and the public is pushed to consume even more health care services than it needs. This has the effect of destabilising health care services.'

It is against this background that privatisation of health care can be seen as economically unsound, politically foolish, morally deficient and a potential major contributor to social conflict, especially in the southern African context.

The case for a unitary national health service/insurance

During the last two centuries the ideals of 'rights' and 'equality' have evolved to include the right to publicly provided health care. Under this influence the responsibility for public health has become increasingly recognised as a major duty of the state. Bismarck developed the first national health insurance in Germany in the 1880s, predominantly as a means of maintaining the health of the labour force. The British National Health Service came into existence in the late 1940s, and shortly thereafter a wide-ranging health insurance system grew under the stimulus of the labour unions in the USA. The health care systems that arose under these influences in the UK, the USA and Canada were recently reviewed through the eyes of consumers in a survey carried out in conjunction with the Harvard School of Public Health.[23] Consumer satisfaction was found to be greatest with the Canadian health care system, which (despite its imperfections) combines many of the advantages of fee-for-service medicine with equitable access to excellent health-care facilities. The achievement of longer life expectancy, lower infant mortality rates and more consumer satisfaction in Canada, and great concern for the burgeoning increase in health care costs in the USA have refocused attention on unitary national services.[23-26] Many of the problems with the British National Health Service over the past 20 years can be accounted for by its inadequate funding and by its unwieldy, oversized and economically inefficient bureaucracy. These misjudgements of organisation do not negate the enormous benefits provided to the British people for many decades, but they should serve as lessons for others trying to design and implement even better unitary health services.

In South Africa in the mid-1980s approximately 46% of all medical practitioners were employed in the private sector, which accounted for about 44% of all health care expenditure and yet provided only 13% of all hospital beds in the country.[4] It is clear that while there must be a place for private practice in a South Africa that retains some elements of an open economy, further increase in the private-practice component will not help to cater for the health needs of the majority of the population, for education of health care professionals or for the survival of academic medicine. Privatisation and fee-for-service medicine should not be over-encouraged and, in particular, not to the detriment of public medicine. This claim is emphasised by the recent proposal from a group of physicians in the USA for a national health programme.[25] 'Our health care system is failing. Tens of millions of people are uninsured, the costs are sky-rocketing and the bureaucracy is expanding. Patchwork reforms succeed only in exchanging old problems for new ones. It is time for a basic change in American medicine. We propose a National Health Program. . . . The pressures of cost-control, competition and profit threatens the traditional tenets of medical practice. For patients, the misfortune of illness is often amplified by the fear of financial ruin. For physicians, it often gives way to anger and alienation. . . . The world's richest health care system is unable to ensure such basic services as prenatal care and immunisation.'[25]

Moral justification

Moral concern for the ways in which knowledge is acquired and used in medical practice and for the encouragement of an ideal doctor/patient relationship is as old as the practice of medicine.

In his analysis of the 'archaeology of the ethics of medicine' Jonsen[27] has described four levels, which constitute the successive foundations of medicine, components of which persist within our modern medical edifice. These comprise the level of *craftsmanship* with its origins in ancient Greek and Roman medicine, the level of *altruism* propagated under the Judaeo-Christian influence from the 3rd century onwards, the levels of *competence* and *professionalism* that have evolved since the 15th century under the umbrella of university education and the growth of science and technology, and the level of *'rights'* and *'equality'* which have matured over the last two-and-a-half centuries.

Pellegrino[28] has drawn attention to five analogical models, which have been used to describe the physician/patient relationship in comparison with other relationships that exist outside the context of medicine. These include the *commodity model* in which the delivery of health care constitutes the sale of a service in the marketplace by medical craftsmen who are predominantly pursuing their own interests but in the process of so doing benefiting their clients; a *covenantal model* in which the physician's obligation to the patient transcends science and human contracts and involves a trusting relationship with strong altruistic and religious overtones; the *applied biology model* which portrays medicine as focusing on proximate causes of disease and expensive technological curative processes with relative neglect of other vital important humane aspects of medicine; the *social functionary model* which describes the purpose of medicine as serving individuals primarily for the benefit of maintaining a healthy society; and, finally, the *contractual model* in which the physician/patient relationship is reduced to a mutually acceptable legalistic arrangement.

This brief reference to some historical and sociological aspects of the medical ethos provides a glimpse into many debates, much soul-searching and voluminous writings on many aspects of the philosophy of medical practice. The newly developing field of biomedical ethics has focused on three moral principles (beneficence, autonomy and justice) that are becoming widely recognised as the ethical framework for modern medical practice.[29]

Beneficence

Within the context of this moral principle, medicine is described as a moral enterprise based on the concept of the sanctity and equality of all human life. Health and disease are considered to result not only from 'natural causes' for which no one can be held responsible, but also from 'social causes' for which societies are responsible directly and indirectly. These considerations call for the establishment of a health care service that is not so prohibitively expensive that it denies access to individuals who cannot afford to pay at the point of delivery. The need for beneficence assumes such a gross imbalance of knowledge between doctor and patient that it is impossible for market forces to determine the allocation and distribution of health care resources. Finally, it is contended that the teaching and practice of medicine should take place in an environment that encourages practitioners to meet the beneficent ideals of their professional commitment without undue emphasis on financial self-interest.[29,30]

Justice

Justice as a moral principle calls for equity as a moral priority. Bayer *et al.*[31] in describing the crisis of the American

health care system, have pointed out that the proportion of the GNP devoted to health care is now more than twice the percentage in 1950. Despite this, 'significant and growing inequities continue to plague the health care system . . . as the focus of public attention has been shifted away from the social goal of securing equitable access for the unprotected to the issue of cost containment . . . it is necessary to re-assert the moral priority of equity'.[31] They make it clear that neither private philanthropy nor local government alone can provide the foundation for a just and adequate health care system and thus the creation of universal health insurance becomes a moral imperative. 'As a nation it is our collective responsibility to provide all individuals with a level of care necessary to maintain and restore health . . . good health cannot be assured to everyone, but good health care can . . . whether the demand for reform of the health care system is framed in terms of a "right to health care" or as a "social obligation", to guarantee access to health care is less important than recognising a moral commitment to an overriding goal . . . equitable access to the full range of health care services.'[31]

Autonomy

In recent years there has been increasing emphasis on autonomy as a major moral principle in medicine. The movement towards patient autonomy has made medical practitioners more conscious of the conflict between professional paternalism and respect for individuals as autonomous or self-determining agents. The autonomy concept assumes that people are free to choose between different courses of action and that this freedom is a requirement for the existence of a moral community. Over-emphasis on patient autonomy, particularly by philosophers, has, however, been contested by both medical practitioners and sociologists and this is an area in which a balance needs to be achieved.[32]

An aspect of autonomy that has not received much attention is the way in which privatisation can erode the autonomy of the medical practitioner.[33] It has been estimated that by the year 2000 the whole of medicine in the USA may be run by 15 - 20 mega-corporations. Clinical practice is increasingly being influenced by case managers, insurance carriers, peer review organisations, all of which form part of the 'managed care revolution', which has many adverse effects. Health maintenance organisation (HMO) enrolment increased from 9,1 million in 1980 to 29,3 million in 1988. Professional provider organisation (PPO) enrolment increased from 1,3 million in 1984 to 17,5 million in 1987. Both HMOs and PPOs are part of the managed-care revolution, which uses various methods to monitor and regulate physician conduct.[33]

The achievement of professional self-regulation has been based on three premisses: (*i*) that it is doctors and only doctors who have the technical knowledge needed for informed control of their own professional activities; (*ii*) doctors' activities are largely autonomous from other activities in health care; and (*iii*) activities of other health care professionals are almost exclusively dependent on doctors' decisions.[20] Brock and Buchanan[20] have pointed out that, while all of these premisses are becoming more dubious, it is unlikely that it will be of any benefit to replace professional self-regulation with regulation by corporations.

Marketplace competition in medicine, in the interim, has resulted in professional self-regulation being viewed as competitive and subject to anti-trust laws; and litigation has shifted regulation to the law courts. Litigation in the USA increased threefold between 1980 and 1985. Thirty-seven per cent of US doctors have had a case filed against them. Over 10 malpractice suits were filed per 100 physicians in 1985.

Economic justification

Under the influence of fee-for-service medicine 'in the marketplace', health care expenditure in the USA more than doubled from $240 billion in 1980 to over $500 billion in 1988.[33] Competition clearly has not been the answer to cost containment. The uninsured increased from 30 million in 1980 to 37 million in 1987. Marketplace medicine has been shown to be costly to administer — 22% of the health-care dollar in the USA. Overall health expenditure in the USA increased by 85% between 1980 and 1986 and during this time administrative costs increased by 186% overall and to even a greater extent in the private sector. Defensive medicine accounts for a further 15% or more of the health care bill and malpractice insurance increased 22% per year from 1982 to 1986. The total cost of practice (including malpractice insurance) comprises 50% of physicians' income in the USA compared with 36% in Canada and 29% in the UK.[33]

The economic disadvantages of marketplace medicine have also been highlighted by Parker,[34] who describes imperfections in both the demand and supply sides of the health care market. On the demand side health is a highly uncertain business, since patients do not and cannot know whether they will get ill, how much treatment will cost, whether treatment will be effective or whether they will be able to return to work, and they do not feel well enough informed to make fully rational choices about the type and quality of treatment they require. Consumer sovereignty cannot compensate for these deficiencies and there is a need for doctors to adopt an advocacy role for patients' best interests rather than seeking to maximise their own profits — which market theory tells us should be their goal. Parker[34] also emphasises the imperfect supply side of the market in health care. The cost of training doctors and the control of numbers is the responsibility of society. In a perfect market each individual would bear the cost of his/her own education and there would be no external limit on the numbers trained and entering the profession. Price competition gives rise to various alternative systems of funding and marketing (HMOs, etc.), but insurance companies do not aim to act in the best interests of the individual claimant. They are accountable to their shareholders and policy holders. Most studies in the USA show that profit-making hospitals in the USA are no more efficient than non-profit hospitals.[34]

The more advantageous economic aspects of the British National Health Service and the Canadian system of national health insurance provide powerful economic support for unitary systems. Although for most of history medicine has been funded and provided privately, this has changed in most countries over the last 100 years. A completely privatised health care service would be impossible in South Africa or any other country in the modern world. The extent to which market forces influence the practice of medicine of course varies enormously from one country to another and the central question is what the appropriate mix of public and private medicine should be and how this should be determined.

Sociological justification

Despite popular belief, there is a relatively poor direct correlation between medical care and national measures of mortality and morbidity. Modern individualised medicine has had a great impact on individual lives but has played a smaller role in improving the overall health status of large, especially developing, populations. The measure of a nation's health is more a direct reflection of the environment created by its economic and political structures. In South Africa, disease and death rates are clearly related to the social and economic structure.[12] How health care services are structured and funded

in any society will be determined by the balance of three socio-cultural considerations:[35] (*i*) the prevailing view of the nature and purpose of medicine and how its objectives can be achieved; (*ii*) the concept of community and what it means to live with and relate to others; and (*iii*) priorities in resource allocation for human development.

How the purposes of medicine can be achieved and how health care should be funded in any community will depend on that community's view of the nature of medicine, its concept of community and how much it is willing to spend on health services. The debate regarding the nature of medicine that has been briefly referred to above cannot be resolved without considering the nature of community and how individuals are bonded in their co-existence.

Loewy[36] has outlined two alternative concepts of community, each of which would subtend very different health care systems. He has pointed out that in a 'minimal' community, structured as a group of individuals bound together only by duties to refrain from harming each other (non-maleficence), health care will be seen as an individual responsibility and there will be minimal obligation to cater for the needs of the less fortunate in society. The economy is viewed as man's major activity in this context and the market becomes the fundamental social phenomenon. The overall effect is to encourage greed and selfishness and to discourage altruism. The second community he describes is one in which individuals would be bound together by more than just the minimal requirement of non-maleficence. Mutual beneficence and human fellowship would play a major role, health care would be defined as a social good and the natural lottery, which confers greater advantages on some people, would also confer on them duties and obligations towards their less fortunate fellowmen. The dilemma within this context is to know how far beneficence should be extended and the degree to which altruism and self-sacrifice are to be considered the norm. These two concepts of community are not necessarily mutually exclusive, and much common ground can be identified and developed.

When considering the priorities in resource allocation for human development it is important to recognise that health care is not an isolated function in society and that health care systems cannot take responsibility for all the social needs of people. Other social needs such as housing, welfare and education all contribute to health.[12] Choices have to be made regarding how resources will be distributed. This poses the questions of who will choose, what criteria will be used, and how limits will be set. Public policy planning is a strategy for controlling and optimising the social application of knowledge and resources. Health policy planning is motivated by an attempt to control the unrestrained use of advancing medical knowledge and to achieve a more equitable distribution of the benefits of medical knowledge for the collective good of present and future generations.[37]

It is clear that the concept of community and priorities in resource allocation will be intimately linked to political ideologies and economic structures within different countries. Polar extremes are typified by *laissez-faire* capitalism on the one hand and Marxist-Leninist socialism on the other. Little is achieved by focusing on these poles, and it is preferable to examine, as Leatt[38] has done, some of the differences that exist closer to the centre of the political and economic spectrum.

Within social democracies, such as Sweden and Western Europe, welfare capitalism encourages both free enterprise and egalitarian principles, such as equality of opportunity, social security and participation in decision-making. Labour is strongly represented and power is achieved through democratic means. Capitalism is subjected to progressive reforms in order to cater for the egalitarian principles aspired to within a particular society. The specific responsibility of the state is for peace and stability, education, social services, health, etc. Monopolies are discouraged and the legal system is used to settle trade union disputes. This can be contrasted with democratic socialist systems in which the economy is state controlled. For example in Yugoslavia there is (communist) party control over national affairs, but with more freedom of expression and greater encouragement towards decentralisation of power in a participatory democracy than in Marxist-Leninist countries. Capital is seen as a social asset and is therefore state-owned. Enterprise is encouraged at the employee rather than at the private level. The state remains somewhat authoritarian but there is an endeavour to avoid the stultifying effects of large-scale bureaucracies.[38] Recent developments in Eastern Europe throw open possibilities for a broader range of alternatives.

Western social democracies in general have economies with annual per caput incomes in excess of US $12 000 - 15 000 compared with countries such as Yugoslavia, where the annual per capita GNP is in the region of US $2 000. Socialised or nationalised health services with a private practice component can exist in all countries. The extent of the mix and the level of health care that can be provided will vary enormously, largely — but not exclusively — determined by the availability of economic resources. Whether South Africa can become a social democracy incorporating features of the welfare state and private enterprise in similar combinations to those found in Western nations (with annual per caput incomes in excess of US $12 000) or whether it will be able to achieve only a democratic form of socialism, such as countries like Yugoslavia, will depend as much on whether our economy can be boosted to its full potential as it will on other considerations.[12,14,39]

The crisis in medicine

The crisis in medicine in South Africa reflects not only the crisis facing medicine in the Western world, but also the crisis of political legitimacy in this country and the problems of delivering modern health care to a population that is growing rapidly and becoming urbanised and which also needs to be adequately housed, fed and educated. Demands for more equity, and more appropriate use of resources, are taking place against a background of wide disparities in health and economic life and within a health care system characterised by gross maldistribution, fragmentation and mal-utilisation. A series of critical decisions about the organisation of health care needs to be made to enable health services to meet the challenge of contributing fully to the construction of a healthy society.[12]

The central question is: whose values will count in shaping our health care system, and indeed our society, as we move into the future? While polar value systems are almost irreconcilable, it is important to realise that all the concepts within each polar ideology are not monolithic or mutually exclusive and that there is considerable common ground on which negotiated solutions could be found.

Unfortunately, obstacles (to developing and changing our health care system and society in an appropriate direction to meet the needs of all) will be put up from many quarters — from the medical profession itself, from economic forces, and from the public through the expression of their various political views. To counter those radical and conservative forces that inhibit progress through negotiation, it must be made clear that the requirements for South Africa to develop into an internationally recognised state, in which human rights will be accorded to all on a non-discriminatory basis, will require the elimination of apartheid, democratisation of the development process, a deeper (legally-entrenched) commitment to human rights, an active programme to reduce human conflict and facilitate co-operation as well as rapid expansion of the economy and re-incorporation of South Africa into the world market. Such progress will demand of whites and blacks that

they agree to the compromises and mutual endeavours required to ensure rapid and peaceful progress towards these objectives. If we can embark successfully on this course then other nations may be motivated to provide the economic and political support needed to help turn this dream into a reality.[13,14,39]

Towards a new South Africa

The contributions that the medical profession can make to a changing South Africa will be to broaden medical education and make it more relevant to the needs of our community without sacrificing its scientific base, to develop and implement the concept of community-based medicine and health care teams, especially in rural areas, and to develop means of allocating and utilising resources justly and optimally within a well co-ordinated, planned and controlled health care service. The challenge is to find ways of using modern medical knowledge humanely and with wisdom and in the process to deliver health care in a milieu that both preserves the dignity of each unique individual and helps to create the spirit of community in which our interdependence is acknowledged and developed.

It is suggested that the likelihood of achieving these ambitions goals will be greatest within a society that is moving rapidly towards democracy, has a vigorous and growing economy, and a strong social commitment expressed medically in the form of a unitary health service working in collaboration with a smaller private medical sector that, in its structure and organisation, complements rather than detracts from the public health service. The human co-operation required calls for moral sensitivity, mutual tolerance, education and open-mindedness, a willingness to negotiate and a practical sense regarding time-frames and processes through which changes can be achieved. Open criticism, the will to listen and to implement changes are the essential ingredients required to move towards developing health services that will offer equitable access to quality treatment in an environment that supports the highest ethical ideals of the health care profession. The spirit in which the dialogue towards a national health service/insurance system is taking place is to be encouraged in the hope that this can lead to a better health care system than we have today and in a non-discriminatory and just South Africa in which many human rights are recognised formally and substantively.

This may all seem an unrealistic dream for a future South Africa, but it is an ideal worthy of pursuit. Succumbing to the forces that encourage polarisation, isolationism, apathy and despair, that serve only selfish ends and that have negative evolutionary implications is an alternative to be avoided.

De Beer *et al.*[40] from the Centre for Study of Health Policy at the University of the Witwatersrand have highlighted two challenges that will have to be met by the proponents of a national health service: firstly, to describe how such a service should be structured and financed and what the manpower policy will be and how resources will be used more efficiently and, secondly, to identify important forces and obstacles likely to stand in the way of creating a national health service and to identify strategies to overcome these.[40]

They have identified ten major obstacles[40] to the transformation of health services in South Africa: the absence of political will; resistance from the private sector; the difficulty of expanding the service to meet increased demand; the demand for tertiary care; the demand for curative care; the expectations of the affluent and the powerful; the power of the professionals; a legacy of unequal resource distribution; the legacy of fragmentation; and the nature of health service management.[40] Work has begun on the ambitious programme of developing the basis on which a unitary national health service/insurance could be planned and structured. The results of these efforts, some of which have been published, will merit close and careful attention.[7]

The College of Medicine of South Africa, a body which represents the most highly trained and accredited members of our medical and dental professions, has endorsed the call for a unitary national health service/insurance.[41] The time is ripe for the rest of the medical profession to join in contributing to making health care the leading edge of an enlightened social policy.

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Town

Opinie/Opinion

The South African Medical and Dental Council — some proposals for change

In the last few years, and in particular during the course of 1990, long hoped for changes in the way in which South Africa could move constructively into the future have begun to materialise. The challenges we face in ensuring peaceful progress into a better South Africa are enormous. The potential role of the health professions in contributing to this process, which will require sensitive human co-operation, is great. There is a need for visionary and courageous pro-active changes to medical education (which many believe has become 'fossilised'), to medical services and to the planning, control and accountability of medicine. Appropriate accountability within the profession, open to public scrutiny, will be preferable to accountability predominantly through market or legal forces, both of which are ill-suited to the complexities inherent in health care delivery, particularly to a burgeoning population.

It is in this spirit that a proposal is advanced that the time has come to restructure the South African Medical and Dental Council (SAMDC) to make it more representative of the health care professions and more responsive to the diverse needs of all the people of South Africa. This, together with restructuring of other organisations and other changes, could help to re-establish the once proud image of the medical profession in this country and enable all health professionals to work together towards the planning and implementation of a health care service that could meet the challenges of equitable access, quality medical care, efficiency, academic excellence, and public trust in the profession.

The SAMDC was established by Act No. 13 of 1928 and is now governed by the Medical, Dental and Supplementary Health Service Professions Act No. 56 of 1974.[1]

The SAMDC was established primarily to serve as an instrument to protect the public. It serves the interests of the medical and dental professions only in so far as these interests coincide with its main aim. According to the Act, the specific aims of the SAMDC are to: (*i*) assist in the promotion of the health of the population of the RSA; (*ii*) control and administer all matters (with some exceptions) dealing with training persons in the diagnosis, treatment, and prevention of physical or mental disorders of the human being and of putting this training into clinical practice; (*iii*) promote liaison in the field of training in the RSA as well as elsewhere and improve the standard of such training; (*iv*) advise the Minister of Health about any matter within the scope of the Act; and (*v*) convey to the Minister any information of public importance that it acquires during the performance of its activities in accordance with the Act.

The SAMDC is vested with a wide range of general powers, which include control over the Medical Register, setting of examinations, the appointment of examiners, approval of training schools, the recognition of local and foreign medical qualifications and the exercise of disciplinary power over persons registered in terms of the abovementioned Act.

The SAMDC has the power to institute an inquiry into any complaint, charge or allegation of improper or disgraceful

conduct against medical practitioners and other persons registered in terms of the Act. It is able to make recommendations to the Minister of Health with regard to the manner in which it should exercise its own functions.

Following an inquiry, the SAMDC may impose one or other of the following penalties: (*i*) a caution and/or a reprimand and a caution; (*ii*) suspension for a specified period from practising or performing acts especially pertaining to a practitioner's profession; and (*iii*) removal of a practitioner's name from the Register.

The acts and omissions in respect of which the SAMDC may take disciplinary steps are set out in *Government Gazette* No. R2278 of 3 December 1976 and are summarised in the MASA's *Guide to the Maintenance of Ethical Standards*.[1] The 1974 Act does not define improper or disgraceful conduct and the SAMDC has the discretion to define such conduct and to make such rules specifying the acts and omissions for which it may take disciplinary steps.

In a 1985 review of the powers of the SAMDC by the Supreme Court, the Council was described by the presiding judge as: 'Truly a statutory *custos morum* of the medical profession, the guardian of the prestige, status and dignity of the profession and the public interest in so far as members of the public are affected by the conduct of members of the profession . . .'.

Since the establishment of the first medical school in this country at the beginning of this century, medical training and practice have made great progress and the South African medical profession has acquired an enviable national and international reputation for excellence in clinical practice and medical innovation. Graduates from our medical schools have become distinguished leaders in many countries of the world and the training provided at undergraduate and postgraduate level remains outstanding in many respects. Credit for this can be attributed to many individuals and organisations, including the SAMDC.

This reputation was, however, gravely damaged by the death in custody of Steve Biko. This turning point in the history of the South African medical profession had as its fulcrum the failure of the SAMDC to rise to the levels expected of it in performing its crucial disciplinary role. Its response to the Biko inquest proceedings met with resounding criticism from many quarters nationally and internationally.[2] The 6 April 1980 press release from a 5-member committee of inquiry announced that it had found no prima-facie evidence of improper or disgraceful conduct on the part of the practitioners involved and it resolved that no further action be taken in the matter. This decision was formally confirmed by the full Council in June 1980.

Despite the protests, the SAMDC confirmed in October 1980 and also in 1983 that its dismissal of the complaints against the doctors involved in the Biko case was final and irreversible. The case was subsequently taken to the Supreme Court, which issued an order repudiating the resolutions adopted by the SAMDC. In July 1985 a disciplinary committee chaired by the President of the SAMDC reversed its previous decisions and recommended disciplinary actions, which were confirmed and extended at the next SAMDC meeting.

The MASA also came under considerable criticism for its inadequate reactions to these events, but to its credit it has subsequently taken some sincere steps in an attempt to rectify its previous shortcomings. Its many statements are now clearly on public record and the challenge ahead is to ensure their further implementation in practice.

At present the SAMDC consists of 34 members. These include the Director-General of National Health and Population Development, 10 persons appointed by the Minister of National Health and Population Development (of whom 4 must be medical practitioners, 1 a dentist, and 1 attached to a medical or a dental faculty of a university; 3 must not be registered under the Act, and 1 must be the chairman of a professional board); a director of hospital services appointed by the administrators of the provinces; 4 medical practitioners from the universities with medical faculties and 1 dentist from a university with a dental faculty, appointed by the rectors of the universities; a medical practitioner or dentist appointed by the College of Medicine of South Africa; 10 medical practitioners elected by registered medical practitioners and 4 dentists elected by registered dentists, a nurse appointed by the South African Nursing Council, and a pharmacist elected by the South African Pharmacy Board — i.e. 19 nominated members and 15 elected members.

It is proposed that the number of nominated members be reduced to 8 and the number of elected members increased to 26. The 8 members nominated by the Minister of Health should include 3 medical practitioners (1 of whom would be the Director-General of National Health and Population Development), 1 dentist, 1 nurse and 3 members of the lay public (including at least 1 with legal expertise). The elected members should include 13 medical practitioners (including at least 5 from medical schools and 1 from the College of Medicine of South Africa), 2 dentists (including at least 1 from a dental faculty), 3 nurses, 1 pharmacist, 3 members of the professions allied to medicine, 1 chairman of a professional board, 2 respected public persons from outside the health profession and 1 director of hospital services. Cognate groups should comprise the electoral college for each sub-category. There could be several requirements built into the election process that would ensure inclusion of representation from all population groups, as well as from members of the family practice/primary health care sector.

South Africa is on the threshold of a new era that offers great potential for constructive and enlightened progress into a brighter future for all the people of this country and the subcontinent. Education and health services will have a high profile as we move into this new era. There is a need for sincere commitment to the public and professional concerns about medical education and our health services and a need for observable maintenance of high ethical standards as we face the enormous challenges inherent in social change. Restructuring of the SAMDC along the lines suggested above (or in other ways that may be suggested in response to this proposal) could help to meet these challenges by creating a leadership body that would be more representative of the health care professions and those they serve.

S. R. Benatar

1. Medical Association of South Africa. *Guide to the Maintenance of Ethical Standards*. 3rd ed. Pretoria: MASA, 1984.
2. Rayner M. *Turning a Blind Eye? Medical Accountability and the Prevention of Torture in South Africa*. Committee on Scientific Responsibility, American Association for the Advancement of Science, 1987.

SPECIAL ARTICLE

MEDICINE AND HEALTH CARE IN SOUTH AFRICA — FIVE YEARS LATER

SOLOMON R. BENATAR, M.B., CH.B.

THE pace of political and social change in South Africa has quickened dramatically since my previous review[1] of medicine and health care, and there has been a resurgence of hope that at last real progress may be made toward a legitimate society capable of contributing to peace, stability, economic growth, and health in Southern Africa. Despite the instability and violence that have followed the dramatic changes initiated by President F.W. de Klerk in February 1990 and the many ambiguities associated with subsequent negotiations, optimism runs high for the future of the Southern African subcontinent.

PROFILES OF DISEASE AND HEALTH

Previously reported health statistics,[1] criticized as "badly outdated" by the then director of the Department of National Health and Population Development,[2] have been updated.[3] Many beneficial trends are evident between 1980 and 1985 (see Table 1 for selected data). Health statistics on black patients are inadequate, however, because of considerable underreporting, wide variations between rural and urban areas, and a long history of insufficient interest in their health status. Studies such as those on the Mamre community,[4] on infant mortality,[5] and on tuberculosis in the Western Cape Province[6] exemplify the recent use of modern epidemiologic techniques to provide more accurate insight into profiles of disease and health in South Africa. These studies are reminiscent of pioneer work in epidemiology and community health undertaken 50 years ago in South Africa, the progress of which was blighted by the apartheid power structure then developing.[7]

DEVELOPMENTS IN HEALTH POLICY

Although there has not been any major restructuring of the health care system since my earlier review,[1] many powerful forces capable of profoundly influencing its structure and function are evolving. Of greatest intellectual importance have been a wide range of critiques of South African medicine (unanimous in condemning apartheid and all its effects on health, human welfare, and dignity), which highlight the complexity of political, social, economic, and "contextual" influences on the health of the nation.[8-16] Several progressive medical organizations have also made important contributions to the health care debate.

From the Department of Medicine, University of Cape Town and Groote Schuur Hospital, Observatory 7925, Cape Town, South Africa, where reprint requests should be addressed to Dr. Benatar.

Most distressing for those concerned with the need for more equity and for appropriate use of resources has been the exacerbation of the fragmentation and duplication produced by the 1983 creation of the tricameral parliament, which with the "homeland" system has spawned 14 ministries of health. The new system announced in 1986, with a National Health Policy Council responsible for planning, coordinating, and monitoring health policy, created a bureaucratic complex that seems designed primarily to give the appearance of planning while in reality further fragmenting health services on racial grounds. The full implications of the rapid promulgation of the National Policy for Health Act of 1990, which centralizes all decision-making power in the hands of the minister of health of the (white) House of Assembly without abolishing other unnecessary and wasteful health ministries, remain uncertain. The power could have been used to create a unitary health service with, for example, national insurance covering all. Regrettably, the political choice has been to favor further transition toward a two-tier medical system — a private sector catering lavishly to the minority with insurance coverage (currently less than 20 percent of the population) and a public sector able to provide only inferior care for the poor majority — that substitutes economic apartheid for racial apartheid in health care, with serious adverse effects on the country's medical schools.[17-20] It is unfortunate that none of those with a major political stake, including the African National Congress, have developed a coherent health policy.

ACCESS TO HOSPITALS AND AMBULATORY CARE

Patients covered by private medical insurance can obtain excellent ambulatory and hospital care at the primary and secondary levels in the private sector. Sophisticated tertiary medical care — renal dialysis, transplantation, chemotherapy, radiotherapy, prolonged intensive care, and neonatal intensive care, for example — is not widely available in the private sector. Patients, including those with private insurance coverage, referred to teaching and other public hospitals are considered for such treatment in limited programs. Cardiac and vascular surgery and neurosurgery can be performed privately. When insurance runs out, as it often does, patients are usually referred to (or dumped on) teaching hospitals. To be fair, it must be conceded that private physicians carry out considerable pro bono work, and some work part time in public hospitals for considerably less than they would receive in the private sector.

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Table 1. Profile of Health and Disease in South Africa, According to Population Group.*

VARIABLE	ASIANS	BLACKS	"COLOUREDS"	WHITES
Population — no. (%)				
1980	821,000 (2.9)	20,692,000 (72.2)	2,613,000 (9.1)	4,528,000 (15.8)
1985	905,000 (2.7)	24,298,000 (73.6)	2,922,000 (8.8)	4,901,000 (14.8)
Annual growth rate, 1980–1985 (%)	1.97	3.27	2.26	1.6
Birth rate (per 1000)				
1980	24	40	27.8	16.5
1985	22.5	39.1	27.6	16.3
Mortality (per 1000)				
Infant				
1980	24.4	70	60.7	13.1
1981–1985†	18	94–124	52	12
1985	16.1	61	40.7	9.3
Total				
1980	5.9	11.0	10.3	8.4
1985	5.5	8.3	7.7	7.6
Deaths at ≤4 yr (%)				
1980	12.1	30.7	25.7	3.4
1985	8.0	23.8	19.5	2.6
Maternal mortality (per 100,000 live births)				
1980	≤30	≤30	>40	1
1985	24	22	29	1
Life expectancy at birth (yr)				
1980	65	55	58	70
1985	67	62	61	71
Incidence of tuberculosis (per 100,000)				
1980	82	226	325	12
1985	80	211	429	15
Incidence of measles (per 100,000)				
1980	34.6	82.4	57	22.1
1985	21.1	71.2	25.2	23.9
Death rate (per 100,000)				
Intestinal infection				
1980	16	75	92	5
1985	6	37	44	2
Nutritional deficiency, 1985	0.5	6.9	6.1	0.3
Ischemic heart disease				
1980	116	6	64	199
1985	110	4	60	178
Lung cancer, 1985	6.9	5.0	23.1	29.0
Homicide, 1985	10.3	23.7	33	2.8
Suicide, 1985	5.8	2.6	2.9	11.4

*According to population registration by the South African government.[3] †Values are according to Yach.[5]

The ownership, type, and availability of hospitals and hospital beds in 1983 and 1989 are summarized in Table 2.[21-23] A further rise in the number of for-profit beds to 13,238 in 1990 (a 61 percent increase since 1983)[22] indicates the rate of growth in private hospitals. The growth in the number of private beds per 1000 insured persons, from 1.63 in 1983 to 1.84 in 1989, contrasts with a slight decline in this ratio in the public sector over the same period.[22]

All public hospitals have large outpatient clinics. At Groote Schuur Hospital in Cape Town, approximately 100,000 patients are admitted each year, and more than 1 million are seen in outpatient clinics that, as in all teaching hospitals, include specialized services. Ambulatory primary care is also available in many public clinics not attached to hospitals. Most private ambulatory care is for relatively minor illness. Everyone has access to ambulatory and inpatient services in public facilities (including teaching hospitals). Until recently, the charges levied, even on patients with insurance, were minimal, and less than 10 percent of operating costs were raised from patients' fees. Newly restructured fee schedules based (in an attempt to raise funds) on taxable income have only marginally improved income generation. Being even more economically unrealistic than in the past,[1] these fees discourage many patients from seeking early medical attention.

With population growth, rapid urbanization (associated with the abolition in 1986 of laws that prevented uncontrolled migration to urban areas), poverty in mushrooming periurban settlements and squatter areas, and very few secondary-care public hospitals, the workload of public and especially (tertiary) teaching hospitals, which have not expanded, is becoming overwhelming.[24-26] Outpatient clinics are overcrowded, and only the sickest patients gain admission. The mean stay in the medical wards at Groote Schuur Hospital has fallen from 14 days in 1972 to less than 6 days in 1990, and many patients are discharged prematurely. Faced with rising fees in public hospitals, patients with insurance coverage are less inclined to use these busy institutions. The private sector is capitalizing on this change by building low-cost private care facilities, and those who can pay choose them rather than subject themselves to the long queues and deteriorating conditions in public hospitals. This both reduces income from patients' fees in public hospitals and draws trained nursing, medical, and technical staff away from the public sector into more lucrative jobs.[22]

MEDICAL AND PARAMEDICAL PERSONNEL

The Health Team

The size of the health team (physicians, dentists, nurses, pharmacists, and paramedical personnel) grew from 10.5 members per 10,000 population in 1940 to 55.1 in 1985.[3] (In developed countries the comparable figure is 102.) The increasingly important role of nurses is evident in the sevenfold increase in their numbers per 10,000 population over this 45-year period (from 5.5 in 1940 to 38.1 in 1985), as compared with just over a twofold increase (from 3.0 to 6.8 per 10,000) in the number of medical practitioners.

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Changing attitudes toward unionization and autonomy and the encouragement of politicization in the nursing profession could have far-reaching effects (not all beneficial) on health care services.[27]

Medical Schools

The percentage of black medical students in all South African medical schools increased from 18.1 percent in 1980 to 25.2 percent in 1988.[3] Equal-opportunity admissions policies and the programs of academic support being developed in several medical schools will facilitate a progressively greater percentage of black medical graduates during the coming decade.

Although medical schools are heavily subsidized by the state, tuition fees (about 6,000 rands [R6,000, or $2,100] per year) and living costs (also about R6,000 per year) outstrip the financial capacity of most black students. University scholarships and others from overseas organizations help to some extent. Recent radical cutbacks in the funding of teaching hospitals and the expectation that medical schools will contribute increasingly to their own keep — a totally unrealistic proposition in a country with no public medical insurance and less than 20 percent of the population privately insured — threaten the viability of several medical schools. In March 1991 all public hospitals in the Cape Province, including teaching hospitals, were suddenly closed for three weeks to all except emergency cases. A 10 percent cut in funding (including personnel) beginning in 1991–1992 will cripple many activities. Teaching hospitals in the Cape Province are being reduced to the level of Baragwanath Hospital, whose condition has been described previously.[28]

Selection of Medical Students

Applications to medical schools exceed the number of places severalfold, with little apparent change in recent years. Traditionally, academic performance in final high-school examinations has dominated in the ranking of applicants. Several medical faculties have assigned up to 30 percent of the score required for admission to nonacademic attributes. One university has developed an interview and an objectively scored biographical questionnaire.[29,30] Analysis of their use among 2304 students between 1984 and 1987 showed that these instruments can broaden the spectrum of personal attributes of those admitted and move the ethnic and sexual composition of the class closer to that of the pool of applicants without affecting the subsequent failure rate. No correlation was found between the academic score and the score on either the biographical questionnaire or the interview.[29] A follow-up report suggested that traditional standards are being maintained and that "excellence in diversity" is achievable.[30]

The worldwide acknowledgment that sophisticated, hospital-based medical care is not sufficient to create a healthy community continues to generate debate, however, over the relevance of the selection criteria and the medical curriculum in producing the "ideal spectrum of medical practitioners" suited to meet the "real health care needs" of a developing society. This debate has a special importance in South Africa, where concepts of relevance and the Africanization of universities are high on the agenda.[31,32]

Medical Curriculum

Evolving curriculum changes in some South African medical schools include more emphasis on small-group teaching; more time allocated to primary health care, epidemiology, medical ethics, health economics, and the structure of health care services; a reduction of the preclinical curriculum from 3 to 2½ years of the 6-year course, with less physics and chemistry and the introduction of courses on human biology and development; the compulsory study of an African language; elective courses in philosophy, sociology, economics, anthropology, and other disciplines; and the development of programs of academic support for underprivileged and academically disadvantaged students. The dispute between those who want to retain traditional medical education with modifications and those who would replace it with an essentially different form of community-based medical education reflects the tension between medicine for individuals and medicine for population groups — both necessary but neither sufficient in any society concerned with improving community health and providing access to the personalized health care facilities demanded by people in contemporary society.

Economics of Health Care

Since 1986, when only rudimentary information was available,[1] health economics has been growing as an academic discipline in South Africa, and comprehensive studies of trends in the distribution of health care expenditures have now been published.[33-35]

The percentage of the gross national product spent on health care increased from 4.8 percent in 1971 to a peak of 5.9 percent in 1986. In 1971, expenditure in the public sector accounted for 2.7 percent of the gross national product (private-sector expenditure, 2.1 percent), and in 1986 for 3.3 percent (private sector, 2.6 percent). The increasing proportion of the gross national product spent on health from 1981 to 1986 resulted from both an increase in real per capita expenditure and a decrease in the real per capita gross national product[35] (a 15 percent decline from 1981 to 1989[23]). Total real per capita expenditure on health care increased from R208 ($73) per annum in 1971 to R284 ($99) in 1988, with a peak of R300 ($105) in 1984. This reflects a total real growth of 37 percent and an average real increase of 5 percent per year from 1979 to 1984 and nearly 1.4 percent thereafter.[35] (The calculations are in 1988 rand, as compared with the 1975 rand that was used as the base line in my previous review.[1]) The devaluation of the rand by 57

Table 2. Distribution of Hospital Beds in the Private and Public Sectors in South Africa in 1983 and 1989.*

TYPE OF HOSPITAL†	1983		1989		CHANGE (%)
	NO. OF BEDS (%)	BEDS PER 1000 POPULATION‡	NO. OF BEDS (%)	BEDS PER 1000 POPULATION	
Public	97,189 (68.7)	3.1	111,920 (70.3)	3.03	15.2
Private	43,179 (30.5)	1.63	46,253 (29.0)	1.84	7.1
Charity	1,252 (0.9)		916 (0.6)		−26.8
Fee-for-service (for-profit)	8,220 (5.8)		11,117 (7.0)		35.2
Contractor	12,928 (9.1)		14,517 (9.1)		12.3
Industrial	10,055 (7.1)		9,585 (6.0)		−4.7
Provincially aided	5,091 (3.6)		4,783 (3.0)		−6.0
Tuberculosis	5,633 (4.0)		5,335 (3.4)		−5.3
Other	1,072 (0.8)		1,072 (0.7)		0
Total	141,440 (100)	4.2	159,245 (100)	4.3	12.6

*From Broomberg et al.[27]

†Public hospitals are those controlled and funded by one of the four provinces of South Africa or one of the authorities in the four "independent homelands" and six "self-governing homelands." Contractors are private for-profit corporations that provide long-term tuberculosis and psychiatric care under contract to state authorities. Industrial hospitals are owned and run by large industrial, agricultural, or mining corporations to provide care for resident workers. Provincially aided hospitals are private institutions operated for local communities; they receive a state subsidy for treating nonprivate patients. "Other" includes municipal, military, charity, and trust hospitals and those of the Department of Health.

‡The number of beds per 1000 persons according to population group was as follows: whites, 150 (urban 130 and rural 260), and blacks, Asians, and "coloureds," 260 (urban 150, rural 460, and "homelands" 302).

percent against the U.S. dollar between September 1985 and December 1990[23] had major implications for the purchase of imported medical equipment, drugs, and medical literature.

Private and Public Sectors

Public and private expenditures followed similar trends, with peaks in 1984, after which public expenditure declined more than private. As in the past, the bulk of public expenditure is for curative health services. The lowest rate of growth in per capita health expenditure in the public sector was in the "homelands," and the gap between the "homelands" and the rest of South Africa increased from R118 ($41) in 1971 to R170 ($60) in 1988 (in 1988 rand).[35]

Medical-insurance companies (250 of them in 1988) disbursed 76 percent of private-sector expenditures in 1987. Of this, 43 percent was paid to general and specialist medical practitioners and dentists, 25 percent was spent on medicines, and 20 percent on hospitalization. The proportion of the population covered by private insurance (largely subsidized by employers) peaked at 17.6 percent in 1983 and had fallen to 16.9 percent by 1987. (There is no public health insurance in South Africa.) During this time the coverage of whites fell from approximately 87 percent to 78 percent, and the coverage of other population groups increased, leveling off at about 30 percent for Asians and "coloureds" after 1984.[35] In 1978 blacks represented only 4 percent of all those with medical insurance; this had increased to 18 percent by 1987, when only 4 percent of blacks were covered. Annual per capita contributions to medical insurance grew from R318 ($111) in 1971 to R555 ($194) in 1987 — an average rate of real growth of 3.5 percent a year (7.3 percent a year since 1982).[35]

The weighted average annual expenditure per capita in 1986 was R138 ($48) for blacks, R340 ($119) for "coloureds," R356 ($125) for Asians, and R597 ($209) for whites. This inequality also reflects the differences between the private and public sectors. In 1987, the average per capita expenditure was R159 ($56) for patients treated in the public sector and R555 ($194) for those with private insurance.[35] There is some lack of confidence in the accuracy of the data on the private sector, suggesting that the expenditure quoted underestimates the resources devoted to private medicine.[35]

Fifty-three percent of all expenditures on health care are in the public sector, which in 1987 employed 42 percent of all doctors full time (with no private practice) and which provides more than 70 percent of hospital beds, serves over 80 percent of the population (those not covered by medical insurance as well as those receiving sophisticated services not available in the private sector), provides all teaching and training for the entire health care team, undertakes research and development, provides preventive and rehabilitative services, and offers the only around-the-clock service for emergency cases and trauma. These activities are all seriously threatened by repeated financial cutbacks and the simultaneous expansion of the private sector.

In the private sector there is a crisis of spiraling costs; the average annual increase ranged from 13 to 31 percent from 1978 to 1988, and premiums increased ninefold, as compared with a fourfold increase in the consumer price index.[36,37] Supplier-induced demand, which distorts the market, is further aggravated by the system of third-party payment, through which perverse incentives encourage providers to increase the supply of services to unconstrained users. That the private health sector could price itself out of the market is evident from the number of whites with medical insurance, which fell from 87 percent in 1985 to 68.4 percent in 1988.[36] Although many blacks, Asians, and "coloureds" are potential members of insurance plans, an enormous growth in the country's economy would be necessary to realize this, and the escalation of costs will largely preclude all but the wealthy from full participation in private health care. The introduction of "flexible insurance packages" will further undermine the principle of equity in health care and will not solve the problems of the private sector.[36,38]

Future Access to Health Care Facilities — Privatization or a National Health Plan?

The explosion of scientific knowledge and technology, coupled with rapid population growth during this century (from 5 million to well over 33 million in

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Economics of Health Care

Since 1986, when only rudimentary information was available,[1] health economics has been growing as an academic discipline in South Africa, and comprehensive studies of trends in the distribution of health care expenditures have now been published.[33-35]

The percentage of the gross national product spent on health care increased from 4.8 percent in 1971 to a peak of 5.9 percent in 1986. In 1971, expenditure in the public sector accounted for 2.7 percent of the gross national product (private-sector expenditure, 2.1 percent), and in 1986 for 3.3 percent (private sector, 2.6 percent). The increasing proportion of the gross national product spent on health from 1981 to 1986 resulted from both an increase in real per capita expenditure and a decrease in the real per capita gross national product[35] (a 15 percent decline from 1981 to 1989[23]). Total real per capita expenditure on health care increased from R208 ($73) per annum in 1971 to R284 ($99) in 1988, with a peak of R300 ($105) in 1984. This reflects a total real growth of 37 percent and an average real increase of 5 percent per year from 1979 to 1984 and nearly 1.4 percent thereafter.[35] (The calculations are in 1988 rand, as compared with the 1975 rand that was used as the base line in my previous review.[1]) The devaluation of the rand by 57

South Africa), has led to major debates worldwide on the structure and funding of health care services. No perfect solution has been found, and most attempts at change have been very conservative. The tendency to polarize the debate by focusing on either completely socialized medicine or medicine controlled by free-market principles obfuscates the reality that most health care systems must inevitably include both private and public services.[20]

In South Africa this debate is further complicated by the structure of the society and the rising tide of justified opposition to discrimination on racial or other grounds. Population growth that has outstripped the development of housing, educational, employment, and recreational facilities so necessary for healthy living, together with mass poverty and the disruption of the family, exacerbated by apartheid, poses a series of devastating medicosocial challenges to the equitable delivery of health care.[20]

The annual growth of the South African economy has declined from 5.5 percent between 1960 and 1974 to 1 to 2 percent since 1974. To maintain per capita income, the gross domestic product must grow 2.4 percent a year. The uneven distribution of economic growth among population groups, coupled with the effects of decades of discriminatory policies, has led to disenchantment with "white, Western, capitalist" solutions for the distribution of wealth.

Intense debate (with profound implications for health care but not specifically directed toward it) has thus focused on whether the country's future lies in the Western liberal capitalist system or whether other ideologies, such as socialism, offer greater potential for success.[20,32] The failure of the health care system in Nigeria, an independent country for over 30 years, has been attributed to capitalism, and socialist solutions have been proposed.[39] There have been similar criticisms of medicine under capitalism in the United States.[40] Recent events in Eastern Europe, however, have highlighted the failures of socialism under Communist rule. Although polar value systems are almost irreconcilable, it is important to concede that not all of each ideology's concepts are monolithic or mutually exclusive and that there is considerable common ground for negotiated solutions. The challenge is to steer between the Scylla of socialism and the Charybdis of capitalism and to couple political aspirations to economic activities that will provide the resources to sustain growth and equity.

Toward a Unitary Health Service

A powerful case against encouraging the dominance of private health care in South Africa has been mounted on economic, political, moral, and sociologic grounds, which in turn have been used to justify the case for a unitary national health service or health insurance.[19,20,33,41-43] There appears to be growing support for a unitary system, a vision of which was formulated at a summit meeting organized in May 1990 by the Medical Association of South Africa,[42] but the government's drive toward privatization continues apparently unabated and, in my view, with devastating implications for health, health care services, and academic medicine in a new South Africa.

Points of growth in academic medicine over the past five years that could add considerable intellectual impetus to progress include epidemiology,[44] health economics,[34-37] health services research,[45] medical ethics,[16,47] health personnel research,[48] and health policy planning.[22,23,41,42] Although these are only fledgling disciplines in South Africa, individuals and institutions are contributing to a rapidly growing body of knowledge and opinion that could serve as the basis for wise decision making at a crucial time in the history of this country.

The Crises of Africa and Other Developing Areas

The most recent World Bank report on the continent comprehensively describes the devastating economic crisis facing sub-Saharan Africa and its implications for human welfare.[49,50] In the 1980s deteriorating rates of infant mortality, nutritional status, and health status in general and decreasing government expenditure for health and education were aggravated by a rapidly spreading epidemic of the acquired immunodeficiency syndrome (AIDS).[50] By the end of 1989, 38,248 of the 203,599 cases of AIDS reported to the World Health Organization were in 48 countries in Africa[51] (where the number of reported cases grossly underestimates the gravity of the epidemic).[52]

By March 8, 1991, a total of 683 cases of AIDS had been reported in South Africa, 282 of them fatal. Cumulative rates of human immunodeficiency virus (HIV) seropositivity in South Africa in December 1989 ranged from 0.03 percent and 0 in white male and female blood donors, respectively, to 0.45 and 0.49 percent in black male and female blood donors and 1.38 and 1.95 percent in black men and women visiting clinics for sexually transmitted diseases in Johannesburg.[53] Calculated doubling times for HIV seropositivity range from 6.55 months in black women to 10.67 months in black men.[53] AIDS forecasts have excited controversy and doomsday predictions. Responsible investigators predict that about 400,000 black South Africans will be infected with HIV by 1992 and that levels of infection of 30 percent will be reached in the next 10 to 15 years.[53,54]

The average income in African countries has dropped by 25 percent since 1980. The value of Africa's exports fell by 45 percent from 1980 to 1987, but $1 billion had to be sent to the International Monetary Fund in 1986–1987 alone. The austerity packages suggested for developing countries included curtailing government expenditure for basic foodstuffs, medicines, and schoolbooks; eliminating credits to poor farmers; and slashing the public wage bill.[55] De-

creased levels of foreign aid during the 1980s have been accompanied by increased pressure for debt repayment, and in several countries interest charges exceed annual foreign earnings.[55]

Some attribute the debt crisis to the 500-year-old colonial system that began with the shipment of slave labor from Africa, continued with the seizure of large tracts of land by colonizers, and then locked former colonies into skewed patterns of economic activity — patterns that the industrialized world endorses in the name of development.[55,57]

Notwithstanding policies of apartheid that have systematically oppressed, discriminated against, and curtailed and restricted the lives of millions in a society in which no one can claim to remain untouched or unblemished, South Africa's potential and the crises facing all of sub-Saharan Africa have encouraged many of its leaders to support the recent dramatic political reversal in South Africa. They recognize the vital need to end alienation and begin negotiation, integration, and the rebuilding and restructuring of a subcontinent that for many diverse, complex, and interlocking reasons has not been able to participate fully in the development required to sustain evolving modern societies. The key to South Africa's ability to contribute to these goals in the subcontinent lies in the legitimation of its political status both within Africa and globally, and in economic growth. The tortuous and complex arguments for[58] and against[59,60] economic sanctions can be studied for further insight into their potential effects on sub-Saharan Africa.

The Future Health of the Nation

For the health profession, concerned predominantly with the training of health care professionals, the delivery of health care services, and the advance of medical knowledge, the challenges are to recognize the enormous constraints on resources that face us, to develop ways of moving forward despite these constraints, and to maintain our clinical, teaching, research, and administrative functions by using scholarship to serve education and health care. The example set by the University of Cape Town at its main teaching hospital, Groote Schuur, is cause for optimism. Analysis of expenditures (corrected for inflation) between 1976 and 1986 revealed no increase in running costs per patient per day during a period in which the workload increased, new techniques and treatments were introduced, academic productivity was maintained, discriminatory practices were abolished, and a new hospital was planned and built.[61,62]

Single-minded devotion to expanding the practice of modern tertiary care medicine and to the interests of individual patients must be tempered by the understanding that these activities — as expensive, challenging, and sophisticated as they are — have little effect on the overall health of communities. Sagan has skillfully depicted the many factors beyond the practice of medicine that profoundly influence the health of whole communities.[63] The collective measures needed at the level of preventive and primary health care to improve the health of future generations are competing for resources with the care of those who are ill today. The search for a middle ground between an atomistic, self-interested, market-oriented individualism that erodes the concept of community and a socialist collectivism that subjugates the individual will have to include a greater willingness to develop a national health service or insurance system.

Conclusion

Today, as the history of Africa is being rewritten by African historians, as black scholars in America are sensitively portraying the crises that affect relationships between blacks and whites even in one of the richest and most democratic nations on earth,[64] and as whites and blacks are reaching out to each other in South Africa in an attempt to overcome centuries of fear, suspicion, distrust, ignorance, and destructive human relationships, there is a need for faith in the ability of men and women with vision and courage to develop means of resolving conflict by seeking our common humanity instead of exacerbating differences in the pursuit of self-interest. The importance and necessity of protest against apartheid must not overshadow the need for reconstruction and democratization through empowerment, education, and economic growth. Without these, any success in overcoming apartheid will be a Pyrrhic victory, accompanied by violence, poverty, misery, and squalor that will further dehumanize and destroy countless generations.

I am indebted to Professors M. Savage and P. Folb and Dr J. Broomberg for constructive comments on earlier drafts of this article and to Dr. Broomberg for allowing me access to unpublished research.

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Reforming the South African Health Care System

by Solomon R. Benatar, FRCP, FACP (Hon.)

South Africa's success in reforming its health care delivery system will depend very largely on its success in reforming its shattered political and economic structure. In this article, the author describes the social, political, and economic factors that dominate the South African scene and suggests the alternative courses that are available to bring the country out of its apartheid past. Both South Africa and its internal and external critics will have to approach the task with patient understanding and flexibility to achieve lasting and satisfactory results.

The many and varied paradoxes and contrasts that characterize human life around the world manifest in South Africa in a unique combination that has focused international attention on this country. Contrasts between geographic beauty and social ugliness, rich human and material resources and impoverished human development, military power and moral weakness, white freedom and black oppression, wealthy life-styles and grinding poverty, modern industrialized cities and impoverished rural areas, sincerity and hypocrisy in human relations, and potential for progress and wasted opportunities are just some of the features that describe this beleaguered country. Admiration for its support of allied forces in World War II, for some of its scientific and other achievements, and for its official identification with western values contrasts with opprobrium for its oppressive apartheid policies and with concern about the alignment of some of the oppressed with Marxism. These are some of the factors contributing to the paradoxical instability of foreign policies toward a country in slow transition from a destabilizing force in southern Africa to a role with greater potential for driving regional growth and development.

Disparities between the small (5.5 million) white population and the larger (32.5 million) marginalized population range from differences in population demographics, disease profiles, and longevity; through racially discriminatory access to land, education, health care, and employment; to polarization in political, civil, and economic power that have formed the cornerstones of apartheid policies. These disparities have been described in detail elsewhere[1-5] and will be only briefly illustrated here (table 1, page 52).

Transition Challenges

Transformation of the South African health care system must be viewed in the context of the broader transformation process that will shape the future of this country. Such changes in turn need to be seen within the economic and sociocultural developmental process in southern Africa.

Solomon R. Benatar, FRCP, FACP(Hon.) is Head of Department and Professor of Medicine, Department of Medicine, Medical School, University of Cape Town, South Africa.



THE AUTHOR

Table 1. Some Social Disparities in South Africa

	Year	Asians	Blacks	Colored	Whites
Population (million)	1990	0.98	28.3	3.2	5.1
Education					
Expenditures (R billion)	1990-1	0.8	6.5	2.0	5.5
Expenditures per capita (R)	1989-90	2,159	930	1,983	3,739
Public schools (**)	1990	45.6	70.8	62.8	65
Private schools (**)	1990	3.1	0.03	0.5	5
Matriculants (**)	1990	675	70.3	140.2	561
College students (**)	1990	1,283	282	599	2,194
University students (**)	1990	1,925	393	566	3,017
Income (R/yr)					
Household	1985	13,308	4,224	8,160	23,496
Per capita	1986-9	3,456	1,044	2,100	10,344
Health expenditure (R)					
Total (per capita)	1987	356	138	340	597
Public sector (per capita)	1985	82	82	82	248
Housing units					
Stock	1986	147,000	486,000*	410,000	1,336,000
Cumulative requirements	1990	53,000	2,107,000*	128,000	104,000

* Excluding all 10 "homelands."
** Per 100,000 population.

Although South Africa's per capita GNP is only one tenth that of the United States, it is 10 times that of 10 northern South African Development Coordinating Conference (SADCC) neighbor countries.[6] This economic position between the more developed and the less well-developed countries (table 2, page 53), and the modern economic and industrial infrastructure on which the country stands, provides an intellectual and economic base that could energize and invigorate development in southern Africa. Whether this will be the path into the future or whether the dynamics of the transition process will severely damage the potential for economic growth and human development remains unpredictable. Recent conflict and breakdown in negotiations (mid-1992) would seem to have set back the pace of progress. Given the background to the transition process,[7] it is perhaps not surprising, although of course extremely disappointing, that the road to the future is paved with so many ambiguities and uncertainties.

Van Zyl Slabbert has lucidly described the challenges facing transition toward a democratic society in South Africa.[8] Drawing on examples of pathways to democracy in other countries (through leadership pacts—e.g., Venezuela, Spain, Uruguay; revolution—e.g., Romania, Nicaragua; imposition from above by military type groups—e.g., Brazil, Portugal, Turkey; reform from below—e.g., Argentina, Poland, Yugoslavia; or combinations of these) and describing the distinction between the democratization process and the practice of democratic government, he outlines modern concepts of the meaning of democracy in the context of industrialized nation states. Because democracy (or a democratic constitution) per se does not guarantee civil stability, eliminate political conflict, or guarantee economic growth and human development when it develops within a shorter time frame and in historical and economic contexts different from those of already consolidated democracies, he emphasizes the need to extend the focus beyond constitutional issues and to simultaneously develop those social structures required to sustain social stability and cohesion—education, health, employment, and social justice.

Loewy has described several different concepts of community and has suggested that it is only in societies that respect the first order biological needs (food and water, clothing and shelter, and sanitation) and the second order sociological needs (education, health care, and the franchise) of its citizens that civil stability, democracy, economic growth, and human development can flourish.[9] Failure to recognize the collective nature of responsibility for these needs inevitably results in a growing disadvantaged class and a spiral of violence.

This is all too evident in South Africa, which has an enormous backlog to meet in all these areas. For example, in relation to first order biologic needs, a considerable proportion of the South African population is considered to be malnourished. Underweight in school children ranges from 5 percent of white children to 25 and 30 percent of African and colored children, respectively. Kwashiorkor and Marasmus account for 5-31 percent of admissions in rural hospitals. The proportion of the population with access to safe water in the rural areas of South Africa ranges from 40 percent in the Northern Cape to 72 percent in the

Northern Transvaal when there is no drought. Housing needs remain enormous; only one-third of the population has access to electricity, and the proportion of the rural population with access to adequate sanitary systems ranges from 11 to 37 percent. Regarding second order sociologic needs, there are stark differences in access to educational and health services, and the majority of the population is still disenfranchised.

Although in 1988/89, 61.7 percent (R8.6 billion) of the total expenditures on schools (R14.4 billion) was spent on "other-than-white" schools, these schools housed 91.8 percent of the total school population. Pupils per classroom, teachers per pupil, and the educational level of teachers were thus all much more favorable for whites. To achieve parity at white levels of education would require a three- to four-fold increase in total expenditures on schooling.

Of total expenditures on health, the private sector consumes 50 percent although serving less than 20 percent of the population who carry medical insurance. The public sector (which, in addition to serving more than 80 percent of the population with the remaining 50 percent—R9 billion in 1991—is responsible for training all health professionals and for research and development) has been progressively eroded over the past decade.[9] To achieve parity at private levels for health care would require increments in expenditures similar to those for education.[10] With government expenditures at approximately 30 percent of the gross domestic product (education, health, defense, and interest on debt repayment consuming 20, 10, 16, and 16 percent of government expenditures, respectively), this could only be achieved by an enormous increase in taxation; massive cuts in defense expenditures; (very necessary) reduction in multiple, racially determined levels of bureaucracy; extremely high and sustained (more than 6 percent) economic growth rates; or a rapid and sustained drop in the birth rate. The achievement of parity in social expenditures within current economic constraints would produce only modest increments for the most disadvantaged in the short term, with perhaps subsequent decreases in the long term if such measures (table 3, above) adversely affected economic growth. Working toward achieving some gains for social expenditures simultaneously on all these fronts, together with some redistribution, offers the best opportunities. The hope we all sustain is that sufficient progress can be achieved within a time frame and political legitimation process that can contain violence and promote a culture of peaceful progress.

Table 2. Comparative Statistics, More Developed and Less Developed Countries, South Africa, and Southern African Development Coordination Conference (SADCC) Countries (1990).[9]

	More Developed Countries	Less Developed Countries	South Africa	SADCC Countries
Population (million)	1,214	4,107	39.6	82.7
Urbanized (%)	73	32	56	
Death rate*	9	10	8	
Birth rate*	15	31	35	
Infant mortality rate	16	81	55	
Natural annual increase (%)	0.5	2.1	2.7	
Population doubling time (years)	128	33	26	
Per capita GNP (US$)	15,830	710	2,290	282

* Per 1,000 population.

Table 3. South Africa Government Social Spending 1986/87 (actual and parity at white levels and within current economic constraints—modified from Van der Berg[10]

	White	Colored	Indian	African	Total
Population (million)	4.9	3.0	0.9	25.2	33.0
Actual spending					
■ Total (R billion)	4.3	1.7	0.5	5.4	11.9
■ Per capita (R)	879	564	547	214	316
Parity spending					
■ At white levels					
Total	4.3	3.5	0.9	25.5	34.2
Per capita	879	1,162	985	1,013	1,036
■ Within economic constraints					
Total	1.5	1.2	0.3	8.9	11.9
Per capita	307	398	328	353	316

Evolution of Our Health Care System

The development and reform of national health care systems, their varying ability to meet the growing demand for modern medical services within reasonable economic constraints, and the debate on "curative" medicine for individuals versus "preventive/primary care" for whole populations have been and remain the subjects of intense contemporary debate in many countries, not least in South Africa.

Van Rensburg, a South African sociologist who has made thoughtful and provocative contributions to our understanding of health services in South Africa,[11-13] has recently analyzed trends in the development and structure of health care services during South Africa's 340-year history.[12] He describes how most changes have evolved in a uniform direction that has sustained and fortified major structural disparities inclusive of race, gender and urban/rural distribution of medical practitioners; the black/white bed/population ratios; and marked disparity between expenditures on preventive and curative services and in per capita expenditures on different populations.

Van Rensburg notes three markers of fundamental change that have pointed toward a radical restructuring of the long prevailing system of health care in an opposite direction: the Gluckman Commission of Inquiry (in the early 1940s), the Freedom Charter of the ANC (in the middle 1950s), and renewed pleas from many sources (since the mid-1980s) for a more unified, national, and perhaps even nationalized health service capable of meeting a wider spectrum of needs in our rapidly changing society.[13] He concludes that, despite recent trends toward greater privatization in medicine, further developments will inevitably be in the direction of either a national health service/insurance or a socialist system (table 4, below[14]). Although the broad principles and practical effects of these directions are similar and will require fundamental change of the existing pluralistic system, it is the future of the political economy of the new South Africa that will determine which system will ultimately be adopted.

From our position at the brink of fundamental societal changes and from the lessons learned from health care systems in highly developed countries,[15] it is clear that health care cannot be left solely to marketplace forces and entrepreneurs. Concern only with short-term individual self-interest will exacerbate inequality, inaccessibility, fragmentation, poor planning, and unnecessary waste. Health care should also not become fully bureaucratized, applied in an authoritarian fashion or totally under central control, with suppression of individual and group medical professional influences. A middle ground—one that is based on lessons learned from the past and from other systems—must be found. Mechanic, writing about changing the American health care system, notes, "The structure of our health care system reflects our unique social and historical background, our culture and our values. We remain, despite our wealth, the only developed western nation that tolerates the exclusion of a significant proportion of its citizens from the right to health services. We have constructed an extraordinary administrative apparatus to maintain the illusion that health is a private enterprise. We increasingly spend more for less, and disillusionment continues to grow among many important segments of our population. There is need to reexamine basic issues and consider where we as a nation aspire to go in health, and the pathways we propose to take in attaining our objectives."[16]

Successful transition toward a new South Africa could be greatly enhanced by a carefully thought out and implemented transformation of

Table 4. Key Characteristics of Health Care Systems (modified from Van Rensburg)[12-14]

	Emergent*	Pluralistic#	National Health**	Socialist**
Health care	Personal consumption	Consumer good	State-supported consumer good	State-provided consumer services
Doctors	Sole entrepreneurs	Sole entrepreneurs and members of organizations	Members of organizations and sole entrepreneurs	State employees and members of organizations
Professional associations	Powerful	Very strong	Reasonably strong	Weak
Ownership of facilities	Private	Private and public	Public and private	Public
Payment	Direct	Direct/indirect	Indirect/direct	Indirect
Role of policy	Minimal	Residual/indirect	Central/direct	Total

* Past (until about 1950). # Present (1950-1990s). ** Future

our similarly inadequate health care system. The elements that should be part of this process include:

- Recognition of current strengths built up over many decades within our health care system and efforts to sustain these with maximum efficiency and effectiveness.
- Acknowledgement of weaknesses and implementation of measures to progressively correct them through initiatives at institutional, community, and individual levels.
- Introduction of audit and accountability procedures that will discourage and reduce wasteful administrative and clinical practices.
- Development of a spirit of participation in the process of reconstructing a more comprehensive service that could go a long way toward meeting the aspirations of patients and health professionals.
- Redirection of resources away from wasteful endeavors toward those with potential for human development.
- Promotion of realistic public expectations of what a health care system can deliver, and professional humility regarding cost/benefit balance in a middle-income, developing country in which nutritional, educational, employment, and housing improvements will have a major impact on population health.
- Greater attention to public health measures and to development of primary health care facilities throughout the country.
- An appreciation for the need to sustain scientific and scholarly endeavors as an essential feature of a country aspiring to become developed rather than remain in a dependent, developing state, but within a peer review system cognizant of economic constraints.
- Some restructuring of medical education to include a deeper understanding of population health and medicine and of sociologic, philosophic, and economic aspects of medicine and health care, while sustaining a solid base of scientific knowledge and encouraging better understanding of the scientific method and approach.
- Greater contact between academic institutions and the whole health service on a regional basis, with a view to extending teaching into the primary and community sectors and to improving the quality of practice in these areas.

Although there is widespread agreement on the goals we wish to achieve for health care and academic medicine, there is much less consensus on the ways in which we should set about doing so.[17] There is now a critical need for a penetrating analysis of the structure, function, and funding of our current system and for the development of several models for the future into which could be inserted a range of economic, demographic, and other variables with a view to evaluating realistic means toward practical progress.

In addition to political will, this transformation process will require economic, philosophic, sociologic, anthropologic, and epidemiologic skills. Analysis and modeling will have to be followed by public education and public relations exercises designed to optimize willing participation by all in a transformation process that will be painful, will not meet all the individual aspirations of any group, but will surely offer much more than the continuing greed and polarization associated with the current trend toward privatization without controls.

The Future

Against the background of our current impasse, at least two potential scenarios can be imagined.

A low-road scenario would be characterized by ongoing debate and superficial consensus[17] but no meaningful action; by continued growth—to a limit—of the private sector with progressive attrition of the public sector and erosion of academic medicine; by further flight of capital and a new wave of brain drain; and ultimately by a very disparate, two-tier health care system with almost the best of everything for those with resources and only the barest minimum for those without. If health professionals work across both systems, this will reduce professional credibility and further erode any conception of medical care as a component of social justice. Litigation will probably increase and, given the limitations of our economy, standards will soon drop, even in the currently well-endowed but already threatened private sector. Within this scenario, South Africa will increasingly come to resemble the rest of sub-Saharan Africa, and the African continent will continue to slide away from and be marginalized by the developed world. The international news media will briefly acknowledge the adverse effects of exploitation but will largely blame the victim. They will smugly recommend that Africa be left alone to develop from where it left off in the 1500s prior to the slave trade,[18] while the developed world continues to exploit human-kind and nature without regard for its humanitarian and physical survival interdependence with poorer nations.[19]

A high-road scenario will include a constitutional solution, an interim

government, free and open elections, a return to the world economy and trading system, development of closer trading and other relations with neighboring countries, carefully structured international aid programs, and the creation of civil stability and human development through social and economic growth. Carefully planned, more rational use of health resources, with attention to the requirements outlined above, would be associated with improved national health status; a reduction in the population growth rate[20]; a less fragmented, better distributed, nondiscriminatory health care system providing reasonable access to primary, secondary, and tertiary care; preventive and rehabilitation services; and, to some, sophisticated modern medicine. A two-tier system will probably still prevail, with the rich having access to more than others, but the gap will be considerably narrower than at present and will be acceptable politically, economically, and sociologically.[21] This scenario, which would require some short-term sacrifices from all, would predictably pay great dividends in the long run. Such developments could also ignite the flame of progress in a subcontinent filled with despondency and contribute to narrowing global disparities, which is ultimately in the interest of all, even the most developed nations.

Although South Africans must depend largely on themselves and on internal forces to ensure movement toward this high-road scenario, it would not be unreasonable to expect that well-targeted financial, intellectual, and moral support from developed nations could play a critically important role. This will require reversal of some of the economic, military, and moral imperialism of the past and a more humble and beneficent perspective on the interdependent nature of survival on a threatened planet.[22,23]



Living and practicing medicine in South Africa fosters an awareness of man's inhumanity to man and of the potential to advance through hope and high aspirations.

If this high-road scenario could be achieved, it would not only reflect the potential for South Africa and sub-Saharan Africa, but could also provide an example to other countries and help sustain the idea that rationality, human rights for all, and commitment to more than one's own personal/national short-term interests, pave the path to a better future for all. The spirituality and magnitude of the challenge are awesome. Regrettably, in the context of recent developments both within South Africa and at a global level, the probability of moving toward such a scenario seems low.

Conclusions

Meaningful discussion of a better health care system in our rapidly changing society will demand great intellectual honesty and a realistic view of what has been achieved elsewhere and of what can be achieved within a reasonable time in our socioeconomic, political, and geographic context. The possible directions toward which we can choose to develop include:

- A divisive, two-tier health care system dominated by a wasteful private sector.
- A totally socialized health service with a predominance of primary health care and little tertiary medicine or medical research.
- Some form of national insurance health service that, through an appropriate mix of private and public primary, secondary, and tertiary services, could sustain and improve the health of all citizens without reducing them to the lowest common denominator.

Commonly held aspirations for our future are for a just, democratic society in which human rights would be upheld and achieved and in which respect for every individual would be a high priority; for an economy with sufficient resources to provide basic social services for the disadvantaged; and for an educational environment conducive to a healthy, happy childhood that would provide individuals with the opportunities to reach their potential as involved citizens actively contributing to the further development of their society and its citizens.

The complexity of the many interlinking tasks involved in working toward these goals should not be underestimated. Even if they can be achieved, given the vast economic growth required, the time frame will be considerably longer than desired by most.

The new South Africa will require more than a political solution. Without economic growth, the development of a culture of democracy, more equitable and nondiscriminatory access to educational and health care systems, respect for human rights, civil stability, and peaceful approaches to conflict resolution,[24] the victory over apartheid will be hollow and characterized by continuing wide disparities, conflict, poverty, and suffering for many generations. Given the goodwill that continues to exist both within South Africa and toward this country (despite its tragic history) and the human and natural resources available to us, we should optimistically conclude that it is indeed possible to generate the convergence of forces necessary to constructively transform our society. Every South African and the many others who wish to assist have a vital role to play in this process. Only by recognizing the importance of cumulative individual efforts on a daily basis can we overcome the inertia that accompanies despair. Living professional and personal lives that set examples and inspire others remains a powerful social force. Hardin's classic article reminds us of the profound adverse evolutionary effects associated with greed and short-term self-interest.[25] Averting the "Tragedy of the Commons" is a collective task that can only be achieved through multiplied individual efforts, encouraged and sustained by appropriate social structures and international support. One of these social structures is a health service that sustains the belief of all citizens in society's respect for their human dignity. Living and practicing medicine in South Africa fosters, for those with some conscience, an awareness (through the effects of racist policies) of man's inhumanity to man and (from the many examples of dedicated care for fellow humans and achievement of excellence in the face of constraints and adversity) of the potential to advance through hope and high aspirations. Altering the balance toward the latter is a challenge for South Africa and for Africa that calls for concerted national and international endeavors.[22]

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The legacy of apartheid in health and health care

H.C.J. van Rensburg
Centre for Health Systems Research, University of the Orange Free State, PO Box 339, Bloemfontein 9300, Republic of South Africa.

S.R. Benatar
Department of Medicine, University of Cape Town, Medical School and Groote Schuur Hospital, Observatory 7925, Cape Town, Republic of South Africa

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This contribution analyses and systematises apartheid as a phenomenon and as a problem in South African health and health care. It is assumed that apartheid is one of the most decisive forces moulding the South African health care system as well as the health of the people, resulting in grave race-related disparities, inequalities, fragmentation and discrimination on the one hand, and divergent, race-related health outcomes in the health indices and health statuses of the different 'colour' groups, The material presented, is systematised within a fourfold framework, differentiating between a structural/institutional component and a consequential/outcome component of apartheid, The former refers to both the racially segregated supply system and the racially divided clientele; the latter applies to both structural outcomes in the form of race-related deformities in the organisation and allocation of health care supply and race-related inequalities and disparities in the health and health status of the different clienteles. The conclusion is that apartheid in health and health care is still firmly in place and will remain a decisive force in South African health and health care for many years, even generations, to come. More deliberate attempts have to be launched to eliminate both 'apartheid in society' and 'apartheid in man'.

Hierdie bydrae ontleed en sistematiseer apartheid as 'n verskynsel en as 'n probleem in Suid-Afrikaanse gesondheid en gesondheidsorg. Die uitgangspunt is dat apartheid een van die kragtigste determinante in sowel die vorming van die gesondheidsorgsisteem as in die gesondheid van die bevolking is, met resultate van ernstige rasverwante dispariteite, ongelykhede, fragmentasie en diskriminasie enersyds, en uiteenlopende rasverwante gesondheidsgevolge in die gesondheidsindekse en gesondheidstatusse van die verskillende 'kleur'groepe, Die aangebode materiaal word binne 'n vierledige raamwerk gesistematiseer, wat onderskei tussen 'n strukturele/institusionele komponent en 'n gevolg-/uitkoms-komponent van apartheid, Eersgenoemde verwys voorts na beide die rasgesegregeerde voorsieningsisteem en 'n rasverdeelde kliëntele, terwyl laasgenoemde aanduidend van beide strukturele gevolge in die vorm van rasverwante distorsies in die organisasie en toewysing van die gesondheidsorgaanbod en rasverwante ongelykhede en dispariteite in die gesondheid en gesondheidstatus van die verskillende kliëntele is. Die slotsom is dat apartheid in gesondheid en gesondheidsorg steeds sterk in plek is en vir baie jare, selfs geslagte, 'n deurslaggewende krag in Suid Afrikaanse gesondheid en gesondheidsorg sal bly. Meer doelgerigte pogings is nodig om beide 'apartheid in die samelewing' en 'apartheid in mense' te elimineer.

Introduction

One of the most important, if not *the* most important, historical forces in the moulding of both the South African health care system and the health of the people of South Africa has been apartheid. Apartheid is also one of the most conspicuous characteristics of health and health care in this country. Both as cause and as consequence apartheid stands prominent in South African health and health care (Benatar, 1986; 1990; 1991; Centre for the Study of Health Policy, 1988; De Beer, 1984; Van Rensburg, 1991; Van Rensburg *et al*, 1992). As formative cause the tendency to separate or segregate people of different race or colour has for decades and even centuries dominated the scene in the organisation, provision and distribution of health care, engraving undeniably race-differentiated imprints on the health care system. Consequently grave race-related disparities, inequalities, fragmentation and discrimination in health care and health-determining spheres of life, with divergent health outcomes, are reflected in the health indices and health statuses of the different 'colour' groups in South Africa.

Literature on the essence of this historical force in South African society at large and in the health sphere in particular, contains numerous analyses of and explanations for this phenomenon called apartheid.[1-] In some cases, Afrikaner nationalism, i.e. the Afrikaner in particular, is held responsible; in other cases, whitism or white supremacy, i.e. whites in general are seen as the directive force behind apartheid.

Simultaneously it appears that apartheid as a phenomenon and as a formative drive in the history of South African society assumes many forms, but nevertheless always boils down to the overarching race /colour-bound stratification of *white* over *non-white*, more specifically to the assumption, perception and attitude that whites are the superior race and culture, whereas non-whites are the inferior race and culture.

Although the Afrikaner — especially after 1948 — contributed enormously to the consolidation and reinforcement of apartheid by way of institutionalised segregation in laws, regulations and bureaucracies, the idea and ideology of racial segregation based on white superiority were neither the sole fabrication of the 1950s and afterwards, nor the unique invention of the agents of Afrikaner nationalism alone.[2] From the inception of contact and confrontation between European and native, white cultural imperialism and concomitant racial privileging were part of South African society, be it under colonial guardianship, apartheid or separate development. Thus, both the informal heritage of colonial segregation and the consequent statutory apartheid 'entrenched the dominant and privileged position of the white 'settler' community in the country' (Cloete, 1991:31). The Dutch and the English, the British settlers on the Eastern frontier and the Voortrekkers to the North, the Boer republics and the British colonies, the successive conservative and the liberal governments, all either willingly or reluctantly, either deliberately or with comfortable indifference erected apartheid, kept it in place or at least enjoyed the lucrative and comfortable dividends of this extraordinary form of white privileging. This is also true of the wide spectrum of beneficiaries in the sphere of health care: both the white clientele and white professionals have benefitted from the privileges of apartheid medicine. In the course of time, health care thus became an enterprise directed mainly by whites for whites, good health, in effect, being deemed more important for whites than for non-whites, while a long history of insufficient interest in the health status of black patients is discernible (Benatar, 1991:30).

Our argument in this paper, however, does not aim to be another attempt at exposing the *why* and the *who* in the apartheid legacy. Rather, it focuses on the *what* and *how*, i.e. on the nature of apartheid in South African health care, its diversified manifestations, and its consequences for the health care system as well as for the health of the people. A synoptic analysis and systemisation of this legacy of apartheid in South African health and health care constitute the essence of this paper. Furthermore, and elaborating on this, the aim is to demonstrate how formidable this legacy is and will be, even in years to come, notwithstanding efforts to deracialise and desegregate health and health care. While we are convinced that the elimination of apartheid is necessary to reduce the wide range of disparities/inequalities between the different groups in this country, it would be naive to imagine that this will be sufficient (Benatar, 1986; 1990; 1991).

This exposition does not aim to and could not succeed in presenting a complete account of apartheid in South African health and health care. Rather, it attempts to compile a representative, plausible, objective and definite summary of apartheid as a phenomenon and as a problem in these spheres.[3] In this regard one further clarification is necessary: to us, apartheid in this context comprises that broad spectrum of policies, structures, laws, measures, actions and attitudes — be they formally institutionalised or informally pursued — in which and through which race and colour are implemented as bases for differentiating, segregating and treating people and groups, and whereby race and colour are thus used and abused as criteria for either including or excluding people, of either favouring certain groups or discriminating against others. In this broad definition, apartheid entails many shades, be it statutory or informal apartheid, political-administrative or socio-economic apartheid, or social and psychological apartheid. The legacy apartheid left us in health and health care, is an overwhelmingly negative, deplorable, unfavourable and dysfunctional one. While most vivid in South Africa, the legacy of centuries of racial discrimination and its effects on health care are also evident in other countries, even the most developed (Brooks *et al*, 1991) — acknowledgement of which is essential in any sincere intellectual endeavour.

Apartheid in South African health and health care — a framework for analysis

Scrutiny of the legacy of apartheid in health and health care in South Africa reveals an astonishing spectrum of relevant dimensions; apartheid has literally penetrated every sphere of life. There are the myriad policy mechanisms, laws and regulations directing and organising apartheid; the numerous structures, institutions and bureaucracies in which apartheid has sedimented, and through which it has been kept in place and fostered; the multiplicity of outcomes and effects of apartheid on health and health care, ranging from obvious race related inequality, inaccessibility and fragmentation in health care to striking racial differences in morbidity and mortality profiles. Recently the South African Medical Research Council (1991:7) thus depicted the crux of this legacy of apartheid contained in South African health care: '... a bureaucratic entanglement of racially and ethnically fragmented services; wasteful, inefficient and neglectful of the health of more than two thirds of the population'. Emerging from this diversity inherent in apartheid in the health sector, it seems logical, when dealing with the legacy of apartheid in this sphere to differentiate, at least for analytical purposes, between a *structural* or *institutional component*, on the one hand, and a *consequential* or *outcome component* on the other. The legacy of apartheid in health and health care will be analysed along these lines. Firstly, an account is given of the *structural* or *institutional legacy of apartheid*, with reference to both the *health care supply* and the *clientele*. Subsequently, an exposition will be given of the *legacy of consequences* or *outcomes of apartheid* with reference to both the *health care system* and the *health and health status of the population*.[4]

The structural/institutional legacy of apartheid in South African health care

With regard to this component, apartheid in health and health care implies definite structures through which apartheid finds expression. However, in itself, this structural dimension of apartheid contains a dual reference: to a *structured supply system*, i.e. the provision, organisation and allocation of health care and to a *structured clientele*, i.e. people receiving, utilising or consuming health care. In both cases the structuring takes place according to the principles of apartheid.

Apartheid structures in the supply of health care

Apartheid in South African health care — as expressed in separate health care delivery structures, separate authority structures, separate professional and training structures for the different races, and racial divisions among the health care personnel — has a long history in this country. According to Savage (1979:149), probably the leading characteristic typifying the organisation of South African health care is that it is 'dominated and controlled by whites and is deeply permeated by the structure of apartheid'. Significant traces of an emerging kind of apartheid in health care date back to the 18th century, more precisely to the smallpox epidemic of 1755 when two emergency hospitals were erected — one for whites and another for non-whites. The earlier training of midwives in this country provides another example; it is recorded that the first seven midwives to qualify in 1813 consisted of five whites and two non-whites, the latter destined to practise among the Malays and free blacks only (Burrows 1958). In 1889 another incident signifying the evolving racial apartheid in the structure of health care was the reluctant reception by his white clientele of the first black physician ever to practise in South Africa when Dr Nembula was appointed as district surgeon at Umsinga. Burrows (1958:223) later had the following comments on this unusual occurrence: 'While the young *South African Medical Journal* waxed eloquent over 'this solitary diamond', the *Natal Mercury* reported the indignation of the whites at Pomeroy at having a Zulu for a doctor. However, the local magistrate testified to his ability: 'He executes his duties satisfactorily'.'

Futher evidence of the systematic establishment of apartheid as part of the structuring of medical care in South Africa, is provided by aspiring white doctors streaming to Europe for training, the almost exclusive training of white doctors in later years at home, the resistance to the initiatives of the Loram Committee and the Rockefeller Foundation to provide for the training of black doctors in the late 1920s, and also the continued privileged selection and racial bias in access to medical training until recently. This is further verified by the emergence of the first black professional nurse only in 1908, that is, after more than three decades of nurse training in South Africa (since 1877), as well as by the history of exclusion of non-whites from erstwhile professional councils and associations, and their employment originally only in the lower ranks of health care and preferably for non-whites only (Burrows, 1958; Mellish, 1985; Rispel & Schneider, 1991; Searle, 1965). The early training of dentists took a similar course of an 'all-white' structuring of this profession — until the 1960s when the first dental faculty (Wits) opened its doors to aspiring non-white dentists (Reddy, 1985). This all emphasises the unilateral white generation and recruitment of health personnel and a systematic barring of non-whites from most categories of health care. From this trend emerged a predominantly white-dominated health care institution.

A similar inclination towards racial segregation is discernible in the evolution of health care structures. Over three centuries there is ample evidence of whites and non-whites being treated separately in the health care domain, resulting in racially segregated hospitals, wards, clinics and consulting rooms. Even as far back as the Dutch era at the Cape, this embryonic form of apartheid is illustrated by the existence of separate facilities for slaves and officials. Further illustration of the development of separate hospitals is found during the British period with the establishment of the first hospitals for blacks. The initiative emanated from Sir George Grey, who through his policy of 'conquest by civilization' aimed at winning over the black peoples to Christianity, civilisation and most certainly to accepting the British Empire. In 1856 this led to the erection of the first Native Hospital at King William's Town, soon followed by the systematic establishment of other separate institutions specifically for blacks, including numerous mission hospitals which were all ear-marked for use by blacks, the Fort Beaufort Lunatic Asylum erected in 1849 and destined for 'native cases', the introduction of 'native hospitals' at the Kimberley diamond diggings by the laws of Griqualand West in the early 1870s, etc.

Inside hospitals it was generally customary to care for whites and non-whites in separate wards and at times there was a marked difference in the care administered. References to this effect abound and Sister Henrietta Stockdale's report in 1876 on conditions in the hospitals at Kimberley and her specific reference to a separate 'Kaffir Hospital' and a 'Kaffir ward' are sufficiently illustrative. Her description of the desperate conditions at the old Kimberley hospital hints strongly at striking differences in quality between the facilities and treatment of 'whites' and 'coloured people' respectively, favouring white patients throughout (Loots & Vermaak, 1975:45, 33–34).

The disproportional development of health services in the different colour communities was also extended into the 20th century. Marks (1988:6) reported *inter alia* that few local authorities had carried out their obligations in relation to black areas in terms of the 1919 Public Health Act; they were not prepared to spend more on these areas than they raised directly in taxation from the black population itself; and a system of fiscal segregation developed which led to the poorest areas becoming the most neglected.

After the formal institution of apartheid in the late 1940s, these informal apartheid structures in health care were henceforth regulated and enforced by law. During the subsequent decades apartheid in health care assumed new, stricter and more pronounced structures. By a series of apartheid laws white and non-whites were fiercely segregated and kept apart. Also the health professions were profoundly infiltrated by legalised racism with the establishment in 1957 of separate registers in nursing for the different race groups, the segregation of the branches of the South African Nursing Association along colour lines, the barring of 'other-than-white' from holding office on the central board of that association, and later on, in 1978, the fragmentation of the profession in ethnically defined associations to accommodate the requirements of the homeland policy of the government (Rispel & Schneider, 1991; Uys, 1987). Furthermore, during the 1970s and 1980s ten separate health authority and service structures were erected in the bantustans, and with the new constitution of 1983, the institution of the tricameral parliament, and the subsequent introduction of the three own affairs authority and service structures in health care, racial segregation in health care was once more pushed to extremes. In all these guises, as Price (1986; 1987) and Zwi (1984) indicated, health care and health care policy actually became

instrumental in bolstering the political and economic objectives of the apartheid state; it became 'a powerful tool in the production and reproduction of Apartheid ideology' (Price, 1986:165). As a result, it became obvious that health services were in every way shaped by the apartheid state (De Beer, 1985:60).

Today the structure of health care is in many respects deeply divided in terms of race and colour. In the main, apartheid in the health care domain is most evident in separate authority structures, in segregated care delivery structures, and in the profoundly distorted racial composition of the health care supply, the dimensions of which are explicated in Table 1.

Apartheid structures within the clientele

As noted above, the structural or institutional legacy of apartheid in health care also comprises a significant structuring within the clientele according to race and clour. Throughout the three and a half centuries of co-existence, varying terminology was used to depict this differentiation and the concomitant subdivisions within the South African population. Obviously the markers of this differentiation and division altered significantly as time passed. During the early Dutch settlement, the subsequent era of British rule, as well as in later years and till this day, antithetical distinctions between slaves and freemen, burghers and Hottentots, Christians and heathens, settlers and kaffirs, civilised and barbarians, whites and natives, Europeans and non-Europeans, etc. were in common use. Underlying all these distinctions, however, there was always the more pervasive distinction between white and non-white, greatly facilitated by the visibility of skin colour. Although such race- or colour-related divisions thus always characterised the structure of the South African clientele, these also were driven to extremes by the Population Registration Act of 1950. Henceforth, the South African clientele were officially composed of whites, Asians, coloureds and blacks, often even more simply denoted by a division between whites and non-whites.

This pronouncedly segregated structure of the South African clientele has many important implications in the sphere of health care. In general it means that the geographical, physical and social segregation of the clientele — in separate white residential areas and non-white locations, in separate populations of white South Africa and those of the native reserves or homelands, in separate white and non-white institutions — also led to a structure of health care delivery targeted not at a rural and urban clientele respectively, but rather to a white rural and white urban clientele as segregated from the Asian, coloured and black clienteles in such areas, and more explicitly from the poverty-ridden townships, informal settlements and peri-urban areas. This racial division stretches even further to separate the clientele of so-called white South Africa from those clienteles of the different bantustans, consisting either of rightless migrants and commuters or of millions of women, youths, unemployed, aged, ill and handicapped, 'dumped' as economically 'surplus' or 'unproductive' people not 'needed' by the 'White' economy (Price, 1986). The erection of health care facilities, the allotment of funds as well as the deployment of personnel took place accordingly, that is, to the different sections of a deeply

Table 1 The race-divided structure of the South African health care supply

Indicator	Year	Whites	Asians/ Indians	Coloureds	Blacks
Population structure (projected %)[a]	1990	13,5	2,6	8,6	75,3
Doctors					
■ number (total 15663)[b]	1980	13913	1200	350	200
■ %	1980	88,8	7,7	2,2	1,3
■ % (total 20947)[c]	1988	74,8		25,2	
Student doctors qualifying[d]					
■ number (total 932)	1988	701	102	26	103
■ %[e]	1988	75,2	10,9	2,8	11,1
Registered nurses[e]					
■ number (total 71516)	1990	32639	1644	6390	30843
■ %	1990	45,6	2,3	8,9	43,1
Student nurses[f]					
■ number (total 11384)	1990	3759	489	1789	5347
■ %	1990	33,0	4,3	15,7	47,0
Enrolled dental students[g]					
■ number (total 1055)	1980	942	72	35	6
■ %	1988	89,3	6,8	3,3	0,6
Hospital beds (acute general, long stay, psychiatric)[h]					
■ number (total 202525)	1986	40959		120607	
■ %	1986	25,4		74,6	

a Sadie 1988:4
b Naylor 1988:1156
c Benatar 1991:32
d MRC 1991:41
e South African Nursing Council 1990:12
f Department of National Health and Population Development 1991a:28
g Gordon 1981:574
h Department of National Health and Population Development 1988:25

Table 2 The race-divided structure of the South African clientele

Indicator	Year	Whites	Asians/	Coloureds	Blacks
Population structure (number projected)[a]	1990	5 052 100	978 300	3 244 400	28 258 300
%	1990	13,5	3,6	8,6	75,3
Educational level (% of population)					
■ Adult literacy (%)[b]	1984	93,0	69,0	62,0	32,0
■ No education (% over 18 years)[c]	1985	1,0	6,0	8,0	17,0
■ No education (% under 18 years)[c]	1985	12,0	14,0	18,0	20,0
■ Higher education (%)[c]	1985	18,0	4,0	2,0	1,0
Occupational structure (% of economically active population)[d]					
■ Professional/semi-professional/technical	1985	21,7	10,4	5,5	3,6
■ Clerical/sales worker	1985	31,3	32,8	12,1	6,0
■ Managerial/executive/administrative	1985	11,4	4,2	0,8	0,2
■ Mining/quarrying worker etc	1985	6,9	22,6	22,9	24,8
■ Farmer/fisherman/hunter/farmworker	1985	3,8	1,3	16,3	17,8
■ Unskilled worker	1985	0,3	2,5	8,3	6,5
Not economically active population[d]	1985	56,8	64,4	60,4	65,0
Income structure					
■ Household income (Rand per year)[e]	1985	23 496	13 308	8 160	4 224
■ Per capita income RSA (Rand per month)[f]	1986-89	862	288	175	87
Average 6 homelands (Rand per month)[g]	1986/87				34,5
■ Share in total personal income (%)[h]	1990	53,9	3,9	9,2	33,0
Per capita child welfare expenditure (Rand)[i]	1988	176	171	227	22
Per capita educationale expenditure (Rand)[i]	1988	3 080	2 226	1 358	276
Per capita monthly social pensions (Rand)[j]	1989	250	199,70	199,70	149,50
Age structure[k]					
■ 0 - 14 years	1985	25,2	34,1	37,0	39,0
■ 65 + years	1985	8,5	2,8	3,3	3,0
Degree of urbanization RSA (%)[l]	1988	89,6	93,4	77,8	39,4

a Sadie 1988:4
b *Encyclopaedia Britannica* 1991:701
c Central Statistical Service 1989:12
d Central Statistical Service 1989:16
e Savage & Benatar 1990:149
f Department of National Health and Population Development 1989:10
g Republic of South Africa 1989/90:175
h *Sunday Times* 22.09.1991:17
i MRC 1991:10
j Cooper *et al* 1989:20
k Sadie 1988:18, 29, 39, 51
l Department of National Health and Population Development 1991b:5

race-divided clientele. The whites were in health care — as in the broader socioeconomic and political spheres — always the privileged, while the non-whites were the under- and disprivileged forced to be content with the least of care and even less. Some of these race-based divides in the South African clientele are summarised in Table 2.

Today the South African clientele still displays a highly divided structure with pronounced scars of sharp distinctions between 'haves' and 'have-nots' in health care, and ample evidence of patients being over- *and* underprovided, over- *and* underserviced, of a clientele being included *and* of a clientele being excluded. These differentiations within the clientele coincide to a large extent with the broader colour- or race-divide between white and non-white. Parallel to these divisions within the South African clientele, the consumption and utilisation of health care were structured accordingly. The best of health services were and are still utilised and consumed by the preponderantly white 'haves' in health care, while the predominantly non-white 'have-nots' had and still have to be content with less. Furthermore, Savage & Benatar (1990:166) state: '... the ability of communities to express their needs in an informed way to health policy-makers, or to participate in local decision-making on health services, has been severely limited by state suppression of political and community organizations'. Thus, over the years and due to harsh state control, overregulation, top-down approaches and oppressive community programmes resulting from apartheid measures, the dynamism of non-white communities was stifled and community participation pacified, all ending up in oppressed passive, subservient populations (Buch, 1985:86).

Health and health care outcomes as legacy of apartheid in South Africa

Besides this structural/institutional component of apartheid, the legacy of apartheid also comprises a *consequential* or *outcome component*, signifying the effects or outcomes of apartheid in health and health care. Here, too, a dual reference emerges: on the one hand, apartheid in the health sphere has definite consequences for the prevailing health care system in so far as apartheid affected the effective, efficient and equitable

functioning of this system; on the other hand, apartheid also has definite consequences for the health and health status of the South African clientele, securing better health for some, while leaving the health of others tragically at risk.

Apartheid outcomes/consequences in the supply of health care

The legacy of apartheid as far as consequences for health care, the health care system or the health care supply are concerned, spans a wide spectrum of shortcomings, deficiencies and dysfunctions ascribed to racial divisions within the system. It also raises ethical questions on equality, justice and equity in the provision and distribution of health care to the different population groups. The key words in apartheid health care are: racial inequality, racial discrepancies and racial fragmentation. More specifically, racial inequality and discrepancies in health care manifest in numerous forms, including the unequal distribution of power and scarce resources; the unequal provision, accessibility, attainability and affordability of health care, as well as the unequal treatment of patients. The health care scene in South Africa abounds with evidence and illustrations of these. Racial inequality is most evident in the authority and decision-making structures of South African health care, with white dominance prevailing. Unequal provision along colour lines is evident in the per capita health expenditure. Even more pronounced are the disparities in provision when per capita expenditure in South Africa is compared to that in the homelands. Disparities in provision and distorted distribution of health personnel and health care facilities provide other dimensions of glaring racial inequalities. The nature and extent of these are abundantly illustrated in former and recent health personnel:population, hospital bed:population ratios, as well as in the selection and intake of students in training schools and the composition of the medical student population. Unequal provision and maldistribution of health care along racial lines were well described by the Gluckman Commission (1944:67) in the early 1940s; the Commission determined hospital bed:population ratios of 1:304 for whites as against a dramatically poorer one of 1:1198 for blacks; similarly the doctor:population ratios were recorded as 1:308 for Cape Town's white population compared to those of 1:22 000 and 1:30 000 in Zululand and a Northern Transvaal Reserve respectively. Manifestations of unequal accessibility and differential treatment on grounds of race and colour are undoubtedly also to be inferred from the bed occupancy rates in many formerly colour segregated hospitals. Some of these race-related inequalities and discrepancies in South African health care are summarised in Table 3.

In the main these indicators emphasise the liberal provision, even oversupply of health care to the whites, especially the more affluent whites; they stress the easy accessibility and high quality of services to white patients. In contrast, to non-whites and more so to those blacks in rural, small-town and peri-urban areas, services and facilities are virtually unattainable, inaccessible, of poorer quality and even absent. The history of

Table 3 Race-related disparities/inequalities in South African health care provision/distribution

Indicator	Year	Whites	Asians/ Indians	Coloureds	Blacks
Doctor population ratio[a]	1981	1:330	1:730	1:12 000	1:91 000
Registered nurse:population ratio[b]	1988	1:155	1:592	1:550	1:699
Dentist:population ratio[c]	1984	1:2000	1:7500	1:30-50 000	1:2 000 000
Hospital bed-population ratio (provincial aided and private beds/1000)[d]					
■ Cape Province	1988	5,63		2,56	
■ Transvaal	1988	4,96		2,41	
■ Natal	1988	5,25		5,32	
■ Orange Free State	1988	6,40		2,23	
Bed occupancy rate in provincial hospitals (%)					
■ Cape Province	1983/84	58,66		102,60	
■ Transvaal	1983/84	59,84		102,60	
■ Natal	1983/84	51,14		74,76	
■ Orange Free State	1983/84	49,00		91,40	
Per capita expenditure in health care (Rand)					
Overall[f]	1987	597,11	356,24	340,16	137,84 (all) 52,00 (homelands)
■ Public[g]	1985	248		82	
Beneficiaries of medical schemes[g]					
■ % of population covered	1989	69,3	33,3	29,5	6,5
■ % of all beneficiaries	1989	61,0	4,7	10,7	23,6
Needs of severe mental handicap met (%)[h]	1990	62	28,5	28,5	8

a Randall 1983:542
b Department of National Health and Population Development 1991a:1
c Reddy 1985:62
d Department of National Health and Population Development 1991a:23
e McIntyre & Dorrington 1990:125
f Savage & Bendar 1990:154
g Registrar of Medical Schemes 1991 Annexure 1:3,8:2
h MRC 1991:39

apartheid health care in South Africa also provides numerous stark incidents of racial discrimination. Examples of these are documented in regard to the training of doctors, remuneration of health personnel as well as the treatment of patients. Regarding the training of doctors, Tingsten (1955:35) reported: 'A small minority of non-Europeans is allowed the privilege of studying medicine alongside the white man but must leave the room when a white patient is the object of study or if a white body is being dissected. The non-European doctors are under no conditions allowed to examine a white woman.' More recently the same seems still to apply: 'Black medical students are barred from entering gynaecological and obstetrics wards in white teaching hospitals' (Kane-Berman, 1990:373). In 1976 the following examples of gross disparities in the salary-scales of white and non-white health personnel obtained (Van Rensburg & Mans, 1982:226,245):

	Whites	Asians/coloureds	Blacks
Staff nurse	R2250–3480	R1740–2700	R1260–2100
Specialist	R12600	R10800	R9180

Fortunately these disparities have now been eliminated.

Regarding the unequal treatment of patients of the different racial groups, Wells (1974:38–39) three decades ago described the contrasting quality of health services for whites and non-whites: 'The White wards are generally uncrowded; nursing is usually good, and relations between doctors and nurses are informal and friendly ... The Black wards are overcrowded; nursing care is often not as good, and there is less personal contact with individual patients ... Illnesses are often messier, and equipment often not as good ... Black patients tend to have a lower standard of care. Facilities are stretched to meet the greater numbers, and many Black patients are discharged earlier than comparable White patients because of the bed shortage (despite the presence of unused, empty 'White' beds).'

Furthermore, the race-differentiated structure and racial fragmentation of South African health care also generated many shortcomings of quite a different kind. Foremost are the systematic deficiencies and dysfunctions manifested in widespread racial fragmentation, inadequate coordination and lack of integration, as well as in wasteful duplication and gaps both in function and in control, ensuing from separate racial authorities in segregated residential areas, and race-based care delivery (Benatar, 1991; De Beer *et al*, 1988; Van Rensburg *et al*, 1992; Zwi, 1984). Moreover, the actual financial costs absorbed by this racial fragmentation in segregated bureaucracies and facilities are enormous and wasteful. Savage (1986) estimated that of every Rand spent by the government, 12 cents is spent on the implementation and enforcement of apartheid (for more detail also De Beer *et al*, 1988:33–58). Health care in this country is deployed more often than not in a marked two-class system, providing the best of services to a privileged, self-paying and insured, mainly white (but also rapidly growing non-white) clientele, as against a poorly equipped and staffed, often second-class public service to a predominantly non-white clientele.

Naturally, inequalities in treatment, provision and distribution, as well as differential accessibility, exclusion, privileging and discrimination, always evoke questions about justice and equity. The aforementioned numerous inequalities based on race, as well as the cases of outright racial discrimination, bear profound witness to the fact that South African health care is often severely lacking in both justice and equity. The successful progressive desegregation of Groote Schuur Hospital during the 1980s, however, reflected the growing recognition by health care professionals of the need to be pro-active in the process of change towards a fairer society (Executive Committee, 1987).

Apartheid-outcomes/consequences in the health status of the population

In addition to the above-mentioned consequences of apartheid for the South African health care system, apartheid also has a notorious record of devastating outcomes for the people at its receiving end. This is apparent from the extremely divergent performances of the different population groups on the health status index. Since early years, there is ample evidence that the non-white population was at higher risk for disease and death. This is well illustrated by the smallpox epidemics. In 1767 179 Europeans died compared to 440 slaves; the smallpox epidemic of 1840 wreaked havoc especially among the coloured population of the Cape, while the 1883 epidemic spread farther afield: Kimberley was declared an infected area and when the epidemic had spent itself, there had been 2300 cases and 700 mortalities (51 whites and 649 non-whites); in the Cape Peninsula 4000 people, principally Coloureds and Malays died. Similar race-related disparities prevailed in the case of infant mortality. The scant data available indicate that in 1884 infant mortality accounted for more than a quarter of the deaths among the European component of the population while the infant mortality rate for the coloured population at the Cape in 1890 is given as 34,4%; in 1942 the figures were lower but the grave racial disparities still prevailed, namely 47,52 (whites), 88,38 (Asiatic) and 176,68 ('mixed' and 'other coloureds') per thousand. The history of tuberculosis in South Africa also illustrates the point. The burden of this erstwhile imported disease, as a result of apartheid measures and their close association with capitalism and exploitation in the work place, was soon deflected to the non-white population, and is nowadays almost exclusively affecting blacks and coloureds (Burrows, 1958; De Beer, 1984; Gluckman Commission, 1944:94).

Similar disparities in the health status of the different colour groups in South Africa still prevail. The wide range of comparative health indicators summarised in Table 4 bears ample witness to the legacy of apartheid to the health of the people, and may be seen as selected apartheid-related outcomes in the health status of the South African clientele. In this regard, however, the health of people is not always simply and unilaterally linked to health care. Apartheid affected socio-economic status, literacy, employment, income, occupation, nutritional status, safe shelter, water and sanitation. These basic indicators of the life-style, living standards and conditions of people are in turn, closely connected to and certainly determine the health status of people. Therefore, what is cause and what is effect, what can be ascribed to apartheid directly, what only indirectly and what not at all, is easily discernable. Despite these reservations, however, it can be generalised that apartheid had and still has a profound and diverse effect on the health and health status of the South African population, with disease and illness striking not merely at random, but rather along very definite channels of class and colour (Savage, 1979:141). De Beer (1984:79–8) described this

Table 4 Race-related disparities/inequalities in health status/health risk of the South African clientele

Indicator	Year	Whites	Asians/	Coloureds	Blacks
Life expectancy at birth (years)[a]					
■ Males	1980–85	66,8	63,1	55,4	55,1
■ Females	1980–85	74,3	69,8	63,5	62,5
Gross mortality rate (per 1000)[b]	1989	7,0	5,7	7,7	10,0
Mortinatal mortality (per 1000)[c]	1988	4,9	10,8	22,3	—
Infant mortality					
■ rate per 1000[d]	1980–85	13,0	18,9	56,0	82,0
■ Neonatal mortality (per 1000 live births)[e]	1988	9,5	13,7	27,9	—
■ Post-neonatal mortality (per 1000 live births)[e]	1988	3,7	3,7	29,5	—
■ Infant mortality as % of all deaths[f]	1988	2,3	6,2	16,5	15,6
Child mortality (1-4 years) (per 1000 at risk)[f]	1988	0,8	1,0	3,8	2,8
Maternal mortality rate[g]					
■ per 100 000 live births	1988	7,0	5,0	19,0	24,0
■ as % of total deaths in women (15–49 years)	1988	0,29	0,25	0,58	1,66
Teenage births (as % of all births)[h]	1987	6,6	8,4	13,9	11,4
Infectious/parasitic diseases[i]					
■ deaths per 100 000	1988	18,1	19,5	101,0	77,7
■ as % of all deaths	1988	2,2	3,3	11,7	12,9
Notifiable diseases (notifications per 100 000)[j]					
■ Tuberculosis	1990	16,5	59,2	599,7	183,4
■ Measles	1990	9,3	3,4	9,2	33,9
■ Typhoid	1990	0,4	1,1	0,2	7,1
Accidents/poisoning/violence (deaths per 100 000)[i]	1988	10,4	12,3	15,8	19,0
■ deaths per 100 000	1988	84,6	72,6	136,9	114,8
■ as % of all deaths	1988	10,4	12,3	15,8	19,0
Nutritional deficiencies (deaths per 100 000)[k]	1988	0,4	1,0	9,7	9,8

a Sadie 1988:13, 26, 36, 46
b Central Statistical Service 1990a:3.8
c Central Statistical Service 1990a:3.12; 1990b:63
d Sadie 1988:13,26,36, 45, 46
e Central Statistical Service 1990a:3.9; 1990b:478
f Department of National Health and Population Development 1991b:12
g Department of National Health and Population Development 1991b:49
h Department of National Health and Population Development 1991b:52
i Central Statistical Service 1990a:1.4, 3.26-3.34
j *Epidemiological Comments* Feb 1990:17(2):53–55
k Department of National Health and Population Development 1991b:69

direct effect of apartheid on people's health thus: 'Apartheid determines where people live, what work they do, what political rights they may exercise and what social services they may benefit from. These circumstances have profound implications for people's health. At the very least, the promotion of their health requires the death of apartheid.' In this respect the white, affluent clientele display, on most dimensions, a high standard of living accompanied by an excellent health status which is also protected by favourable living and working conditions and health care opportunities. In contrast, most of the non-white population are more exposed and vulnerable amid unfavourable living and working conditions; they experience the lack of basic means of subsistence and health care most severely, and they are at present or were in the past, most directly affected by the mental, social and industrial colour bar, job reservation, influx control, cheap labour, overcrowded homelands, forced removals, impoverished living conditions in squatter camps and neglected townships, township violence, etc. From these apartheid monstrosities emanate the high profiles of stress, trauma, diseases and casualties of poverty, undernourishment, powerlessness and instability so highly prevalent in the non-white deprived and disprivileged population (Andersson & Marks, 1988; De Beer, 1984; MRC, 1991; Turton & Chalmers, 1990; Zwi *et al*, 1988) leading to the inevitable conclusion drawn by Savage (1979:144) that 'apartheid and health are irreconcilable'.

Anti-apartheid structures in South African health care: A legacy of a different kind

Three centuries of steadily evolving and eventually full-fledged apartheid in health care in South Africa simultaneously engendered parallel forms of opposition and resistance to apartheid. Numerous anti-initiatives and counter-actions, anti-organisations and counter-measures were invented and implemented with the aim of opposing, counteracting and eradicating apartheid and racialism in health care, or at least of mitigating or alleviating their many effects in this sector. Naturally this counter-culture and the concomitant anti-structures also constitute part of the legacy of apartheid in health and health care.

Indicators of attempts to safeguard health care from racial segregation, or otherwise to rid it of apartheid, are numerous. Scattered illustrations in earlier colonial days signifying non-racial health care were, *inter alia* inauguration of the first civil hospital, the Somerset Hospital in 1818 at the Cape, open to all, *viz* the citizens of the Cape, seamen, the slave population, the mentally ill, the aged and the handicapped. Since the early 19th century, the missionaries played a more active role in opposing racialism in the broader societal context as well as in the field of health care particularly. In this regard the following observation by Tingsten (1955:141–142) is sufficiently indicative: 'Between these oppressed peoples and the master race, which now in the name of white and Christian civilization carries out oppression, stand a few thousand missionaries as barriers and mediators. Their work has no limit in this land, divided and tortured by prejudice, hate, bitterness, poverty and sickness'.

During the 20th century more concerted opposition to racialism in health care developed. In the 1920s and 1930s several organisations and commissions of inquiry highlighted the desperate health conditions and inadequate health services of the black population and also voiced resistance to racialism in health care as part of a much broader reform-mindedness in the then South Africa. Amongst others, the Vos Committee (1925) and the Loram Committee (1928) are especially noteworthy, as both reflected the deteriorating condition of the health of the black population in both rural and urban areas. The Loram Committee warned specifically against the dangers implicit in the poor general health of the black population in connection with the spreading of contagious and communicable diseases, and the deterioration and collapse of labour. To rectify these conditions state subsidised training of black medical personnel and the establishment of rural health units were recommended. These measures were rejected by the National Party government of the time, as was the offer of the Rockefeller Foundation to establish a medical school for black doctors.

Undoubtedly the climax of this wave of reformism was reached in 1942 with the appointment of the *National Health Service Commission* and the publication of its findings, i.e. the Gluckman Report (1944), two years later. Both in its terms of reference and in the aims of this Commission non-racialism was implicated: the aim was to establish a national health service which would be in a position '... to bring these services within reach of all sections of the population, according to their need, and without regard to race, colour, means or station in life' (Gluckman Commission, 1944:8). Much of its investigation illuminated the issues of race and colour in South African health and health care. Among other things, it was stated that care was not administered according to need, but according to the ability to pay. This resulted in doctors establishing themselves where the wealthy lived and not where the ill lived; health services were not equally available and accessible to all sectors of the population. This left the majority of the South African population in an inadequate and unfavourable provision situation. The Commission also pointed out the problem of shortages of both health personnel and facilities, and narrowed down these shortages to services for blacks in both urban and rural areas; these were especially acute in black reserves in terms of both personnel provision and facilities and also the unsatisfactory quality of both. In order to remedy the numerous identified shortcomings and problems, the Commission recommended the establishment of a national health service and at the same time meticulously formulated a detailed programme to implement such a service. The potential impact of these recommendations on easing and even equalising the many disparities and inequalities in South African health and health care, even those pertaining to race and colour, was never allowed the chance. Nonetheless, this report remains a forceful condemnation of the ills of a racially segregated health care system and an appealing plea for equality and equity in health and health care.

The momentum with which the subsequent era of statutory and grand apartheid invaded South African health care after 1948, systematically fuelled the rise and fury of opposition and resistance to apartheid as well as racialism in health and health care. In the four decades that followed, many a democratic, political, worker and professional organisation, numerous progressive civil and academic groups either academically dissected the costly nature and consequences of apartheid in health and health care, or fiercely protested against its inherent prejudices and injustices, condemning its detrimental effects on health, welfare and human dignity (Benatar, 1991; Coovadia, 1985; De Beer, 1984; Executive Committee, 1987; MRC, 1991; Rispel & Schneider, 1991; Van Rensburg, 1991; Van Rensburg *et al*, 1992). Of major importance in this organised opposition to apartheid and racialism in health and health care on the political front, were all those political parties, trade unions and liberation movements which displayed a history of vehement rejection of racial discrimination and inequality in health care and a concomitant agenda towards eliminating these as part of their policy. From early on the ANC became a prime carrier of this message of equality, equity and non-discrimination, as embodied in the *Freedom Charter* of 1955. More recently the ANC (1992:37–41) reaffirmed these commitments and the intent to create a comprehensive and integrated National Health Service including the homelands. Regarding the racial inequalities and imbalances in the training of health workers and the underrepresentation of blacks in the corps of doctors and in middle or senior management, planned action to correct these imbalances has begun, but requires greater effort. A similar tendency is also reflected in the health policies of the many liberation movements and black opposition parties during the apartheid era. At the health worker and health professional levels a multitude of progressive and solidarity organisations have displayed disenchantment with the many distortions which the white-Western-curative-privatised model effectuated in South African health and health care. They collectively opposed apartheid and racialism in health care and demanded a total reform of South African health care, part of which is its explicit deracialisation. In this regard the National Progressive Primary Health Care Network (NPPHC), the Committee for Health in Southern Africa (CHISA), the Health Workers' Society (HWS), the National Medical and Dental Association (NAMDA), the National Education, Health and Allied Workers' Union (NEHAWU), the South African Health Workers' Congress (SAHWCO) and the National Health Unity Forum (NHUF), and the recent amalgamation of some to form the South African Health and Social Services Organisation (SAHSSO), are worthy of mention. Significant progress has also been made within the Medical Association of South Africa (MASA).

In retrospect, and in recognition that the revolt against apartheid in health care has not been completed yet, this counter-culture and accompanying multiplicity of oppositional structures *vis-á-vis* apartheid health care constitute a further dimension of the diverse legacy of apartheid, imposing yet another deep-cutting divide within and across the South African health care system, this time splitting health care delivery, the health professions and health personnel ideologically into two diametrically opposed pro- and anti-establishment factions. In addition to all the other internal divisions, these potentially have further adverse effects on the structural and functional unity of the South African health care system.

Prospects for health and health care without apartheid: The South African dream

Numerous factors, both nationally and internationally, both outside and inside the health sphere, both planned and unplanned, have in recent times significantly contributed to the erosion and dismantling of apartheid and racial structures in the broader societal context as well as in the domain of health care particularly (Andersson & Marks, 1988; Benatar, 1992; Cloete, 1991; Kane-Berman, 1990; Leatt *et al*, 1986; Van Rensburg *et al*, 1992; Van Zyl Slabbert, 1991). Especially since 2 February 1990 great strides have been taken in dismantling apartheid and in the deracialisation of South African society. Fundamental socio-political reform has set in and the numerous laws upholding statutory apartheid and institutionalised racialism have already been scrapped — all these contain the potential of leading this society to a democratic, non-racial and equitable dispensation.

In similar vein, 1990 was an important milestone for South African health care and for the health of the people. After a protracted history of unsuccessful attempts to effectuate fundamental reforms and much cosmetic patchwork during the 1970s and 1980s (Browne Commission, 1986; Department of Health, 1977; Department of Health and Welfare, 1980; Department of National Health and Population Development, 1986), the government for the first time jolted the very framework of the structural problems in health and health care, that is the problematic societal and political dispensation from which apartheid-health care and the racial divides within the clientele emanate. Thus, also in the sphere of health care a systematic process of deracialisation was set in motion. Apparently, the government is determined to establish a health service which, in compliance with the principles of accessibility, effectiveness, affordability, equity and acceptability will provide for the needs of the entire population and contribute to the improvement of the health status and quality of life of all people (Department of National Health and Population Development, 1991c; Venter, 1990). In this spirit the opening of public hospitals to all races, the scrapping of hospital apartheid and the phasing out of the three own affairs health departments were recently applauded.

Yet, despite these promising signs, many of the strongholds of apartheid in health care are still firmly in place. Race-based authority structures and racially segregated care delivery, embodied in the ten bantustan health departments, in numerous race-segregated health care and training facilities, and in substantial colour-segregation both between and within many hospitals persist — even in the fast upcoming so-called desegregated private hospitals (Centre for Health Policy, 1991; Cooper *et al*, 1992:124–126). The same applies to the concomitant authority, administrative and geographic fragmentation of health care based on racial grounds. Nevertheless, these elements of apartheid in health and health care obviously constitute but part of a shorter term and even potentially easily reformable/manageable legacy of apartheid in this sector.

In addition and beyond these, however, there lies the harder core, that longer term stature and those deeper layers of the apartheid legacy which will remain part of both the health care system and the health status of people for many years, even decades to come. Yach *et al* (1990:39) hinted at these: 'The residual effects of apartheid on health will still need to be addressed and much effort will be required to develop a way of reducing existing race and social class inequities in access for and use of health care and health-related services', and pointed out: 'As South Africa moves into the post-apartheid era, it is critical to realize that the residual effects of apartheid policy will remain for health, health status and health services for many years to come' (1990:25).

More systematically this long-term and stubborn core of the legacy of apartheid in health and health care can be thus articulated: On the one hand, pertaining to the *health care supply*, it entails the indefinite continuation of informal colour segregation and deep-rooted racial privileging, of gross backlogs, inequalities and disparities in the health care supply as expressed in the varied forms of a numerically white dominated health care corps, of shortages and disproportionate distribution and representation of personnel and facilities along colour lines, of uneven health insurance patterns favouring some colour groups far more than others, and of long standing race-related vested interests in the provision, control and delivery of health care. These distorted structural dimensions and deforming effects of apartheid in health care will not be eliminated easily and surely they will last far beyond the formal de-institutionalisation of statutory apartheid. A purposeful and systematic programme to equalise and democratise health care, including decision-making, allocation of funds, and training and deployment of personnel as well as deliberate attempts to unify a highly divided and fragmented health care system, would seem necessary to increase momentum towards equality and equity in health care. However, such a strategy inevitably has to reach far beyond the limits of the health care system alone; it must also address the inequalities and inequities in broader societal context.

On the other hand, that is on the side of the *clientele*, an even taller order is the alleviation and equalisation of the burning race-related and race-induced discrepancies in life-expectancy, gross mortality, infant mortality, in fatalities due to preventable diseases and violence, in deficiency diseases and those caused by poor living conditions as well as the alarming differences in susceptibility and vulnerability among the different population groups. These health patterns and the ensuing discrepancies in the health and disease profiles of the people evolved and sedimented over generations and it can be assumed that significant alterations in these indicators of health will also demand generations of deliberate efforts at equalisation. In this case also the discrepancies reach far beyond mere health as such, as these discrepancies are not only

a matter of narrow health risks and differential health status secured by good health care, but also and rather more a matter of better life chances and general standards and conditions of living determined by the larger societal context.

In our view there is an even deeper layer still of the apartheid legacy in health and health care. Parallel to *apartheid in society*, that is social and structural apartheid as an objective phenomenon *out there*, there is also that deeper, subjective reality of *apartheid in man*, apartheid *in here*. Apartheid has penetrated and permeated people through generations of inculcation and socialisation. South Africans, both at the executive and the receiving ends of apartheid, have internalised apartheid willingly and unwillingly, making its overt structures and divides part of their innermost selves. Apartheid became part of their psychic make-up and self-image, part of their minds and emotions, their attitudes and behaviour patterns. In this regard apartheid frequently entrenched itself within South Africans with resulting attitudes of either superiority or inferiority; it often incited South Africans to either dominance or subservience; it often evoked either overconfidence or suspicion and frequently led to either arrogance or escapism. Undoubtedly, it is this inner, internalised or personalised legacy of apartheid in man that will last longer and have the most enduring effect on health and health care. To rid South African health and health care of these it is not enough to deracialise or de-institutionalise statutory apartheid structures. South Africans must also be resocialised in the fundamentals of basic human rights and relations; they must be rehumanised in self-assertion and self-control; respect and caring for one another must be cultivated anew. Thus apartheid must also be pulled down in the minds and hearts of people. Certainly, such a strategy implies not only a political will and commitment to change, but also and even more, a personal will and willingness to change and be changed.

Today, due to the deplorable legacy of apartheid in health and health care, we are a far cry from this ideal and dream. African writers have, with deep insight, sensitivity and eloquence portrayed the depth and breadth of the racism associated with colonialism and imperialism over many centuries. The impact on the self-esteem, human dignity and development potential of blacks in Africa and elsewhere needs to be understood at a level as yet unperceived by those who equate universalism with Eurocentrism (Achebe, 1958; 1988; Baldwin, 1985a; 1985b; Fanon, 1970; Ngagi, 1967). In the words of a black American exiled in France: 'Negroes want to be treated like men: a perfectly straightforward statement containing seven words. People who have mastered Kant, Hegel, Shakespeare, Marx, Freud and the Bible seem to find this statement impenetrable. The idea seems to threaten profound, bare conscious assumptions' (Baldwin, 1985b). 'It is a terrible, an inexorable, law that one cannot deny the humanity of another without diminishing one's own: in the face of one's victim, one sees oneself' (Baldwin, 1985b). Although written years ago these sentiments remain relevant reminders of the covert racism which lingers in many societies. Active efforts being made by many, including South Africans, to eradicate racism need encouragement and support. For those of us who are so often inclined to despair or revolt and for those who have focused only on condemnation, we wish to reiterate: The importance and necessity of protest against apartheid must not overshadow the need for reconstruction (Benatar, 1991:35). Let us then rather light a candle in the darkness, soften the hearts, open the minds and heal the wounds.

Notes

1. The origins, explanations, nature, manifestations, extent and effects of apartheid as a phenomenon and as a problem, are aptly described, analysed and systematised in the following literature: Adam & Giliomee, 1979; Adam & Moodley, 1986; Benatar, 1992; Cloete, 1991; Guelke, 1989; Kane-Berman, 1990; Leatt *et al*, 1986; Tingsten, 1955.
2. Elements of racialism and apartheid in the early history of South African health care are explicitly pointed out or implicitly recorded in the following works: Burrows, 1958; Gluckman Commission, 1944; Laidler & Gelfand, 1971; Loots & Vermaak, 1975; Marks, 1988; Mellish, 1985; Searle, 1965.
3. In recent times the cruciality of apartheid and racialism, or elements thereof, is more pointedly and systematically dealt with in a wide range of literature; the following may serve as a more extended bibliography on the topic of apartheid in South African health and health care: Andersson & Marks, 1988; Andersson *et al*, 1988; Benatar, 1986; 1990; 1991; Beselaar, 1989; Browne Commission, 1986; Centre for Health Policy, 1991; Centre for the Study of Health Policy, 1988; Cliff & Noonnahomed, 1988; Coovadia, 1985; De Beer, 1984; 1985; 1988; Marks, 1988; MRC, 1991; Pillay, 1984; Price, 1986; 1987; Rispel & Scheider, 1991; Savage, 1979; 1986; Savage & Benatar, 1990; Turton & Chalmers, 1990; Uys, 1987; Van Rensburg, 1991; Van Rensburg & Mans, 1982; Van Rensburg *et al*, 1992; Zwi, 1984; Zwi *et al*, 1988.
4. Apart from these categories of consequences pertaining to South African health and health care, there is enough evidence that the detrimental effects and influence of apartheid reach far beyond the boundaries of the RSA itself. Apartheid has also had pervasive effects on the health and health care of the frontline states, particularly by way of the migrant labour system, the armed struggle within South Africa, and South Africa's involvement in/support of military operations in its neighbouring states. In this regard health and health care in Mozambique, Lesotho, Angola, Zimbabwe, Botswana, Swaziland and Namibia were to a greater or lesser extent diversely affected by the South African regime during the apartheid era. These effects are described in a special issue of *Social Science and Medicine* (Andersson *et al* [Eds.], 1988; cf especially Zwi *et al*, 1988; Cliff & Noonnahomed, 1988).

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Health Care Services in a New South Africa

by Solomon R. Benatar and H.C.J. van Rensburg

In meeting the challenges of fashioning a new health care system, South Africa stands poised to contribute to a better future for its own citizens and the subcontinent.

Health care is facing critical challenges worldwide. The explosion in scientific knowledge, its costly application to medicine and health care, coupled with rapid population growth and changing disease profiles during this century, have led to intense debates on the design, structure, and funding of health care systems. No perfect solutions have been found and health care systems in many countries are both of a mixed nature and in unstable states of change.

The challenge is unique in South Africa as it faces the task of establishing a cohesive social democracy in which its natural resources and human talent can be used to benefit all its people. This will call for genuine commitment to human rights and rapid expansion of the economy within an international market.

Within this context, the choice of a health care system has significance for the social tranquility so necessary for progress. The provision of greater equality of access to health care is a potentially powerful way to foster the sense of solidarity in citizenship and community that is essential in South Africa in its transition toward a more just society. Because of the narrow time frame available for visible progress toward a stable and flourishing democracy, the challenge of health care reform is particularly acute in the new South Africa. The recent remarkable election process gives cause for optimism, however.

Our present system of health care education, practice, and policy has many characteristics of the society in which it evolved. Undisputed high standards of medical education in the Western tradition, aspiration to high standards of patient care, remarkable "Old World" goodwill between doctors and patients of all races, some public health facilities as well as successful private medicine show one side of the coin. The ability to perform the world's first heart transplant in 1967 illustrates this. The other side of the coin is fragmentation and duplication of services, wide disparities in health and in access to health care (particularly in rural areas), the paucity of preventive, promotive, and rehabilitative services, (increasingly resented) paternalistic attitudes to patients, and until recently, dismissive attitudes toward African traditional medicine.[1]

Three statistics illustrate the current disparities in health. First is the infant mortality rate, which ranges from 13 per 1000 live births in whites to 82 in blacks. Second, infectious diseases accounted for 12.9 percent of all deaths in blacks in 1988 as compared with 2.2 percent of deaths in whites. Third, the life expectancy at birth in the 1980s was fifty-five years and sixty-two years for black males and females, respectively, and sixty-seven years and seventy-four years for white males and females.

Structurally, our current health service fits somewhere between the predominantly fee-for-service, managed care health care system in the United States and the (until recently) predominantly socialized, nonprofit system in the United Kingdom. Approximately 50 percent of health expenditure is in the private sector in which 50 percent of doctors work to serve 20 percent of the population covered by health insurance. The undesirability of either a fully privatized or totally socialized health care service is not the major dispute, but rather the balance between these two components. Neither Thomas McKeown's nor Leonard Sagan's concern that modern medicine plays only a modest role in improving population health, as distinct from the health of specific individuals, minimizes the impressive impacts of modern medicine on individual and collective well-being.[2] Rather, their analyses point to the need for more than an individualistic and reductionist medical approach to health and disease.

The challenge of transforming our health care system is compounded by the profound legacy of apartheid in all aspects of life that influence health and disease.[3] Developing a health care system that offers fairer access to a range of services capable of promoting and protecting health in our new society will demand great intellectual honesty, a realistic view of what has been achieved elsewhere and of what can be achieved within a reasonable

Solomon R. Benatar *is professor and chairman of the department of medicine, University of Cape Town and Groote Schuur Hospital;* ***H.C.J. van Rensburg*** *is professor of sociology and director of the Centre for Health Systems Research, University of the Orange Free State, South Africa.*

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time frame in our economic and demographic context.

What sort of health care system will South Africa have in the future? At least three possibilities can be envisaged:

(1) a two-tier health care system dominated by an elitist, open-ended, and exorbitantly expensive private sector, which disables medical schools and undermines a public sector struggling to provide adequate primary and secondary services to a poor majority—the direction in which we have been moving over the past decade; or

(2) a totally socialized health care system concerned almost exclusively with primary health care—a direction in which we could move if resources are shifted so rapidly into primary health care that our current health services, built up over several decades, are allowed to collapse; or

(3) as we advocate, progress toward some kind of national health system—(whether national health insurance or a national health service), which, through an appropriate blend of high quality public and private, as well as primary, secondary, and tertiary services, could provide more equitable access to health care and improve the health of many who are currently marginalized.

Which should be chosen, by whom, and through what process have been hotly debated.[4] The African National Congress has now published a bold and ambitious National Health Plan that advocates a unitary health service.[5] The cornerstone on which this service will be built will be a district-based primary health care approach. Its functions will include the promotion of healthy life-styles, coordination of all health care services, intersectoral collaboration with other sectors influencing health (for example, housing, service amenities, water supply, sanitation, etc.), community participation in the planning and delivery of all health care services, effective referral systems, environmental health services, and administrative services—(including budgetary control and human resource development)—all at the regional level with central supervision.

The plan incorporates commonly held aspirations for (a) a just, democratic society in which individual human dignity is respected and human rights upheld and universalized; (b) an economy with sufficient resources to provide work opportunities, decent living and working conditions, and basic health and social services for all; and (c) an educational environment conducive to a healthy, happy childhood with opportunities for all to reach their potential as involved citizens actively contributing to progress. However, it is not yet clear how an oversized, open-ended, and unaccountable private medical sector with no responsibility for training health care professionals or delivering care to uninsured persons could effectively be incorporated into such a national unitary system.

The complexity involved in achieving these human development goals should not be underestimated and, given the political, social, and economic growth required, even to approach some of the high ideals being aimed for, the time-frame will regrettably be considerably longer than desired by most.

Some aspects of the complex political, economic, and social scenarios that constitute the context within which health services and academic medicine will be restructured in a new South Africa have been reviewed elsewhere.[6] Here, we offer a brief review of the political background from which changes will evolve and consider some philosophic, economic, and social factors that will (as in other societies) significantly influence the direction and pace of transformation of our health care system.

The Political Context

In the eighty years since the British Parliamentary Act of Union gave the whites of South Africa the right to self-determination and removed the rights of blacks to sit in Parliament, relentless promulgation of legislation has perpetuated the separation, oppression, and dehumanization of black people initiated through imperialism and colonization.[7] With growth and consolidation of Afrikaner political and economic power since the National Party came into power in 1948, apartheid legislation and policies flourished—blighting the lives of millions and casting a dark shadow over all the people of southern Africa.

Black opposition evolved over many decades from peaceful protest into a growing culture of individual and group violence, much (but not all) in frustrated response to corrupt and brutal state forces, and ultimately toward a "negotiated revolution" that led into the recent elections.[8] The electoral process and its outcome have been widely acclaimed and there is now great optimism for rapid progress toward a well-ordered and more just society. Precisely what is meant by this description of any society is open to debate, but Rawls's recent description of a well-ordered society with which (more) just societies based on liberalism should be willing to interact seems to be a minimum.[9] Such a society would have to meet three criteria:

(1) It must not be aggressive or have expansionist aims.

(2) It must have a system of laws that impose moral obligations/responsibilities on all in its territory; the system of law must be guided by a "common good" conception of justice and there must be a sincere and not unreasonable belief by judges and other officials who administer the legal order that the law is guided by such a conception of justice. The latter takes account of peoples' essential interests, which include the right to means of subsistence and security, to liberty, personal property, and to formal equality as expressed by rules of natural justice.

(3) It must respect basic human rights.

Aspirations in the new South Africa to achieving higher ideals than this minimum level are inspiring, but must be tempered by recognition of the major impediments to their achievement within any short term.

Toward Transforming Medicine and Health Care

Sustained population growth, rapid influx into urban areas with mushrooming peri-urban settlements (for which health care facilities are only now slowly being created), aging of the population, changing health and disease profiles, poverty, unemployment, and disruption of community and family structures pose enormous social challenges to the delivery of health care.[10] As a middle income developing country with per capita GNP one-tenth that of North America, but ten times that of the Southern African Development Conference (SADC) countries to our north, expectations are high from all quarters for the achievement of equitable health care at a considerable level of sophistication. Economic stagnation in South Africa (15% fall in per capita gross national product since 1979), only minor growth in the percentage of the GNP spent on health care (from 4.8% 1971 to 5.9% in 1986), and escalating expenditure in the private health care sector (from 33% of the total in 1979 to about 55% in 1992 on just over 22% of the population) have, however, all contributed to attrition of the public health services on which most of the population depend and which form the infrastructure for educating all health care professionals.[11]

Worldwide, increasing attention has been focused on the health of whole communities in addition to the health of individuals. Access to a reasonable standard of health care, as a universal right rather than a privilege, is being debated in relation to the level of care that each society can afford. Clearly, the range of health care services to which all citizens should have access will be much more limited in a country with a per capita GNP of about $2,500 (South Africa, similar to Chile, Mexico, Hungary, Thailand, and Malaysia) than in industrialized countries with per capita GNPs ranging from $12,000 to $28,000. Increased resources could come from increasing the proportion of the GNP spent on health (currently about 6 to 7% in South Africa) and by using resources as efficiently as possible. Rationing will nonetheless be inevitable. Disparities will also remain, as it seems almost inconceivable that market forces will not play at least some role, although it is to be hoped less than at present.

> Regrettably, racial apartheid in health care seems to be transforming into a two-tier system of economic apartheid.

Expenditure on health, resource allocation, and market-driven health care versus socialized or some kind of national health services—topics high on the South African agenda—have been extensively debated in local and international writings.[12] The need for some kind of private-public blend in the health care field is widely accepted, while the proportion of each and where and how to draw the lines in different societies remain controversial.

Threats to health services and academic medicine from a private sector growing at the cost of the public sector have been outlined[13] and repeated proposals made for building a coordinated health service offering equitable access to all.[14] Despite apparent professional support for this concept, the previous South African government paid little attention and proceeded to allow—indeed, promote—unchecked proliferation of private medicine through privatization policies on the one hand and progressive erosion of public medicine and of teaching hospitals on the other.[15] How this will change under the leadership of our new government is not yet clear, even with the publication of the ANC health plan.

Major and recurrent budgetary cuts to academic hospitals in order to redistribute resources toward primary health care are undermining the viability of the few well-staffed and fully operational teaching hospital complexes in the country (and perhaps even in Africa) before the more accessible primary facilities have been built, staffed and made functional. Creating an effective system of health care based on the primary health care approach will require considerable time, effort, and resources. It has recently been announced that sixty-five new clinics will be opened in rural and poorly developed metropolitan areas and that these will be funded by a further 5 percent cut in the budget of teaching hospitals. This, it is stated, will be the first step toward building 780 such clinics over the next three years!

If some academic health care institutions that will also be needed in a new South Africa are to be preserved, careful thought will have to be given either to closing some of the less viable medical schools or to generating additional finances to develop much needed and desirable primary health care facilities. Streamlining a mammoth health bureaucracy, a lottery with proceeds earmarked for health services, or additional taxation on alcohol and tobacco are possible new sources of income. While expenditure in teaching hospitals must be more carefully planned and controlled, and primary and community-based medical care are indeed priorities, it would seem counterproductive to attempt to rectify deficiencies so rapidly that this cripples existing facilities (which provide extensive services at primary and community level in addition to tertiary care) and such national assets as some of our medical schools. They too, albeit with considerable adaptations, will be needed in a new South Africa. Expansion of current efforts to involve personnel from academic centers in community and primary health care facilities is a potentially constructive method of shifting resources and objectives without

destroying currently functioning units.

Regrettably, racial apartheid in health care seems to be transforming into a two-tier system of economic apartheid. The upper and middle classes of all races are being deflected toward the rapidly growing, expensive private sector backed by private insurance that is becoming increasingly unaffordable while public services are being neglected. Insufficient attention is being given to the fact that medical schools and public health services are on the decline and that private medical insurance schemes are pricing themselves out of the market.[16]

The battle to protect vested interests will probably intensify unless visionary leadership and enlightened management drives the development of a more equitable health service. The case against extensive privatization of health care in South Africa (without denying the place for a relevant and appropriate private component) and the case for a unitary health system have been mounted on the basis of moral, economic, and social considerations.[17] There is much to learn from the experience of the British National Health Service (which brought such great benefits to the British at very reasonable costs for many decades when the country was struggling to recover from an expensive war) and the Canadian National Insurance system (which provides high consumer satisfaction and seemingly excellent performance as reflected by health statistics). The difficulties currently facing both these systems should be viewed in context and without minimizing their great advantages.

Given the different scales of economy, different population growth rates, greater population heterogeneity, the legacy of apartheid, and the current starting point from which transition and transformation must proceed, it is clear that there is no simple formula for achieving a unified comprehensive and effective health system in South Africa. Proposals for shifting health policy toward a nationwide service—appropriately coordinated, regionally controlled, reasonably funded, and flexible enough to allow building on the current health system—rather than promoting a private service for an elite, albeit nonracial, minority that relegates the poor to an inferior level of care would, if structured on realistic economic and time scales, have strong public and professional support.[18] It is to be hoped that lessons can be learned from the experience of other societies where fee-for-service medicine in an open-ended system is failing to meet the demands of social justice, is eroding values that form the core of the authentic healing process, and cannot be sustained economically.[19]

Some Competing Perspectives

The structure and funding of health care services in any society reflect a complex interaction of social, political, and economic historical trends. There are at least three major influencing forces at work in South Africa as elsewhere:[20]

(1) society's view of the nature and purpose of medicine and health care and how its objectives can be achieved;

(2) society's concept of community and what it means to live with and relate to others; and

(3) national priorities in resource allocation for human development.

Underlying the conflict in values and the way in which these are expressed in relation to health and health care (as well as to many other aspects of life) is the "world view" within which individuals or a society operate. This is the point of departure from which attitudes develop regarding the concept of community, the nature and purpose of medicine, and what it means to live with and relate to others within a nation and in the world.

The choices we make—including those regarding health care and health policy—are profoundly affected by influences from contrasting (but also overlapping) contexts and frameworks of thought. The best recognized are the polar political, economic, and ideological frameworks: capitalism and socialism. Others include Eurocentric and Afrocentric thought systems; secular and religious world views; and moral perspectives that emphasize either justice and rights or beneficence and obligations.

The various terms used to focus on specific perspectives in describing medicine and health care systems reflect the range of values that have been incorporated into medicine over many centuries and interwoven into different kinds of health care systems. Those who speak of *effuiency* emphasize marketplace aspects of health care, while those who talk of *equity* are more concerned with social justice. *Liberty* and *freedom* are terms used mainly by privileged individualists while the unempowered poor speak the language of *rights*, and *social conscience* is expressed in the language of *needs*. Each of these idioms brings to bear a particular perspective on health care, though they are not always used consistently or coherently, especially when they are used to describe health and health care as complex and variably interpreted mosaics.

The health care system in South Africa during apartheid has been mainly influenced by forces reflecting the core of (predominantly Western and increasingly economic) values common to the subculture of medicine worldwide. It is in this context that in recent decades the drive toward a marketplace model has been fostered by the self-interest of a privileged minority (white and black) and has allowed private medicine to flourish at the expense of public medicine. The structuring of a more evenly spread and accessible health care service for South Africa will, therefore, require considerable commitment from the state, and especially the implementation of health policies favoring democratization, equalization, regionalization, and unification of health services.

Challenges and Prospects

The worldwide acknowledgment that sophisticated, high-technology, hospital-based medical care is not sufficient to create a healthy community generates ongoing debate regarding the relevance of selection criteria for medical students, the nature of the medical school curriculum,

and the task of medicine.[21] Although there have been some evolutionary changes in South African medical schools, the dispute remains between those who wish to retain orthodox medical education with ongoing modifications and those who wish to replace it with an essentially different form of community-based medical education.[22] These possibilities need not be mutually exclusive, and medical schools could either differ in their emphasis or provide educational streams with a range of objectives. Clearly, there is a need for a deeper understanding of the scientific and human values driving the practice of medicine and health care and of the social roles of health care professionals. Better communication between medical teachers and medical practitioners, for example, with greater integration of academic medicine and health care teams in the community, and more attention to the human sciences in medical education and practice could contribute toward narrowing this divide.[23]

Modern developments in medicine have also resulted in intense interest in ethical and moral issues in the practice of medicine. A wide range of contentions issues are increasingly coming under scrutiny in this context and there is an urgent need in South Africa to develop both a cadre of professionals with a working knowledge of modern concepts in biomedical ethics and the procedural mechanisms required rationally to debate and advise on complex ethical problems. Modern bioethics education is in its infancy in South Africa, but is being addressed with growing interest.[24]

South Africa, including its health care institutions, is at an exciting stage of its history. As the choices made now, during a period of transition, will have effects far into the future, there is a great burden of responsibility for all who have a potential role in building this society. As South Africa emerges from the isolation earned through its oppressive racial policies, there is a growing need for human cooperation on an unprecedented scale if its future is to be characterized by the social justice, democracy, and economic growth necessary for it to fulfil its potential in sub-Saharan Africa. Moral sensitivity, mutual tolerance, education, and open-mindedness, and a deep commitment to the communication necessary to resolve conflict should all be encouraged. Success would be characterized by moderate to high economic growth in a stimulated economy in which disparities are being progressively narrowed, and a commitment to educational and health care systems that would include greater emphasis on primary health care. An essential national health research program could provide the basis for well-being within a culture of education and training necessary for building a better society. A fall in the population growth rate, encouragement of female literacy and women's rights, and finding common ground between Eurocentric and Afrocentric cultures would characterize progress toward a society which in the future could meet many of our common aspirations.

Without this, the victory over apartheid, racism, and white dominance could be hollow and characterized by continuing wide disparities and escalating conflict, poverty, and suffering for many generations.[25] A realistic view of the future in a middle-income country struggling to narrow inequities will acknowledge that common ground must be developed between the polar extremes of different frameworks of thought.

Leading the Way to Progress

In this context, the structure and funding of our health care system should be characterized by greater emphasis on primary health care in order to improve access to care. Coordinated, planned interaction between primary, community, and tertiary services, and promotion of health and rehabilitation, will require efficient administration of funding and acknowledgment that the health transition in middle-income countries offers new and specific challenges that differ from those in both high- and low-income countries.[26] Private medicine will not be abolished, but it also cannot be a dominating component wastefully consuming and narrowly allocating scarce national resources. Meaningful health care reform is a long-term task demanding a combination of idealism, pragmatism, and community spirit. Analytical skills, modelling of possibilities and their cost, development of procedural mechanisms for change, ongoing open-minded public debate, and coherent, comprehensive restructuring in an economically viable direction will require scholarship, vision, and political skills.

The struggle to prevent destruction of our currently fragile academic health centers as important components of our public health system and to appropriately restructure and rebuild that system in the interest of all our people will be largely determined by forces within South Africa, but could also be constructively influenced by international intellectual contributions to analyzing and weighing options and national planning. Engaged support for the development of a unified health service with a strong primary health care component, of which a new South Africa could be proud, would earn the gratitude of future generations of all South Africans. In a rapidly changing South Africa, balanced attention to the inevitable (and understandable) self-interest of providers and recipients of health care could characterize health services as both private and public goods. Health care could thus become the leading edge of an enlightened social policy that may facilitate peaceful progress toward a better future for all in our country and our subcontinent.

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Special Report

HEALTH CARE REFORM IN THE NEW SOUTH AFRICA

SOLOMON R. BENATAR, F.R.C.P.

THE social transition that must follow the political transition in South Africa will pose major challenges for many decades. The need to reduce inequities is undisputed. However, the means of effectively and sustainably achieving this reduction are less clear, especially in the face of rapid population growth and minimal additional resources in an economy that is growing less rapidly than hoped for by the new government. Health care reform exemplifies the many challenges facing South Africans. Profound shifts in thinking about the social forces influencing health and disease underlie the shift from the conventional biomedical model of health care to the primary health care approach within a fixed or even diminishing public health budget. The move toward a primary care approach in South Africa is not the same as a shift in emphasis toward primary care in highly industrialized nations. An attempt is made here to provide some insight into this process by describing the dilemmas facing health care reform in South Africa and the threats to academic activities that will be central to future progress.

In the 1930s it was recognized that health care could not be provided for the growing and diverse South African population by allowing entrepreneurial medical services to develop haphazardly. The plea for a national health service by the president of the Medical Association of South Africa in 1931 was echoed by the government-appointed National Health Services Commission in 1944. The rejection of this proposal, the subsequent election of a Nationalist government in 1948, and the institution of apartheid were associated with the development of a health service characterized by racial discrimination, fragmentation, poor coordination, duplication of services, and a predominant focus on hospital-based care rather than primary care.[1-3]

Privately financed medicine flourished, providing excellent primary and community-level care for patients (predominantly white) who had health insurance through more than 200 private insurance companies. Tertiary services, which were largely confined to government-financed academic hospitals, were available free of charge to the indigent as well as to those with private insurance. As a result of this focus on hospital-based care, academic medicine thrived — allowing, for example, innovative research on malnutrition and iron metabolism, and the capacity to perform the first heart transplantation — but primary care and community facilities for poor patients (predominantly black) remained woefully inadequate.[1,2]

In the late 1970s, overall funding for health services in South Africa (both the public and private sectors) was about 5 percent of the gross national product and had remained at that level for about 10 years. At that time, a private sector, comprising about 40 percent of the physicians in the country, accounted for about 30 percent of the health care expenditures and provided excellent care to the 20 percent of the population that had insurance. Many private-sector physicians supported academic and government-financed medicine (in which the remaining 60 percent of the nation's physicians worked full time) by working part time in public institutions for minimal compensation.[1]

THE 1980s AND 1990s

Between 1980 and the early 1990s, health care expenditures increased to about 8 percent of the gross national product. Despite many warnings, private medicine grew into a large, uncontrolled entrepreneurial industry with no public accountability. By 1992 it took 64 percent of national health care expenditures for 60 percent of the nation's doctors to provide medical services, often lavish and wasteful, to about 17 percent of the population — those with insurance.[2,4,5] Not only was the private sector expanding, but its demographic features were also changing, with many blacks joining the middle class and acquiring private medical insurance. Academic medicine came under increasing strain as teaching hospitals faced the demands of a growing and more urbanized population, the private sector recruited medical and nursing staff into more lucrative positions, and physicians in full-time private practice be-

From the Department of Medicine, University of Cape Town and Groote Schuur Hospital, Observatory 7925, Cape Town, South Africa, where reprint requests should be addressed to Dr. Benatar.

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came less interested in doing part-time work in the public institutions. In the 1980s these trends gave rise to renewed, but unsuccessful, advocacy for a national health care system.[3,6]

Three statistics show the extent of the disparities in health care at the end of the apartheid era. First, the infant mortality rate in 1990 was 7.4 per 1000 live births among whites, as compared with 48.3 per 1000 among blacks, with malnutrition, diarrheal diseases of childhood, and measles contributing a heavy burden of morbidity and mortality. Second, infectious diseases continued to account for about 13 percent of all deaths among blacks, as compared with 2 percent among whites, with approximately 90,000 new cases of tuberculosis, mainly among blacks, reported annually. Third, the life expectancy at birth in 1990 was 60 years and 67 years, for black male infants and female infants, respectively, as compared with 69 years and 76 years for whites.[3] The growth of the AIDS epidemic is reflected by the results of prevalence surveys at antenatal clinics that show a progressive rise in human immunodeficiency virus seropositivity from 0.73 percent in 1990 to 2.15 percent in 1992 and 10.44 percent in 1995.

POLITICAL AND SOCIAL TRANSITION

South Africa's political transition from apartheid to a fledgling democracy through negotiations and a peaceful election in 1994 has been a source of great inspiration to South Africans and, indeed, to the world.[7,8] That such a change could take place without a violent revolution amazed those who believed that power would be transferred only through a bloody civil war. In the third year of the new South Africa, however, justified jubilation over the transition is being tempered by a realization of the magnitude of the challenges that the new government faces — initiating and sustaining a social transformation that could appreciably reverse the legacy of inequities bequeathed by decades of apartheid and the discriminatory "colonial" mentality.[7-9] The African National Congress's Reconstruction and Development Program and National Health Plan, which have a district-based approach to primary care as their framework, offered ambitious approaches to these daunting social problems.[10,11]

HEALTH CARE REFORM SINCE 1994

Government-driven reform of health care is taking place predominantly in the public sector, where the chief focus is on developing community facilities accessible through the district-based primary health care approach.[3,11] This public health system will emphasize the promotion of healthy lifestyles, the coordination of health services, collaboration with other public sectors affecting health (for example, housing, water, and sanitation), community participation in planning and delivering free primary care, environmental health services, efficient administration, and effective systems of referral to secondary and limited tertiary levels of care. Intellectual backing is provided by research emphasizing population-based epidemiology, the formulation of health policy, studies of health services and health economics, and a wide-ranging program of education on public health.

Providing free primary health care for all with no increase in spending involves redistributing the public health budget on the basis of the official census of each province (Table 1), as well as creating a new balance between hospital-based services and primary care clinics. Given the economic and demographic disparities among regions and the maldistribution of health services, with medical schools clustered in certain provinces, this will be a daunting task for decades. To build and staff primary care clinics in poor areas within a fixed budget (actually, in real terms, a shrinking one), resources are being withdrawn from academic medical centers, and many of their services are being curtailed. Almost 100 new primary care clinics were opened in the country by the end of 1996, funded by a cut of about 7 percent in the budget for teaching hospitals. This is the first step toward the building and staffing of 780 such clinics over the next three years. Such restructuring offers many potential benefits, but clearly at the cost of hospital-based services, particularly in the academic centers.

The effects of these shifts are already evident, especially in the Western Cape, where the largest budget cuts are being made in order to shift resources toward the provinces (such as the Eastern Cape) with fledgling medical schools or the most meager rural health care facilities. These shifts have resulted in the progressive reduction of staffs and hospital beds,[3] with erosion of the critical mass of staff needed to sustain many of the usual services of academic medical centers.

Since there are no provincial taxes, the country's public health care system is funded entirely from federal taxes. The central government retains control over planning, legislation, and funding, with responsibility for the delivery of care devolved to the nine provincial administrations, which have no mechanism by which they can be remunerated for the care of patients from other provinces or by which they can generate any substantial amount of resources through private work.

The private sector has been largely untouched by these efforts to restructure the public health care system and provide free primary health care for all. In the private sector, the organization and delivery of care remain predominantly under the influence of entrepreneurs and market forces. The rapid escalation in the cost of private health care, resulting in increases in contributions to private insurance funds at a rate almost double the consumer price index, has,

TABLE 1. DISTRIBUTION OF SPENDING FOR PUBLIC HEALTH CARE AMONG THE PROVINCES OF SOUTH AFRICA.*

PROVINCE	NO. OF MEDICAL SCHOOLS	POPULATION	INHABITANTS LIVING IN POVERTY	PUBLIC HEALTH BUDGET, 1995–1996†
		percent of national total		
Western Cape	2	9.0	4	14.3
Eastern Cape	1	16.1	24	13.2
Northern Cape	0	1.9	1	1.8
Free State	1	6.9	9	7.4
Kwa Zulu Natal	1	21.2	21	19.6
Northwest	0	8.3	9	6.1
Gauteng	3	17.0	6	24.2
Mpumalanga	0	7.2	9	4.0
Northern Province	0	12.4	18	9.4

*Data are from the South African Health Review 1995.[3] Columns do not all total 100 percent, because of rounding.

†The total budget was 14.3 billion rand ($3.24 billion).

however, provoked a drive toward containing costs through the development of managed care.[3]

ACADEMIC MEDICINE AND MEDICAL EDUCATION

All eight medical schools in South Africa are publicly supported, but in recent years limited private practice by the faculty has been allowed in an effort to retain staff. These institutions have been subject to increasing strain for several reasons. Private practice has expanded and recruited away some of their staff over the past 10 years; permission for limited private practice has been abused by some physicians, with the resulting neglect of public patients; many young professional staff members have emigrated to seek academic and economic advantages; national resources for hospital-based health care have been reduced in line with the national plan; and macroeconomic policy has imposed progressive reductions in all government expenditures for health care, education, and welfare. The pace and extent of budget cuts threaten the sustainability of all our medical schools. For example, recently announced cuts affecting the medical schools of the Western Cape over the next four years will reduce real funding by 25 percent in the 1996–1997 fiscal year and cut it in half by 2001.

What these changes imply for academic medicine in South Africa can be shown by describing their likely effects on the Department of Medicine at the University of Cape Town and Groote Schuur Hospital. With difficulty, this department, perhaps the largest and most active in sub-Saharan Africa, retains the ability to carry on all its current functions, whereas other previously strong medical schools have lost that capacity and newer schools have not been able to develop it.

The department, which now has about 12 percent less staff than it did five years ago, has 35 full-time faculty members, 80 residents (in postgraduate years 1 through 6), 12 fellows (in postgraduate years 7 and 8), and a loyal cadre of part-time physicians. They staff a busy emergency unit (serving more than 44,000 patients per year), an acute care unit (with more than 12,000 admissions per year), four general medicine services (with more than 6000 admissions annually), and cardiology, clinical immunology, endocrinology, gastroenterology, geriatrics, hepatology, nephrology, neurology, pulmonology, and rheumatology services with heavy inpatient and outpatient responsibilities.

An average of three full-time faculty members serve in each subspecialty. They cover most areas of special interest in their disciplines, sustain undergraduate and postgraduate training and continuing medical education across a large part of sub Saharan Africa, undertake some research, keep up with international advances, and introduce these advances into practice in the context of local constraints on resources. All the full-time faculty members teach and care for inpatients and outpatients throughout the year, with at most a month or two away from their clinical duties for research. They work closely together on collaborative projects, undertake some general medical duties, and participate in national and international medical organizations. Over the past year, agreements to allocate up to 30 percent of the staff's time to regional health care — to consult on patient care and assist in developing community services — are being implemented.

The 25 percent budget cut in the coming fiscal year and the planned further reduction by another 25 percent over the following two to four years will radically compromise the structure and function of this department and others, as well as their potential for leadership and training in the future.[12] Physicians in wealthy countries may better appreciate the challenges facing academic medicine in South Africa through a comparison with some social, economic, and medical statistics for the United States (Table 2).

One reason for the shift to primary care is the claim that the bulk of expenditures in public academic institutions are for high-technology medicine. This is misleading, however, because so called high-tech academic hospitals in South Africa deliver a relatively small volume of high-technology services and a considerable volume of community services. They do the latter effectively because they have well-organized infrastructures and sufficient staff members to provide 24-hour coverage for a wide range of needs. It is also not sufficiently appreciated that all health care professionals in the public and private sectors are trained in academic institutions. Also, it

TABLE 2. COMPARISON OF THE SOUTH AFRICAN AND U.S. HEALTH CARE SYSTEMS.

VARIABLE	SOUTH AFRICA	UNITED STATES
Population		
No. of inhabitants	40 million	255 million
Urban dwellers (%)	50	76
Growth rate, 1980–1992 (%)	2.7	1.1
Medical schools		
No.	8	125
Inhabitants per school	5 million	2 million
Physicians		
No.	20,000	650,000
Inhabitants per physician	2,000	400
Ratio, specialists:family practitioners	1:3	1:1
Gross national product		
Per capita	$2,500	$25,000
Annual growth, 1980–1992 (%)	0.1	1.7
Health care expenditures		
Per capita	$200	$3,750
Percent of gross national product	8	15
No. of patients on long-term dialysis per million population	26	800
Unemployment rate (% of population)	40	<10

is the poorest members of the population who are served by public institutions and from whom services are being withdrawn to build primary care clinics, albeit for the advantage of future generations of the poor. Furthermore, our academic institutions both underpin the future of medical education in the country and have wide-ranging outreach programs that support and sustain the community medical services on which primary care will also depend.

CHOICES FACING SOCIETY

South African society now needs to decide whether, while developing a more equitable system of primary care, all medical schools should reduce their activities or whether certain special functions should be preserved by merging some schools and encouraging others to focus on the education of primary care physicians. Taking the former course could result in the demise of all the schools, especially if they try to emulate past models that even the most successful schools cannot realistically aspire to. The alternative of explicitly adopting different goals for undergraduate and postgraduate education may permit the preservation of some tertiary care for the poor in the public sector while encouraging the diverse spheres of excellence that South African society will require during a challenging transition.

FROM POLITICAL APARTHEID TO ECONOMIC APARTHEID

While public and academic services erode, private for profit hospitals are being allowed to flourish,[5] and drug companies (whose products consume 30 percent of expenditures in the private health care sector[3]) are directing more of their funds into product-oriented research. This thrust toward private medicine may seem attractive in the short term, but it will almost certainly jeopardize further our already fragile public medical facilities and academic centers.[4] As funding for medical schools (all in the public sector) is cut back and they become more focused on primary care, educational and health care facilities for modern scientific medicine may be increasingly diverted to the private sector. The growth of private medical schools will be encouraged, and their fees for students will rise in keeping with market forces.

The previous inequity in access to universities that was based on political apartheid could be replaced by an inequity due to economic disparities. Medical students, except for those aspiring to deliver only primary care, will need to have rich parents or be willing to accumulate large debts. This may be appropriate in affluent societies, and it may be seen as appropriate for South Africa by some who consider it the only way to retain modern medical skills, but the danger it poses of re-creating a new form of two-tier system for "haves" and "have nots" will frustrate efforts to reduce inequities in the nation. It will also, I anticipate, threaten the social stability needed for long-term economic growth and the development of a civil society.

PUBLIC AWARENESS

The public is largely unaware of the repercussions of this civil war in health care. Hospital services are being increasingly withdrawn from some of the most vulnerable members of the society. The ability of medical schools to give disadvantaged students the quality of education they were previously denied, when at last they are gaining access in increasing numbers, is being eroded. The possibility of sustaining secondary and tertiary care services in the public sector is being diminished; such services may not be available for the patients who will emerge from improved primary care to expect the next level of care. Finally, the enthusiasm of young medical practitioners for careers in academic medicine or the public sector is being dampened, and they are being driven to seek economic opportunities in private medicine or academic opportunities in other countries.

The enthusiasm of our Health Ministry for staffing rural clinics and hospitals with physicians from Cuba, who are inadequately trained for conditions in South Africa (there are about 200 such physicians already here, and recruitment continues), and the apparent intention to reintroduce coercive measures to send medical graduates to rural areas (measures that resemble military conscription, which drove many young physicians out of the country) seem shortsighted and inadequate solutions. An alternative

with more potential for sustainable progress would be to develop financial and educational incentives for work in rural areas and to couple them with well-structured vocational training that is carefully planned in association with medical schools. Ambitious goals cannot be achieved by government edict alone, however well intended.

CONCLUSIONS

The cooperation of professionals, the public, and government is essential if the efficient and fair use of health care resources is to be achieved. At least one or two medical schools will need to be capable of meeting the full range of needs for health care and postgraduate education in South Africa and sub-Saharan Africa. Other schools should focus on education and training for primary care. The private sector must be incorporated constructively into the transformation process. A deeper understanding of the need to move toward a just health care system,[13] acknowledgment of the political responsibility to inform the public of the tradeoffs involved in withdrawing existing services in order to benefit future generations, and an attitude that encourages public deliberation on cost-containing policies will all be vital aspects of progress.

The complexity of a successful transformation of society generally and of health care specifically precludes any simple plan,[14-16] particularly in view of the demographic transition in South Africa.[17] Extensive research on health services[3,18] reveals both the willingness and the knowledge base necessary for evolution toward a system that could satisfy the reasonable expectations of patients and the appropriate aspirations of health care professionals in a middle-income country. The realities of our economic status and the prospects for economic growth in the context of our demographic transition call for the re-education of both the public and health care professionals about their expectations of medicine and the role of professionals in our society[6] (and unpublished data). This reorientation should involve the private and the public sectors constructively, without sacrificing the medical schools that have a crucial role in sustaining our progress.

The important achievements of South Africa's new government[12,19] and the difficulty of building a society that respects the law in the wake of apartheid[20] should not be eclipsed, either by the criticisms outlined here or by high-profile reports in the media of the escalating crime, violence, and fraud that may follow the unleashing of freedom in societies that were formerly oppressive. Shaping a future in which freedom will be used responsibly will take many decades, during which tolerance, hard work, patience, and support for the concept of civic citizenship, as well as valid criticism of current policies that could lead to new directions in planning, will all be essential. Achieving tough goals requires great resolve, perseverance, and some sacrifice — but also flexibility. The uncertain and tumultuous nature of the pathway into the future will be recognized by those who understand the complexity of social transformation in a country such as South Africa at the dawn of a new millennium.[21,22] Having avoided a bloody civil war to achieve political change, we now face the challenge of averting a civil war over resources and access to the social services required in a society that aspires to democracy.

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EDITORIAL

PREVENTING VERTICAL HIV TRANSMISSION: THE CONTROVERSY IN SOUTH AFRICA

Solomon R. Benatar*

The issues underlying the widely criticised decision by the South African government not to implement a national HIV transmission prevention programme are more complex than is apparent from popular news reports. In this editorial an attempt is made to provide a deeper insight into the controversy.

The ability to reduce transmission of HIV infection from mother to child has been one of the most important advances in the medical management of the HIV/AIDS pandemic. Given the outlook for infants infected during childbirth or infancy — 91 per cent mortality by the age of eight years — there is good reason to promote the widespread introduction of effective preventive measures. The expense of the first successful method (ACTG076) for preventing vertical transmission has led to the search for cheaper regimens that can be applied cost-effectively in middle and low income countries.[1]

However, the cost of medical treatment needs always to be considered in relation to the availability of resources. What is considered reasonably priced in some countries may be too expensive in others, and therefore unimplementable despite being very cost-effective. This can be illustrated by considering the plight of Africa — home to 10 per cent of the world's population who live on only one per cent of annual global economic income while bearing 68 per cent of the world's HIV/AIDS burden. For example, in Uganda, a country with an annual per capita income of $310 that spends 40 per cent of annual government income on debt-servicing (much more than on education and health combined), it is clear that without the debt relief so actively championed for by the Jubilee

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* Professor of Medicine, Department of Medicine and Director Bioethics Centre, University of Cape Town, Observatory 7925, Cape Town, South Africa. Tel.: (Cape Town) 27-21-406-6115, Fax.: 27-21-448-6815, Email: sbenatar@uctgsh1.uct.ac.za.
Visiting Professor, Department of Public Health Sciences and Joint Centre for Bioethics, University of Toronto, 88 College Street, Toronto, Ontario, Canada, M5G 1L4. Tel.: (Toronto) (416) 978-7742, Fax.: (416) 978-1911, Email: solly.benatar@utoronto.ca.
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1 N. Soderlund, K. Zwi, A. Kinghorn, and G. Gray, "Prevention of Vertical Transmission of HIV: Analysis of Cost Effectiveness of Options Available in South Africa", Br. Med. J. 1999; 318: 1650-56.

2000 campaign,[2] even the cheapest and most cost-effective form of HIV transmission prevention cannot be applied at a national level.

The rapid spread of HIV infection in South Africa, as revealed by anonymous testing of pregnant women attending public antenatal services (a rise in overall prevalence from 0.7 per cent in 1990 to 22.8 per cent in 1998), has resulted in over 3.5 million persons being HIV positive and as many as 200 HIV positive children being born in the country each day with 46 per cent of positive mothers passing the virus on to their children. In 1998 the frequency of HIV positivity in pregnant women ranged from 5.2 per cent in the Western Cape to 32.5 per cent in Kwa-Zulu Natal.[3] Of the 550,000 newly infected people each year 65 per cent are between the ages of 15 and 25 years. The social and economic implications of the epidemic for the country are only now becoming widely appreciated.

The total budget of the South African government for the year 2000 is approximately R200 billion (US$31billion at an exchange rate of R6.4 per dollar), and the country's population is approximately 40 million people. Twenty per cent of the budget ($6.2 billion) is allocated for debt-servicing, 20 per cent for education and 10 per cent for health. With such resources a considerable amount of health care can be provided, and there is widespread concern that in a middle income country with an annual per capita income of almost $3,000 in which HIV/AIDS has become a major problem, the Mbeki government has been reluctant to implement transmission prevention methods that are not merely cost-effective but could actually save money.

Some insight into understanding why such a decision was taken may be gained by reflecting on South Africa's economy and on the health care restructuring that has been taking place.

MACROECONOMIC POLICIES

Since the political transition in 1994 a macroeconomic fiscal policy (GEAR — Growth, Education And Redistribution) has been developed to ensure that government expenditure does not exceed income and that debt can be reduced or at least not be allowed to increase.[4] The modest success of this policy is reflected in the reversal of the negative economic growth rate that characterized the last 10-15 years of the apartheid regime to a positive growth of between 1-2 per cent per annum in the past few years — not as large an improvement as had been hoped for. The limited extent of economic recovery has thwarted the ambitious health and welfare policies outlined in the Reconstruction and Development Program of the new government. Clearly if the debt burden could be reduced this would enable considerable resources to be released for expenditure on

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[2] Jubilee 2000 Coalition, *Kicking the Habit: Finding a Lasting Solution to Addictive Lending and Borrowing — and Its Corrupting Side-Effects* (London: Jubilee 2000 Coalition, 2000).

[3] Health Systems Trust, *South African Health Review 1999* (Durban, South Africa: 1999).

[4] A. Habib and V. Padayachee, "Economic Policy and Power Relations in South Africa's Transition to Democracy", World Development, 2000; 28: 245-63.

social services, but until then it is very difficult for the government to increase such expenditure without adverse domino effects.

HEALTH CARE EXPENDITURE

The annual public health budget of R20 billion (US$3.1 billion) is used to provide primary, secondary and tertiary level health care for the 80 per cent of the population (32 million people) who do not have private health insurance. It is also used to support all medical, nursing, dental and allied health professional education in the country. Even excluding the 20 per cent of the population who have private insurance (but who also benefit from medical education and tertiary services in public hospitals), this implies an annual per capita expenditure of no more than R625 (less than US$100) per person. At this level of health expenditure it is understandable why treatment of HIV infection for the many infected people in the country (even at such a low cost as $30–$50 per patient per month) is unaffordable, and why there is hesitation to embark on a national programme of any kind that focuses excessively on drug treatments.

HIV TRANSMISSION PREVENTION PROGRAMMES AND HEALTH CARE REFORM

It has been estimated from mathematical simulation models of various preventive methods (drugs or formula feeding alone or in combination) that it would cost R100 million annually (US$15.6 million — 0.5 per cent of the annual public health budget) to set up and run a programme to provide the CDC-Thai regime for HIV transmission prevention in South Africa.[5] While this could save money that may be spent in the future on HIV positive children, the required resources would have to be found immediately in order to embark on this life-saving and cost-saving exercise. Money could be borrowed for the programme if indeed the money was saved the following year to repay the loan. However, it is well known that expanding health care services seldom results in money being saved. In the absence of new sources of funding, the only alternative would be to close some existing services. Given that significant structural and functional changes are being made in the public sector of health care with continuing reductions in tertiary facilities *predominantly for the poor* in the public sector in order to shift resources towards primary health care, it is apparent that further diversion of resources would have to take place either on an ongoing basis from tertiary services, with all the implications this has for health care and health care education in the country, or by delaying the development of the highly desired

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[5] N. Soderlund, K. Zwi, A. Kinghorn and G. Gray, *supra*, note 1.

primary care services — both difficult decisions, given the magnitude of changes taking place in the South African health care system and their impact.[6]

It is also necessary to consider whether mathematical modelling is supported by empirical evidence. Pilot studies have been set up in South Africa to seek such evidence. If these studies were to confirm the results obtained from modelling it would still be necessary to determine whether the success achieved within an experimental pilot study setting could be achieved within a national programme. While it should be acknowledged that it is much less clear that such a programme can work as effectively in the field it is regrettable that the South African government has interrupted the process of progressively acquiring such knowledge by terminating some pilot studies.

Additional data that would need to be acquired over time to provide on-going support for treatment that could reduce HIV transmission would include the long-term results of such programmes within specific settings. For example, it would be important to establish what happens to children born of mothers who are HIV positive. This would include evaluating whether the short-term benefits of reduced transmission are associated with long-term survival or whether poverty, orphanhood and lack of social support services lead to death from other preventable causes not adequately dealt with in our society, and to determine what could be done about this. The extent of drug side-effects and other operational drawbacks would also need to be evaluated and addressed.

Valid obstacles to the immediate introduction of a comprehensive HIV transmission prevention programme thus include constraints on resources; the inadequacy of the health care infrastructure in the country to ensure the widespread success of a programme to prevent vertical transmission of HIV infection; concern about the potential adverse effects of retroviral drug therapy in a poor and nutritionally vulnerable population; and concern about promoting drug resistance.

SCEPTICISM ABOUT A HIGH-TECHNOLOGY APPROACH

In addition to these valid obstacles there are other pressures that we can presume are affecting those in government who may be sceptical of a high-technology approach to HIV/AIDS. First, there is concern about the motives of the drug industry in poor countries, especially against the background of recent vehement interference by other nations and multinational drug companies in South Africa's decision to allow the importation of generic drugs to lower excessively high drug costs. Even the recent decision by drug companies to radically reduce the price of AIDS drugs in developing countries will not necessarily resolve the problem, as the infrastructure required before drugs would be supplied at reduced cost is not yet available. In addition, the regrettably common theft of drugs in developing countries, and their potential recycling through the open

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[6] S.R. Benatar, "Heath Care Reform in the New South Africa", N. Engl. J. Med., 1997; 336: 891-95; H.C.J. Van Rensburg, "Health and Health Care Reform in South Africa in Transformation: A Macro Perspective", Acta Academica, 1999; 31(1):1-26.

market, may cause reversal of the decision to make drugs available at a much cheaper rate.

Second, many in developing countries are concerned that an intensely biomedical approach deflects attention from broader considerations affecting health. For example, the question is asked whether spending the resources on improving the literacy rate of women and empowering them through education could be potentially more powerful approaches to reducing the HIV/AIDS pandemic. Combining this with more research on simple microbicides, treatment of sexually transmitted diseases and attempts to modify sexual behaviour could be a more effective and perhaps less costly approach.

The question of what is indeed the most effective way of using limited resources to retard or reverse the progression of the epidemic in South Africa is thus not clear. An approach focusing on drug treatment to prevent transmission may have a very limited short term impact and may even be viewed as psychologically harmful to HIV positive mothers — as they would be told about the advantages of antiretroviral treatment and receive this during the latter part of pregnancy but not continue to receive this after giving birth. Those children in whom transmission is not prevented will also not have access to drug treatment and the long term benefits of preventing transmission are not clear — although these are popularly presumed to be very positive, based on current outcome models.

However, of most widespread and indeed relevant concern (intensified since the AIDS 2000 Conference in Durban in July 2000) is the government's previous support for an untested drug claimed to be the cure for AIDS (Virodene)[7] and their more recently expressed outmoded ideas about the lack of a causal link between HIV infection and AIDS.[8] Such attitudes towards science and the scientific method do not augur well for a country aspiring to demonstrate care for its citizens and optimize its position in a competitive world.

SOME CONCLUDING CONSIDERATIONS

Against this background, however, three other considerations merit mention. First, failure to implement public health policies based on solid epidemiological data is not unique to South Africa. For example, in reviewing the silicone breast implant saga in the U.S. and the large sums of money spent on diseases not caused by the implants, Angell pointed out that the "*breast implant story illustrates... how litigation, fear, bias and greed interfere with scientific efforts to answer an important public health question*".[9] Such problems in a country with an educated population and considerable intellectual and material resources for

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[7] P. Folb, A. van Gelder and G.E. Swan, "Virodene — Support Misguided", S. Afr. Med. J., 1997; 87: 466.

[8] P. Mankhlana, "What the President Said", *Mail and Guardian*, March 31-April 6, 2000, p. 31; I. Powell, "The Self-styled Galileo of the Modern Age — Who Is Peter Duesberg?", *Mail and Guardian*, March 31-April 6, 2000, p. 31.

[9] Angell M. Shattuck Lecture, "Evaluating the Risk of Breast-implants: The Interplay of Medical Science, the Law, and Public Opinion", N. Engl. J. Med., 1996; 334: 1513-18.

health care should make it possible to understand (while also objecting to) the existence of similar forces in less sophisticated societies, and the irrationality of the Mbeki government's decision. Failure to make the highly rational decision to move towards universal access to health care within a single payer system in the U.S. is another example of the power of politics over reason.[10]

Second, commitment to the modern biomedical approach to disease should not eclipse knowledge that the adverse forces contributing to the initiation and perpetuation of the HIV/AIDS pandemic go well beyond medical solutions, and it is unrealistic to place excessive confidence on the role of drugs in reducing the impact of the epidemic. It is appropriate to reflect here on the fact that despite the availability of curative therapy for tuberculosis for over 50 years this disease not only remains prevalent but is a growing problem worldwide. Indeed the emergence of multi-drug resistance strains is threatening to make the disease potentially untreatable.[11] This provides insight into the complexity of effectively treating infectious diseases and reminds us about the powerful influence of social, economic and behavioural forces in achieving success.[12] This is recognized in South Africa, and progress is being made in disseminating information and developing culturally sensitive educational and behavioural change strategies as part of the overall approach to the epidemic.[13]

Finally, South Africa, like many other countries continues to spend considerable resources on new military equipment. Although global military expenditure has decreased in recent years,[14] further reductions and a shift in expenditure from security against war towards expenditure that could reduce threats from social disintegration could arguably contribute even more to ensure secure and safe societies.

Open debate towards constructive solutions will require objective evaluation of all data, wider acknowledgement of the more complex determinants of HIV/AIDS and the meeting of minds to resolve issues that may be perceived differently. It is hoped that in South Africa, a society aspiring to be a democracy, such debate can take place in collaboration with international colleagues to achieve progress in dealing with pandemic with profoundly adverse effects on individuals and whole populations.

Solomon R. Benatar
Cape Town, South Africa
May 2000

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[10] American College of Physicians, "Access to Health Care, Position Paper", Ann. Intern. Med., 1990; 112: 641-661.

[11] S.R. Benatar, "Prospects for Global Health: Lessons from Tuberculosis", Thorax, 1995; 50: 489-91.

[12] K. Lee and A.B. Zwi, "A Global Political Economy Approach to AIDS: Ideology, Interests and Implications", New Political Economy, 1996; 1: 355-73; S.R. Benatar, "AIDS in the 21st Century", N. Engl. J. Med., 2000; 342: 515-17.

[13] Health Systems Trust, *supra*, note 3.

[14] R.L. Sivard, *World Social and Military Expenditure*, 16th ed. (Washington, D.C.: World Priorities Press, 1996).

HEALTH POLICY REPORT

Health Care Reform and the Crisis of HIV and AIDS in South Africa

Solomon R. Benatar, M.B., Ch.B.

South Africa's transition to a democracy — characterized by a liberal constitution, a bill of rights, and attempts to pursue reconciliation rather than revenge — has been widely admired as a paradigm shift in human relationships from seemingly inevitable conflict to a negotiated peace. The challenge of narrowing racial disparities in health care is a formidable one for the new government.[1,2] The high rates of infection with the human immunodeficiency virus (HIV) and full-blown AIDS add another layer of complexity. In this review I evaluate health care reform and responses to the pandemic of HIV and AIDS during the first decade of the new democracy.

PROGRESS TOWARD IMPROVING HEALTH

SOCIAL DETERMINANTS OF HEALTH

Human health, patterns of disease, and life expectancy are profoundly affected by complex interactions among economic, social, and political forces, behavioral patterns, medical care, and the application of technology.[3,4] Given the importance of the social determinants of health, the new government can be proud of its many achievements that have improved health among the nation's approximately 45 million people. These include stabilization of the economy, substantial economic growth, reversal of discriminatory legislation, and rationalization of the complex bureaucracy associated with the policies of apartheid. In addition, the government has provided access to clean water for 9 million people, built 1.5 million houses, and installed electricity and telephone connections to more than 1 million homes.[2,5] It has also constructed hundreds of new clinics that provide primary health care, desegregated medical services, made health services free to expectant mothers and children under five years of age, and developed new food programs that reach 5 million children.

These achievements have been marred by several shortcomings. Many new clinics and the district health system are not yet adequately functional because of a lack of personnel and finances, poor administration, and expanding demands. Public tertiary health services have been severely eroded. Many new homes are of substandard quality, and 7.4 million more houses are needed. Electricity, water, and telephone services are often interrupted because of a lack of payment by residents. Unemployment rates are high (up to 40 percent) and rising. More than 600,000 jobs have been lost in the agricultural sector since 1994, and at least 500,000 other jobs have been lost since 1995. Although a strategic plan has been formulated for dealing with the pandemic of HIV and AIDS, it has had a low profile and has been overshadowed, until recently, by official denial of the causal relationship between HIV and AIDS.

HEALTH EXPENDITURE

The government's total planned expenditure of $48 billion (in U.S. dollars, at an exchange rate of 7 rands to $1) for fiscal year 2003–2004 represents 30.4 percent of South Africa's gross domestic product (GDP) and is $4.8 billion in excess of expected revenue for the year.[5] The allocation of 11 percent of the government budget for health care — $5.3 billion (far less than the $27 billion research budget of the U.S. National Institutes of Health) — funds primary, secondary, and tertiary health care for the 36 million people (approximately 80 percent of the population) who do not have health insurance, as well as all health care training and education in the country.

Over the past 30 years, expenditures for health care in the private sector have grown to consume a much larger proportion of the total national expenditure on health. In the 1970s, 30 percent of all health care expenditures were concentrated in the 20 percent of the population that had private insurance. Today, approximately 9 percent of the nation's GDP is spent on health care, with 60 percent of these funds going to care for the 18 percent of citi-

zens who have private insurance. Similarly, the percentage of physicians who work in the private sector and care for patients with insurance has grown from 40 percent in the 1970s to 66 percent today.

HEALTH POLICY AND HEALTH CARE REFORM

In the apartheid era, intense criticism was focused on wide disparities in health and access to health care in South Africa.[6,7] Determination to develop a more equitable national health care system was central to the new government's ambitious health and welfare policies in the Reconstruction and Development Program.[2]

Extensive new legislation regarding national health has been enacted to meet these goals through expanded access to health care within a district-based system of primary health care, nationalization of health laboratory services, greater regulation of health care professionals, compensation for occupational injuries and diseases, and health promotion (Table 1). The rationale has been that in the face of limited public resources, a strong primary care system is more likely to effect equitable improvements in health than are hospital-based services.[8-12] Legislation is also aimed at reducing inequity within the private sector — for example, by preventing health insurance plans from excluding benefits for chronic diseases to patients who have preexisting common conditions such as hypertension, diabetes, and asthma; by controlling drug prices; and by improving the administration and management of private insurance schemes[13] (Table 1). The National Health Bill (which, if signed by the president, will become the National Health Act) consolidates such legislation.

However, movement toward some sort of national health service that resembles health care systems in many developed countries, with equitable access to well-balanced primary, secondary, and tertiary care facilities, has been slow. South Africans with health insurance retain access to much that modern medicine can offer, although premiums are escalating rapidly and benefits are increasingly restricted.[14] Those without health insurance are dependent on public health services. A two-tier health care system thus continues, with discrimination in access to care on economic grounds replacing the racial discrimination of the past.[14-16] These disparities are evident in annual per capita expenditures on health care of less than the equivalent of $150 in the public sector and about $850 in the private sector. In practical terms, the disparities are illustrated by the fact that, nationally, there are 8.7 cardiac surgeons per 1 million population who perform 774 operations per 1 million people annually in the private sector; in the public sector, there are 0.6 cardiac surgeons per 1 million people who perform 69 operations per 1 million population.

There is thus ongoing tension in South Africa between promoting or allowing private medical care, on the one hand, and developing a more equitable system of public medical care, on the other. Within the public health sector there are additional tensions. At the same time that resources are being redistributed toward a system based on primary care that is within reach of all, and common ground is being sought between Western medicine and African traditional healing practices,[17] attempts are being made to form public–private partnerships.[18]

Allocation of resources in the public sector is focused on national redistribution — away from tertiary care and toward long-neglected primary and community-based care.[19] Resources are also being shifted away from the Western Cape and Gauteng provinces, which have two and three medical schools, respectively, that serve as regional tertiary care centers, and toward the previously disadvantaged Eastern Cape and KwaZulu-Natal provinces. The government is further redistributing finances on a per capita basis toward poorer regions. The overall result is that, although the proportions of the national population in the wealthier provinces of Gauteng and the Western Cape increased between 1994 and 2002, the percentage of the national health care budget allocated to each has been reduced since 1995 (Table 2 and Fig. 1).[20] The consequence is that some of the well-established and valued tertiary services for the poor and uninsured are being radically trimmed. New tertiary care hospitals are being built in the Eastern Cape and KwaZulu-Natal provinces, but a shortage of specialized personnel frustrates the delivery of services (Table 3).[21]

Attempts are being made to shift medical personnel toward areas of need, through several methods, some of them coercive. For example, the choices of junior doctors for their first year of residency and subsequent years of community service in rural areas are more restricted than in the past. In the public sector, medical jobs are being shifted to new tertiary care institutions in previously disadvantaged areas, but it is difficult to recruit staff to work in such regions. In the private sector, physicians will have to demonstrate the need to open or

Table 1. Health Legislation in South Africa since 1994.

Legislation and Year	Provisions
Choice on Termination of Pregnancy Act, 1996	Set national policy on a liberalized approach to abortion
Nursing Amendment Act, 1997	Created a single South African Nursing Council
Genetically Modified Organisms Act, No. 15, 1997	Defined control over the development, use, and application of genetically modified organisms
Compensation for Occupational Injuries and Diseases Amendment Act, 1997	Defined functions of the director general and minister of health with regard to the allocation of compensation
Dental Technicians Amendment Act, 1997	Established regulations for the work of dental technicians and their relationship to dentists
Medicines and Related Substances Control Amendment Act, 1997	Introduced various measures for reducing the cost of drugs, including parallel importation of generic and brand-name drugs, promotion of generic substitutes, regulation of the supply of medicines, and establishment of a pricing committee to introduce transparent pricing and various price controls
Social Health Insurance Scheme, 1997	Aimed to establish social health insurance as a component of a comprehensive social security system
Medical, Dental, and Supplementary Health Service Professions Amendment Act, 1998	Established a broadly representative Health Professions Council and conferred disciplinary powers on separate professional boards for the various health professions
Sterilization Act, 1998	Reaffirmed the right of adults to consent to sterilization and set out the circumstances for sterilization of persons who are unable to provide consent
South African Medicines and Medical Devices Regulatory Authority Act, 1998	Provided for a new authority to monitor, evaluate, regulate, investigate, inspect, register, and control medicines, clinical trials, and medical devices; provided for the registering and regulation of complementary medicines and the regulation of veterinary medicines
Medical Schemes Act 131, 1998	Replaced the old act of 1965, which was designed to meet the needs of a for-profit health system that allowed arbitrary discrimination against groups of people; prescribed minimum-benefit conditions without copayment; prevented "cherry picking" of healthiest clients by the insurance industry; prohibited rating of risk and exclusion on grounds of age, sex, or state of health; required improved governance, financial administration, and accountability
Chiropractors, Homeopaths, and Allied Health Service Professions Second Amendment Act, 1998	Established a new council and allowed for registration of a wide range of allied, complementary, and alternative health practitioners
Tobacco Products Control Amendment Act, 1999	Dealt with harmful effects of tobacco by prohibiting smoking in designated public places, advertisement, and promotion of tobacco products
National Health Laboratory Services Act, 2000	Restructured and reformed the pathology services in the public sector and made them part of a single National Health Laboratory Service
Pharmacy Amendment Act, 2000	Established provisions for licensing of pharmacies and education, training, and practice of pharmacists; removed the former restriction that only pharmacists could own pharmacies
Medical Schemes Amendment Act 55, 2001	Strengthened the policy goals of the 1998 act
Financial Advisory and Intermediary Services Bill, 2001	Regulated brokers of medical insurance schemes
Mental Health Care Bill, 2001	Sought to ensure availability of services for appropriate care, treatment, and rehabilitation, in line with a primary health care approach, for people with mental health problems and protected them from abuse
National Health Laboratory Services Amendment Bill 56, 2001	An amendment of the National Health Laboratory Services Act of 2000 that provided for amalgamation of 234 public-sector laboratories and various research facilities
Occupational Diseases in Mines and Works Amendment Bill, 2002	Required owners of mines to compensate workers who contract diseases while in service
Medicines and Related Substances Amendment Bill, 2002	Further amendments to the 1997 amendment
National Health Bill, 2003	Established a broad framework for administration of the health care system, with delineation of distribution of powers and functions among national, provincial, and district health authorities; protected the rights of health-service users; addressed the establishment and operation of private and public health facilities; the regulation of public health programs and services; the use of human tissue; health laboratories; health surveillance; research; and information

Table 2. Population, Public Health Expenditure, and per Capita Disposable Income in South Africa, According to Province.*

Province	No. of Medical Schools	Population (% of Total)		Public Health Budget (% of Total)		Annual per Capita Disposable Income†
		1994	2002	1995–1996 (R14.3 billion)‡	2003–2004 (R37 billion)§	$ U.S.
Eastern Cape	1	16.1	16.0	13.2	13.9	1,081
Free State	1	6.9	6.4	7.4	6.7	1,816
Gauteng	3	17.0	18.2	24.2	22.0	3,721
KwaZulu-Natal	1	21.2	20.6	19.6	21.9	1,584
Limpopo	0	12.4	13.1	9.4	9.4	915
Mpumalanga	0	7.2	7.1	4.0	5.7	1,395
Northern Cape	0	1.9	2.0	1.8	2.0	1,810
North West	0	8.3	8.2	6.1	6.4	1,476
Western Cape	2	9.0	9.5	14.3	12.0	3,282

* Data are from South Africa at a Glance 2001–2002[5] and Intergovernmental Fiscal Review 2003.[20]
† Disposable income is an indication of wealth or poverty.
‡ The equivalent in U.S. dollars is $3.24 billion at an exchange rate of 4.5 rands (R) to $1.
§ The equivalent in U.S. dollars is $5.36 billion at an exchange rate of R7 to $1. (The fluctuating exchange rate between these periods — up to R13 to $1 at one stage — has serious implications for the import of medical devices and supplies.)

maintain medical practices in areas that are deemed to have an excess of services.

All of these changes are designed to improve equity in access to health care. However, the short-term costs of transformation include inadequate facilities and shortages of personnel and basic medicines at new primary care centers, reduced availability of tertiary care for the poor, and inefficient and ineffective interactions among hierarchical levels of public health services. Cost effectiveness is impaired by reduced economies of scale when caseloads are decreased. For example, when cardiac surgical operations are reduced by 60 percent, the savings achieved amount to about 40 percent because expenses do not fall in direct proportion to the reduction in the number of operative procedures. The many changes in health care have resulted in widespread dissatisfaction and feelings of alienation on the part of physicians throughout the nation, and they led to an unprecedented protest march on Parliament by the medical profession last February 6.[22]

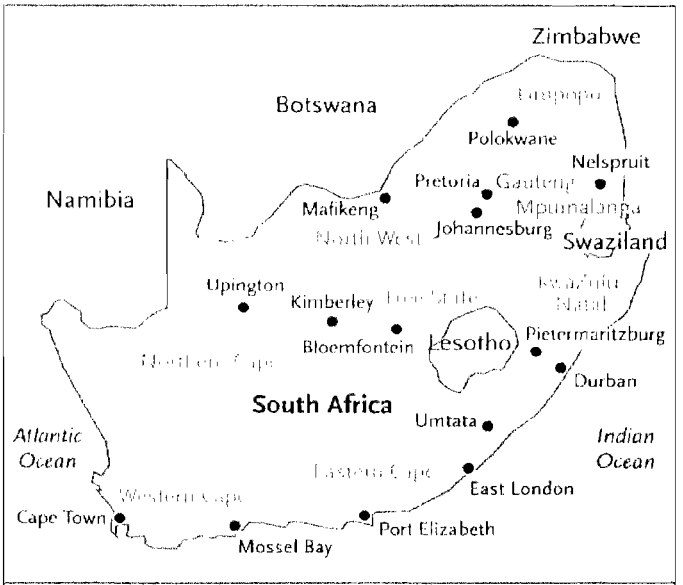


Figure 1. The Provinces of South Africa.

IMPACT ON TERTIARY SERVICES IN THE PUBLIC SECTOR

Selected statistics from the Western Cape and from Groote Schuur Hospital, the University of Cape Town's main teaching hospital, illustrate adverse trends in tertiary care. Adequate nationwide data are not available, but discussions with my colleagues at the University of Witwatersrand and elsewhere indicate broadly similar trends in other regions.

Between 1995 and 2000, the public health sector in the Western Cape was downsized by 3601 hospital beds (24.4 percent) and by 9282 health and support personnel (27.9 percent), while the lo-

Table 3. Number of People Served by Health Care Workers in the Public Sector in South Africa as of February 2003.*

Province	Primary Care Physicians	Specialist Physicians	Nurses	Dentists	Pharmacists	Physical Therapists	Occupational Therapists	Speech Therapists	Dietitians	Radiographers
	number served per health care worker									
Eastern Cape	8825	47,529	1278	190,117	53,662	237,646	554,507	950,583	475,292	26,616
Free State	422	11,342	786	71,491	31,881	45,369	3,932	157,279	65,533	14,212
Gauteng	273	3,398	606	25,458	18,994	29,117	31,575	79,714	54,635	8,104
KwaZulu-Natal	4362	15,641	901	145,607	27,239	43,289	79,291	170,391	148,304	21,528
Limpopo	8544	92,129	1001	141,736	48,067	106,302	76,774	197,418	110,554	60,084
Mpumalanga	5772	143,698	1124	54,605	34,003	75,841	65,006	151,681	60,672	5,056
Northern Cape	823	6,635	1079	74,066	47,535	86,076	99,526	244,986	109,821	49,763
North West	3352	39,296	776	64,303	32,151	5,441	101,047	235,777	70,733	24,391
Western Cape	2979	2,746	796	28,074	13,789	32,126	33,152	35,489	61,103	691
National average	4829	10,403	910	65,406	29,578	55,698	64,722	172,793	98,282	17,878
Ratio of highest to lowest	3:2	52:3	2:1	7:5	3:9	8:2	16:7	7:0	8:7	8:7

* Data are from Intergovernmental Fiscal Review 2003.[21]

cal population increased by 8 percent.[23] At Groote Schuur Hospital, cardiac surgical operations in adults have been reduced from 700 per year to fewer than 250 per year. In the orthopedics department, budgetary reductions have resulted in the limitation of joint replacements to 60 procedures per year in 2003, as compared with 350 in 1993. In the ophthalmology department, there has been a 60 percent reduction in faculty and a 50 percent reduction in beds over the past decade. In the general surgery department, the waiting time for surgery for breast cancer is now 8 weeks (as compared with a wait of 2 weeks 10 years ago). A reduction in neurosurgical facilities has required the withdrawal of intensive treatment from those patients who have been given the worst prognoses.[24]

The numbers of patients who are being treated for chronic renal failure have also been reduced. In the mid-1990s, 156 patients were undergoing long-term dialysis and 100 patients received renal transplants annually at Groote Schuur Hospital; by 2002, only 100 patients were undergoing dialysis and about 75 patients received transplants. Dialysis is largely restricted to potential candidates for transplantation in order to maintain a steady stream of patients through the dialysis service into the transplantation program. In South Africa, 15 new patients per 1 million population enter programs for the treatment of chronic renal failure each year, for a total of about 99 patients per 1 million population. By contrast, the number of new patients and the total number of patients per 1 million population in similar programs in Europe are 100 and 900, respectively; in the United States, they are 140 and 1800.

The number of beds in the internal medicine department at Groote Schuur Hospital was reduced from 216 in 1990 to 60 in 2003, with the remainder having been shifted to secondary community hospitals where care of patients is cheaper but where referral for tertiary care is restricted. The number of full-time faculty members in the department of medicine was reduced from 43 in 1990 to 27 in 2003, resulting in fewer general physicians and a loss of both critical mass and experience in several subspecialties, as had been anticipated.[25] In other parts of the country, the situation may be worse. For example, in November 2003, elective surgery was put on hold for six months at the University of Witwatersrand's major academic hospitals in Gauteng.[26]

Some are optimistic that the tensions resulting from the redistribution of resources for primary, secondary, and tertiary care are temporary, and they argue that perhaps this is the price to be paid to secure a more balanced and equitable system of public health care in the future.[27] However, it is a matter of great concern that current trends are threatening postgraduate training, the maintenance of surgical skills, and research in what have been some of the

best-established and fully functional medical schools, which should continue to serve many regions in the country. Such attrition in tertiary services has long-term implications for the survival of the academic institutions necessary for educating new generations of health care professionals, and for reestablishing high-quality tertiary services on an adequate scale in the foreseeable future.

THE CHANGING PROFILE OF THE MEDICAL STUDENT

Equity policies are changing the profile of South Africa's medical students. For example, at the University of Pretoria, the proportions of black and female students increased from 11 percent and 63 percent, respectively, in 1994 to 37 percent and 75 percent in 2003. In 2003 at the University of Cape Town, 67 percent of undergraduate medical students were black, and 65 percent were women. Nationally, enrollment of black first-year students increased from 28.9 percent of the total in 1994 to 60.3 percent in 2001,[28] and in 2003, 64 percent of new entrants to medical schools were women. The medical curriculum is being revised so that students receive five years of case-based learning directly after high school, followed by a year of general residency and two years of compulsory community service — regrettably, often with inadequate supervision by more experienced staff members.

Although such changes may produce more primary care physicians, restricting their career options could lead these physicians to emigrate to countries with better opportunities. Unless the erosion of tertiary public institutions is reversed, eventually there may be an almost exclusive focus on primary and community-hospital–based care in the public sector, with nurses, paramedical staff, community-based health workers, and traditional healers playing dominant roles.[17]

CHALLENGES POSED BY HIV AND AIDS

DEMOGRAPHIC FEATURES

Of the more than 40 million people infected with HIV in the world, 5 million are in South Africa (about 10 percent of the country's population). In 2000, HIV and AIDS accounted for 38 percent of total years of life lost from premature death — 47 percent for females and 33 percent for males (Fig. 2). Communicable diseases other than HIV and AIDS, maternal and perinatal conditions, and nutritional deficiencies associated with poverty and underdevelopment accounted for 25 percent of life-years lost, noncommunicable diseases for 21 percent, and injuries for 16 percent (Fig. 3).[29]

Increasing workloads for health care workers are illustrated by data from Hlabisa, a rural district of 222,000 people where the prevalence of HIV infection increased from 4 percent in 1992 to 35 percent in 2002. Clinic visits increased by 88 percent between 1991 and 2001,[30] and hospital admissions increased by 81 percent between 1991 and 1998.[31] The result has been stress and exhaustion among health care workers, up to 16 percent of whom are positive for HIV themselves.[32] A national study of 222 health care facilities that are representative of the public and private sectors confirms these observations.[33]

It is estimated that 40 to 50 percent of South Africa's workforce could die from AIDS over the next 10 years and that by 2005 there will be about 800,000 orphans under the age of 15 years.[34] The reduction in the workforce, the increased human and financial resources required to provide care for people living with AIDS, and the needs of orphans will profoundly affect all aspects of social and economic development and the lives and well-being of all.

HIV PREVENTION AND TREATMENT PROGRAMS

The approach of the South African government to HIV and AIDS has been resoundingly criticized within the country and internationally. It has been a great disappointment that a new, enlightened democratic government could so arrogantly deny the link between HIV infection and AIDS in the face of overwhelming evidence provided by the global scientific community.[35] The failure of the government to promote a prevention campaign over the past decade and an initial focus on ineffective treatments have contributed to sustained and pervasive denial of the existence of the HIV pandemic as well as perpetuation of the stigma associated with HIV and AIDS.[36]

Prevention of the transmission of HIV from mothers to children has been badly handled. The ability to reduce vertical transmission of HIV infection is one of the most important advances in the medical management of HIV infection. The poor prognosis for infants infected during delivery or infancy (among whom mortality is 91 percent by the age of eight years) provides a good reason to promote the widespread use of effective preventive measures.[37,38]

It is paradoxical that although the president, the

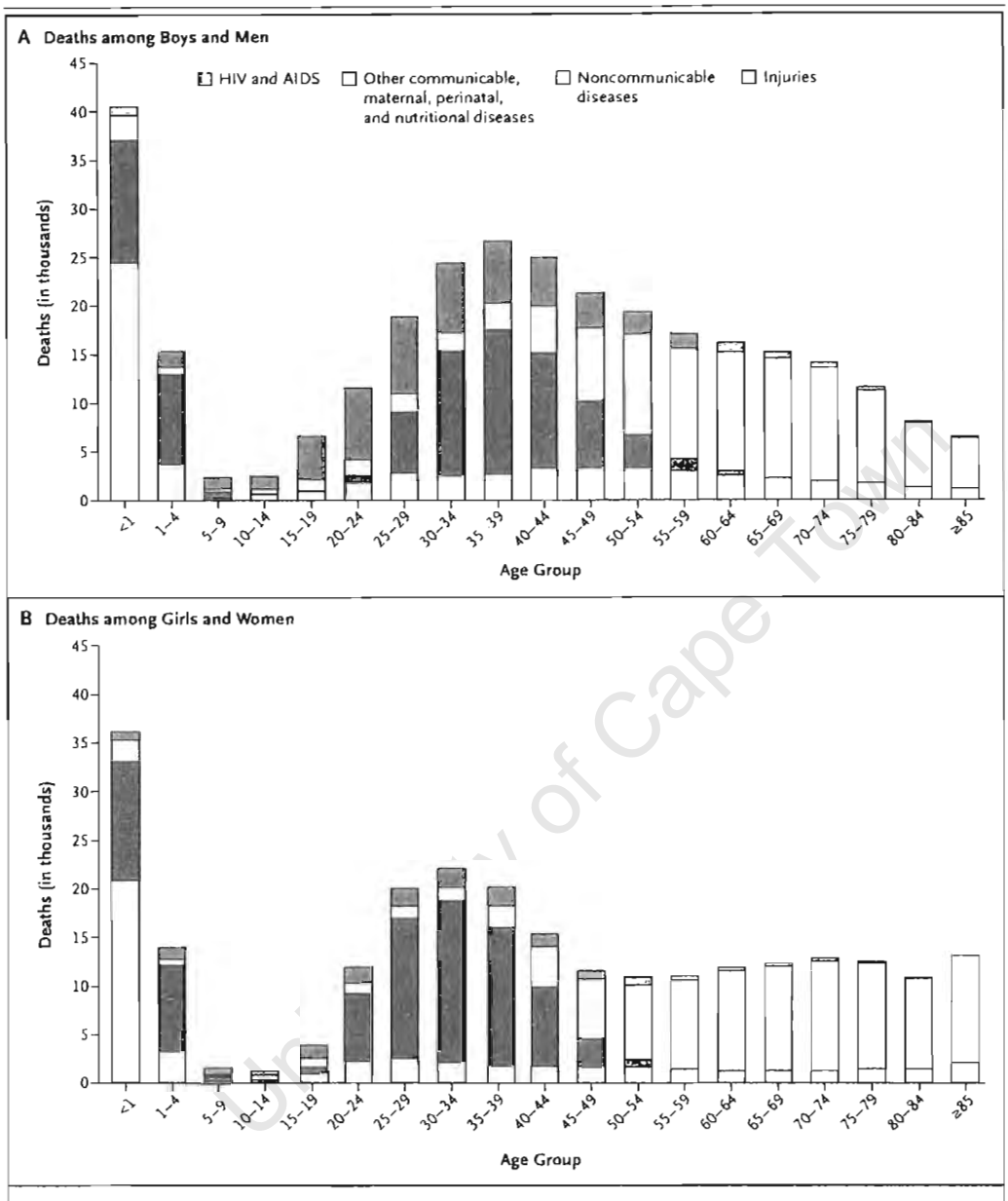


Figure 2. Age Distribution of Deaths, According to Groups of Causes, in Boys and Men (Panel A) and in Girls and Women (Panel B).

Data are from Bradshaw et al.[29]

minister of health, and others in the government have long publicly denied the link between HIV and AIDS and failed to provide high-profile leadership on this issue,[39] the Ministry of Health has quietly formulated a comprehensive national strategic plan for HIV and AIDS that includes such vital components as education, programs for the modification of sexual behavior, and treatment of opportunistic infections.[40,41]

Many obstacles frustrate the introduction and maintenance of comprehensive and effective programs for preventing the transmission of HIV and

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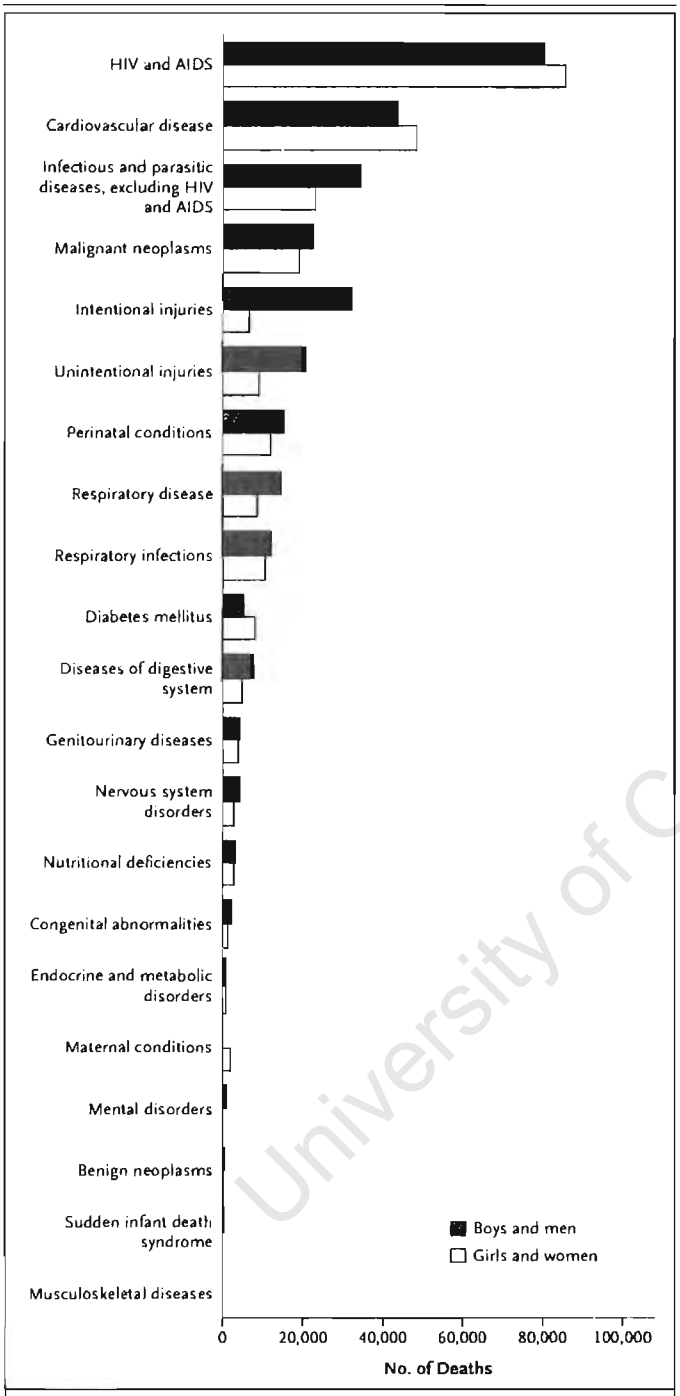


Figure 3. Deaths at All Ages, According to the Cause-of-Death Category, 2000.
Adapted from Bradshaw et al.[29]

for treating infected patients with antiretroviral drugs. Such obstacles include a high prevalence of high-risk sexual behavior, extensive sexual violence against children and unempowered women, constraints on financial and human resources, an inadequate health care infrastructure, resistance to adopting bottle feeding rather than breast-feeding, concern about the potential adverse effects of antiretroviral-drug therapy in poor and nutritionally vulnerable populations, concern about promoting drug resistance, and fear of not meeting constitutional requirements for equity.

Resistance to introducing antiretroviral treatment was understandable in the era of high-cost antiretroviral drugs and suspicion about the motives of the drug industry. In addition, powerful nations and multinational drug companies resisted efforts to import affordable generic drugs.[42] Welcome changes in the attitudes of all who hold a stake in this situation are rectifying it, thereby making possible the local production of generic drugs and further substantial reductions in prices.

There also may have been concern that a purely biomedical approach to addressing HIV and AIDS would deflect attention from such other important social issues as extreme poverty, poor sanitation and nutrition, dysfunctional families, a lack of recreational facilities, sexual promiscuity, and high crime rates. All of these problems are endemic in Africa, which has suffered greatly from global economic forces that have perpetuated and aggravated disparities in wealth and health,[43-49] and are relevant to the control of infectious diseases — as illustrated by the history of tuberculosis.[50] Finally, there is legitimate concern about the theft from public health systems of drugs used to treat HIV, the growth of crime syndicates,[51] and the large numbers of illegal immigrants in search of treatment, with potential deleterious effects on an antiretroviral-treatment program that is inadequately monitored.

None of these impediments should continue to delay progress. New information is generating deeper insights into factors that influence sexual activity in the young.[52] The government's inability to provide a comprehensive program should not prevent the implementation of such a program where an infrastructure exists. The example of the Western Cape, where almost 100 percent of eligible patients now have access to drugs that prevent

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the transmission of HIV from mother to child, illustrates what can be achieved. High rates of compliance with formula feeding[53] and antiretroviral therapy[54] are also feasible. The efforts of the Treatment Action Campaign,[55] an activist nongovernmental organization, and the judgment of the Constitutional Court requiring the government to implement programs to prevent mother-to-child transmission[56] demonstrate the powerful role of civil society and the ways in which government can be held accountable. The work of former president Nelson Mandela in recent years, his foundation's support of research on HIV, and the work of satirist Pieter Dirk Uys, Archbishop Desmond Tutu, and many others on the issues surrounding HIV have been exemplary. Before the World Health Organization's "3 by 5 Program" to provide antiretroviral treatment to 3 million people by 2005 and President George W. Bush's announcement of an emergency fund for AIDS relief, international debate was polarized on the question of whether to give priority to treatment with antiretroviral drugs or to provide more cost-effective preventive medicine.[57] It is now clear that treatment and prevention programs bolster one another.[58-60] Experience at the Médecins sans Frontières clinic in Khayelitsha shows that the availability of treatment can transform denial and stigma to openness and responsibility and can facilitate effective public health measures.[54]

The government's commitment to providing treatment[61] and its recent decision to introduce antiretroviral-treatment programs[62] are a welcome relief from its long-standing vacillation and vindicate the efforts of activists and nongovernmental organizations. Successful implementation will be costly and socially complex. A total of $1.7 billion has been budgeted for antiretroviral therapy over the next five years, and it is estimated that $2.4 billion to $3 billion will be required annually by 2010. Providing antiretroviral treatment to hundreds of thousands of people for many years, in addition to offering adequate integrated care for tuberculosis, malnutrition, and other associated diseases of poverty, presents major challenges in terms of cost, health care delivery, and other factors.[63] With testing for HIV currently available in only 56 percent of health care facilities and condoms available in only 87 percent of facilities,[64] recent proposals for strengthening the existing health care system and ensuring equity in the implementation of antiretroviral treatment are salutary.[65]

EXPANDING THE HEALTH CARE BUDGET IN THE FACE OF A NATIONAL HEALTH EMERGENCY

Given the current expenditures on health in the public sector and the overwhelming problems that the government faces, sustained treatment of HIV infection for hundreds of thousands of people is a formidable challenge. Brazil's example demonstrates the potential to make treatment progressively available in middle-income countries.[66] However, Brazil's annual per capita GDP ($4,400) is greater than South Africa's ($3,200), and only 0.7 percent of Brazil's adult population is positive for HIV, as compared with more than 20 percent of South Africa's population.

Several options are available for increasing the budget for the prevention and treatment of HIV and AIDS, with differing social and ethical implications and justifications. Priorities could be changed and resources shifted within the existing public health budget, or resources could be shifted within the overall budget — for instance, from the military budget to the health care budget. The allocation of $5.73 billion for military equipment has come under severe criticism. This is the best potential local source of additional funding and has the lowest opportunity costs. Borrowing money from the International Monetary Fund or the World Bank would prevent immediate opportunity costs but incur a growing debt burden, with major adverse social effects. Reduction of the annual burden of paying $7 billion in interest on debt could release considerable resources for expenditures on health and social services, but this scenario is unlikely. Raising personal income tax by 5 percent would generate only about $0.67 billion annually, and a 5 percent increase in corporate taxes would raise another $0.5 billion annually.

Much hope also rests on the acquisition of external resources from the U.S. Emergency Plan for AIDS Relief, the World Bank Multisector HIV/AIDS Project, the Global Fund to Fight AIDS, Tuberculosis, and Malaria, the Clinton Presidential Foundation, and other sources. Developing partnerships with and maximizing the benefit from these sources represent a major challenge. However, recruiting and training many more health care workers, improving the health care infrastructure, and sus-

taining the required financial resources over the longer term are likely to be even more difficult.

MAKING SUSTAINABLE PROGRESS IN HEALTH

The formidable scientific complexity inherent in understanding the pathobiology of HIV and AIDS and in designing vaccines, microbicides, and effective treatments is well recognized by the scientific community.[67] Local scientific work toward production of a vaccine has strong national and international support.[68] Many ethical challenges to clinical research are increasingly being acknowledged.[69-71] Two local institutions have received generous grants from the National Institutes of Health's John E. Fogarty International Center for educational programs to improve the capacity of ethics review in developing countries.[72,73]

It is less well recognized and acknowledged that complex global economic forces that perpetuate poverty have magnified the burden and impact of HIV and AIDS in poor countries and pose the largest threat to ambitious plans for prevention and treatment. Medical advances and a biomedical approach to health will make necessary contributions to the improvement of health both in South Africa and internationally. However, these contributions will not be sufficient. The emergence and spread of new and recrudescent multidrug-resistant infectious diseases is arguably the single greatest worldwide threat of the 21st century.[74,75] The impact of global economic and social forces on health and the need to address them are acknowledged in recent reports from the U.S. Council on Foreign Relations[75,76] and in a forthcoming report from the Institute of Medicine on the challenges of providing antiretroviral treatment in settings where resources are constrained. Since philanthropy cannot continue indefinitely, it will be vital to address the problems of debt that can never be repaid, trade in weapons, unfair global trading rules, and other upstream determinants of health. This will help us to cope with HIV and AIDS in the long term, ameliorate poverty, and reduce the threat of more devastating future plagues.[75,77-79]

THE FUTURE

The evolution of improved health care is both a crucially important aspect of South Africa's development and an indicator of whether the country's political transition can be followed by a successful social transition. In its justified early focus on equitable access to primary care and on social determinants of health, the new government has made two major errors that will have adverse long-term consequences: denying the link between HIV and AIDS and allowing the severe erosion of tertiary care in the public sector. It is possible that these errors are linked by an ambivalence toward science and the role of modern health care in the face of poverty. The example of leadership on HIV and AIDS in such countries as Brazil, Uganda, and Botswana has long been evident and could have been emulated. As previously suggested, differentiation in the training and research functions of medical schools, with the preservation of some efficient tertiary institutions, could have served South Africa's interests more effectively than the attempt to have all medical schools emulate the same model.[25]

In reflecting on the first decade of South Africa's transition to democracy, it is necessary to strike a fair balance between justified criticism and deserved praise for a government faced with the overwhelming burden of a major political transformation and the simultaneous challenges posed by a devastating disease.[80] It is also fair to conclude that the improvement of health in South Africa will depend both on enlightened, vigorous reconsideration of many local policies and practices and on a reshaping of the global forces that affect the health of whole populations.

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From the Department of Medicine, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa. Address reprint requests to Dr. Benatar at the University of Cape Town, Observatory, Cape Town 7925, South Africa, or at sbenatar@uctgsh1.uct.ac.za.

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Medicine in a South African Context★

R E KIRSCH★★
and
S R BENATAR★★★
University of Cape Town

I INTRODUCTION

The health of a community is dependent on adequate nutrition, housing, employment and education.[1] Health development is thus a political and social process and is linked more closely to the general status of the community than to the structure of its health care system.[2] This paper attempts to examine critically those broad forces which influence the health of South Africans. Following a brief statement on apartheid, and after presenting some basic demographic data, it sets out to describe South Africa's health care system, expenditure on health services, the number and distribution of medical personnel, hospitals, access to medical facilities, profiles of health and disease, the private sector and the major medical organisations. It then deals with selected issues of major concern to the medical profession. These include care of detainees, privatisation of health services, medical education, the future of academic medicine and academic freedom. This broad approach is justified by the standard definition of medicine ie ' . . . the science and art dealing with the maintenance of health and the prevention, alleviation or cure of disease . . .'.[3]

II APARTHEID

In South Africa the policy of apartheid has had a major impact on the status and the health of all communities. Apartheid is indefensible. It has serious effects on health and on human dignity.[4] Some of these effects are

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★★ MB ChB MD (Cape Town) FCP (SA); Professor of Medicine in the University of Cape Town.

★★★ MB ChB (Cape Town) FFA (SA) FRCP; Professor of Medicine in, and Head of the Department of Medicine, University of Cape Town.

[1] R E Kirsch 'Health needs in South Africa' in N J van der Merwe & M E West (eds) *Perspectives on South Africa's Future* (1979) 63–71; M Savage 'An anatomy of South African health services' (1988) 15 *Energos* 1–3.

[2] Savage (n 1) 1–3; H Mahler 'Problems of medical affluence' (1976) 31 *World Health Organisation Chronicles* 8–13; J R Kriel & D J Beuster 'Health care systems' (1977) 51 *South African Medical Journal* 167–8.

[3] *Webster's Dictionary* sub nom 'medicine'.

[4] S R Benatar 'Medicine and health care in Southern Africa' (1986) 315 *New England Journal of Medicine* 527–32; H J C van Rensburg & A Mans *Profiles of disease and health in*

obvious, for instance, disparity in resource allocation[5] and racially separated health care facilities.[6] Other effects are less obvious but equally important and include the impact that geographical segregation, migrant labour, influx control (until 1986) and forced removals have had on the population.[7] While it is unrealistic to attribute to apartheid alone all the disparities in health and in other areas of South African society, 'socially engineered' inequalities will continue to exist and will widen unless apartheid is abolished and rapid progress is made towards a more democratic and just society.[8]

III DEMOGRAPHIC INFORMATION

The health status of any nation is influenced by the size of its population, its age distribution, growth rate, the geographic location of its members and by the strength of the nation's economy.

The 1985 population census data (excluding the Transkei, Bophuthatswana, Venda and the Ciskei) compiled by the central statistical services are shown in Table 1 and the estimated African population of the ten homelands in 1985 in Table 2. The total population, obtained by adding the updated 1985 census figures for the White-designated areas and the non-independent homelands to the figures for the 'independent homelands', is given in Table 3. The 1985 census also reveals that nearly 40 % of the Black population (cf 24 % of Whites) is under the age of 14. Approximately 10 % of Whites are older than 65 as compared with 3 % of Blacks. One important implication of the large number of young Black persons is that the Black population can be expected to grow rapidly even if the fertility rate declines.[8]

The geographic distribution of the population plays an important role since it influences access to State provided health care facilities. Botha et al estimate that 25 % of Whites, 15 % of Asians, 43 % of Coloureds and 67 % of Blacks live in rural areas and, as will be seen, these are areas in which there are shortages of medical personnel and facilities.[9]

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[5] Savage (n 1) 1–3.

[6] Benatar (n 4) 527–32; S R Benatar *'Changes, challenges and choices in medicine'* (1981) Inaugural Lecture, New Series no 72, University of Cape Town; S R Benatar & R E Kirsch 'Baragwanath—a hospital in despair' (1987) 72 *South African Medical Journal* 307.

[7] Seedat (n 4); Benatar (n 4) 527–32; L J Botha, D Bradshaw, R Gonin & D Yach 'The distribution of health needs and services in South Africa' (1988) 26 *Social Science Medicine* 845–51.

[8] Benatar (n 4) 527–32; Benatar (n 6); Benatar & Kirsch (n 6) 307; *Report of the working group on inequalities in health* London: Department of Health and Social Security (1980); A R P Walker 'Health and disease in apartheid South Africa' (1984) 2 *Lancet* 1158.

[9] J L Botha, D Bradshaw & R Gonin 'How many doctors are needed in South Africa by 1990?' (1986) 69 *South African Medical Journal* 250.

TABLE 1
Population (excluding Transkei, Bophuthatswana, Venda, Ciskei)

	Numbers	Proportion	Revised for undercount	Proportion
African	15 162 840	64,9%	19 051 500	68,7%
Asian	821 361	3,5%	861 300	3,1%
Coloured	2 832 705	12,1%	2 862 200	10,3%
White	4 568 739	19,5%	4 947 100	17,9%
Total	23 385 645	100,0%	27 722 100	100,0%

TABLE 2
Homeland Populations

Independent homelands	
Bophuthatswana	1 721 463
Ciskei	736 185
Transkei	2 916 134
Venda	455 857
Sub total	5 849 639
Non-independent homelands	
Gazankulu	496 200
KaNgwane	391 205
KwaNdebele	235 511
KwaZulu	3 738 334
Lebowa	1 833 114
QwaQwa	180 924
Sub total	6 875 288
Total	12 724 927

TABLE 3
Total Population

	Numbers	Proportion	Revised for undercount	Proportion
African	21 012 479	71,8%	24 901 139	74,1%
Asian	838 859*	2,9%	878 300*	2,6%
Coloured	2 851 867*	9,7%	2 881 362*	8,6%
White	4 582 701*	15,6%	4 961 062*	14,7%
Total	29 285 906	100,0%	33 621 863	100,0%

* These figures differ slightly from the official population estimates given above as they have been adjusted to include the small percentage of Asians, coloured people, and whites estimated to be living in the 'independent homelands'.

IV STRUCTURE OF THE HEALTH CARE SYSTEM

The South African health care system is characterised by a marked degree of fragmentation and duplication. Before 1976 there was one central authority responsible for the control, management and direction of health care and services. However, even under this system the agencies providing preventative services were separated from those providing curative care and the extent of central planning and organisation were sub-optimal. Today there are 14 ministries of health: one belonging to the central government, one for each of the three Houses of Parliament and one each for the six non-independent and four independent homelands. These all interact to some degree with the administrations of each of the four provinces (Cape, Transvaal, Natal and the Orange Free State), the Regional Service Councils and the approximately 800 local authorities involved in rendering health care.

On 14 August 1986 the Minister of National Health and Population Development, Dr W van Niekerk, announced a new health dispensation based on the 1977 Health Act[10] and the Health Amendment Act 1985.[11] A National Health Policy Council (NHPC), chaired by him, would be responsible for planning, co-ordinating and monitoring health policy. Members would include the ministers of health services and welfare in the three ministers' councils. A Health Matters Advisory Committee (HMAC) would assist the NHPC and would have various sub-committees, including nursing services, ambulance services, teaching hospitals, education and primary health care. Health care would be divided into six levels: the first three to be concerned with the provision of basic subsistence needs (such as safe drinking water and sewage and garbage disposal), health education and primary health care. These three levels would be the responsibility of the 'own affairs' departments of health services and welfare. Levels four, five and six would be community, regional and teaching hospitals, management of which would be delegated to the provincial administrations. The provincial administrations would also be responsible for health services for black South Africans. Hospitals occupied by over 95 % of patients from one race group, however, would remain under 'own affairs' while those occupied by less than 80 % of one race would be classified as 'general affairs'. The Minister of National Health and Population Development would chair a co-ordinating board of provincial administrators. Together with the health ministers of the non-independent homelands, it would be responsible for the determination of health care policy at central level. There would be a strong link between the NHPC and the six non-independent homelands. The regional health organisation to which the independent

[10] Act 63 of 1977.
[11] Act 70 of 1985.

homelands belonged would continue to function. The new health system would be responsible for both preventative and curative services. All teaching hospitals would remain under 'general affairs'.[12] It is not clear to the authors that this bureaucratic complex has anything concrete to offer and it would seem to be designed primarily to give the appearance of health service planning while in reality it fragments health services on racial grounds.

V EXPENDITURE ON HEALTH SERVICES

Until recently, accurate information regarding total expenditure on health was not readily available. The Browne commission of inquiry into health services reported that between 4.5 % and 5.2 % of South Africa's gross national product (GNP) was spent on health care in the years 1980 to 1985.[13] This contrasted with previous estimates by McGrath (4.2 % of GNP in 1959/60 and 3.6 % in 1974/75) and Benatar (4.2 % in 1976 and 3.2 % in 1981).[14] Taylor and Klopper have recently analysed South African health care for the period 1975 to 1984 and found that the total expenditure on health had risen from 4.6 % to 5.9 % of the GNP.[15] Per capita expenditure had increased from R56 in 1975/1976 to R186 in 1984/1985. However, when adjusted for inflation this represented an increase in real terms of 13.5 % per capita or 1.2 % per capita per annum. In another study Klopper and Taylor examined the distribution of health care expenditure,[16] and stressed the disparities between the per capita expenditure on health in the four provinces and in the national (independent homelands) and the self-governing states (Table 4). Benatar and Benatar and Kirsch drew attention to the wide variations in unit cost per day for various provincial hospitals.[16] In 1983/1984 these were: R45 at Baragwanath Hospital, R57 at Kalafong Hospital (teaching hospitals responsible for treating black patients) and R194 and R209 respectively at the H F Verwoerd and Johannesburg General Hospitals (teaching hospitals responsible for treating white patients). Klopper and Taylor also analysed the expenditure on health care by selected local authorities (Cape Town, Johannesburg, Durban and Port Elizabeth) for the periods 1975/1976 and 1983/1984.[17] When these were compared in real terms (using the 1975 rand), per capita expenditure was found to have decreased by 3.8 %. The authors suggested that this reflected the low

[12] 1986 *Race Relations Survey Part 2* (1988) 768.

[13] Commission of Inquiry into the Health Services (Browne Report) (1986).

[14] M D McGrath 'Health Expenditure in South Africa' in G Westcott & F Wilson (eds) *Perspectives on the Health System* (1979); Benatar (n 4) 527–32; Benatar (n 6).

[15] S P Taylor & J M L Klopper 'South African health care expenditure, 1975–1984' (1987) 72 *South African Medical Journal* 802–4.

[16] Benatar (n 6); Benatar & Kirsch (n 6).

[17] J M L Klopper & S P Taylor 'The health and welfare of South Africa' (1987) 72 *South African Medical Journal* 799–801.

priority given to preventative as opposed to curative services. Total health expenditure devoted to preventive and promotive services was less than 2 % in 1980 and according to the Browne commission this had only increased to 4.7 % by 1986.[18]

TABLE 4
Provincial, National States and Homeland per Capita Expenditure on Health 1983/1984*

	Estimated population, 1983 (000)	Estimated expenditure on health by Dept of Health/ Province (R000)	Per capita expenditure (R)
Cape Province.....	5 300	675 545	127
Natal.....	2 356	266 436	113
Transvaal	8 591	711 253	83
OFS.....	2 064	164 064	79
Ciskei.....	803	36 000	45
Bophuthatswana	1 352	59 530	44
Gazankulu	597	20 241	34
Transkei.....	2 651	73 577	28
Venda.....	407	10 614	26
KwaZulu	4 495	107 578	24
QwaQwa.....	217	4 337	20
Lebowa.....	2 203	35 367	16

* Excludes expenditure by the Department of National Health and Population Development, local authorities inside South Africa, KwaNdebele, KaNgwane and the SA Development Trust.

VI MEDICAL PERSONNEL

In the 1940's the ratio of family practitioners to specialists was 7:1; this has gradually fallen to 3:1 in the 1980's (1:1 in Western Europe). The seven medical schools in South Africa (1 per 4 million people) currently graduate approximately 900 doctors a year. About 80 % of these are classified White. After a six-year medical course and a year of internship, graduates are eligible for registration as general practitioners. Specialisation requires an additional four to five years of recognised training, as well as passing a higher examination. Sub-specialisation (eg cardiology) requires a further two years of training. Those aspiring to academic faculty positions are encouraged to devote an additional two years to formal research.[19]

[18] See n 13.
[19] Benatar (n 4) 527–32.

Of the 20 229 doctors registered in 1986, 93 % were white and 85 % male.[20] The doctor:population ratio improved from 1:2 157 in 1960 to 1:1 800 in 1982 (urban 1:875, rural 1:12 700) and to 1:1 344 in 1985 (cf United Kingdom 1:650, United States 1:520, Kenya 1:10 500). By comparison, the doctor:population ratio in the South African homelands ranges from 1:19 000 in the Transkei to 1:116 000 in QwaQwa.[21]

In 1985 there were 3 367 dentists and 7 239 pharmacists registered with the South African Medical and Dental Council. The overall dentist:population ratio was 1:10 300 (1:1 926 in the United States). However, in KwaZulu one dentist served a population of 300 000 Africans, and the homelands of KwaNdebele, KaNgwane and Venda had no resident dentists.[22]

The number of nurses registered with the South African Nursing Council in 1985 included 26 411 Africans, 1 228 Asians, 5 242 coloured people and 30 585 whites. The World Health Organisation has recommended that there should be at least 2 nurses per 1 000 people in developing countries. However according to the South African Nursing Association in 1985 South Africa had 1.2 African, 1.9 Coloured, 1.4 Indian and 6.3 White nurses for every 1 000 people respectively.[23] These figures may be misleading since nurses do not only care for patients in their own 'population group'.

VII HOSPITALS

Of the 729 hospitals in South Africa (including the homelands) in 1985, 495 (70 %) were public and 234 (30 %) private. Many of the private hospitals receive assistance from the state. Of the total of 161 261 beds, 87.5 % are in public hospitals and the overall bed:population ratio is 3.2:1 000.[24] Officially beds are allocated on the basis of race. At present 25 % are for Whites, 49 % for Africans, 3 % for Coloured persons, 1.5 % for Asians and 21.5 % are unclassified. The bed:population ratio in South Africa excluding the homelands is 5.5:1 000. This contrasts with ratios of 3.3:1 000 in the Transkei, 1.6:1 000 in QwaQwa and 8.3:1 000 in the United States.[25]

Less than 5 % of the operating costs of hospitals in the public sector are recovered in the form of patient fees. The remainder is subsidised by the state. Fee schedules based on income have until recently been extremely modest—a maximum of R76 per day (in the Cape Province). Recent

[20] See n 12 at 782.

[21] P N Pillay 'The distribution of medical manpower and health care facilities in South Africa' *Second Carnegie Inquiry into Poverty in Southern Africa* School of Economics, University of Cape Town (1984).

[22] See n 12 at 784.

[23] See n 12 at 785.

[24] Benatar (n 4) 527–32; 1985 *Hospital and Nursing Year Book of Southern Africa.*

[25] Pillay (n 21).

restructuring of the fee schedules in an attempt to increase income has created a potential economic burden for families earning R5 400 to R13 800 per year, while still protecting those earning less than this amount. Patients can obtain partial or complete rebates by providing data on income and expenditure and their level of income-tax payment, but the mechanism is cumbersome. The maximum fee is charged to all who earn more than R13 800 per annum.

In the Cape Province most hospitals cater for patients of all races although the facilities within these hospitals are separated on the basis of race. The University of Cape Town teaching hospitals have integrated their services in certain departments. In all other provinces hospitals are segregated according to race. The Browne commission found that there was an oversupply of public sector in-patient services for Whites resulting in a 60 % bed occupancy rate. On the other hand the bed occupancy rate for Blacks was 'unacceptably high'. In its final report the commission recommended that where practicable, excess capacity in hospitals for one ethnic group should also be used to relieve congestion in the facilities for 'other ethnic groups'.[26]

In contrast to the public sector most private hospitals are open to patients of all races and this appears to operate without criticism by government authorities and the public at large. The example of successful integration of Groote Schuur Hospital serves as a model for health care services in the country and for the harmonious manner in which services can be provided by an integrated staff to an integrated population. The equity of this system has greatly boosted staff and patient morale and has allowed the flowering of many of the best human qualities shared by all people. The success of this venture, which requires teamwork and co-operation, gives great hope for a peaceful solution to South Africa's racial problem.

VIII ACCESS TO HEALTH CARE FACILITIES

Medical services in South Africa are concentrated in urban areas where the emphasis is increasingly on specialist care. Primary health care and community hospital services are poorly developed even in the urban setting. Approximately 76 % of doctors work in metropolitan areas, and 18 % in small towns. The concentration of medical personnel in urban areas is a world-wide phenomenon. For example in the United States 12 % of doctors practise in rural areas where they care for 25 % of Americans. However in South Africa this trend is exaggerated. Thus Johannesburg and Cape Town contain 11 % of the population, three medical schools and 40 % of the country's doctors.[27] Conversely, more

[26] See n 13.
[27] Benatar (n 4) 527–32.

than 50 % of South Africans live in rural areas where only 5 % of doctors practise. As a result of this maldistribution access to health services in rural areas is extremely poor.[28]

IX PROFILES OF HEALTH AND DISEASE

The birth rate, life expectancy, and disease profiles of the various population groups are shown in Table 5. Among Whites, the disease profile and mortality patterns closely resemble those in industrial countries, whereas among Africans and Coloured people the profiles approximate those found in developing countries. The GNP is used

TABLE 5
Profile of health and disease in South Africa according to population groups †[1–3,23]

	Asians	Africans	'Coloureds'	Whites	USA/UK
Population (1980)	821 000	20 692 000	2 613 000	4 528 000	
% total	3	71	9	17	
Rate of population growth 1970–1980	2,68%	3,04%	2,42%	1,84%	
					USA (1977)
Birth rate (1980)	24	40	28	17	17
Mortality—infant (1980)	25	95	65	17	16
total	5,9	11,0	9,2	8,3	8
% <5 yrs (1970)	—	55	49	7	
% >65 yrs	—	12	18	52	
Life expectancy (1980) yrs					
Men	62	54	55	67	
Women	67	58	60	73	
Incidence of tuberculosis (TB)	±200	±300	±300	±20	±10
% of all new cases of TB	1,5%	78%	18,5%	1,4%	
5 Main causes of death (1976)					UK
Cardiovascular diseases	1(259)★	3(131)	2(252)	1(399)	1(± 330)
Neoplasms	5(43)	5(61)	5(92)	2(132)	2(± 150)
Respiratory diseases	2(76)	4(120)	3(206)	3(100)	3(± 104)
Accidents/violence/ poisoning	3(69)	2(174)	4(150)	4(80)	4(± 38)
Gastrointestinal diseases	—	—	—	5(26)	5(± 15)
Infectious/parasitic diseases	4(48)	1(175)	1(265)	–(± 16)	–(± 6)
% of all deaths					
Cardiovascular diseases	42%	±5%	24%	48%	50%
Infectious/parasitic diseases	7%	24%	22%	2%	0,6%
Accidents/violence/ poisoning	9%	15%	11%	9%	4%

★ Figures in parenthesis are rates per 100 000 population.
† Population groups according to South African Government population registration.

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[28] Kirsch (n 1) 63–71; Benatar (n 4) 527–32.

internationally as an indicator of both the wealth and indirectly of the health of a country. Klopper and Taylor compared South Africa's per capita GNP with those of other countries where life expectancy is similar (63–65 years at birth) and found South African life expectancy to be similar to that in developing countries (figures 1 and 2). Of those countries where life expectancy was comparable South Africa had the highest GNP. When Klopper and Taylor examined life expectancy in countries with per capita GNP similar to that of South Africa they found that life expectancy in South Africa, figure 2, was lower than all except Algeria. Using infant mortality as an indicator of health (Table 6) Klopper and Taylor found South Africa to be part of a group which had significantly lower per capita GNP. These findings, they suggest, reflect the low priority which primary health care currently enjoys.[29]

TABLE 6
Comparison of GNP in Countries with an Infant Mortality Rate of 75–100/1 000 Live Births

	Infant mortality rate 1983 (0–1 yrs)	Per capita GNP 1983 (US $)
Peru	98	1 040
Ghana	97	320
Papua New Guinea	97	760
Tanzania	97	240
Burma	93	180
India	93	260
Libya	91	8 460
South Africa	91	2 240
Nicaragua	84	880
Tunisia	83	1 290
People's Republic of the Congo	82	1 220
Turkey	82	1 250
Honduras	81	670
Kenya	81	340
Ecuador	76	1 420

Another indicator of primary health care is immunisation. Yach et al[30] found South Africa's overall immunisation coverage to be below the average for developing countries. Infectious diseases remain the major cause of death in black South Africans. In 1984 there were 14 892 notified cases of measles and 1 095 registered deaths due to this preventable disease. The most common notifiable disease is tuberculosis. Benatar and

[29] Klopper & Taylor (n 17).

[30] D Yach, J M L Klopper & S P Taylor 'Use of indicators in achieving "Health for all" in South Africa, 1987' (1987) 72 *South African Medical Journal* 805–7.

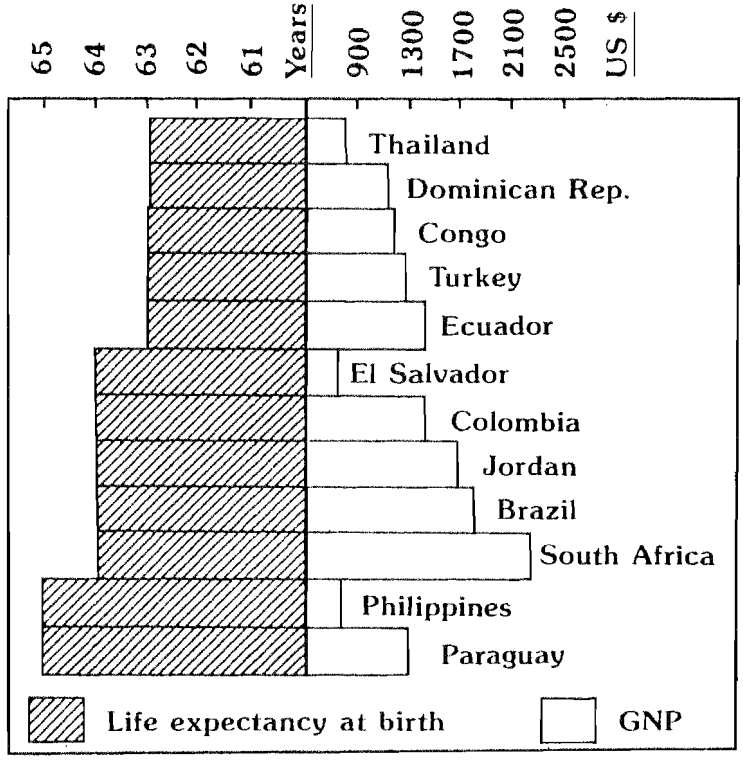


Figure 1. Comparison of 1983 per capita GNP in countries where the life expectancy is 63–65 years.

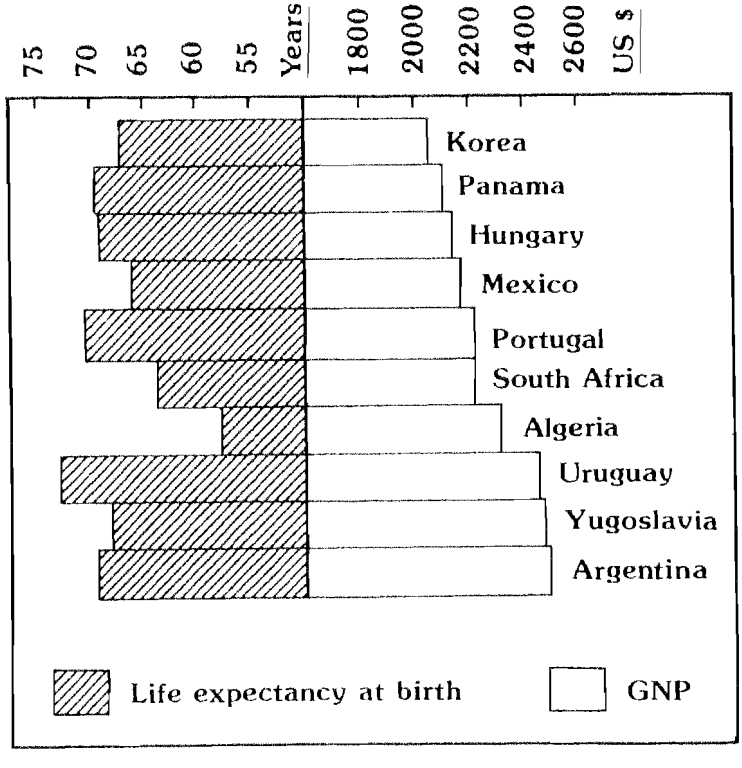


Figure 2. Comparison of 1983 life expectancy at birth in countries with a per capita GNP of US $2 000–2 500.

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others have drawn attention to the estimate that only a third to a half of all tuberculosis cases are notified to the authorities. In 1985 the authorities received 59 351 notifications for tuberculosis. The incidence of notified TB per 100 000 persons in 1980 was: whites 12.8, Asian 82.8, Coloured 325.3 and Africans 226.5. Recent reports suggest that the incidence of this disease is increasing.[31]

X THE PRIVATE SECTOR

Approximately 40–45 % of South African doctors are in private practice. It has been estimated that 65 % of all doctors practise in the metropolitan areas, 11 % in cities, 12 % in towns and only 5 % in rural areas.[32] The tariff of private practice fees is governed by the 1967 Medical Schemes Act.[33] According to this Act the responsibility for setting reasonable fees resides with the Medical Association of South Africa (MASA), while the responsibility for determining the scale of benefits has been allocated to the Representative Association of Medical Schemes (RAMS). The MASA publishes an annual 'guide to fees for medical services', determined by its Federal Council, which assigns a number of units to each service and recommends the charge per unit. Thus a consultation in a general practitioner's rooms comprises nine units and the recommended charge per unit is R3,00. Practitioners may choose to charge from 0 to 120 % of this amount. Similarly, the scale of benefits, ie the amount provided for a particular service, is decided on an annual basis by the RAMS. The RAMS accept the number of units assigned to a particular procedure by the MASA but determine their own value for each unit. This currently stands at R1,67 per unit. Prior to 1984 practitioners who undertook to charge all patients according to the scale of benefits could submit their accounts to the various medical schemes and would receive direct payment ('contracting in'). Those choosing to charge fees in excess of the scale of benefits rendered their accounts to their patients who were responsible for these and for claiming the scale of benefit amount from their medical scheme. Since 1984 practitioners have been able to choose whether to charge a particular patient according to the MASA guidelines or the RAMS scale. All accounts must be submitted to the patient in the first instance but may be sent direct to the medical scheme if the patient fails to respond to two monthly accounts, at which stage the scale of benefits fee may be paid directly to the

[31] S R Benatar 'Tuberculosis in the 1980's with particular reference to South Africa' (1982) 62 *South African Medical Journal* 359–64; S R Benatar 'Failure of tuberculosis control in South Africa—the need for a unitary health service' (1986) 70 *South African Medical Journal* 247–8; D Yach 'Infant mortality rates in urban areas of South Africa (1981–1985)' (1987) 73 *South African Medical Journal* 232–4.

[32] Kirsch (n 1) 63–71.

[33] Act 72 of 1967.

practitioner. The current dispensation is considered to represent an improvement since it reinstates the mutual financial responsibilities entailed in the patient-physician relationship.

Private sector expenditure accounted for about 45 % of total expenditure during the period 1975 to 1984.[34] Medical insurance and private expenditure on health increased from R405 million in 1975 to R1 890 million in 1984. Five million people in the Republic of South Africa (approximately 80 % of Whites, 10 % of Coloured people and 2–3 % of Blacks) belong to one of the 215 registered medical insurance plans.[35] Membership fees increased by 500 % between 1975 and 1985. Of the funds paid out by these plans in 1985, 14 % went to general practitioners, 22 % went to specialists, 19 % to hospitals, 22 % for drugs, 15 % to dentists and 8 % for ancillary services.[36]

XI MEDICAL ORGANISATIONS

(1) *The South African Medical and Dental Council* (SAMDC)

The SAMDC is the statutory body with which, in terms of the Medical, Dental and Supplementary Health Services Act,[37] every practising medical practitioner and dentist must be registered. The council consists of 34 members. These include the Director-General: National Health and Population Development; ten persons appointed by the Minister of National Health and Population Development (of whom four must be medical practitioners, one must be a dentist, one must be attached to a medical or dental faculty of a university, three must not be registered under the Act, one must be the chairman of a professional board); a director of hospital services appointed by the administrators of the provinces; four medical practitioners from the universities with medical faculties and one dentist from a university with a dental faculty, appointed by the rectors of the universities; a medical practitioner or dentist appointed by the College of Medicine of South Africa; ten medical practitioners elected by the registered medical practitioners and four dentists elected by the registered dentists; a nurse appointed by the South African Nursing Council and a pharmacist elected by the South African Pharmacy Board. The Council promulgates rules and regulations pertaining to medical training and examinations and sets ethical standards of practice and behaviour for medical practitioners and dentists. The Medical Council is also responsible for disciplinary action against those who contravene the rules and ethical standards.

[34] Taylor & Klopper (n 15).

[35] J M L Klopper 'Privatisation' (1987) 72 *South African Medical Journal* 374–5.

[36] Benatar (n 4) 527–32; 'Medical health costs' (29 November 1985) *Financial Mail* 36–9; A J Brink 'Distribution of doctors in the RSA' 1987 *MASA 55th Congress*.

[37] Act 56 of 1974.

(2) *The Medical Association of South Africa* (MASA)

The MASA was founded in Cape Town in 1883. Originally a subdivision of the British Medical Association (BMA), this link was replaced in 1946 by an agreement of affiliation which was terminated in 1982. The purpose of the MASA is to serve humanity by endeavouring to achieve the highest international standards in medical education, medical science, medical art and medical ethics and health care for all people. Membership is voluntary and available to any registered medical practitioner or intern resident within the boundaries of the Republic of South Africa or South West Africa/Namibia. The Association, which is affiliated to the World Medical Association, currently has 11 725 members. The Association's 21 geographically delineated branches elect representatives on a proportionate basis to represent them on Federal Council, the governing body of the Association. Federal Council meets annually. An Executive Committee and a Secretariat, based in Pretoria, act on behalf of council between the annual meetings. The Executive Committee is made up of the chair-persons of various committees plus elected members. A Parliamentary Committee deals with aspects of legislation and regulations concerning health. A Central Committee for Contract Practice handles matters concerning medical aid schemes and benefit funds, settling of differences with regard to fees, and the determination of private tariffs. The Ethical Committee examines complaints of ethical misdemeanours and, by approaching those complained about, attempts to resolve matters. Where appropriate such matters are referred to the SAMDC for examination and possible disciplinary measures. The Cost Awareness/Peer Review Committee of the MASA, together with representatives of the RAMS, is concerned with cost containment as well as maintaining acceptable standards of patient care. The Committee for Fulltime Practice and Medical Education is responsible for dealing with health care issues arising in the public sector ranging from debate on allocation of resources, through discrimination in patient care to the conditions of employment of members holding full-time appointments.

Augmented Executive Committees are appointed for each province and liaise with health authorities in each of the provinces. The Association organises regular conferences and is responsible for publishing the fortnightly South African Medical Journal, the monthly South African Journal of Continuing Medical Education and various lay publications. To date the latter have included over 50 different topics and have been published in English, Afrikaans and in 5 African languages.

It is appropriate to concede that the MASA has, in the past, often failed to meet the ideals to which it has aspired and that its official policy has been extremely conservative. In recent years concerted efforts to rectify this have met with considerable success and the organisation is increasingly representative of a broader range of professional views.

(3) *The National Medical and Dental Association* (NAMDA)

NAMDA was formed on 5 December 1982 as a result of discontent with MASA's actions following the death of Mr S B Biko. NAMDA's aims and objectives are:

> to attain the highest possible level of health by all the people;
>
> to promote and practise comprehensive health care, emphasizing both preventive and curative health care;
>
> to promote the health and allied sciences, at all levels of society;
>
> to promote and protect the honour and interests of the medical and dental professions and ensure that every member adheres to the highest ethical codes governing the medical profession;
>
> to promote improved standards of teaching and training in the health, medical and related professions, relevant to the needs of the majority of the people;
>
> to affiliate or to co-operate with any scientific, professional or other groups which contribute to the advancement of health; and
>
> to actively encourage and develop community and workers' participation in all matters of health.

Membership is voluntary and is open to all registered medical practitioners and dentists in Southern Africa. NAMDA at present has 1 000 members. The association's 11 geographically delineated local branches elect representatives to the National Council.

NAMDA has permanent observer status at CAMAS (Confederation of African Medical Associations and Societies) and is also an affiliate of a number of other organisations which it was instrumental in starting. These are *(a)* Progressive Primary Health Care Network (PPHC) which brings together a range of non-governmental health projects, *(b)* Emergency Services Groups (ESG) which aims to assist civilians in dealing with a variety of situations (especially first aid) in times of civil unrest; and *(c)* Detainees' clinics which have been established for the care and rehabilitation of detainees following their release.

(4) *The College of Medicine of South Africa*

The College of Medicine of South Africa is an independent non-racial, national body which aims to foster post-graduate education in medical and dental fields. The College is the only one of its kind in South Africa and is unique in that it embraces under one roof all medical disciplines and the discipline of dentistry. Admission to the College is open to all registered medical and dental graduates who comply with the professional requirements for admission. The College was registered in 1955 as a non-profit making company, after it had been founded and financed in 1954 by members of the medical profession who visualised the institution of such a College as a national asset. Their goal was to establish and to maintain the highest possible standards in the field of medical and dental practice throughout South Africa.

The affairs of the College are managed by a Council, functioning

through an Executive Committee and two standing committees—the Finance and General Purposes Committee in Cape Town and the Examination and Credentials Committee in Johannesburg. Members of Council are all senior members of the medical and dental profession, either in private practice or in academic positions. Fifteen members are elected and 9 further members are co-opted by those elected. Since the first elections in 1956, the Council has been elected every three years by the enfranchised members. The total membership of the College numbering almost 4 000 is made up of members of 22 Faculties, each of which comprises a specific discipline, eg the Faculty of Surgery, the Faculty of Dermatology, the Faculty of Medicine, the Faculty of Dentistry etc. Each Faculty has its own committee with an elected Chairman and Secretary with whom the Council deals in regard to matters affecting the Faculty. A separate specialist qualification has been established for each individual Faculty.

The function of the College is primarily educational at postgraduate level. It conducts examinations to enable doctors to register as specialists. The qualifications obtained are known as Fellowships. The College qualifications are recognised by the South African Medical and Dental Council as acceptable for specialist registration, enabling Fellows to register and practise as specialists in the Republic of South Africa. Consequently it is no longer necessary for medical and dental practitioners to travel overseas to train as specialists. There is some measure of reciprocity between the South African College and overseas sister Colleges.

For those medical practitioners who do not wish to specialise, the College offers diploma qualifications in midwifery, forensic medicine, child health, anaesthetics, dentistry etc which are registered by the South African Medical and Dental Council as additional qualifications. There is also a separate qualification designed especially for the general practitioners, the Membership of the Faculty of General Practice. This membership is also registrable as an additional qualification.

In recent years the College has increasingly recognised that it must extend its role beyond that of an examining and educational body in order to promote and maintain ethical standards and better health care. It has made public statements regarding the health care of detainees, and its concern for better health care facilities in South Africa.[38] It adopted the following credo in 1986:

(a) The College is committed to the maintenance of the highest

[38] College of Medicine of South Africa 'Medical care of prisoners and detainees' (1982) 62 *South African Medical Journal* 884; President and Council of the College of Medicine of South Africa 'Role of South Africa in the advancement of health for all' (1986) 69 *South African Medical Journal* 728.

professional and ethical standards through its primary roles as an educational and postgraduate examining body.

(b) The College is opposed to all forms of discrimination on the grounds of race, religion or sex and believes that such discrimination is incompatible with the ethical practice of medicine.

(c) The College is committed to striving for the improvement of the health of all the people of South Africa.

It advocates a unitary health service organisation supported by an open university policy in a non-discriminatory society which encourages equitable and fair access to education, health, recreational and other social services.

It energetically pursues its policy of making available to neighbouring territories and other states in Africa its multi-disciplinary educational resources.

(d) The College strongly endorses internationally recognised human rights standards as set out in the 1975 Declaration of Tokyo, deplores torture and strongly condemns the involvement of medical practitioners in such practices.

It recommends that the medical care of prisoners and detainees should be constantly under review to ensure optimum care, and believes that it is of the utmost importance that their rights should be clearly stated and enforced.

(e) The College condemns all forms of violence and is committed to the development of a just and peaceful society.

(5) *Trade unions in the health sector*

The 1980s have seen an unprecedented upsurge of labour militancy in the health services. Beginning in November 1982 at Hillbrow Hospital, industrial action followed at Groote Schuur Hospital (1984), King Edward VIII, R K Kahn and Wentworth (1985) and Baragwanath (1986). For the most part these strikes involved 'unclassified' (semi-skilled and domestic) workers and were concerned with issues of wages, job security and pensions. Hospital workers, together with other public sector workers, domestic and farm workers, are excluded from the Labour Relations Act. Strike action is illegal. Despite this COSATU has gone on to foster the development of a National Education Health and Allied Workers Union (NEHAWU). The new era of industrial relations is gradually edging its way into the hospital services providing new challenges and demands for those who administer them.

(6) *The South African Medical Research Council* (MRC)

Created by an Act of Parliament in July 1969 the MRC acts as an independent statutory body funding and co-ordinating medical research activities throughout the country. The South African MRC has dedicated

itself to the advancement of medical knowledge through scientific endeavour with equal opportunities for all. The Council's major source of funds is an annual grant allocated by Parliament. The MRC's current budget of approximately R36 000 000 represents approximately 6 % of the total funds spent by government on research and development. The MRC currently funds 5 MRC research institutes and 2 MRC service institutes, 3 MRC/host institution (university) centres, 25 MRC/host institution units, 2 MRC/collaborative national research programmes and 265 short term research projects conducted by individuals at various universities, hospitals or in practice. In addition the MRC awards 95 research scholarships for local use and 15 overseas research scholarships. Currently over 50 % of MRC research funds are allocated for the study of health problems in developing countries.[39]

XII ISSUES OF MAJOR CONCERN TO THE MEDICAL PROFESSION

This section examines selected areas which are currently of concern to the medical profession since each has exerted a major influence on health care delivery in South Africa.

(1) *Medical care of prisoners and detainees*

According to official figures 3 989 people were detained during 1986 in terms of the Internal Security Act of 1982, excluding the 'independent homelands' and those detained under the emergency regulations. In February 1987 the Minister of Law and Order Mr Adriaan Vlok tabled in Parliament a list of 3 857 people who had been detained for more than 30 days under regulation 3 of the emergency regulations issued in terms of the Public Safety Act[40] since September 1986.[41] The list included the names of 281 youths under the age of 16. Between 29 August 1986 and 10 February 1987, 197 people detained in police cells under the emergency regulations or the Internal Security Act[42] were hospitalised. According to the Detainees' Parents Support Committee (DPSC) 62 people have died in detention since 1963. Eighteen of these died between 1984 and 1986.[43]

The ethical responsibilities of members of the medical profession for the care of detainees has received much attention since the death in

[39] *South African Medical Research Council. Research Support. Information Brochure* (January 1987); *South African Medical Research Council. Research Report 1986* (1987).

[40] Act 3 of 1953.

[41] *Hansard House of Assembly Debates*, Questions and Replies, col 72 (17 February 1987).

[42] Act 74 of 1982.

[43] See n 12 at 827–9.

detention in 1977 of Mr S B Biko.[44] The initial inadequate reaction of the MASA and the SAMDC to the actions of those responsible for the medical care of Mr Biko have been widely publicised. The MASA, severely criticised by some of its members, by other medical associations and by members of the public, appointed an ad hoc committee to consider 'certain medical issues'. The subsequent report by Maisels and de Villiers, which contains a brief summary of the evidence at the Biko inquest together with comment on some of the legal and ethical issues involved, was published as a supplement to the *South African Medical Journal* on 22 August 1981. The fundamental ethical principles raised by the death of Mr Biko were the access of a detainee to medical care and the professional independence of those responsible for the care of detainees. Dealing with the latter Maisels and de Villiers accepted as fundamental to the proper performance of their (the doctors involved in the care of detainees) duties, the contents of article 4 of the Declaration of Tokyo, which reads:

> 'A doctor must have complete clinical independence in deciding upon the care of a person for whom he or she is medically responsible. The doctor's fundamental role is to alleviate distress of his or her fellow man, and no motive whether personal, collective or political shall prevail against this higher purpose.'[45]

This statement is an amplification of certain paragraphs in the Declaration of Geneva adopted by the General Assembly of the World Medical Association in September 1948 to which the MASA is a signatory. The following paragraphs in that declaration are of relevance:

(a) 'The health of my patient will be my first consideration.

(b) 'I will not permit considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my patient.'

(c) 'I will maintain the utmost respect for human life from the time of conception; even under threat, I will not use my medical knowledge contrary to the laws of humanity.'[46]

It is also reminiscent of the Hippocratic Oath, which states:

> 'I will carry out that regimen which, according to my power and discernment, shall be for the benefit of the sick and will keep them from harm and wrong.'Into whatsoever houses I shall enter I will go for the benefit of the sick, abstaining from all voluntary wrong and corruption.'[47]

Maisels and de Villiers pointed out that while the standing orders and instructions directed to members of the police clearly indicate 'that there

[44] 'Medical care of prisoners and detainees' 21 May 1983 *Supplement to the South African Medical Journal*; M Raynor *Turning a blind eye? Medical accountability and the prevention of torture* (1987).

[45] I A Maisels & J N de Villiers 22 August 1981 *Supplement to the South African Medical Journal* 4.

[46] Quoted by Maisels & De Villiers (n 45) 5.

[47] Quoted by Maisels & De Villiers (n 45) 5.

is a duty upon the police to call in the district surgeon whenever a person is seriously injured or shows signs of serious illness', 'it is open to doubt whether these instructions apply or applied to detainees'.[48] They emphasised the need for improvements in these standing orders some of which came into operation after Mr Biko's death.

At its 1982 meeting the MASA Federal Council appointed an ad hoc committee to institute an inquiry into the medical care of prisoners and detainees. The report of this committee, chaired by Prof S A Strauss, appeared as a supplement to the *South African Medical Journal* on 21 May 1983.[49] The report found that 'despite certain improvements which were brought about by the Internal Security Act, No 74 of 1982, and by the directions subsequently issued by the Minister of Law and Order, there are insufficient safeguards in the existing legislation to ensure that maltreatment of detainees does not occur without those responsible having to account for their actions before a court of law'.[50] It concluded that the 'circumstances relating to the detention of security-law detainees in South Africa present potential hazards to their physical and mental health. These hazards exist only to a limited extent in the case of convicted prisoners.'[51] The report pointed out that 'the duties of medical practitioners do not only extend to the treatment of sick or injured patients, but include a duty to practise preventative medicine actively. A system which makes legal provision for indefinite detention of security detainees without adequate judicial safeguards to minimize possible abuse inherently presents a serious health threat to those who fall in the security net.'[52] The report stressed the fact that there was serious concern in the medical profession that the provision of medical care of an adequately high standard and conforming to the accepted norms of medical ethics 'cannot at present be fully guaranteed to detainees because of the absence of appropriate legislation'.[53]

The Committee pointed out that medical care of detainees was almost exclusively the responsibility of district surgeons. The Committee was of the opinion that district surgeons 'do not have full clinical independence in the treatment of prisoners and detainees'.[54] The Committee found this situation 'untenable'.[55] The Committee categorically rejected suggestions that there was a 'conspiracy' between the Police on the one hand and district surgeons on the other. District surgeons, they believed, were generally fully aware of their responsibilities in regard to the medical

[48] Note 45 at 5.
[49] See n 44.
[50] Note 44 at 2.
[51] Note 44 at 2–3.
[52] Note 44 at 3.
[53] Ibid.
[54] Ibid.
[55] Ibid.

treatment of prisoners and detainees. There had however been individual and serious instances of dereliction of duty on the part of district surgeons—which the Committee deplored. Fortunately such cases were rare. The Committee was fully conscious of the fact that according to common law detainees are entitled to reasonable medical care as of right and not merely as a privilege. They felt strongly that all medical personnel who might become involved in the medical treatment of detainees be made aware of this truth at all times. District surgeons experiencing problems in gaining access to a detainee or in adequately providing medical care to a detainee on account of limitations imposed by members of the Security Police should immediately report back to their principal, ie the Department of Health and Welfare as well as to the Peer Review Committee.

The Committee recommended that a right be given statutorily to district surgeons to have free access, without prior police authorization, to a detainee at all times. They were of the opinion that there should be legislation to make obstruction of a district surgeon in the performance of his duties a criminal offence. In the event of such obstruction the district surgeon concerned should do whatever is reasonable to secure intervention on the part of the department which employs him. In so doing the district surgeon may expect the full support of the MASA.

It had come to the attention of the Committee that there was some uncertainty as to the duty of district surgeons to maintain professional secrecy in relation to detainees whom they were attending. The Committee was of the opinion that a doctor-patient relationship is established as soon as a district surgeon attends professionally to a detainee. The doctor is therefore bound in principle to maintain professional secrecy. However, the duty to maintain confidentiality is not absolute and the doctor is entitled to divulge information to the authority responsible for the health care of the detainee where it is clearly in the interest of the detainee. The doctor must also divulge information when ordered by a court of law to do so. (The authors believe that a doctor should only divulge information under protest if in his view such breach of confidentiality is potentially detrimental to his patient and the information is not needed to safeguard the public good.)

There is clearly a duty, both legally and ethically, upon the district surgeon to keep adequate, medically relevant records on the state of health of a detainee examined and treated by him. Should any physical injuries be observed by the district surgeon, these should be duly noted. (In the authors' view the confidentiality of such medical records must be protected.)

Should it become necessary for a detainee to be transferred from the place where he has been detained originally to another place of detention his full medical record must accompany him.

The Committee was of the opinion that in so far as a system of

indefinite detention is regarded as necessary by the authorities, a number of safeguards pertaining specifically to medical care should be introduced so as to prevent abuse of the system as far as is possible.

The Committee felt that a detainee should under no circumstances be kept in prolonged isolation (in any event not exceeding seven days) in the absence of regular physical and psychiatric assessment. During isolation and interrogation there must be close observation of any psychological reactions in the detainee which may indicate suicidal tendencies, and special care must be exercised to prevent the detainee from committing suicide. Attention should also be given to any complaints of physical illness or injury by detainees.

With regard to interrogation the Committee recommended that at least two persons should be present, and a closed-circuit television should monitor the interrogation. 'During interrogation there must be no physical torture of the detainee.'[56] In this respect the Committee wished to direct attention to the extensive recommendations regarding the conduct of interrogation made by the Bennett Report, which the Committee endorsed.[57]

It was felt to be essential that all detainees should be examined medically within 24 hours—but preferably immediately—after their detention. Where necessary, a proper psychiatric assessment of the detainee should be made as soon as was reasonably possible.

The clinical independence of the district surgeon should be legislatively guaranteed. This should enable the district surgeon to decide upon the medical treatment to be given a detainee or prisoner, when and where the treatment must be given, the involvement of other medical practitioners, conveyance of the detainee to outside facilities, whether or not the detainee should be kept in isolation, etc. The district surgeon was not only entitled, but legally bound, to continue treating a detainee until such stage as the district surgeon was of the opinion that the detainee was no longer in need of treatment. The medical profession could not participate in any ill-treatment of or irregularities in connection with detainees, nor could it condone such ill-treatment or irregularities.

Should it be requested by a detainee, the opportunity should be created for a medical examination of him by an independent medical practitioner of his own choice and at his own expense. (MASA has recently indicated that their panel of doctors would be prepared to see such patients free of charge.) Should the authorities be of the opinion that this might create a security risk, the obvious way of management of the case would be to let the detainee's doctor examine the detainee in the presence of the district surgeon. In this respect the Committee wished to point out that the

[56] Note 44 at 4.

[57] *Report of the Committee of Inquiry into Police Interrogation Procedures in Northern Ireland* Chapters 10–13.

MASA were prepared to provide the names of private medical practitioners who would be willing to serve on panels from which the detainee could choose a doctor. The district surgeon should at all times be entitled to call for a second opinion, which could be that of the detainee's own doctor, another private practitioner or another district surgeon.

There should be a system of monitoring or 'peer review' of the medical treatment given to detainees by district surgeons. This could be achieved by means of small standing committees of medical practitioners appointed by bodies such as the MASA and the Department of Health plus a senior member of the legal profession, such as a retired judge. These committees should, they felt, have reasonable access to all detainees and to all reports on the medical examination or treatment of detainees and should be able to liaise with the Inspector of Detainees.

The Peer Review Committee must, they believed, have the right to examine a detainee if necessary, to assess the case and to take a statement from him. The Committee would then transmit its findings to the Minister of Health and Welfare, the Minister of Law and Order and the Department of Health and Welfare for their consideration and necessary action.

All facilities reasonably required for the proper medical and psychiatric treatment of a detainee should be put at the disposal of district surgeons. The district surgeon should be given the opportunity of examining a detainee in private. In the case of female detainees, there should always be another woman present during the examination.

Psychiatric treatment of detainees should be the responsibility of psychiatrists, general practitioners, psychologists, psychiatric nurses and/or suitably trained occupational therapists.

The possibility of suicide on the part of detainees was an ever-present risk. This had been the experience not only in South Africa, but in other countries as well. Security personnel should be specially alerted to this risk.

The Committee stressed the fact that there was no satisfactory statutory regulation of the medical care of detainees and prisoners. There were some provisions in the Prisons Act[58] and the regulations made thereunder, and there were also directives to the police and prison personnel. In the opinion of the committee it was of the utmost importance to ensure that the rights of detainees and prisoners and the concomitant duties of police and prison personnel be set forth statutorily, in a comprehensive form, by way of parliamentary legislation, or at the very least, a set of proper regulations promulgated under such legislation. Detainees and prisoners should be made aware of their rights, preferably by the regulations being made available to them upon detention or incarceration.

[58] Act 8 of 1959.

The Committee's report was accepted by MASA and their recommendations were conveyed to the relevant ministers. To date the only result of these representations has been the acceptance of the MASA nominated panels of practitioners. Regrettably the recommendations regarding changes in legislation have not been accepted and further action is needed to rectify this.

NAMDA noted the fact that the MASA report made some positive recommendations but did not condemn the system of detention without trial. It also noted that two of the most important recommendations, access of detainees to doctors of their own choice and a review system to monitor conditions of detention and the medical care of detainees, were rejected. NAMDA has unconditionally opposed detention without trial. In collaboration with other organisations, mainly OASSA (Organisation for Appropriate Social Services in South Africa) and DPSC (Detainees' Parents Support Committee), NAMDA has been a party to the establishment of detainees' clinics in the major centres. Released detainees reach these clinics through a variety of referral routes and are offered medical and psychological counselling as well as other forms of support.

On 20 June 1987 MASA published a supplement entitled 'Children in places of detention—a code for their handling' which had been prepared for MASA by the South African Paediatric Association.[59] The purpose of this code was to lay down a set of rules for the handling of all children in detention. It emphasised at the outset the 'awesome responsibility' assumed by the State when it removes a child from his home, parents and school. This effect 'is greater when one considers the possible ill effects, including the physical, psychological, emotional and criminalising effects of detention'. The sections of the existing statutory regulations which deal with children are examined in some detail. The report comments that despite these acts children detained under the Internal Security Act 'are not granted any special protection in terms of this legislation, either physically, mentally or legally. The potential consequences for child political offenders are therefore very disturbing'. The report then provides general and specific guidelines concerning arrest, awaiting trial and trial and sentencing. With regard to detention without trial the report comments: 'No child, whatever the circumstances, should be held in detention without being charged for longer than two days unless a court order exists. It should be mandatory that such children are segregated from adult prisoners and convicted prisoners'. Guidelines are also listed for the physical environment in places of detention, living conditions, medical facilities, the sick-bay, medical formulary, psychosocial facilities, rehabilitation, inspection and investigation of complaints. Noting

[59] 'Children in places of detention—a code for their handling' 30 June 1987 *Supplement to South African Medical Journal.*

the discrepancies in access to medical care of prisoners awaiting trial, detainees under the Security Act and detainees under the emergency regulations the Federal Council of the MASA resolved in 1987 that the Federal Council should make urgent representations to the appropriate Ministers to ensure that all detainees are subject to the same medical care as other prisoners and that, in addition, they have access to the MASA panels.

To date the government has not acceded to this or to the MASA's previous recommendations. According to a recent editorial in *The Lancet*, the NAMDA doctors in May, June and July 1987 saw 83 children under the age of 18 who had recently been released from detention.[60] Sixty-eight were aged 15 to 17 years and 15 were 14 years or younger. 64 % complained of assault and 73 % had been detained for 20 weeks or more. According to this report 14 % had been subjected to electric shock torture and 13 % had been kept in solitary confinement. When seen, 57 % had psychological symptoms, a third had a definable psychological disorder and a third had a definite psychiatric illness. These findings are similar to those of Foster who, in a study of 175 ex-detainees, found that 83 % reported some form of physical torture during detention and that all cases reported psychological abuse.[61] The Government's recent action against the DPSC may well have a negative effect on monitoring the care of detainees and even on the care of detainees themselves. At present the MASA panels are not being used to any significant extent. This may be a result of a lack of knowledge on the part of the detainees or may reflect a perception that these doctors, who have been 'vetted by the State' represent the system under which they have been detained.

It is the authors' belief that detention without trial is morally and medically unacceptable and abhorrent. While such practices continue, we believe that there is need to emphasise and publicise the extent of the ethical dilemmas posed for doctors working in prisons and places of detention; to formulate codes of practice which cater for these special circumstances; to campaign for mechanisms to implement the concepts outlined in the codes; to speak out against the inhumanity of detention without trial; to exert formal pressure to change unjust laws; to provide professional support for prison health care personnel and to stand by those who may be victimised for taking highly principled stands; to join forces with our legal colleagues in formulating clearer and fairer mechanisms of 'due process'; to handle problems which may arise within the detention system as it exists[62] and to continue to motivate for detainees to be allowed free access to registered members of the medical and legal

[60] 'Detention of schoolchildren in South Africa' (1988) *The Lancet* 623–4.

[61] D Foster, D Davis & D Sandler *'Detention and Torture in South Africa. Psychological, legal and historical studies'* (1987).

[62] S R Benatar 'Ethical responsibilities of health professionals in caring for detainees and prisoners' (1988) *South African Medical Journal* (in press).

professions of their choice. These issues have recently been debated at an inter-disciplinary forum, the proceedings of which will be published in the *South African Medical Journal*.[63]

(2) *Privatisation*

The South African government has committed itself to a free enterprise base economy within which privatisation will play a decisive role. A subcommittee of the health matters advisory committee is currently investigating the privatisation of health services but as yet the public and the medical profession have had no indication what precise form the proposed system will take. This has naturally given rise to some concern and both the proponents and opponents of privatisation have expressed their opinion on the principles involved.[64] The essence of the argument is whether health care is viewed as a privilege or a right, and whether individuals are responsible for their own health care or whether the state should share this responsibility. The debate is further complicated by emotional responses in which proponents of national health systems are often labelled as socialists and by a tendency to split South Africans into first and third world groups. These emotional and dogmatic reactions to carefully considered proposals for a unitary health care system, neglect rational assessment of the needs of the average South African—that person most representative of the entire population.

Both those for and against privatisation of health services acknowledge that the costs of medical care are escalating, that the South African population is likely to double in the next 25 years, that unemployment and underemployment are likely to rise, that the number of 'aged' South Africans will grow and that these factors will place an increasing burden on whatever health service the government provides.

The proponents of privatisation believe that health services will place an unacceptably large burden on the state and on the taxpayer. They argue that individuals are responsible for their own health and that access to what they term unlimited free health is a privilege and not a right.

[63] G Marcus 'Liability for the health care of detainees' (1988) *South African Medical Journal* (in press); J Levine 'Intervention in detention: psychological, ethical and professional aspects' (1988) *South African Medical Journal* (in press); G McCarthy 'Practical problems in the treatment of detainees' (1988) *South African Medical Journal* (in press); T Jenkins 'The health care of detainees: the law, professional ethics and reality' (1988) *South African Medical Journal* (in press); Benatar (n 62).

[64] S R Benatar 'Privatisation and medicine' (1987) 72 *South African Medical Journal* 655–6; *A Health Care Delivery System for South Africa*. Recommendations by the Pharmaceutical Manufacturers' Association of South Africa (1987); W A Van Niekerk 'Privatisering—moontlikhede en perke' (1986) 9 *SALUS* 8–9; E de la H Hertzog 'Privatisering van gesondheidsdienste' (1987) 27 *MASA News* (Western Cape Branch) 3–6; H M Coovadia 'The case for a national health service' (1988) 15 *Energos* 12–20; C D Naylor 'Privatisation of South African health services—are the underlying assumptions correct?' (1987) 72 *South African Medical Journal* 673–8; J M L Klopper 'Privatisation' (1987) 72 *South African Medical Journal* 734–5.

They believe that there should be a single health care system in which individuals and not institutions are subsidised. They support a system of co-payment which requires all patients to contribute something towards their care. This they believe will discourage patients from overuse of the system. Finally they believe that the system should be deregulated and that free market principles should apply to the supply of medicines, the supply of medical services and to the structure of medical aid schemes. They argue that 'the invisible hand of the market place' is the best method of allocating all goods, including health care. They believe that public systems are more costly and less efficient than private systems and that privatisation will depoliticise health care.

The opponents of the system argue that the health of the population is a social concern and is vital to the continued economic growth of the nation and that shifting the responsibility for health to the individual will result in health care becoming inaccessible to an even larger segment of the population. This, they believe, will result in the system entering a spiral in which the incidence of disease and the cost of treatment will continually increase. Naylor, a Canadian physician trained in health policy studies, who has for several years followed developments in South African health care, has pointed out that market forces are markedly distorted by the nature of medicine; that public health consequences of free trading in health would be serious; that health care is a public good and therefore requires equitable distribution; and that there are perverse incentives for privatisation.[65] Naylor also provides evidence which he believes refutes the claim that public systems are more expensive and less efficient than private health care facilities. These arguments are supported by Himmelstein and Woodlander who, in an article entitled 'Cost without benefit—administrative waste in US health care', point out that expenditure on administration accounted for 22 % of all health care costs in the USA in 1983, as compared to 6 % in the UK and Canada where health care is the responsibility of the public sector.[66] Finally the opponents of privatisation examine the effect of this system on indices of health care such as infant mortality and life expectancy and point out that even in the USA where only 15 % of the population is considered to be disadvantaged these indices have not been improved by privatisation.

Those against privatisation can be divided into two groups. One favouring a national health system only and the other favouring the existing parallel systems with varying degrees of redistribution of expenditure.

Those favouring a unitary national health service (NHS) point out that the Gluckman Commission appointed by the Smuts Government in 1944

[65] Naylor (n 69) 673–8.

[66] D U Himmelstein & S Woolhandler 'Cost without benefit—administrative waste in US health care' (1986) 314 *New England Journal of Medicine* 441–5.

stated:[67] 'We have had evidence up and down the land that the people are thoroughly dissatisfied with the inadequacy and inco-ordination [sic of health and medical services, and that they want—nay, demand—a fully-planned National Health Service: their need is desperate; and in order to satisfy it they will be prepared to meet additional taxation, and if necessary, to support far-reaching administrative changes.' The Commission's findings and recommendations were not implemented by Smuts and were subsequently vetoed in 1948 by the Nationalist Party. The proponents of a NHS argue that there must be 'fairness and justice' in health care provision so that resources are not disproportionally allocated to any one group. Only a NHS would ensure the availability of a minimum standard of health care for all, equal treatment for equal need and equality of access and cost.[68]

While accepting that none of the systems currently in use elsewhere is perfect, the authors believe that a form of NHS is the only system which will enable South Africa to provide health care without discrimination. There is an urgent need for health care planners to strengthen the public sector and to improve accessibility of health care. This will have to include the creation of a unitary health care system and a major increase in expenditure on preventative medicine. The current systems responsible for care in the public sector have been considered by some to be expensive. This is in part due to fragmentation and duplication but is also due to poor planning, which has resulted in patients who could easily be cared for in community centres, clinics or hospitals having no alternative but to attend and often to be admitted to larger and more expensive regional and teaching hospitals. It follows that there is a vital need for the planned expansion of appropriate facilities accessible to the majority of South Africans. However, the Government's move towards privatisation will undoubtedly increase the fragmentation and disparities already present in our health care system.

(3) *Medical education*

When Jan van Riebeeck built the first 'Siekenhuys' at the Cape medical knowledge was extremely limited.[69] Most of what was then believed would today be regarded as incorrect. Therapy was in the main harmful. Despite this, medicine was an honoured and respected profession. Saward has suggested that this attitude was due in part to the belief that recovery or death occurred as a result of divine influences and in part to

[67] *Report of the National Health Services Commission on the provision of an organized National Health Service for all sections of the people of the Union of South Africa* (1944).

[68] S R Benatar 'A National Health Service for South Africa' (1985) 68 *South African Medical Journal* 839; Coovadia (n 64) 12–20.

[69] R E Kirsch *Medical Education—heal thyself* Inaugural Lecture, New Series No 93, University of Cape Town (1984).

the physician's ability to comfort.[70] Today high cost, difficulty of access, and highly publicised activities such as organ transplantation and imprudent use of life support systems have created anxiety in the minds of many; and in many parts of the world the attitude of the man in the street towards the medical profession has changed from trust to distrust. The type of medicine practised in any country is profoundly influenced by the way in which doctors are trained. This is in turn influenced by the value judgments of their teachers. This section examines the 'type of doctor' needed in South Africa, the need for postgraduate training in general practice, undergraduate education, whether science has dehumanised medicine, the future of academic medicine in South Africa and academic freedom.

The type of doctor that South Africa needs, and which its educational institutions should produce, has been the subject of much concern both from within and from outside the medical profession. Some have argued that South Africa should produce the equivalent of the Chinese 'barefoot' doctor. Others believe that South African graduates should be trained, at the time of qualifying, as general practitioners and should not be equipped for, or encouraged to undertake, specialist training. Finally there is a group, currently constituting the majority of those responsible for medical education, who believe that South African doctors must be educated at the highest level possible in order to enable them to adapt, after further training, to any field in which they may wish to practise. This debate has not been limited to South Africa but has taken place in all so-called third world countries. Thus, for example, Lord Rosenheim in his opening address to the 4th World Conference on Medical Education urged delegates to use the conference as an 'opportunity for stock-taking, for enquiring whether, in this chaotic and changing world, our efforts to train doctors are producing the right men and women for the job'.[71] Discussing the developing countries he stated, 'the prime need remains the general improvement of hygiene and nutrition and the eradication of infection and parasitism. Individual health will be vastly improved by a rise in the standard of living, by advances in industrialization and in agriculture. The immediate care of the individual is of less urgent priority; yet the delivery of medical care in rural areas is of paramount importance and we have, I believe, much to learn from the efforts being made in many parts of the world to provide such care through teamwork of the doctor and his paramedical colleagues.'[72]

[70] E W Saward 'Some views of the current dilemma of American medicine' in G McLahlan (ed) *Medical Education and Medical Care* (1977) 141–54.

[71] Lord M Rosenheim 'The conflicts between health needs and health wants of society' *Educating Tomorrow's Doctors* Proceedings of the 4th World Conference on Medical Education, New York (1973).

[72] Ibid.

This may well be the key to the problem outlined above ie whether developing countries can afford to produce fully educated doctors or whether they should aim at producing less well educated practitioners or medical auxiliaries. Many prominent medical educationists, including Sir John Ellis and Lord Rosenheim, have suggested that lower standards of university undergraduate education would do health care great harm. Ellis, addressing a conference organised by the University of Natal, advocated the production, in addition to fully educated doctors, of an 'army of highly specialised, very briefly trained auxiliaries. . . . Indeed in countries swamped with infectious diseases I would make that army a team of specialists, one for this disease, one for the next disease, and one for the third. And when those diseases were conquered, I would have those auxiliaries back, and train them for the next conditions.'[73] Today, more than twenty years later, we have the beginnings of this task force in the form of nurse-practitioners. In this system, which is not unique to South Africa but is used in some European countries as well as in the USA, large numbers of patients attend clinics where they are seen in the first instance by nurse practitioners. The latter, after examining the patients, decide whether they require to see the doctor or whether their condition is amenable to management at the nurse-practitioner level. Many conditions, including most infectious diseases, are easily diagnosed and treated and can be handled by the team. Other conditions, such as hypertension, may require the medical practitioner for diagnosis and initial therapy but can be followed up as well by nurse-practitioners. Thus a team will be able to provide a high standard of care for a large number of patients currently denied access to health care. The creation of auxiliaries does not absolve doctors of their responsibility to the community. If anything it increases their responsibility, for, through the efforts of 'their team', they will be responsible for the care of greater numbers of individuals and this will require additional knowledge and skills. The authors have no doubt that South Africa needs both auxiliaries and fully educated doctors and that future health needs will be met only by using teams of which both are members.

Accepting that South Africa requires properly educated doctors, medical educationists face yet another problem. Should they attempt to produce graduates who after their internship are competent to enter into general practice? In the past many South African graduates entered general practice immediately after graduating. However, both those responsible for medical education and the general practitioners themselves, believe that it has become impossible today to train competent general practitioners during the six years of undergraduate study. This is

[73] J Ellis 'A clinical teacher looks at preclinical teaching' in E C Malherbe, J V O Reid & A J Wilmot (eds) *Medical Education in South Africa* (1965) 88–99.

largely due to the vast increase in knowledge during the past 88 years. It has been estimated that during the first half of this century scientific activity doubled every ten years and that scientists knew four times as much about science in 1960 as they did in 1950.[74] This has forced educationists to take stock of the goals of their undergraduate curriculum. Professor Graham Wilson, commenting on British medical education prior to the mid 1960s stated: 'The chief defects were overloading of the curriculum and over examination of the student. This was a relic of the time when the chief aim was to produce a competent general practitioner safe at the time of graduation to let loose on the public without further training.'[75] Sir Graham called for acceptance of the inevitable need for postgraduate vocational training of the family doctor. Indeed the Royal Commission on Medical Education 1965–68 stated that 'every doctor who wishes to exercise a substantial measure of independent clinical judgment will be required to have a substantial postgraduate professional training, and that the aim of the undergraduate course should be to produce not a finished doctor but a broadly educated man who can become a doctor by further training.'[76]

With regard to countries such as ours Ellis pointed out that: 'There is still a substantial body of opinion to the effect that even now a medical school in a developing country should aim to turn out (at least after a compulsory year of internship) general doctors ready for independent practice. Unfortunately there is overwhelming evidence that this view is seldom shared by the graduates themselves . . . where scant provision for postgraduate training has been offered, the graduates emigrate in large numbers to countries where further training is available.'[77] Most authorities would agree with Ellis' statement that '[t]he purpose of a Medical School, new or old, is to educate young people in medicine so that they may, after graduation, be trained in some particular branch of medicine. . . . Medical education is to a very vital extent concerned with preparing the individual for a rapidly changing future while teaching him what may be described as the grammar of medical practice. As change is likely to be even more rapid in a developing country than in those more advanced it is particularly important that its young doctors should be adequately prepared to face the future, especially if they are to work as general practitioners.'[78] Both the MASA and the SAMDC have recently shown an increased interest in vocational training for general practitioners. The MASA has recommended that aspirant general practitioners

[74] Malherbe et al (n 73) ix–xi.

[75] G M Wilson 'Structures of medical schools in various countries. A new English Medical School at the University of Nottingham' in H Popper (ed) *Trends in New Medical Schools* (1967) 66–71.

[76] *Royal Commission on Medical Education 1965–68* (1968).

[77] J R Ellis 'Challenges to new medical schools' in Popper (n 75) 71–8.

[78] Ibid.

should be legally obliged to undertake an approved two year postgraduate training program and to pass an approved examination in order to obtain registration with the SAMDC. There is general agreement that most of this training should be carried out in the setting of a general practice and that hospital training will only form a small component of the two year period. This should ensure that the process of vocational training will not deprive the community of medical practitioners.

(4) *Undergraduate education*

There is little doubt that our current system of undergraduate education should aim at producing a life-long learner. One of the strengths of South African medical education has been its reliance on skilled practitioners teaching small groups of students at the bedside. This practice was encouraged by Sir William Osler, who at the turn of the century revolutionised the teaching of medicine in the USA and in Britain. Osler stressed that the aim of undergraduate medical education was 'to train the senses for observation and the mind for reasoning and to acquire a knowledge of the human machine and its disorders'.[79] Osler also emphasised the distinction between 'being taught' and 'being encouraged to learn' when he said: 'The fundamental purpose of undergraduate medical education is to promote the attainment of knowledge through personal enquiry, to encourage the capacity for logical thought and to aid the student to acquire proficiency in methods through individual experience. The acquisition of the tools with which to learn, to think and to work must be given precedence over futile effort to attain immediately all necessary knowledge. A man cannot think without facts, but he cannot think with facts alone.'[80] Most South African medical schools attempt to produce graduates equipped for life-long learning, but this requires the provision not only of a sound basis to their undergraduate students but also of an infrastructure which allows postgraduates the opportunity to keep abreast of advances in their chosen fields.

(5) *Science and the dehumanisation of medicine*

A frequently voiced objection to the scientific basis of medical education has been that science has dehumanised medicine. Few would argue that the increase in scientific knowledge, which has greatly improved the outcome of many diseases, has led to increased specialisation and to a technology which, because of its sophistication, has shifted the medical care for many conditions from the patient's home to hospital. This, some have suggested, has led to the practice of medicine becoming increasingly impersonal. Those who disagree that science per se is responsible for medicine becoming impersonal point out that medicine

[79] Sir W Osler *Aequanimitas* (1906).
[80] Ibid.

represents the interface between science and humanity. As Sir John McMichael put it: 'It's not a matter of science or service, science supports service.'[81] Many doctors argue that to blame science for a lack of empathy or manners is sheer nonsense. Stephen Harrison writing in the *Harvard Alumni Bulletin* has summed up the issue as follows: 'A proper education in mathematics, physics, chemistry and biology is above all an education in clear thinking—and surely clear thinking is "dehumanising" only to those who equate "humane" with "muddle-minded".'[82] Kirsch has argued that the art of medicine is a combination of attitude and skill which has to be conveyed by example and even then will only be appreciated by some. This will not be suppressed by knowledge of physics, chemistry or mathematics, nor will lack of this art be cured by a couple of courses in English or history. It is the duty of teachers and practitioners of medicine to convey these attributes to their students and not simply to blame science for this lack in themselves or in others.[83] John Cooper, president of the Association of American Medical Colleges, blames the changes in medical practice on those occurring in society. He writes: 'In this depersonalized society, the well-being of our citizens is being equated with the goods and chattels of the market place. . . . Doc-in-a-box, deprecatingly called Quack-in-a-shack by some are new tenants of shopping centers. Parking is plentiful, no appointment is necessary, and you can combine medical care with the search for a new pair of shoes.'[84]

Whether or not science is responsible for the defects in medical practice, it remains under attack and it is appropriate to examine whether there is a need for a scientific basis in medical education. Ellis has called for a graduate 'who is the master, not the servant, of science in medicine; who can profit from experience, who can add to knowledge, and critically evaluate the knowledge added by others'.[85] Sir Graham Wilson went even further when he wrote: 'The practice of medicine is becoming a scientific discipline and every doctor should be a scientist.'[86] Osler highlighted the interdependence of scientific method and patient care when he wrote: 'To wrest from nature the secrets which have perplexed philosophers in all ages, to track to their sources the causes of disease, to correlate the vast stores of knowledge, that they may be quickly available for the prevention and cure of disease—these are our ambitions. To

[81] Cf A G Bearn 'The growth of scientific medicine' in G McLahlan (ed) *Medical Education and Medical Care* (1977) 44–56.

[82] S C Harrison 'Natural sciences and the foundations of medical studies' (1982) 55 *Harvard Alumni Bulletin* 33–6.

[83] See n 46.

[84] J A D Cooper 'What is immediate past is prologue—unfortunately.' First Annual John A D Cooper Lecture. October 1985 Annual Meeting of the Association of American Medical Colleges, Washington DC.

[85] See n 73.

[86] See n 77.

carefully observe the phenomena of life in all its phases normal and perverted, to make perfect the most difficult of all the arts, the art of observation, to call to aid the science of experimentation, to cultivate the reasoning faculty, so as to be able to know true from false—these are our methods. To prevent disease, to relieve suffering and to heal the sick—this is our work.'[87] The need for physicians to practise medicine in a scientific milieu is not a new concept. William Harvey, who first described the circulation of blood, urged members of the Royal College of Physicians in 1656 to '[s]earch out and study the secrets of nature by way of experiment'.[88] Alexander Bearn in an extremely thoughtful paper entitled 'The growth of scientific medicine' points out that distrust of science is nothing new. 'It was an ancient tradition that passed out of Egypt into Greece that a god, who was an enemy to the repose of mankind, was the inventor of all sciences. Astronomy was born of superstition, geometry of avarice, physics of idle curiosity, and even moral philosophy out of human pride. Small wonder, then, that if the sciences sprung more from the vices of mankind than from its virtues they should be under grave suspicion.'[89]

In arguing the case for a scientific approach we will limit ourselves to a few key areas. One of these is the oft-repeated statement that research and its fruits are largely irrelevant. Bearn addressed this issue using two examples. The first was Harvey's discovery of the circulation, which a contemporary dismissed since it 'made no change in the practice of physic, and so has been of little use to the world, though, perhaps of much honour to the author'.[90] Bearn's second example was the classical retort of Faraday when asked by a disdainful politician to comment on the usefulness of his discovery of electromagnetic induction: 'Some day, Sir, you will collect taxes from it.'[91] In developing countries we should consider Flemming's preoccupation with moulds at a time when infection was rampant. This pre-occupation gave rise to the discovery of penicillin. Thus to quote Lord Rosenheim 'The revolt against research must not be allowed to pass unchallenged. It is, I believe, essential that medical education should take place in a questioning atmosphere of research if we are to produce doctors for tomorrow with a scientific and enquiring outlook, prepared for the major advances that will occur during their active careers.'[92]

Whatever the cause of the perceived dehumanisation of medicine this trend may well be reversed by the recent emergence of medical ethics as an integral part of the medical curriculum. Traditionally ethics in

[87] See n 79.
[88] See n 81.
[89] See n 81.
[90] See n 81.
[91] See n 81.
[92] See n 71.

medicine has consisted of the acceptance of the Hippocratic and other conduct-describing oaths and a small number of lectures in medical etiquette. Decisions involving ethical issues were based solely on life experience and role modelling.[93] The growing discipline of philosophical medical ethics is creating the opportunity more thoroughly to analyse and debate moral dilemmas and to formulate structured defensible decisions. The common practice of avoiding discussion of errors has been questioned by Neil McIntyre and Karl Popper in a paper entitled, 'The critical attitude in medicine: the need for a new ethics',[94] in which they propose that knowledge grows by the recognition of error rather than merely by accumulation of facts. They remind us that '[t]here is no absolute certainty in science. Scientific knowledge is conjectural, hypothetical. As a consequence there can be no authorities.'[95] Indeed authorities are counter-productive since, in so far as they are not expected to err, their errors tend to be covered up, thus retarding the growth of knowledge. They stress the importance of the acceptance of fallibility and of including the discussion of errors and areas of uncertainty in medical education. It is hoped that the recently renewed interest in the practice and teaching of medical ethics will provide students with a body of knowledge, experience and methodology which they can apply when wrestling with the many moral dilemmas which arise in modern medical practice.[96] The initiative of more actively teaching medical ethics to undergraduates at the University of the Witwatersrand Medical School, followed by annual Faculty Symposia on medical ethics at the University of Cape Town[97] and the publication of an issue of the *SA Journal of Continuing Medical Education*[98] devoted to medical ethics hopefully will serve to catalyse more widespread interest in this subject both in medical education and in clinical practice in South Africa.

(6) *The future of academic medicine in South Africa*

Academic medicine is made up of three components: teaching, research and patient care. These three functions are interdependent.[99]

[93] S R Benatar 'Flexner revisited—the challenge ahead' (1987) 72 *South African Medical Journal* 731–3.

[94] N McIntyre & K Popper 'The critical attitude in medicine: the need for a new ethics' (1983) 287 *British Medical Journal* 1919–23.

[95] Ibid.

[96] S R Benatar & T Jenkins 'Teaching medical ethics in South Africa' (1988) *South African Medical Journal* (in press).

[97] S R Benatar (ed) *Ethical and Moral Issues in Contemporary Medical Practice* Proceedings of a University of Cape Town Faculty of Medicine Symposium (1985); S R Benatar (ed) *Medical Ethics Some Philosophic Considerations* Proceedings of a University of Cape Town Faculty of Medicine Symposium (1986).

[98] Medical Ethics (1987) 5 (4) *J Cont Med Ed.*

[99] R E Kirsch 'Academic medicine—what will we leave the next generation?' (1987) 72 *South African Medical Journal* 145–8.

Medicine is taught at the bedside, thus the academic physician must be a leading figure in the establishment and maintenance of a high standard of patient care.[100] In order to achieve such excellence the academic specialist must be actively engaged in research. This absolute requirement for research was clearly expressed by Dr Stuart Saunders, Vice Chancellor of the University of Cape Town, who in his Bernard Pimstone lecture stated: 'My thesis is a simple one: you cannot reach fulfilment as a full-time member of a medical faculty unless you are active in research. . . . Just as it is impossible to practise clinical medicine without asking critical questions it is impossible to be an inspiring teacher and to set the appropriate role model for future doctors unless one has a critical approach which is fostered by being active in research.'[101] Osler expressed similar views when he suggested that academic physicians should be 'men who have, first, enthusiasm, that deep love of a subject and desire to teach and extend it without which all instruction becomes cold and lifeless; secondly, a full and personal knowledge of the branch taught; not a second-hand information derived from books, but the living experience derived from experimental and practical work in the best laboratories'.[102]

Despite these statements research currently enjoys a low priority in our medical schools and teaching hospitals. Discussing the attributes of the teaching hospital, T B Turner, formerly Dean of the Faculty of Medicine, Johns Hopkins University, Baltimore stated: 'The climate of the teaching hospital is one of enquiry, easy communication with one's peers, and the constant stimulus of alert and inquiring medical students. A second asset of inestimable value is the opportunity for research in the teaching hospital, made feasible largely by the presence of a full-time staff, although happily some members of the part-time staff can and do participate in research. At this point, I must issue a stern warning to medical schools in some of the medically undeveloped countries. The clinical faculty is being reduced to educational impotence by the crushing burden of service to patients. Admittedly, the human problems are great and distressing; vast numbers of patients clamor at the doors of the teaching hospital, enough to absorb the complete energies of the teaching staff. But to permit excellently trained and carefully selected faculty members to exhaust themselves in this manner, to the inevitable deterioration of teaching and research, is most short-sighted indeed. It should be recognized by all concerned, and most particularly by those in

[100] 'The Future of Academic Medicine in South Africa: a report from the College of Medicine of South Africa' (1988) 32 *Transactions of the College of Medicine of South Africa* 14–19.

[101] S J Saunders 'The university, the medical school and research' (1983) 63 *South African Medical Journal* 719–24.

[102] See n 79.

authority, that the primary purpose of a teaching hospital is to serve the teaching needs of the medical school, that is, the preparation of young men for careers in medicine.'[103]

Some years ago Professor Andries Brink, President of the South African MRC warned: 'All too frequently the employing authority accepts people for their service potential rather than for their academic and research qualities.'[104] Dall and Wassermann in a recent editorial entitled 'Medical research in the RSA', strongly censure this bureaucratic tendency. They point out that it is 'essential that our medical faculties and teaching hospital complexes should provide the very necessary opportunities for our teaching and post-graduate staff to have time available for active research. But most important they should scout for talent and train their successors if medicine is to remain a viable intellectual pursuit.'[105] The recent De Villiers Committee of enquiry found that '[a]cademic medicine is in a downward spiral: the poorer the conditions, the fewer the opportunities for academic activities and the greater the number of specialists leaving the service—which further worsens conditions for those who stay on'.[106] There is no doubt that South African academic medicine is in a parlous state.[107] Indeed if those in authority continue to ignore the warnings of the President of the MRC, the Committee of Deans and of their own committee of enquiry, South Africa will no longer be able to produce adequately trained personnel and health care will undoubtedly deteriorate.

(7) *Academic freedom*

Finally we would like to examine the effect which the present lack of academic freedom is exerting on academic medicine. Universities and medical schools cannot exist in isolation and must be sensitive to the needs of the community. Turner reminds us that 'social forces have significantly affected the doctor himself as well as his patients. As society has become more highly organized, as the state, whether as an instrument of the majority or of a small minority, has become more powerful, the medical profession is inevitably caught up in this organization, and its traditional independence compromised. The medical student and doctor, therefore, cannot ignore these profound changes that have occurred and

[103] T B Turner *Fundamentals of Medical Education* (1963).

[104] A J Brink 'Medical research in the RSA' (editorial) (1983) 63 *South African Medical Journal* 177–8.

[105] G Dall & H P Wasserman 'Medical research in the RSA' (editorial) (1986) 70 *South African Medical Journal* 193.

[106] Department of Health *Report and Recommendations of the Committee of Inquiry on Possible Further Facilities for Medical and Dental Training* (1984) 63.

[107] R E Kirsch & H du P Hoffmann 'Ostriches and supertankers—too little, too late and too slow' (1987) 72 *South African Medical Journal* 237–8.

are occurring in society.'[108] Dr Charles Davidson, former Professor of Medicine, Harvard Medical School reminds us that college students today are much better informed about the world and its problems. 'Many not only recognize the injustices around them in the form of poverty, racism and war and the difference between these facts of life and the American ideal, but they also want something done about these matters, not by Government, nor at some time in the future but by all of us and now.'[109] South Africans and South African physicians are currently having to teach and to practise medicine in a time of severe crisis in our country. Loss of life due to unrest and violence occurs on a daily basis. Medical services to large groups of people, for example, the former inhabitants of Crossroads, have been disrupted and this lack of access to health care must inevitably extract its toll. The emergency regulations preclude the publication of information relevant to physicians. Furthermore, the fear of infringing these regulations may lead to self-censorship and may silence physicians when their voices should be heard. The practice of medicine under the state of emergency is dealt with elsewhere in this volume. However, the authors are of the opinion that any description of medicine in the South African context would be sadly lacking unless it expressed the concern of the medical profession regarding the deleterious effects of the state of emergency on the health of the South African population.

The rage and frustration felt by the oppressed people of South Africa and their views that academic institutions to a large extent support and perpetuate the apartheid regime has led them to advocate academic boycott (complete or selective) as a means of isolating and weakening the Nationalist Government and thereby facilitating more rapid change to a democratic society. While cognisant of and sympathetic to these sentiments which arise from many years of imposed human indignity the authors cannot identify with a method which subverts the purpose of universities and education—the pursuit of knowledge for the benefit of humanity—for political or other ends. We believe that post-apartheid South Africa will require the very best of educational and health care systems and that the erosive and damaging effects of academic boycotts, a political weapon, will render great damage to all the people of South Africa. We cannot agree with those who believe that new and appropriate educational and health systems can only arise from the ashes of those which currently exist. Change yes, even very major change, but destruction—no!

[108] See n 103.

[109] C S Davidson 'The student. Student revolt and our medical schools' in Popper (n 75) 124–8.

XIII CONCLUSIONS

South Africa has become a pariah nation, as a result of which even those aspects, components, people and institutions instrumental in creating and propagating structures, systems and attitudes vital to the present and future well-being of the country and its people are in danger of being destroyed by processes being embarked on, often with the best of intentions, by those so correctly incensed with continuing injustices in our society. The challenge for all of us in South Africa, the health profession very much included, is to seek the means whereby the change so desperately needed can be effected peaceably and without destroying the economic, educational and health care systems which will be needed for the well-being of society and its members. We hope that this paper has objectively reviewed the structure of our health care system, its strengths and its weaknesses and that it will provide some insights into the ways in which we can work towards the changes needed to create a more just and democratic society.

9 An analysis of health and health services

Michael Savage and Solomon R. Benatar

This chapter looks at how the health care system has failed to meet the needs of the oppressed and disadvantaged, and considers the differing opinions on the changes needed in the current organization of medical services.

Introduction

The health care system in South Africa is coming under increasing scrutiny. Its adequacy is in question because of:

- the persistence of high levels of infant mortality among large sections of the population;
- the widespread nature of preventable disease;
- the continued unequal provision of health services to different sections of the population;
- the increasing fragmentation of services; and
- apartheid policies that exclude the majority of the population from participation in control over the health care system.

Health care in South Africa reflects many of the problems associated internationally with modern medicine: its technological ineffectiveness in improving the overall health status of large populations, its rising economic costs, and the maldistribution of its resources.

South Africa is not alone in facing these problems, but they are intensified by inappropriate development strategies, resulting in the poor provision of basic services to much of the population, and are exacerbated by current political policies which impede their effective organization. The development of a Western model of health care in an initially colonial and subsequently apartheid South Africa has, in meeting the needs of the most advantaged section of the population, failed to be creative in meeting many of the needs of the oppressed and disadvantaged and has contributed to entrenching disparities in health and access to health care facilities.

There are starkly differing positions on the changes needed in the current organization of medical services. Some argue for increasing privatization of

medicine; others propose the creation of a national health service. Similarly, arguments proposing better co-ordination of health services contrast with recent government decisions to fragment responsibility for health services to a variety of homeland governments, own affairs ministries and a general affairs ministry. Critical choices need to be confronted urgently about the form of organization that will best meet the needs of the whole South African population.

Health and society

Despite popular belief, there is a relatively poor direct correlation between medical care and national measures of mortality or disease prevalence. Modern, individual-oriented medicine has been shown to be technically ineffective in improving the overall health status of large populations. The specific medical treatment of individuals is only marginally responsible for reducing the compound disease burden or raising the life expectancy of a population.

The measure of a nation's health is more a direct reflection of the environment created by its economic and political structures. Access to clean water and adequate food, housing, employment and good sanitation play the decisive roles in determining the overall health status of a population. Many illnesses and diseases causing early death or unnecessary morbidity are best combated not by medical technology, but by changing the environment and by altering personal behaviour patterns that are individually open to change.

Mortality and morbidity

In South Africa, disease and death rates are clearly related to the social and economic structure. Although the World Bank ranks South Africa eighth in a group of twenty-four upper middle-income countries (that include Algeria, Brazil and Poland), in 1988 only three countries in this group had life expectancies lower than South Africa's.[1] When contrasted with countries of similar average income, South Africa falls behind them in terms of health indicators, as a direct consequence of the skewed distribution of its economic resources. This emphasizes the often ignored fact that a critical determinant of the health status of the South African population is the manner in which basic resources are distributed.

The burden of disease and ill-health in South Africa is found among the African and coloured population (Tables 9.1, 9.2 and 9.3). This reflects the

[1] World Bank, *World Development Report 1988*, New York: Oxford Univ. Press, for World Bank, 1988.

Table 9.1: A profile of the population of South Africa

	Asian	*African*	*Coloured*	*White*
Population in 1987*				
Millions	0,91	26,3	3,07	4,91
Per cent	2,6 %	74,7%	0,87%	14,0%
Birth rate				
1940s	±38	±45	±45	±25
1980	24	40	28	16
Projected population growth rates 1985–90				
Per cent	1,56%	2,72%	1,64%	0,95%
Mortality				
Total (per 1 000 population)				
1940s	±17	±25	±25	±17
1980	5,9	±11	9,2	8,3
Infant (per 1 000 live births)				
1945	82,5	190	151	40,3
1987	15,6	80**	40,4	9,7
Life expectancy (years)				
1950	56	44	45	65
1980 Males	62	±55	56	66,8
Females	67,5	±60	61	73,8
Household income (Rands per year)†				
1985	R13 308	R4 224	R8 160	R23 496
Private medical insurance‡				
Per cent population, 1985	29%	3,6%	29,9%	81,3%
Per cent population over 6 years without schooling	5,5%	20,9%	11,6%	2,6%

Sources:
Statistics from various sources, including *Health trends in South Africa*, Dept. of National Health and Population Development; *Report of the Scientific Committee of the President's Council on demographic trends in South Africa*, Cape Town: Govt. Printer, 1983; and see also references for Table 9. 4.

Notes:
* Includes TBVC countries (Cooper, *Race Relations Survey 1987/8*, p. 11).
** Ranges between 130:1 000 in Transkei in 1980 and 25:1 000 in Soweto in 1983.
† The top 10% of the population earn 52% of generated income, the bottom 50% earn 7,2%.
‡ Zwarstein, 'Expenditure on medical care in South Africa 1978–1982'.

continuing legacy of discriminatory policies which have entrenched the unequal distribution of resources and access to health care.

Disease profiles and mortality patterns among whites closely resemble

Table 9.2: Distribution of causes of death in South Africa,* 1984

	Asian	*African***	*Coloured*	*White*	*Total*
Cardiovascular disease	[1]37,4%	[3]11,8%	[1]22,2%	[1]40,4%	17,7%
Respiratory disease	[3]8,5%	[4]9,6%	[4]11,3%	[4]10,9%	9,9%
Infectious diseases†	3,1%	[2]15,5%+	13,0%	1,8%	12,9%+
Malignant disease	[4]8,4%	7,4%	[3]11,4%	[2]17,2%	9,2%
Peri-natal conditions	4,2%	6,0%	6,6%	1,3%	5,3%+
Non-natural causes	[2]14,2%	[1]17,1%	[2]17,6%	[3]12,6%	16,4%
Ill-defined/other	24,2%	32,6%–	17,9%	15,8%	28,6%–

Source:
C. Simkins, 'Mortality rates compared', *Energos*, 1988, vol. 15, pp. 39–42.
Notes:
Numbers 1 to 4 in square brackets indicate the top 4 causes of death.
* Excluding TBVC areas.
** Immunization — full coverage: measles 39%, polio 45%, diptheria/pertusses/tetanus 44%, tuberculosis (BCG) 63%. The majority of deaths from immunizible diseases occur among the African population (Yach, 'Infant mortality rates').
† Data for Africans is the least accurate.

Table 9.3: Infectious disease notifications in South Africa, 1987

	Total number	*African*	*Coloured*	*White*	*Deaths*
Tuberculosis	62 654	75%	23,0%	<2,0%	4,0%
Measles	24 460	92%	4,8%		1,9%
Malaria	10 599	98%			0,1%
Typhoid	5 014	98%			0,9%
All	105 492	81%	15,7%	2,2%	4,0%
Population		74%	8,6%	14,6%	

Source:
Epidemiciological comments, vol. 13, 1986, pp. 1–50.

the patterns in industrialized countries, whereas those among the African and coloured populations approximate the status of industrialized countries at the beginning of the twentieth century.

The lack of accurate health statistics for Africans (for example those relating to birth, death and causes of death) is another indication of the inadequate health services available to them, especially in rural areas. About 14 million of South Africa's population of an estimated 33 million live in the ten states designated homelands, four of which are considered by the South

African government to be 'independent'. The health status and health services in the homelands reflect their inadequate socio-economic and inferior political status.

As life expectancy improves, there is a progressive change in the distribution of causes of death (Tables 9.1 and 9.2). In general, rising incomes are accompanied by lower mortality rates from perinatal causes, infections and parasitic diseases (especially in childhood), and higher death rates in older subjects from cardiovascular and neoplastic diseases. The proportion of deaths in South Africa from non-natural causes (motor vehicle accidents, other accidents, suicide, homicide and other violence) is notable higher than in other countries of similar economic status.

The infant mortality rate (IMR = number of deaths under one year old per 1 000 live births in a specific year) is regarded as both an indication of infant health and of the health status of, and health services for, a population and its socio-economic status. Although IMRs have dropped for all population groups over recent years, the IMR remains highest among blacks and there is a wide range from one area to another in the country. For the period 1981–5 it has been estimated that the IMR for Africans was 9 to 10 times greater than that for whites.[2]

Morbidity information is meagre except for notifiable diseases, and here again the burden of disease is among the black population (Table 9.3). Data from the Department of Medicine at Groote Schuur Hospital shows that disease morbidity in the different population groups closely parallels reported national mortality rates.[3]

South Africa is the most technologically advanced country in Africa. The economically active population (including the homelands) is about 10 million, of whom about 10 per cent belong to the growing independent trade union movement. Despite recent advances, legislation to protect health in the working environment remains inadequate. On average, 300 000 work-related accidents are reported annually, with 2 000 fatalities occurring in industry and agriculture, and a further 500 on the mines.

The balance of power between the conflicting interests of the employers (predominantly concerned with maximizing profits) and of workers (concerned about their safety) is changing as the unions' strength and their bargaining power increases. Health and safety in the workplace will inevitably become a more prominent industrial relations issue as the union

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[2] D. Yach, 'Infant mortality rates in urban areas in South Africa 1981–1985', *South African Medical Journal*, vol. 73, 1988, pp. 232–4.

[3] S. R. Benatar and A. Saven, 'Morbidity trends in the medical wards at Groote Schuur', *South African Medical Journal*, vol. 67, 1985, pp. 968–74.

movement consolidates itself.[4]

Structure and function of health services

Current medical services are concentrated in urban areas and tend to favour capital-intensive technology for dealing with degenerative diseases in tertiary care hospitals. Primary health care and community hospital services are poorly developed and only 4,7 per cent of the total health services' budgets are officially allocated to preventative medicine, although the government's stated intention is to increase this to 15 per cent by the year 2000.[5]

More than 75 per cent of doctors work in metropolitan areas and 18 per cent in small towns. About half the population live in rural areas where only 5,5 per cent of doctors practise.[6] This maldistribution has been aggravated by forced shifts in population to the rural homelands and by the rapid growth of the black population. In 1950, an estimated 40 per cent of the population lived in the homelands; by 1980 the figure had increased to an estimated 53 per cent. Access to health services is extremely poor in rural areas, particularly for blacks. Ancillary medical services — inadequately developed even in the cities — are often skeletal in rural areas.

Faced with an enormous backlog in health services as a result of inadequate planning and investment in a national medical service, and with an expanding demand for health care by a burgeoning and increasingly urban population, the South African government is attempting to follow the example set by the American medical system and reduce its own responsibility for health services through privatization.

A broad approach to the provision of health services is outlined in the National Health Services Facilities Plan of 1980. This classifies services into six levels and stresses the provision of four basic requirements — safe drinking water, adequate food, satisfactory sewage and waste disposal, and adequate housing — for minimum levels of health care. The 1980 plan, however, excludes health services in the homelands and does not address how these services are to be integrated, nor how resources and staff are to be distributed to meet its objectives.

The plan is premised on the continuing fragmentation of health services, with each homeland having its own health authorities, regional service

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4 J. E. Myers and I. Macun, 'The sociologic context of occupational health in South Africa', *American Journal of Public Health*, vol. 79, 1989, pp. 216–24; and Anthony Zwi, S. Fonn and M. Steinberg, 'Occupational health and safety in South Africa', *Social Science Medicine*, vol. 27, no. 7, 1988, pp. 691–701.

5 Republic of South Africa, *Final Report of the Commission of Inquiry into Health Services* (Browne Report), Pretoria: Govt. Printer RP67/86, 1986.

6 P. Pillay, 'The distribution of medical manpower and health care facilities in South Africa', *Carnegie Conference Paper no. 167*, Saldru: Univ. of Cape Town, 1987.

councils, and central government departments of own and general affairs adding to what has been described as a 'confused jumble' of differing health authorities that provide duplicated and overlapping services.

The current organization of health services — with fourteen Ministers of Health — is patently irrational and damaging to the economy and health care. This flaw in the existing structure of health care is recognized in the 1986 Browne Report of the Commision of Inquiry into Health Services which found that 'there is an excessive fragmentation of control over health services and a lack of central policy direction. This has led to a misallocation of resources and a wasteful duplication of services'.[7]

Official action to address this has been minimal. The government White Paper on the Browne Report ascribes this fragmentation and lack of direction 'to the way in which health services are financed' and indicates that in future 'all budgets of health authorities will be channelled through the Health Matters Advisory Committee to the National Health Policy Council for consideration'.[8]

Health expenditure and finance

There is no single comprehensive, reliable source of data on health care expenditure in South Africa. Existing data sources are fragmented and incomplete, making it difficult to monitor spending in critical areas such as rural and urban health, or preventive versus curative medical expenditure, or to relate health spending to the Consumer Price Index or population growth.

The lack of adequate data 'casts great doubt on the quality of existing health care planning' and points to a clear need for reliable information on health expenditure if rational allocation of resources and adequate health planning is to take place in future.[9] Total expenditure on health in South Africa is estimated to have risen from 4 per cent of gross national product (GNP) in 1970 to 5,3 per cent in 1985, when total health expenditure in both the public and private sectors amounted to R6 000 million.

This growth in the proportion of GNP expenditure on health is more a function of the fall in GNP per person since 1980 than an indication of sharp increases in health care expenditure. The increase in spending per person on health in South Africa over this period (from R23 in 1970 to R180 in 1985) is unimpressive when it is recognized that the 1985 expenditure

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7 Browne Report, para. 4.2.

8 Browne Report, para. 10.2.1.

9 M. Zwarenstein et al., 'Expenditure on medical care in South Africa 1978–1982' in C. P. Owen, ed., *Towards a national health service*, Cape Town: NAMDA Publications, 1988, p. 33.

amounted to R34 in 1970 prices, or that the rise is the equivalent of R11 per person over a fifteen-year period.[10]

South Africa's health spending in 1985 amounted to 4,9 per cent of its gross domestic product (GDP), compared to the United Kingdom's 5,9 per cent, Australia's 7,8 per cent and the United States' 10,7 per cent (1984 figures). More striking in terms of international comparisons is the low proportion of the GDP spent by the state on health services, which amounted to 2,5 per cent in 1985, in contrast with 5,3 per cent in the UK, 6,6 per cent in Australia and 4,4 per cent in the US.[11]

Several features of South Africa's expenditure on health care are masked by citing national figures. First, relatively little is spent on preventive health. Comprehensive figures on preventive health expenditure are not available, but it is estimated at 4,5 per cent of total health care spending in 1982.

There is a marked dominance of spending on curative medicine over preventive medicine. This means insufficient resources are being injected into a badly planned health care system that places little emphasis on primary and community health services. One consequence is that the resources and facilities in even the best hospitals are under pressure when, with better planning, demands for health care at the tertiary level could have been met more effectively and less expensively at primary and secondary health care levels.

Second, racial bias exists in overall expenditure patterns. A conservative estimate indicates that 1985 spending per person on health care for whites amounted to R451 in contrast with R115 for Africans, R245 for coloured persons and R249 for Asians.[12] Thus, whites have about four times as much spent per person on their medical care as Africans, and more than twice as much as coloured and Indian South Africans.

Focusing only on public expenditure on health care, these inequalities remain pronounced with white spending per person by the state amounting to R248 in 1985 in contrast with that on Africans of R82.

A third notable feature in national figures is the ratio of public to private health expenditure. In 1985 public spending accounted for 51 per cent of all expenditure on health, and private spending, 49 per cent — a ratio that has scarcely changed over the 15-year period since 1970.[13] These figures point to the importance of public finance in health care, particularly for disadvantaged groups unable to afford health services.

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10 S. R. Benatar, 'Privatization and medicine', *South African Medical Journal*, vol. 72, 1987, pp. 655–6.

11 N. Timmins, 'Reforming the NHS', *Independent*, 27 January 1988.

12 R. E. Dorrington and M. Zwarenstein, 'Some trends in health care expenditure 1970–1985' in Owen, *Towards a national health service*, p. 48.

13 Zwarenstein, 'Expenditure on medical care', p. 33.

Private medical care is expensive and can generally only be afforded by people with medical insurance. In 1985 only 18 per cent of the total population were covered by some form of medical insurance scheme, and this comprised 81 per cent of the white population and less than 4 per cent of the African population, whose coverage tended to be much more limited.[14]

Most of the population relied on public expenditure for provision of medical care and services — financed by their tax revenues and some fee-for-service payments. Less than half of the country's doctors work in the public sector, which houses 87 per cent of all hospital beds, provides care for the sickest patients and is responsible for medical, nursing and paramedical education as well as research and development in medicine!

While more resources are needed to finance adequate health services, levels of spending on whites cannot be taken as a norm to be duplicated throughout the country, for this would involve an expenditure of over R15 billion on health care, or 13,3 per cent of GNP in 1985 (a figure greater than the US expenditure on health of 10,5 per cent of GNP in the same year).[15]

Privatization of health care

There is a discernable shift in government policy toward promoting health service privatization. This shift is taking place against a background of a stagnant economy, declining foreign investment, rising government spending, together with pressures from private interest groups favouring privatization and disquiet among whites facing rising tax levels. While the government has signalled its approval of privatization in the health sector, it has not specified which activities should be privatized nor to what extent, or how this should be implemented.[16]

Arguments in favour of privatization have been challenged by Naylor[17] who points out that the proposals used to propagate the market-place method for delivery of health care are seriously flawed on the grounds that:

- market forces are markedly distorted by the nature of medicine;
- there are serious public health consequences of free trading in health;
- health care is a public good and therefore requires equitable distribution; and

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14 Zwarenstein, 'Expenditure on medical care', pp. 24–34.

15 Dorrington and Zwarenstein, 'Some trends in health care expenditure', p. 48.

16 Benatar, 'Privatization and medicine', pp. 655–6.

17 C. D. Naylor, 'Privatisation of South African health services', *South African Medical Journal*, vol. 72, 1987, pp. 673–8.

- private fee-for-service care creates perverse incentives that lead to the oversupply of services by health care providers and therefore contribute to increasing costs.

The impossibility of applying privatization in poor areas is obvious; this would further aggravate existing disparities in health. The claim that imposing direct charge and user fees can reduce abuse of medicine is only superficially correct. Such schemes predominantly act as deterrents for the poor and elderly, and result in increasing medical fees to recoup losses, and ultimately only redistribute costs rather than effect savings. Naylor also exposes the flawed rationale of the concepts that it is more efficient to subsidize private persons than institutions and that privatization will diminish the load on the taxpayer and de-politicize health care.

Privatization is not the way forward for it will, as Naylor points out, replace overt racial discrimination with economic discrimination to almost the same effect. At the same time, privatization is likely to seriously damage the structure of health care services, particularly public health services, to the detriment of those most in need of them and ultimately to the detriment of the whole health care system.[18]

Medical education

South African medical schools have a proud record of training competent, compassionate and dedicated doctors, many of whom practise their profession in the finest medical tradition in the public and private sectors. Training medical staff in the Western tradition, however, encourages specialization and private practice and sends doctors in directions that deprive many of care. Black South Africans demand access to more primary and community-based health care services than are being provided by Western trained doctors.

Medical schools provide training increasingly considered by some to be inappropriate to the needs of Africa. However, they can never graduate enough medical practitioners for all the needs of a rapidly expanding population. At present, there are seven medical schools in South Africa, approximately one per 4,5 million people, and these graduate about 1 000 medical practitioners each year. At the current rate of population growth, one new medical school will be required every three to four years to maintain the current medical school to population and doctor to patient ratios. Clearly this can never materialize in the current economic, social and political climate.

Philpot has drawn attention to the fact that South Africa's medical schools

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[18] Benatar, 'Privatization and medicine', pp. 655–6; and S. R. Benatar, 'Economics of health in South Africa; past, present and future', *Medicine and Law*, vol. 8, 1989, pp. 111–17.

have catered for the privileged élite; that they have succeeded in keeping people apart and isolating medical students from the community they should serve.[19] There can be no doubt that while the current system of medical education in South Africa provides a vital component of the training and expertise required in this country, there remains an equally vital need to develop medical education in additional directions to ensure that our rapidly expanding population can have their basic health care needs met through access to affordable primary health care clinics and community hospitals.

Suggested solutions to the shortage of medical staff include opening medical schools in rural areas, with entry criteria and curricula designed to produce doctors oriented to family practice, and developing health care teams with auxiliary health workers of various types under medical or nursing leadership. The number of nurses and medical practitioners in South Africa at present are listed in Table 9.4.

The existing context of health services

The current organization of South African health care services, comprehensively described by Kirsch and Benatar,[20] is deficient in several critical respects. These include providing services which are curative rather than preventive, the emphasis on urban-based services, and poor ancillary services. The lack of adequate financing for health services and their continued administrative fragmentation exacerbate these inadequacies.

The South African economy is characterized by deep structural inequalities, low growth rates and rising unemployment (see Chapter 14), which have a marked negative impact on the living conditions and thus the health status of the population.

A recent report indicates that half of the total South African population in 1980 lived below the subsistence level; for Africans this figure was nearly two-thirds (60,5 per cent), while for those living in the reserves, 81 per cent of households were in dire poverty.[21] The absolute number of people living in poverty is estimated to have risen from 13 million to 15 million between 1960 and 1980.[22]

These structural inequalities occur within an economy that since 1972 has been on a downward trend and has experienced a sharp decrease in its capacity to provide jobs. By 1981 it was estimated that over 21 per cent

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19 H. Philpot, 'Medical education in changing South Africa', *Energos*, vol. 15, 1988, pp. 34–8.

20 R. E. Kirsch and S. R. Benatar, 'Medicine in a South African context', *Acta Juridica*, 1988, pp. 1–39

21 C. Simkins, 'What has been happening to income distribution and poverty in the homelands?', *Carnegie Conference Paper no. 7*, Saldru: Univ. of Cape Town, 1984, p. 18.

22 F. Wilson and M. Ramphele, *Uprooting poverty: the South African challenge*, Cape Town: David Philip, 1989, p. 18.

Table 9.4: Selected medical statistics in South Africa

Public and private health care compared:		
	Public sector	Private sector
Hospitals	495 (68%)	234 (32%)
Hospital beds*	141 104 (87,5%)	20 158 (12,5%)
Doctors	54%	46%
Nurses	75%	25%
Health expenditure 1984/5**		
Rand x 10^6(GNP)	3318,2 (3,32%)	2647,0 (2,65%)
People in the medical profession:		
1986 statistics for doctors		20 229 registered 93% white 85% male ±14 000 in practice
Doctor/patient ratios†	1960	1:2 157
	1980	1:1 800 (urban1:875; rural 1:12 700)
Dentist/patient ratios‡	1960	1:13 000
	1980	1:10,870
Registered nurses	1980	55 002
Total no. of nurses	1987	129 363
Physiotherapists	1980	2 250
Medical technologists		3 000
Radiographers		3 000
Psychologists		1 775
Optomotrists		800
Occupational therapists		1 000
Speech therapists and audiologists		750
Medical schools		7 = ±1:4 x 10^6 population ±1 000 graduates per year

Sources:

Statistics from various sources, including S. R. Benatar, 'Special report: medicine and health care in South Africa', *New England Journal of Medicine*, vol. 315, 1986; Race relations Survey 1988; and Kirsch and Benatar, 'Medicine in a South African context'.

Notes:

* Total bed:population ratio is 2,2:1000. Excluding homelands, the ratio is 5,5:1000. (USA ratio is 8,3:1000.)

** Includes homelands (12,3% of public expenditure).

† 1982 — UK 1:650, USA 1:520, Kenya 1:10 500.

‡ 1977 — USA 1:1 926.

of the population of working age were unemployed, with this figure rising to over 50 per cent in rural areas. Projections by De Lange indicate that, if present low growth rates continue, by the year 2000 only half of the economically active population will be formally employed, some 13 per cent will be employed in the informal sector and over 36 per cent will be unemployed.[23]

Against the background of mass poverty, low economic growth and rising unemployment, the task of providing adequate health care for all becomes a scarcely achievable goal. Such a goal can only be reached by a society which has developed the political will to uproot poverty and promote healthy living and working conditions for all its citizens.

Allied with negative economic patterns, health services occur within the context of a growing population. The South African population is projected to increase by 40 per cent over the period 1980–2000, with an average of 800 000 persons a year being added to the present population.[24] Although South Africa is experiencing declines in its birth rates, its transition to low fertility remains slow and pressures from population growth place further considerable demands on the task of providing adequate health services. (See Chapter 12.)

The geographic distribution of the population also presents particular difficulties. Urban growth will be rapid in the future: the proportion of the population urbanized in 1980 amounted to an estimated 47 per cent and by 2000 it is estimated that an additional 10 million persons will be added to the urban population, when about 58 per cent of the total population will be urbanized.

Health services, already inadequate in rural areas and undersupplied in urban areas, are coming under increasing pressure to meet the needs of a growing and more urban population, while having to contend with the health consequences of deep rural poverty.

Influencing major determinants of basic health

Health services play only one part, albeit an important one, in promoting and improving a nation's health. The challenge facing South Africa lies essentially in improving those economic, social and political conditions that play the major part in determining morbidity and mortality levels.

Dismantling the institutions of apartheid and dealing with their consequences cannot be achieved in a short period. Continuous action will be required to promote what can be termed the socio-economic health of the

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23 C. Cooper et al., *Race Relations Survey 1984*, Johannesburg: South African Institute of Race Relations, 1985.

24 P. Spies, 'South Africa in the year 2000', *Energos*, vol. 10, no. 2, 1984, pp. 153–67.

society. However, four areas of basic needs — adequate nutrition, clean water, satisfactory sewerage, and proper housing — can be identified as being of prime importance for individual physical health.

In drawing attention to the need for intervention in these areas no implication is made that a range of other important actions are not also urgently required to improve the socio-economic health of South Africa.

Nutrition

Turning first to the area of basic needs, urgent attention to the nutritional status of the population is required. Hansen[25] has reported that approximately one-third of African, coloured and Asian children below the age of fourteen are underweight and stunted for their age. Fincham[26] estimates that 10 per cent of the African population, 13 per cent of the coloured population, 5 per cent of the Indian and 2 per cent of the white population are currently undernourished. Other research findings indicate that 56,5 per cent of the rural black population suffer from 'chronic malnutrition'.[27]

Such a pattern of malnutrition has many roots — inadequate wages, deficient food distribution mechanisms, poor nutritional education — which are aggravated in the South African environment by migrant labour, unemployment and discriminatory land ownership patterns. The web of factors producing such widespread malnutrition points to the existence of no one easy solution to this grave situation. However, a variety of effective strategies have been identified that markedly improve nutritional status and which are technically feasible.

A recent evaluation of nutrition intervention projects by the World Bank — ranging from consumer food subsidies, child feeding through institutions, food coupons and food supplementation — demonstrates that nutrition programmes can be implemented at low cost. They can be effectively targeted at those in need and produce dramatic nutritional improvements over short periods.[28]

Much can be learned from the successes and failures of other countries that have mounted programmes attacking malnutrition; yet scant recognition of such experience takes place. Among the first steps in formulating adequate nutrition policies would be a careful sifting of international evidence on intervention strategies together with a close examination of previous South African efforts to combat malnutrition.

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25 J. Hansen, 'Food and nutrition policy in relation to poverty', *Carnegie Conference Paper no. 205*, Saldru: Univ. of Cape Town, 1984.

26 R. Fincham, 'Positive health and food supply', *Energos*, vol. 15, 1988, pp. 48–52.

27 Cooper, *Race Relations Survey 1984*, p. 807.

28 A. Berg, *Malnutrition: What can be done?*, Baltimore: John Hopkins, for World Bank, 1987.

Two past South African interventions aimed at children of school-going age provide significant pointers toward possible future actions in this area. In 1944 it was reported by the Gluckman Commission that of white schoolboys, 47,6 per cent in the Transvaal, 31,5 per cent in the Cape and 43,6 per cent in the Free State were malnourished. National resources were deployed to combat the physical effects of this malnutrition and the whole complex of underlying causes.

It was recognized that malnutrition was only one dimension of the so-called 'poor white problem' — and that it was also necessary to create employment opportunities, ease the transition of poor whites into the towns, provide effective channels of political participation and improve the economic circumstances of this community.

In 1943 a severely limited version of nutritional intervention led to the institutionalization of school feeding schemes in all South African schools;[29] however, these schemes were abolished with the introduction of Bantu Education policies without their impact being assessed.

A recent proposal to establish a food stamp programme in South Africa, aimed at benefiting all households below a minimum living level and not targeted solely at the school-going population, would double the amount of food available to some 18 million persons at a cost of 50 cents per person per day, or about 6 per cent of the national budget.[30] If implemented, this scheme would both improve national nutritional levels and have a multiplier effect of increasing demand for food production and so help to create employment.

Water and sewerage

Outbreaks of cholera, typhoid and dysentry during the past decade, and the endemic nature of diarrhoeral diseases among children living in poverty, emphasize the importance of adequate water and sewerage facilities.

Both more water — to provide for better washing and cleaning — and cleaner water is needed. In areas such as the Mhala district of the eastern Transvaal there is, on average, one water tap for every 760 people; in an area of the Ciskei, daily water consumption per person averages 9 litres, in contrast with the World Health Organization's (WHO) goal of providing 50 litres daily per person.[31]

Also needed are better sewerage facilities, in both urban and rural areas. In Alexandra township, Johannesburg, a recent report recorded 'sewage

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29 N. Bromberger, 'Government policies affecting the distribution of income 1940–1980' in R. Schrire, ed., *South Africa: public policy perspectives*, Cape Town: Juta, 1982, p. 174.

30 Wilson and Ramphele, *Uprooting poverty*, p. 339.

31 Wilson and Ramphele, *Uprooting poverty*, p. 324.

flowing in the streets' because of the overloading of the bucket system.[32] In Gazankulu, only half of schools and 20 per cent of households are equipped with toilets.[33] Adequate water and sewerage form basic public health needs that for the large majority of the population have still to be met.

In meeting these needs both state and community initiatives will be required. The effective combination of such dual initiatives is well demonstrated in Epworth, Zimbabwe, where a peri-urban community of 30 000 persons, until recently, had inadequate sewerage and relied on a large number of contaminated open wells for its domestic water supplies.

The Zimbabwean government financed the installation of protected water points and upgradeable ventilated pit latrines, with installation of both these being undertaken by local residents. At an installation cost of four Zimbabwian dollars per head the community is now supplied with 600 thousand litres of potable water daily and has 3 000 odourless, fly-free latrines.[34]

Housing

The existing housing shortage and the extensive overcrowding of present housing stock has a considerable impact on the health status of the population. At the end of 1987 the total housing shortage in South Africa (including the homelands) amounted to between 700 000 and 1 400 000 units.[35]

The housing shortage has worsened since 1982, when the government decided it would no longer take primary responsibility for housing and placed emphasis instead on site-and-service schemes and private housing construction.

Overcrowding of existing housing stock is severe, particularly in urban African townships where national averages indicate that between 12 and 16 persons occupy each four-room dwelling.[36] According to international standards, it is considered that an average of more than 1,5 persons to a room constitutes overcrowding; South African figures for urban black housing indicate average occupancy rates double this figure.

More and better quality housing is required if the prevalance of preventable diseases such as tuberculosis is to be overcome.

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32 C. N. Ntoane and K. E. Mokoetle, 'Major problems as perceived by the community', *Carnegie Conference Paper no. 2*, Saldru: Univ. of Cape Town, 1984, p. 9.

33 P. Harries, 'Aspects of poverty in Gazankulu: three case studies', *Carnegie Conference Paper no. 67*, Saldru: Univ. of Cape Town, 1984, p. 8.

34 P. Morgan, 'Low cost water and sanitation: a Case study in Epworth, Zimbabwe' in John Pickford, ed., *Developing world water*, London: Grosvenor Press, 1987, pp. 56–8.

35 C. Cooper et al., *Race Relations Survey 1987/8*, Johannesburg: South African Institute of Race Relations, 1988, p. 198.

36 M. Kentridge, 'Housing in South Africa', *Carnegie Post-Conference Paper*, Saldru: Univ. of Cape Town, 1986; and National Building Research Institute, *Housing Research Review*, no. 8, Pretoria: NBRI, 1986.

Providing health services

The profiles of health and disease found in different social and population groups in contemporary South Africa are as disparate as the comparison between those which prevailed in developed societies at the start of this century, and those found in developed societies now. The health care needs of the people of South Africa span the spectrum of those relevant to the social and medical aspects of prevention of diseases and premature death (especially in children), to the application of modern science, to the postponment of death from previously rapidly fatal malignant disease and organ failure in later life.

The biomedical model of scientific medicine in the Western world has focused increasingly on super-specialized aspects of disease in a reductionist fashion to try and find the 'magic bullet' with which to cure 'disease'. It is increasingly acknowledged that the adverse side effects of such modern trends have been to lose sight of the patient as a whole, to expend vast human and financial resources on the diagnosis and management of disease among a small percentage of the population, and to fail to develop adequate community services.

Such side effects are most obvious in health services which tend to be privatized (as in the USA) as opposed to those that function on a national and socialized basis (for example, in the UK). Combinations of these structures may be more successful, whether found in Canada with its national insurance system or in those countries providing health facilities nationally, associated with limited forms of user charges.[37]

The choice of an appropriate model of health care and health care delivery leads any society to decisions on the basic structure of its health services, how they should be financed and controlled, and the spectrum and intensity of training for its personnel.

More than forty years ago there was a clear recognition that health care could not be provided for a growing and diverse South African population merely by allowing the haphazard development of entrepreneurial medical services in an uncoordinated and unplanned fashion.

In 1942 a Commission of Inquiry into the National Health Services under the chairmanship of Henry Gluckman, later Minister of Health, was appointed to evaluate the need for the 'provision of an organised national health service for all sections of the people of the Union of South Africa'. It noted that three sets of public health authorities had spawned a 'crazy patchwork of health services' emphasizing curative medicine over primary

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[37] J. Akin and N. Birdsall, 'Financing of health services in LDCs', *Finance and Development*, vol. 24, June, 1987, pp. 40–3; and C. H. W. Paine and F. Siem Tjam, *Hospitals and the health care revolution*, Geneva: World Health Organization, 1987.

and preventive health care and concluded that there was a 'desperate need' for a fully planned national health service.

The Commission proposed creating a service in which all personal health care would be supplied free; also a network of community health centres with one centre for every 10 000 to 30 000 people and staffed by a team of health workers that would include health visitors, dentists, nurses and doctors. Linked to these centres would be a network of general practice specialists and teaching hospitals.

The Commission recommended training several thousand health visitors, to be concerned with basic health education and preventive medical work in the community, and that the proposed national health service be financed by means of a national health tax.

The recommendations of the Commission were ignored and medicine was allowed to develop piecemeal. However, its blueprint for a national health service remains, and has stimulated creative thinking about the future of South Africa's health services. It is increasingly realized that a health care system is needed which:

- provides essential health care of adequate quality on a universally accessible basis;
- gives priority to those most in need; and
- sustains primary health care that is integrated within a supportive referral system.[38]

The identification of these goals emerges from a growing consensus about the need to develop a unitary national health system for the whole country, without excluding a place for private medicine.[39]

Conclusion

Health care services in South Africa are in decline. Inadequate resources, fragmentation and the encouragement of privatization all seriously threaten to undermine the situation.

Solutions will need to focus on the development of a more unified rather than a more fragmented health care service, and the training of staff for all components of a health care system which must be characterized by being well planned, well co-ordinated and adequately funded.

A satisfactory health system must include primary, secondary and tertiary facilities and a considerable degree of unification in their functions and future development, at least at regional levels and, preferably, nationally.

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38 C. De Beer, E. Buch and J. Mavrandorius, *A national health service for South Africa (part one)*, Johannesburg: Centre for the Study of Health Policy, 1988.

39 S. R. Benatar, 'Medicine and health care in South Africa', *Energos*, vol. 15, 1988, pp. 21–8; and Benatar, 'Economics of health in South Africa, pp. 111–17.

Mechanisms for equitable and efficient access to these services must be developed.

A series of critical decisions about the organization of health care needs to be made to enable health services to meet the challenge of fully contributing to the construction of a healthy society. Chief areas in which policy decisions are required include the four in the text that follows.

1. Privatization versus unification

The debate on this issue continues to rage[40] and it can only be hoped that vision and community spirit will prevail to allow the growth of efficient and effective primary and community health services, appropriately supported by tertiary facilities and a small private sector within a unitary health care system. Audit, accountability and control mechanisms also need to be debated, and negotiated decisions taken regarding their position at regional or national levels.

2. Finance and allocation of resources

Allocation of adequate resources for a reasonable health service will require a strong and growing economy, capable of providing the basic requirements for healthy living as well as a range of medical services.

How much South Africa should spend on health care, how these resources should be raised, by what processes decisions should be made in allocating them, whether user fees should be charged to those able to pay them, and many other pertinent issues will depend on the mechanisms and pace of progress towards a more democratic society, sensitive to social justice and in which true consensus negotiations can be conducted.

Resource allocation questions raise three fundamental issues that are faced by most countries: the problem of allocation (of spending too little on cost-effective services in comparison to costly services); the problem of internal efficiency (of funding higher level tertiary health facilities when more effective expenditure can be made at the primary health level); and, finally, the problem of equity (of using funds in such a way that the disadvantaged benefit less than the advantaged).[41]

3. Appropriate distribution and training of medical personnel

The present concentration of health personnel, particularly doctors, in urban and white areas requires attention at a policy level in order to stimulate better distribution into areas of acute need. Possible ways to achieve this include proposals that selection for training should be biased toward those

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40 C. P. Owen, ed., *The case for a national health service*, Cape Town: UCT Dept. of Adult Education and Extra Mural Studies, 1989.

41 Akin and Birdsall, 'Financing of health services, pp. 40-3.

wishing to practise in areas of greatest need, that training be linked to a period of national professional service, and that registration be conditional on service in a needy area.

These suggestions are riddled with problems concerning their potential impact on the nature of professional training and their impact on the autonomy and needs of the medical professions. They would be difficult to implement in any political framework that values individual freedoms.

Rational and equitable distribution of appropriately trained health personnel is needed, but it is more likely that this may be achieved by increasing the number of primary health care workers at a lower level of training than doctors. Gear has suggested that a ratio of primary health care worker to general practitioner to specialist of 36:6:1 be aimed at.

Successful implementation of this would require recognition by medical authorities that the functions of diagnosis and screening, traditionally undertaken by doctors, be undertaken also by primary health care workers.[42] The formulation of policies that focus on providing appropriately trained staff, empowered to serve the needs of those requiring primary medical care, provides a challenge to policy-makers that is more far-reaching in its implications than would be efforts to redistribute some of the existing pool of trained medical personnel.

Without denying the value and desirability of modern medical education and practices, it is only realistic to acknowledge that a middle-income country with a rapidly growing population must face critical questions on selection of staff, content of training, training of auxiliaries and the use of health care teams, particularly at the primary health care level.

4. Control of medical services

The existing pattern of control of South African medical services occurs within the framework of a tricameral parliamentary system and a homeland system of government. This has led to fragmentation of the control of health services, on both a colour and geographical basis.

Participation by all communities in central decision-making at a national level is not possible within the existing political framework. As participation in central government is limited to select groups and communities, not all South Africans are able to participate in determining the structure and functions of South Africa's health care system. In addition, the ability of communities to express their needs in an informed way to health policy-makers, or to participate in local decision-making on health services, has been severely limited by state suppression of political and community organizations. This has become more pronounced under the current State of

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42 J. L. Botha et al., 'The distribution of health needs and services in South Africa', *Social Science Medicine*, vol. 26, no. 8, 1985, pp. 845–51.

Emergency, which has stimulated an increased resistance to collaborating with any state structure.

The challenge facing South Africa in the political sphere is to create and foster a democratic political system that allows all communities to participate in the choice of government and thus in decisions about the structure and policy of South African health services. The degree and extent of community involvement in the control of health services can then be democratically decided.[43]

Conclusion

These issues, some of which have already been addressed in South Africa,[44] need further urgent attention. There is a great need for the public, the medical profession and governing bodies to put aside some of their self interest and desires and to have a vision in planning and implementing a relevant health service which is affordable and which will retain the best features of the divergent health care systems currently in operation.

Full potential for positive change in the organization of health services can only be realized when a more democratic society is achieved which has the political will to commit itself to achieving health for all.

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43 R. Crawshaw, M. J. Garland, B. Hines and C. Lobitz, 'Oregon health decision: an experiment in informed community consent', *Journal of the American Medical Association*, vol. 254, 1985, pp. 3213–16.

44 Department of Health, *Report and recommendations of the Committee of Enquiry on possible further facilities for medical and dental training*, 1984.

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An alternative to academic boycott

Solomon R. Benatar

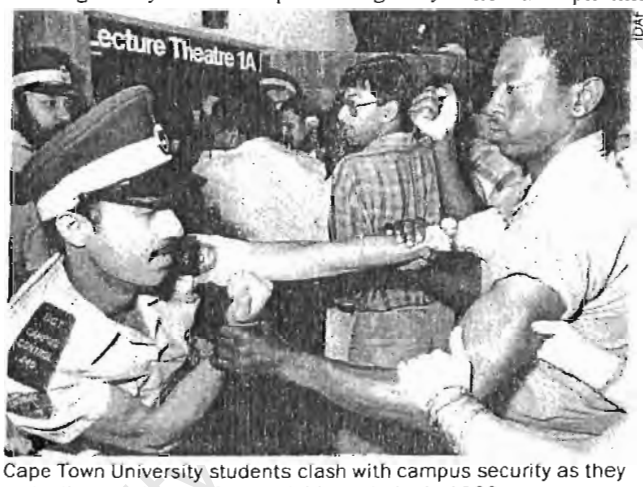
How can the international academic community contribute to the demise of apartheid? Academic boycott is a political strategy of doubtful ethical basis, and should be replaced with a policy of selective support.

THE history of South Africa during the twentieth century can be described as a combination of industrial and economic success intimately coupled to racially discriminatory political and social processes that have denied most of its population access to recognized human rights[1]. South Africa's economic and other successes — by comparison with the rest of Africa — have been totally eclipsed by its tragic political failures, by its refusal (as a nation supposedly committed to the Western tradition) to identify with the Universal Declaration of Human Rights, and by legislation which has relentlessly silenced much opposition, eroded the rule of law, entrenched the ruling party, muzzled the press and degraded human dignity. These deficiencies constitute the basis for South Africa being progressively ostracized by many Western countries.

Academic boycott, which has operated informally for many decades, has recently become consolidated into a more formal component of a strategy to pressurize the South African government to reverse its repressive and discriminatory policies and to develop a non-racial democratic society. Academic boycott, examples of which in the medical and scientific fields include banning participation in congresses, refusals to lecture in South Africa and censoring of publications, has stimulated a plethora of conflicting views[2]. Last week's announcement by President F. W. de Klerk — that political reform is to become a reality — will fuel rather than dampen the arguments.

It is important to understand and to empathize with the frustration, anger, despair and moral outrage which have led to advocacy for academic boycott as part of a political strategy to achieve desperately needed changes in South Africa. It is also important to strive for a more just society in South Africa. Nevertheless, it must be acknowledged that the forces motivating and driving political strategy are not necessarily the same as those that motivate scientists, physicians and educators in their professional roles.

Although moral outrage against the racist policies of South Africa, with all the devastating effects these have had, is clearly justified, the consequence that academic boycott is a morally imperative response requires more than mere assertion. The potential of such a boycott to affect adversely higher education, medical education, scientific endeavour, health care and the international collaborative spirit of higher education, all of which are necessary both now and in a post-apartheid South Africa, cannot be ignored. Many who reject and oppose apartheid, who acknowledge their own unwitting enmeshment in the process, who agree that it is beyond dispute that the hegemony of a white power oligarchy cannot continue in South Africa and that all political skills need to be brought to bear on achieving peaceful changes, consider that there are more constructive approaches than academic boycott.



Cape Town University students clash with campus security as they try to disrupt a lecture from a visiting scholar in 1986.

Because of the moral outrage against apartheid policies, discussion tends to be emotive, inconsistent and characterized by attempts to conflate political strategy with moral justification. Strategically justifiable political actions may indeed have a moral component, but I question the assertion that academic boycott is necessarily part of the moral imperative. I suggest that pressures generated through imaginative programmes of targeted professional support have greater moral consistency, justification and potential than academic boycott as a means of facilitating change in South Africa.

Selective support

The background and rationale for academic boycott is stated, and the arguments used by opponents and proponents outlined, in a recent publication[3] from the National Medical and Dental Association (a progressive medical organization formed in 1982 as a result of discontent with the Medical Association of South Africa's actions following the death of Steven Biko). Although asserting that academic boycott is a moral imperative, the authors of this document also express growing concern for the adverse effects of such sanctions. They offer guidelines as a basis for "selective support" of academic exchanges. If selective support means freedom of choice in targeting one's support of colleagues in South Africa, and is not a euphemism for selective boycott (requiring coercion for its implementation), this is certainly a more justifiable alternative to total boycott or uncritical support. (A subsequent statement from the African National Congress re-affirmed advocacy for selective academic boycott.)

Can academic boycott be justified within the traditional framework of professional moral codes? The World Medical Association (WMA), which has been active in the formulation of such codes, has rejected academic sanctions on the grounds that they conflict with the main objectives of the association — "to achieve the highest international standards in medical education, medical science, medical art and medical ethics" and such restrictions will "adversely affect health care, particularly of the disadvantaged" (ref. 4). The WMA's codes on various issues are widely accepted. Those who are willing to reject its view on academic sanctions must realize that this could erode the force of other WMA declarations, such as the role of doctors in war or caring for prisoners.

Although professional codes stress the need for collegial cooperation and support, recognition that there may be circumstances in which the imposition of sanctions may have to be considered has been addressed by the Council for Science and Society in collaboration with the British Institute of Human Rights[5]. "If any sanction is to be effective to achieve its special object, and is not to devalue the effect of other sanctions to be applied on other occasions, it must be appropriate (directed to the removal or mitigation of the particular evil which it is sought to combat), efficient (calculated to have the desired effect) and proportionate (use no more external force than is needed to

achieve its effect)." In addition to conforming to the principles of appropriateness, efficiency and proportionality, sanctions "must not be imposed in such a fashion as to reduce the imposer of the sanction to the moral level of the wrongdoer whose conduct is under criticism. Whoever wishes to take steps to protect scholarly freedom must not himself imperil that freedom by the steps which he takes."

Given the consistent opposition of many South African universities, professional bodies and individuals to apartheid and racial discrimination, it seems that the accusation that academics in South Africa are guilty of "colluding" with initiating, maintaining or supporting government policies that lead to violation of human rights is an overstatement. That many academics have been complacent about the socially destructive society in which they live as privileged members is beyond dispute. But it should also be acknowledged that individuals, professional bodies and academic institutions in 'free' countries (many of whom are also complacent about social injustices in their own environments) have either remained aloof or have devoted much more effort to a condemnatory stand than to encouraging or assisting their South African colleagues to oppose more actively violations of human rights and thus to contribute more effectively to change. Under these circumstances, it is not readily apparent that academic sanctions can be considered as appropriate or proportionate.

Academic freedom, even in its imperfect form in South Africa, needs to be protected if universities are to survive into a post-apartheid society. This view will be disputed by those who are scornful of the 'liberal' position or who consider even the open universities in South Africa to represent white, racist institutions that by their very nature perpetuate injustices in our society.

Concern for the role of politics in science has been expressed by several prestigious organizations[5–7]. The committee on Human Rights of the US National Academy of Sciences has acknowledged the difficulty in grappling with the continuum of repression and in determining just what is science and what is political. But it affirms that its position continues to be to hold to the universality principle, not to restrict the channels of scientific communication in the name of trying to maintain and extend them[7].

Ethics

An alternative means of exploring the moral validity of academic boycott is to question whether it can be justified within an ethical theory. One general tradition focuses on ethical principles, which subtend and justify right actions independent of their consequences, and on the moral integrity of individuals faced with making moral decisions. Specific actions are considered 'right' if they conform to an overriding moral duty (principle) and 'wrong' if they violate such duties.

A chief deficiency of such theories is their failure to provide guidance on how one ought to act when two or more moral principles are in conflict. In relation to academic boycott, for example, it could be argued that to distance oneself from academics in a repressive country is a morally principled means of expressing moral outrage, of separating oneself from evil and thus preserving moral integrity. But it could also be argued that actively to support education and academics who oppose the repressive regime is equally principled. How does one choose between these two courses of action? To choose the former may provide quick emotional satisfaction, but this would be an arbitrary rather than a reasoned choice.

These difficulties lead to the consideration of an alternative group of ethical theories which argue for the selection of a course of action which will lead to the greatest net balance of 'good' over 'bad' outcomes. In this context it is the ends which justify the means. The central criticisms of this group of theories are that weighing and balancing principles tends to sacrifice the individual for the common good, and that it is not possible to know without empirical evidence whether good consequences will be maximized in the short or long term. Crucial to this utilitarian notion is the time within which the anticipated change will occur. Despite recent encouraging developments, the time frame in South Africa is likely to be sufficiently long to confirm the already obvious shortcomings and adverse effects of the cry of "liberation before education" which seriously undermine the hoped for effectiveness of the academic boycott[8,9].

Yet another approach is one which enhances individual discretion by allowing for greater flexibility in reaching moral decisions. But, for example, selectively boycotting those academics who are not opposing the repressive regime is an unworkable approach because of the difficulty in determining the criteria for identifying those who fall into this group and problems of implementation. The coercion involved is also inimical to academic freedom.

The sincerity of many who advocate or impose sanctions should not be doubted. Unfortunately, an unintended by-product of academic boycott is the creation of opportunities for self-serving activities by individuals which have the potential to brutalize science and to lead to great damage, in particular over a prolonged period of time. The sincerity of many who oppose academic boycott should also not be doubted, but freedom must be used responsibly and in ways which do not curtail the freedom of others — consistent with the concept of freedom built over centuries into the 'social contract' within the Western tradition.

Alternatives

Living and working in South Africa presents the onerous task of challenging apartheid, striving towards abolishing racial discrimination and towards achieving internationally recognized human rights. Consistency and clarity in articulating and trying to uphold these ideals is demanding and poses risks which at a minimum include unpopularity with the government of the day. The strength and vigour of endeavours to uphold ideals with constancy (wherever this is needed) is dependent on international cooperation and support not only for those already committed to this ideal but also for those who could be motivated to do so[3,5,7,8].

Apartheid, racialism and all forms of discrimination which degrade human dignity must be rejected. Great effort has been expended and much more is needed to create a democratic, just society in South Africa. The strength of professionals' special contributions to this society should not be diluted by conflating political imperatives with moral imperatives. The assertion that academic boycott is 'moral' requires that its ethical basis should be clearly justified, and it is those who wish to impose restrictions on freedom who must do this. Imposing academic sanctions without ethical justification can reduce its protagonists to the moral level of the regime of which they are critical and can serve further to isolate and alienate those who are endeavouring to contribute to change in South Africa from within.

I propose an alternative — pressure for change through freely offered support on a selectively targeted basis (rather than resorting to the coercion associated with selective boycott) — as a more ethically justifiable approach. That this will require greater involvement, more commitment and greater effort is undisputed, but these are indeed the requirements for moral action, as distinct from moral posturing. □

Solomon R. Benatar is in the Department of Medicine, University of Cape Town and the Groote Schuur Hospital, Observatory 7925, South Africa.

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VIEWPOINT

Academic freedom in South Africa

S. R. BENATAR

Freedom of speech and academic freedom are widely acknowledged prerequisites for the relentless, objective, scholarly pursuit of knowledge and truth for the advancement of the human condition. Freedom of speech at universities in many countries has often been hindered by vigorous protest against allowing speakers with fascist, communist, or racist persuasions the privilege of a campus platform. Such protest and dissension has disrupted lectures and silenced speakers. Freedom of speech allows for protestors to dissent, but cannot rationally be extended to "licence to gag", since this would stifle presentation of contentious issues and prevent public exposure of flawed arguments. The need to preserve opportunities for open debate is greatest during times of rapid social change if anarchical and tyrranical forces are to be countered. It is, however, at just such times that the greatest threats are posed to freedom of speech and association and to academic freedom, which are essential for democratic politics and for the primary task of a university—to discover and disseminate knowledge by means of research and teaching.[1,2]

Academic freedom can be considered from two viewpoints—that of the individual academician and that of

ADDRESS: Department of Medicine, University of Cape Town, and Groote Schuur Hospital, Observatory 7925, Cape Town, South Africa (Prof S. R. Benatar, FRCP)

an institution. These two interrelated aspects of the right to academic freedom are not synonymous and should not be conflated. From the institutional viewpoint, academic freedom—better described as university autonomy—refers to the independence of the university's governing body from political interference, the university's right to decide who should teach, what should be taught, who should be taught, and who should graduate (setting standards), with the primary objectives of pursuing the advancement of knowledge and seeking the truth.

Academic freedom from the viewpoint of the individual is a different and less clear-cut concept and consists of several components. I understand its fundamental component to be the right of an individual to pursue his academic work—teaching, researching, and publishing—in accordance with scientific and scholarly convictions and in conformity with the academic ethos, without fear of persecution on the grounds of private views and conduct (eg, religious beliefs, sexual preferences), provided these do not interfere with his academic work.[2] The extension of academic freedom beyond the right to hold private views to the right to incorporate these into teaching when this is relevant is not disputed. Whether academic freedom should be extended further to the right to act on these beliefs in the teaching milieu is, however, contentious. It is certainly considered unacceptable for the teacher to coerce students to accept his private views, since this action infringes on the rights of students to pursue their academic studies free of interference with their private preferences.

In any society the right of freedom of speech is necessary before academic freedom can be truly fulfilled. Academic freedom in turn ensures: (a) that it is only academic and scholarly qualities that justify a secure place in the university; and (b) that the potential for advancing knowledge in the university setting will not be adversely affected by factors extraneous to academic ability.

In 1960 Prof C. W. de Kiewiet defined the concept of academic freedom more broadly in his T. B. Davie Memorial Lecture at the University of Cape Town: "The Definition (of academic freedom) which seems to have the most dignity and creative meaning is the right of scholarship to the pursuit of knowledge in an environment in which the emancipating powers of knowledge are the least subject to arbitrary restraints. This means that scholarship and the teaching or writing in which it expresses itself must be free to deal with the major problems or issues of the age. It is vital to go beyond freedom to pursue knowledge for its own sake, and claim for scholarship today a greater and freer role in relieving mankind of inequality, injustice, deprivation, fear, ignorance or anger . . .".[1]

Academic freedom in South Africa

Before the 1959 extension of the University Education Act and associated legislation, the Universities of Cape Town and the Witwatersrand were "open" universities in the sense that students were admitted on academic criteria without regard to their race, colour, or creed.[1] These universities' unequivocal and publicly stated opposition to the racial restrictions imposed on universities[1,3] has been reiterated and vigorously defended over the past 30 years, during which time the restrictions on freedom of speech, movement, and political expression have been progressively imposed on South African society, and university autonomy has continued to face many threats. It is against this background that the English language universities of Natal, Rhodes, Cape Town, and the Witwatersrand have on numerous occasions reaffirmed their commitment to intellectual freedom and have indeed extended the concept of academic freedom in a changing society.[3,4]

The debate on freedom of speech and academic freedom in South Africa is complicated by the cultural and ideological diversity that characterises a heterogeneous society in which long entrenched racial discrimination has had profoundly adverse effects. "Worlds apart" is an apt description of the different environments in which whites and blacks live in South Africa. It is necessary to recognise, and be sensitive to, the different perspectives from which freedom is seen by those who have been privileged to grow up in an environment of freedom as compared with those whose whole lives have been restricted in a myriad of ways. The complexity of relationships between blacks and whites needs to be understood in the context of generations of domination and subordination that have resulted in mutual fear, mutual disrespect, a sense of otherness, and a persuasive feeling by blacks of malign neglect. These are the ingredients of a social environment that has engendered a deep feeling of inferiority in blacks and a deep sense of guilt in whites.[5] It is perhaps not surprising that in this context the "language" used to communicate ideas and perceptions does not necessarily have the same meaning to all the participants in the debate. The background to these differences also raises the question of the extent to which it is justifiable for universities and academics to claim that there is academic freedom in an oppressive society (a) in which limitations are imposed on freedom of speech by legislation or emergency powers, (b) in which universities are not fully academically free in an institutional sense, and (c) in which until recently these limitations were in danger of becoming more stringent. The increasingly expressed challenge to universities in South Africa to become "Africanised" is also highlighted in this debate.

It must be conceded that within the context of South African history universities have collectively (although not necessarily individually or to the same extent) mirrored and served to support the deep cleavages within this radically divided society, although usually unintentionally and despite the hope that universities would be the focus of conciliation.[6]

How should a university react to events that affect it in a society such as exists in South Africa? What action should be taken against those who "obstruct" academic freedom by disrupting and preventing lectures, and how should such obstructions (which are claimed by some to be actions for future greater freedoms) be viewed in the context of university life in this country? What ought to be its attitude to the idea of academic boycott? How can universities contribute to the peaceful development of a democratic and just society?

The need to take a moral stand against apartheid and all its implications is undisputed and in this regard the position of several South African universities is quite clear and has for many years been on public record. The nature and extent of actions that should be taken to express the moral stand are hotly debated. Pragmatic, economic, and sociopolitical considerations inevitably influence the ability to implement change. Many hold the view that even the most outspoken universities have taken inadequate action.

Open universities in South Africa are part of the international academic community, but have become increasingly (externally) isolated over the past 30 years.

Censorship within South Africa has served to (internally) isolate South African academics from life around them. Both forms of isolation and the consequent academic impoverishment frustrate rather than facilitate intellectual and social progress, and are thus antithetical to the concept of academic freedom. The viewpoint espoused by liberal universities is that freedom of speech and academic freedom are important, even in their incompletely fulfilled states, since South African universities are neither the cause of, nor perpetuators of, injustice in our society. Indeed quite the converse applies since they encourage and allow dissension against such injustices. This view calls for the protection of even imperfect academic freedom to enable universities to contribute to the reasoned dialogue required to develop a new, more just, and peaceful society in which universities can continue to carry out their universal function of advancing knowledge.

An alternative view, expressed by some who continue to advocate academic boycotts, is that the so-called universal function is more Eurocentric than universal, that even the central knowledge and truth seeking work of universities is not neutral, and that its protection by academic freedom helps to perpetuate racism and oppression by: (a) reproducing forms of power relations that reinforce elitist dominance in society, (b) suppressing the collective will of the people, and (c) frustrating progress towards the elimination of an illegitimate government and its replacement by a democratically elected leadership. Opponents of freedom of speech and proponents of academic boycott in such a context justify their stand as appropriate political strategies which, by contributing to the isolation of South Africa, could facilitate the removal of an unjust regime and lead to greater academic and other freedoms in the future. Crucial to this notion has been the time anticipated for such change to occur. The time frame has already been so long that many individuals and organisations, including the African National Congress, are openly expressing concern for the now obvious adverse effects on a whole generation of schoolchildren of the slogan "liberation now, education later". This course of events, which has contributed to a generation inculcated with a culture of violence, has seriously undermined both the usefulness and the morality of school boycotts and other restrictions on freedom of speech and academic interchange.

The road ahead

Persistence in trying to view the experiences of others only through the prism of our own life experiences will not suffice. This applies both within nations and between nations. Empathy, and a willingness to communicate at more than a mere superficial level, are prerequisites to understanding the deep cultural, economic, and ideological gaps that separate opposing groups, and to developing the mutually enriching and desperately needed dialogue that is essential for peaceful progress into the future. The "politics of protest" is becoming obsolete and must be replaced by the "politics of transformation". By this means the adverse effects of obstructing academic freedom and of total academic boycott are already being acknowledged, and it is being conceded that even selective boycott poses many problems. As a result some who previously proposed academic boycott are now retracting[7] and the morally justifiable status of selective support[8] is gaining recognition.[9,11] I hope that those who still believe that obstructing academic freedom is a necessary part of the struggle will soon also move away from this counterproductive and self-defeating stand and contribute to a momentum for peaceful progress. Building a new South Africa will demand a pattern of thought and action that transcends the rhetoric of protest.

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Letter From Cape Town

Academic Boycott—Through the Looking Glass

Since the establishment of the first medical school (University of Cape Town) in South Africa at the beginning of this century the South African medical profession has acquired an enviable national and international reputation for excellence in clinical practice, medical education, and scientific research.[1] Graduates from our schools have become distinguished medical leaders in many countries. This reputation, marred by the apartheid society in which medicine has developed and of which it is a part,[2] has become gravely damaged since the Biko case, a turning point that had as its fulcrum the failure of the South African Medical and Dental Council (SAMDC) to appropriately apply its disciplinary powers.

Detention Without Trial

In 1977 Steve Biko died in detention following physical atrocities inflicted on him by South African security police. The district surgeons who attended him and who were grossly negligent were almost certainly operating under intimidating and coercive hierarchical pressures within the state security system and also under the similar but more subtle influences of a repressive society.[3,4] The subsequent response of the Medical Association of South Africa, the SAMDC's failure to find prima facie evidence of improper conduct on the part of the physicians involved, and the SAMDC's resolution that no further action be taken met with resounding international criticism.[3,4]

In 1985, following the persistent efforts of a small group of South African medical practitioners, the Supreme Court issued an order repudiating the resolutions adopted by the SAMDC in response to the Biko case and directed the SAMDC to undertake a disciplinary enquiry. The disciplinary committee found that two medical practitioners had been guilty of professional misconduct on several counts.[3]

Medical Responses

Constructive responses to these events have been twofold: (1) stimulation of the social and moral conscience of medical practitioners in South Africa—most of whom, until this episode, while dedicated to international ideals in medical practice, had been complacent about many socially destructive forces and attitudes in our society, and (2) recognition of and encouragement to improve the inadequate health care facilities available to prisoners and detainees.[5,6]

The recent description of exemplary medical management of political detainees on a hunger strike in Johannesburg is illustrative of changes that have ensued.[7]

Those who are sincerely concerned about professional deficiencies (not unique to South Africa) but who do not stereotype all their colleagues have expressed beneficent and encouraging attitudes[8,9] toward those South African colleagues striving to improve medical services and to sustain human rights. Others, who have accused the entire medical profession in South Africa of being corrupted and subverted by the racist ideology of apartheid,[10,11] represent the advocacy for total academic boycott.

Academic Boycott

Justifiable abhorrence for racism and justified political opposition to South Africa's racist regime have been used to define academic boycott as a "moral imperative." Similarly, the endeavor to ostracize the South African medical profession has been well masked behind a veil of supposed moral superiority. The lack of an adequate moral justification for academic boycott has, however, been described,[12-14] as has been the need to foster academic and broader freedom in South Africa.[15] The sincerity of many who, through deep personal reflection, wish to dissociate themselves from South Africa is not disputed. What is in question is the moral justification for boycott action, especially at a policy level where coercion is required for implementation.[8,13,14] Even those who should be able to recognize the lack of moral justification for intellectual defection from academic freedom have been intimidated into an uncomfortable silence.

For example, in May 1988 the Royal Australian College of Physicians (RACP) implemented an academic boycott against the College of Medicine of South Africa (CMSA) at its Golden Jubilee scientific meeting in Sydney. This action, without clearly articulated justifying reasons, was taken despite knowledge of the long-standing nonracial policies of the CMSA and of its credo (published 18 months previously and sent to all sister colleges). In this credo the CMSA expressed opposition to all forms of discrimination; stated support for internationally recognized human rights, including those of prisoners and detainees; and advocated a unitary health service supported by an open university policy within a society that encourages equitable and fair access to educational, health, recreational, and other social services.[16] Advocacy for universal access to a unitary (coordinated, nonfragmented, and nondiscriminatory) health service was reinforced in a subsequent statement from the CMSA.[17]

Presidents representing other colleges of physicians were made aware of the boycott at the International Meeting of College Presidents on the day before the May 1988 RACP meeting. By their silent acquiescence with the RACP decision they failed to rise to the occasion. By expecting their colleagues in repressive countries to defend human rights (often at risk to their lives) while not being themselves willing to take a stand on academic freedom, these presidents revealed their lack of the intellectual depth, discernment, and moral strength characteristically associated with wise and courageous leadership. While the human degradation of living in a country with racist policies should not be underestimated, it is surely inappropriate to ignore the efforts of organizations that reject such policies and unjust to ostracize these organizations. Subsequent correspondence with the RACP eventually resulted in a retraction, published in April 1989,[18] that was diminished by an attempt to justify the previously imposed boycott through reference to events subsequent to its imposition.

Some Reflections on Academic Boycotters

The RACP boycott exemplifies the way in which those who have accused the medical profession in South Africa of being

(Continued on p 504.)

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Reprint requests to Department of Medicine, University of Cape Town and Groote Schuur Hospital, Observatory 7925, Cape Town, South Africa (Dr Benatar)

(Continued from p 501.)
consciously or subconsciously subverted by apartheid policies have themselves committed an act of intellectual brutality. By propagating the boycott process in a totalitarian fashion the RACP resembled the apartheid regime, and those who silently acquiesced repeated the complacency of which the medical profession in South Africa was accused. Imposing an academic boycott without clearly articulated ethical justification thus reduced the proponents of the boycott to the moral level of the regime of which they were appropriately critical.[13,14]

In July 1989 it was reported that the president of the RACP had proposed cooperation between colleges and equivalent institutions in supporting Action in International Medicine (AIM), a global alliance of health professionals to improve health care in developing parts of the world.[19] It is not unreasonable to question whether the inconsistency between the RACP advocacy of a boycott of the CMSA and the RACP advocacy of cooperation between other colleges can be explained by the self-interest promoted through appearing to act from moral high ground on each occasion.

Self-interest, an acknowledged necessary force of life, has adverse implications for the practice of medicine (within a country or internationally) when it becomes a dominant driving force. International codes of ethics, freedom to collaborate and communicate with colleagues in the quest for knowledge and wisdom, the integrity of medical research, and the healing power of the physician are all threatened by pretenses of moral superiority, financial greed, and other purely self-interest–directed activities.[20-23]

Academic boycott illustrates attitudes and events that damage the universal ethos and ideals that the medical profession seeks to uphold through internationally accepted codes of ethics and through intellectual collaboration between people of good will striving to improve the human condition.[14,23,24] High professional ideals are also linked by the knowledge that justice must be blind to the shifting, often inconsistent motivations and coercive strategies of politicians. While science, professionalism, higher education, and academic freedom cannot be completely separated from politics, and some would argue that they should not be, constant vigilance is required to ensure that they are not hijacked for political purposes.[14,25] These views have been eloquently expressed by Sakharov[26]:

> Intellectual freedom is essential to human society — freedom to obtain and distribute information, freedom for open-minded and un-fearing debate and freedom from pressure by officialdom and prejudices. . . . Freedom of thought is the only guarantee of the feasibility of a scientific democratic approach to politics, economy and culture. But freedom of thought is under a triple threat in modern society — from the opium of mass culture, from cowardly, egotistic and narrow minded ideologies and from the ossified dogmatism of a bureaucratic oligarchy and its favourite weapon, ideological censorship. Therefore, freedom of thought requires the defence of all thinking and honest people.

Conclusions

The medical profession, as a worldwide moral community, strives toward common high ideals.[26,27] In different countries we succeed to varying degrees in reaching some of these. None of us achieves perfection. Our shortcomings, which often have a contextual bias, should be exposed, constructively whenever possible, to facilitate advances within nations[28] and between nations[29] in our quest for better health for all. Paternalism toward patients, which has been appropriately discredited, must be followed by rejection of paternalism toward professional colleagues. Hubris and presumptions of moral superiority in medicine are transparent, destructive, and degrading. Humility, a more sensitive perception of professional deficiencies in all societies, and recognition of the need for mutual support in overcoming these are, in contradistinction, morally uplifting.

Solomon R. Benatar, MBChB, FFA(SA), FRCP(Lond)
Department of Medicine
University of Cape Town and Groote Schuur Hospital
Cape Town, South Africa

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NEWS AND VIEWS / NUUS EN MENINGS

Freedom of speech, academic freedom and challenges to universities in South Africa

S.R. Benatar

Freedom of speech and academic freedom are widely recognized prerequisites for the maintenance of national and international freedom to communicate with colleagues in the relentless, objective, scholarly pursuit of knowledge and the advancement of the human condition. The debate on freedom of speech and academic freedom at universities in South Africa is complicated by the cultural and ideological diversity which characterizes a society in which racial discrimination has been entrenched for so long.[1] It is perhaps not surprising that in this context the 'language' used does not necessarily have the same meaning to all the participants in the debate. These differences in 'realms of discourse' which seem to threaten freedom of speech and academic freedom are in part a reflection of the different ideologies from which they arise and also highlight the challenge to universities in South Africa to become 'Africanized'.

This essay is an attempt to analyse and discuss some of the overt, covert and intertwined strands of thought and the different 'realms of discourse', woven into the debate on academic freedom (and academic boycott) with a view to identifying, and briefly describing, the various concepts which influence and determine differing positions and which in part derive from diametrically opposed ideological value systems. The complexity of the issues involved preclude provision of comprehensive arguments for or from each position. I shall endeavour to sketch the basis for conflicting opinions, and illustrate that the difficulty in reaching consensus on 'rational' grounds is hampered by the contrasting basic value systems from which reasoned debates may proceed. Without recognition and acknowledgement of these fundamental differences, it is difficult to understand discussions in which the same words are used to describe different concepts and values, or to embark on the de-alienation and negotiation processes required to peacefully reach compromise solutions to the complex challenges facing society and universities in South Africa.

Freedom and rights

Freedom can, in its simplest form, be defined as the absence of interference and constraint. This classical liberal concept of freedom implies certain liberties such as freedom of speech and worship which are now traditionally identified as rights. Although freedom of speech and academic freedom are interrelated and overlapping concepts, both falling under the rubric of *rights*, they are not synonymous and should not be conflated.

Rights can be considered in a narrow sense as *legal rights* or in a wider sense as *moral or human rights*. Legal and institutional rights are those which can be created and abolished by appropriate bodies, and enforced in a court of law. These rights are justified by legal principles and rules, are acknowledged and codified, and entail specific correlative duties by various parties.[2-4]

In a wider sense we may also speak of (human and moral) rights which have social and political significance even when they are not formally codified and institutionalized. The ways in which such human rights are perceived and valued can be considered within several different paradigms. Two (the most hotly debated by theorists in South Africa at present) will be considered as examples in this essay, to facilitate better understanding of the current controversies about such liberties as academic freedom and freedom of speech. I must, however, make it clear that it is too simplistic to consider either of these paradigms as being monolithic or to imagine that they are the only two paradigms in which questions are posed and answers offered (in South Africa or anywhere else) regarding what freedom means and how society should be structured.[3, 5]

'Individualistic' ('capitalist') ideological paradigm

The recognition of individual moral rights was first clearly articulated by Locke in the late 1600s. In the mid-19th century, Mill formulated his Principle of Liberty directed against repressive laws and against the censorious public opinion which could threaten individual liberty and minority rights. His awareness that democracy and liberty were not one and the same (but rather distinct ideals which, in practice, may or may not reinforce each other) led him to temper the claims of democracy and to entrench the claims of individual liberty and minority rights.[5] The natural rights to life, liberty and property are now intuitively widely accepted and are proclaimed in several national constitutions.

In contemporary moral theory this individualistic ideological paradigm (which places emphasis on reason as the source of morality) is articulated in terms of various (deontological) moral theories which derive moral principles and rules from the basis of respect for the supreme value of the individual and her autonomy over that of the state or church. Rights can also be justified, although less convincingly, on the basis of the utilitarian value of individual rights to society as a whole.

The modern language of moral rights in the social welfare tradition (which justifies and encourages resentment and protest by those whose needs have not been met) stems from the rise of the labour movement and the workers' demands that their dignity and equality be respected. In these circumstances social welfare rights (to health care, for example) have served as a powerful means of protecting the weak by achieving dominance over other uses of scarce resources for short-term social utility. Such rights, increasingly recognized alongside classic and individual rights, can thus be thought of, not as ultimate 'goods' on their own, but rather as achievements of social struggles in situations characterized by competing claims and relatively scarce resources. It follows that rights should be asserted in ways most likely to satisfy the individual good and contribute to the common good, although these two components can be separated to varying extents. (Indeed it is the extent to which such separation is justified which lies at the heart of much of the debate between conflicting ideologies.)

It has been argued that because statements of fundamental rights are created in vague and imprecise terms, they can seldom be enacted with precision; each individual right, duty or other moral principle does not have absolute trump quality and can be validly over-ranked by competing moral principles under certain circumstances.[5-7]

Freedom of speech

The general acceptance of the demand

S.R. Benatar is professor of medicine in the Department of Medicine, University of Cape Town, Observatory, 7925 South Africa.

for freedom of speech acknowledges the need to retain independence of thought and opinion in the face of opposing power. While this (negative) right does not automatically provide the (positive) opportunities to 'speak' through the media, it is agreed that it should include the positive right of access to the processes which enable a public hearing.

The implementation of freedom of speech and academic freedom at universities has frequently been complicated by vigorous protest against allowing speakers with 'unacceptable credentials' the privilege of a campus platform. Such protest and dissention has disrupted lectures and silenced speakers. Because freedom of speech allows for protesters to dissent, it provides necessary (and perhaps even sufficient) opportunity to react to provocation and offensiveness. But because dissenters often use inflammatory speech which may threaten life and liberty by inciting violent action, it must be concluded that the right to freedom of speech (which includes the right to dissent), is like other rights, prima facie and powerful but not absolute. It can be superseded by other prima facie moral principles, although not without leaving 'moral traces'.

If having a right invokes co-relative positive and negative obligations for others, it logically also implies obligations for the claimant, that is, to use the right responsibly and as a means to enhancing, rather than detracting from, the social cohesion necessary for man's communal existence. The preservation of freedom and of freedom of speech (and dissent) thus entails the setting of limits and these form part of the social contract as a means of securing the individual's rights.

Academic freedom

The primary tasks of a university, to discover and disseminate knowledge and to encourage independent thinking by means of research and teaching, can only be optimally achieved in an open society in the context of freedom of association and freedom of speech.[9-11] Academic freedom can be considered from two viewpoints, that of institutions and that of the individual academician. These two interrelated aspects (which have been recently reviewed[1]) are not synonymous and should not be conflated. Academic freedom ensures (a) that it is only academic and scholarly qualities which justify a secure place in the university, and (b) that the potential for advancing knowledge in the university setting will not be adversely affected by factors extraneous to academic ability. The right of freedom of speech is a necessary condition within a society in which academic freedom is to be truly fulfilled.

'Communal' ('socialist') ideological paradigm[5,6,12]

Whereas in the 'capitalist' paradigm freedom of religion, speech and association for the individual are of central importance, in the 'socialist' paradigm participation in a process in which autonomy is *heteronomously* directed is seen as the way in which human potential can be fulfilled by making the collective human will sovereign over all.[6] These concepts of freedom seem profoundly different.

The argument from the extreme end of the spectrum of this broad ideological paradigm is that the roots of human antagonism and inequality lie in exploitation which takes place within the struggle between labour and capital, the latter optimizing power through control of capital and knowledge. According to this view, the dominant concepts of morals, politics, religion, law, philosophy and art of any society are the ideas of the dominant economic class. Capitalism is perceived to have its basis in greed, selfishness, competition and materialism. It is accused of encouraging erosion of many human rights, of placing greater value on commodities than on caring for other humans, of dehumanizing us and alienating us from each other.[12]

The extreme view within this paradigm also claims that scientific knowledge and practice are not neutral. Science and the so-called universal function of universities in advancing knowledge and seeking truth (protected by academic freedom) are seen to perpetuate (racism and) oppression by (a) reproducing forms of power relations that reinforce capitalist dominance in society, (b) suppressing the collective will of the people and (c) frustrating progress towards a participatory democracy.

More evolved, less extreme socialist positions are today more prevalent and more credible than the caricature I have depicted. There are also non-Marxist communitarian ideological paradigms which encourage the development of a hierarchy of values in which humanity is more important than science, technology, economic development or better living conditions. Here the controlling forces are countered not with aggression, but rather with self-discipline, non-violent protest and non-cooperation of various kinds.[6]

The idea of a university within these two paradigms of thought

Universities are components of larger social systems within which they have a unique position, character and function — ideally to preserve, generate and spread knowledge and understanding for their intrinsic worth and as the basis of welfare for humanity. They, however, must interact widely with other institutions in society and they have to meet conflicting demands and expectations. Halsey has described the concept of a university as embodying the intermingling of two traditions both deeply embedded in the history of European institutions of higher education.[13]

> The one is monastic, other-worldly, devoted to learning as an end in itself and indifferent to the profane comforts of this world. The other is secular, worldly, seeking knowledge instrumentally for the purposes of personal or collective mastery over this world.[13]

He refers to these traditions symbolically as 'Franciscan' and 'aristocratic', to capture their relation to European culture and society of the time and also to draw attention to the need to redefine them in the modern, secular, egalitarian age. In the evolution of universities during this century, science, technology, bureaucracy and popular accountability have preferentially fostered the 'aristocratic' tradition which, through its modification by the concept of meritocracy, has led universities to express the shared values of society to a greater extent than in the past.

Criticisms have been levelled at modern liberal universities from diverse perspectives. Some critics portray academics and universities as politically conservative and co-opted into the 'system' by subsidies and research grants from governments and by the approval of academics' domination of their disciplines.[13] Others claim that liberal universities no longer foster the open-mindedness required for true scholarship,[13,14] and that they are becoming increasingly partisan to left-wing views rather than remaining neutral. These tensions and those between egalitarianism and elitism, between traditional identity and demands for contemporary relevance, between universality and particularity, between autonomy and restrictions, and between accountability as a corporation and the need for independence as a community of scholars constitute the crisis of modern liberal universities as they struggle to preserve simultaneously their intellectual integrity and respond to their societies' needs.[13-16]

Academic freedom and the role of universities in South Africa

Debate about academic freedom in South Africa reflects elements of conflicting realms of discourse exemplified

by the two ideological paradigms outlined and further poses the question of the extent to which it is justifiable for universities and academics to claim academic freedom in an oppressive society in which (a) basic human rights are denied to the majority of the population, (b) limitations are imposed on freedom of speech by legislation or emergency powers, (c) universities are not fully academically free in an institutional sense and in which, until very recently, (d) these limitations seemed to be becoming increasingly stringent.[1,13,15–18]

One polar view contends that academic freedom, like freedom of speech, should be limited by external authoritarian control for the purpose of preserving the peace and maintaining freedom — more accurately described as preserving the status quo and silencing opposition. National security, economic stability and social order are the reasons usually advanced by the proponents of this view whose major concern is the preservation of the power of the state and its current rulers. Implementation of this view at its extreme limits would constitute fascist tyranny, and is illustrated by recent events at the University of Chile.[19]

The other polar view, held by some student activists and some radical academics, is that even liberal universities represent white, racist, capitalist, dominating forces, policies and attitudes that perpetuate injustices in our society. In this context actions (even if they reduce academic freedom) which seek to change universities and bring them in line with the 'peoples' needs' have been proposed as part of the (temporary) strategy required to intensify processes which will lead to abolition of an abhorrent apartheid regime and to increased freedom on a wider basis in our society. It is within this context of thought that academic boycott has been propagated. Taken to its extreme, this view and the actions it leads to (i.e. whatever means are necessary — including violence and the destruction of universities — to achieve the desired end) constitute anarchy.

These extreme attitudes, largely determined by differing perceptions of social justice and by the desire for power and control, have fundamentalist foundations and the potential to lead to oscillations between tyranny, anarchy, revolutions and new tyrannies.[20]

It must be conceded that in the context of South African history universities have collectively (although not necessarily individually or to the same extent) mirrored and served to support the deep cleavages within this racially divided society, although usually unintentionally, and despite their hope that universities would be the focus of conciliation.[21] Concern for the adverse effects of a prolonged academic boycott on post-apartheid South Africa has resulted in a move towards advocating either a selective academic boycott (for neither of which a moral basis has been justified), or more recently selective support (which is morally defensible) for those academics and institutions who reject apartheid and contribute to the development of a more just society.[22,23] (The term selective support can either be used euphemistically to sustain selective boycott or in its correct linguistic sense: meaning the freedom to assist or interact, uncoerced in any way, with those of one's choice.[23])

Challenges to universities in South Africa

How should a university react to events which affect it in a society such as currently exists in South Africa? How does it take up the challenge to become relevant and Africanized without losing its universalistic ideals? What action should be taken against those who obstruct academic freedom by disrupting and preventing lectures, and how should such obstructions be viewed in the context of university life in this country? The need to take a moral stand against apartheid and all its implications is undisputed, and in this regard the position of several South African universities is quite clear and has for many years been on public record. The nature and extent of actions which should be taken to honour the moral stand are hotly debated. Pragmatic, economic and socio-political considerations all influence daily decisions and longer term policies and the ability to implement these.

Africanization

The implications of the demands for 'Africanizing' our universities and making them more 'relevant' also need to be addressed. In relation to the University of (then) Rhodesia, Murphree has pointed out that the process of Africanization involves more than mere indigenization of the staff or adaptation of curricula to African cultural and social contexts. It rather entails 'a more embracing quest which lays upon the African university the task of assembling the entire gamut of African heritage and ensuring its continuity by an analysis and pedagogy which gives it a contemporary relevance to the needs and aspirations of the modern African nation-state'.[15] This programme, which requires a degree of detachment from the state and its immediate concerns, conflicts with the demands for relevance which require more urgent focus on the utility enterprise of the university in relation to national development needs. He quotes Ashby's description of the dilemma for the African scholar:

> 'It stretches his nerve between two spiritual worlds, two systems of ethics, two horizons of thought. In his hands he holds the terrifying instrument of Western civilisation: the instrument which created Jefferson's speeches, the philosophy of Marx, the mathematics and chemistry of atomic destruction. His problem is how to apply this instrument to the welfare of his people...' 'The responsibility for concentrating and crystallising the ethos of African cultural and social heritage and refracting it through an analysis of contemporary relevance requires a perspective produced by a certain distance — but not divorce — from proximate, pragmatic considerations, the kind of distance inferred in the often castigated "ivory towerism" of the university tradition.'[15]

Africanization and the pragmatic requirements of relevance are moreover particularistic in that they address themselves to specific sectional or regional requirements and realities. Such particularism Murphree believes is 'antithetical to the genius of the university tradition and inimical to its viability and ultimate utility.' To be viable and enjoy public support necessary for its continued existence, the university must be seen to be relevant (implying a degree of particularism in its activities) but it is also essential to retain a 'universalism which places consideration of rationality above the more particularistic claims of given structural or ideological requirements of a given time and place. Such a universalistic perspective requires a measure of autonomy for the university, providing the academic freedom for its development and expression.'[15]

Towards narrowing the ideological gap

The philosophy of Marx, designed in the 19th century to 'free the people', to grant them basic social needs and to 'bring power to the people', remains powerful, evocative and appealing to oppressed masses in developing countries. Rhetoric must, however, be tempered by recognizing the reality of the evolutionary transformation of the unrestrained capitalism of Marx's time into modern socialized democracies with a more 'human face'. These changes together with the failure of raw socialism and its slow evolution towards various forms of more democratic socialism have narrowed the gap between polar extremes and offer the 'space' for negotiated

solutions which could reduce human conflict.[17]

In an attempt to define potential negotiating terrain, Campbell has posed the following questions:[24]

> 'If we value and defend our rights, is this an expression of human dignity or an indication of our selfish and alienated condition? Is the notion of individual rights tied to the competitive individualism of liberal capitalism or would rights have a central place even in a socialist utopia? Is socialism the fulfilment or the negation of human rights?'

He has suggested that:

> 'If the ideals of socialism can be expressed in terms of individual rights then, however different socialist rights may be from those most highly prized by the classical liberals, there is at least a continuity and similarity of thought forms and basic concepts in which major political disagreements can be clarified and debated. But if the ideological basis of socialism is so far removed from that of liberal democracy that it has no use for the language of rights, then there can be little room either for compromise or for significant dialogue between socialists and liberal democrats. In so far as the peaceful solution of political disputes depends on sustaining communication between those in serious disagreements, the conceptual compatibility of 'rights' and 'socialism' has a bearing on the prospects of reducing the political uses of violence both within and between nations.'[24]

He goes on to suggest that the compatibility of socialism and rights can be approached either at a practical level (on the basis of examining practices in socialist countries) or at the philosophical level (requiring careful analysis of the meanings and assumptions within our ideas of 'rights' and 'socialism'), or at both levels as they are not unrelated. He makes the point that the 'dispute about rights and socialism is as much a debate within socialism as about it', and he sets out to explore and evaluate the dispute within socialism between 'revolutionaries' and 'reformists'. The latter 'while admitting the relative and inadequate nature of bourgeois rights, seek to salvage something of lasting value from the traditional concept of rights...', 'which will be transformed to serve the true interest of humanity'. It is appropriate to draw attention to such attempts as those by Campbell to elevate the debate above the level of ideological dogma and thus to seek the grounds on which peaceable progress could perhaps be negotiated within nations and between nations; an essential process for the achievement of global peace in the face of many threats including that of nuclear war.

Conclusions

It is clearly possible to empathize with some of the less extreme components of each of the polar viewpoints outlined in this essay while simultaneously rejecting others. Complete identification with either extreme is impossible for those who value peaceable dialogue over the naked pursuit of power by tyrannical or anarchical forces and who are cognizant of the severe limitations of each of these polar ideologies.[2,17,20] It is important to recognize the strength and prevalence of moderating views and to avoid the common error of labelling social change as akin to communism, or to fail to draw a clear distinction between liberalism and communism and between opposition and subversion. Such errors have resulted in open universities being 'maliciously and recklessly branded as subversive communist outposts in South African society'.[9] Similarly, there is a need to moderate and contest the assertion that academic boycott is justified on the grounds that universities are co-opted into and perpetuate the 'system' by their dependence on state sources of funding and by 'Eurocentric' and other 'status quo' influences.

The viewpoint espoused by liberal universities is that academic freedom, even in its incompletely fulfilled state in South African universities, does not foster the cause of wider injustices. This view calls for the protection of even imperfect academic freedom to enable universities to contribute to the reasoned dialogue required to develop a new, more just and peaceful society in which universities can continue to carry out their universal function of advancing knowledge. The challenge to this viewpoint is acknowledged.[1]

The assertions made in this essay assume that academic freedom, like other freedoms, cannot be absolute, that there is a need for such rights to be implemented with responsibility and with consideration of the common good, and that where restraints on full freedom of speech on the campus are necessary, every attempt should be made to minimize these.

The challenges we face in South Africa are to shed the crippling and dehumanizing shackles of racial discrimination which have blighted our society and the lives of so many, to work towards rectifying the injustices to which such discrimination has led, to consolidate and strengthen the economy and to develop political, social, economic and cultural structures which foster greater equity, human dignity and the community spirit which will allow all people to achieve their full potential.[17,25-29] The survival of our open universities is, I believe, vital to the intellectual, economic, and social well-being of a future, more democratic South Africa.

The only means available to counter the threats from polar extremes are those based on communication, education, dialogue, co-operation and self-discipline, ideally with these in turn informed by a non-restrictive faith in a force which has the potential to unify all people. Education is the foundation on which enlightened growth and change can be built, and is a mainstay of an open and free society. As our society changes and our universities try to anticipate and meet the needs of a new society, it is the fervent wish of many that the de-alienation and negotiation processes will prevail and thus avert the vast human tragedy that will be the inevitable outcome if tyranny, dogma, anarchy and revolution become the only means of change.

Universities, institutions of higher education and professional organizations in other countries need to consider how they could respond to the call for help in meeting these challenges. Recent proposals from professional organizations[30] for selective support of individuals and bodies in South Africa who are striving for a more just and equitable society is encouraging.

Participation in the deliberations of the University of Cape Town Academic Freedom Committee has stimulated my thoughts and reading on academic freedom. I am indebted to Andre du Toit, Paul Taylor and Denise Myerson for critical comments on earlier drafts of this manuscript.

Postscript

Since this article was accepted for publication, the author has become aware of the document 'Rethinking UCT: the debate over Africanization and the position of women', by G. Goosen, M. Hall and C. White, Centre for African Studies Occasional Paper 6/1989. Readers are referred to this for additional discussion on the crises facing liberal universities in South Africa and on the context and problems associated with Africanizing universities.

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Academic boycott — political strategy or moral imperative?

Selective support as a justifiable alternative

S. R. BENATAR

Summary

Academic boycott has been justified as an appropriate political strategy in the struggle against the oppression of apartheid. Moral outrage against racist policies has led to the claim that academic boycott is a morally imperative component of a broader sanctions policy. This claim has neither been substantiated by a reasoned ethical argument nor weighted against an ethically justifiable approach that is consistent with universal humanitarian aspirations and which allows rejection of apartheid to be coupled to constructive endeavours.

S Afr Med J 1991, 79: 660-664.

The history of South Africa during the 20th century can be succinctly described as a combination of relative industrial and economic success intimately coupled with racially discriminatory political and social policies that denied the majority of its population access to progressively acknowledged human rights[1] and that prevented the country from achieving its long-recognised great potential.[2,3] South Africa's economic and other successes, with many beneficial effects on the lives of all who live in this country (these should be conceded[4] but not overemphasised), have thus been totally eclipsed by its tragic political failures, by its refusal (as a nation supposedly committed to the Western tradition) to identify with the Universal Declaration of Human Rights, and by legislation that, until February 1990, relentlessly silenced much opposition, eroded the rule of law, entrenched the ruling party, and degraded human dignity. The failure to harness human dignity to economic progress constituted the basis for South Africa's being progressively ostracised by many countries.[5-9]

Academic boycott, which operated fragmentedly and informally for many decades, became consolidated into a more formal component of a political strategy of economic and cultural sanctions to pressurise the South African Government into reversing its repressive and discriminatory policies and into developing a non-racial democratic society in which there would be greater freedom and respect for fundamental human rights.

Although moral outrage against the racist policies of South Africa, with all the devastating human effects these have had, is clearly justified, the idea that academic boycott is a *morally* imperative component of an anti-apartheid stand requires more than mere assertion. Its incompatibility with academic freedom in the open societies we admire and to which we aspire, and its potential to affect very adversely higher education, medical education, scientific endeavour, health care, and the international collaborative spirit of higher education, all of which are necessary for human upliftment now and in a post-apartheid South Africa, calls for careful examination of its justification.

Many who reject and oppose apartheid, who are also morally outraged by all forms of discrimination, who acknowledge their own unwitting enmeshment in the process, who agree that it is beyond dispute that the hegemony of a white power oligarchy cannot continue in South Africa and that all political skills need to be brought to bear on achieving peaceful change, consider that academic boycott is not morally defensible and that there are alternative justifiable approaches.

Because of the moral outrage against apartheid policies, discussion and debate on academic boycott tends to be emotive, and characterised by attempts to conflate political strategy or mass opinion with moral justification. Strategically justifiable political actions may indeed have a moral component, but I question the assertion that political imperatives of necessity embrace academic boycott as a moral imperative. I shall endeavour to examine this assertion, highlight its deficiencies and suggest to medical and academic colleagues that imaginative programmes of professional encouragement and involved support have the requisite moral consistency, justification and potential for both opposing apartheid and, equally important, contributing to the necessary infrastructure for a new, better South Africa.

From academic boycott to selective support

In a recent National Medical and Dental Association (NAMDA) publication,[10] the background and rationale for academic boycott is stated, the arguments used by opponents and proponents outlined, and guidelines offered as a basis for *selective support* of academic exchanges on the grounds that it is 'now necessary to move beyond the policy of a total boycott as proposed by some associations'.

In brief, NAMDA's views are that:

'1. In the context of a general state of crisis within apartheid's health and education systems . . . the impact of a decline in international medical exchanges on health care afforded to the majority of the population, will be minimal . . . although the effect on academic institutions in the long term is likely to be more serious and there would be secondary effects on health care from this (which NAMDA views with concern).

'2. The progress and spirit of science and knowledge in South Africa is fundamentally obstructed by the policy of apartheid [and it is] the collusion of a large segment of academia (including the medical profession) in the maintenance of the system which has resulted in the academic boycott.*

'3. As health is fundamentally determined by political and economic factors . . . apartheid is inimical to good health' and

Department of Medicine, University of Cape Town and Groote Schuur Hospital, Cape Town
S. R. BENATAR, M.B. CH.B., F.F.A. (S.A.), F.R.C.P.

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* Substantive evidence for the claim of collusion is not referred to or provided. Complacency about social and political influences on health (a feature not unique to medicine in South Africa) would be a more accurate description.[6]

it is appropriate to develop a policy on academic exchange which encourages health professionals to make a contribution in their professional capacity to political change.

NAMDA's view that 'a policy of *selective support* can create incentives to academics to oppose apartheid more actively . . . also ensure access to ideas and research that promote democratic change' and is thus 'not anti-science or anti-knowledge but is in fact fundamentally committed to the cause of academic freedom', is, unlike total boycott or uncritical support, justifiable but with the caveat that the term 'selective support' is not used as a surreptitious euphemism for selective boycott.

NAMDA acknowledged, however, that academic boycott is an established fact; stated that it recognises 'the political and the moral imperatives on which it is based' (but that it had 'no role in initiating it') and believes that 'in the face of a total academic boycott it is now necessary to move beyond the policy of total boycott' as 'a selective support policy would now be more effective in promoting political change'. While asserting that academic boycott is a moral imperative, this document simultaneously expresses growing concern for the adverse effects of such sanctions and proposes a move towards a very different and justifiable position, which emphasises selective support.

The ethical basis for academic boycott

The issue on which I should like to focus is the assertion that academic boycott can be considered as a *moral imperative*. I shall begin by questioning whether academic boycott can be justified within the traditional framework of professional moral codes and then I shall very tentatively try to explore whether academic boycott can be justified within an ethical theory.

Moral codes

The term 'morality' as popularly used to define right and wrong within a particular social context, comprises a set of usually abstract, uncodified standards, pervasively acknowledged and applicable to behaviour in diverse circumstances.[11] Various 'codes' of morality have been features of civilisations for thousands of years. In common with the codes guiding medicine they have not been absolutely rigid and have been progressively influenced by social developments.

The World Medical Association (WMA) (which has been active in the formulation of professional codes), has rejected academic sanctions on the grounds that these are 'in conflict with the major objectives of the WMA, viz. to achieve the highest international standards in medical education, medical science, medical art and medical ethics and such restrictions will adversely affect health care, particularly of the disadvantaged. . . .'[12] The WMA points out that academic boycott is 'in conflict with the WMA's Declaration of Geneva, Declaration on Human Rights and Individual Freedom of Medical Practitioners . . .'[12] These codes have been widely accepted and have a powerful hortatory effect. Willingness to reject the WMA view on academic sanctions must be coupled with recognition and responsibility for the effect this could have in eroding the moral force of other WMA declarations, including that of Tokyo, which help to define the universal, non-partisan role of doctors in war, armed conflict and in caring for prisoners and detainees. Valid criticisms of some actions taken by the WMA,[13] do not, as answered by Crawshaw,[14] necessarily invalidate the stand taken against academic boycott.[15]

Although professional codes stress the need for collegial co-operation and support, recognition that there may indeed be dire circumstances in which the imposition of sanctions may have to be considered has been addressed by the Council for Science and Society in collaboration with the British Institute of Human Rights:[16]

'If any sanction is to be effective to achieve its special object, and is not to devalue the effect of other sanctions to be applied on other occasions, it must be appropriate, efficient and proportionate. To be appropriate, a sanction must be directed at the removal or mitigation of the particular evil which it is sought to combat . . . . To be efficient, a sanction must be calculated to have the desired effect. To be proportionate, a sanction must use no more external force than is needed to achieve its effect . . . . Properly used, the sanctions which scientists can collectively impose on national governments are far more powerful than most of them realise. That power, like all others, must be used responsibly, wisely and only where its use is essential in the defence of those human rights which are recognised in international law. . . .' In addition to conforming to the principles of appropriateness, efficiency and proportionality sanctions 'must not be imposed in such a fashion as to reduce the imposer of the sanction to the moral level of the wrongdoer whose conduct is under criticism. Whoever wishes to take steps to protect scholarly freedom must not himself imperil that freedom by the steps which he takes'.[16]

Given the consistent opposition of many South African universities, professional bodies and individual academics to apartheid and racial discrimination, it seems that the accusation that academia in general in South Africa is guilty of *colluding* with initiating, maintaining or supporting Government policies, which lead to violation of human rights, is an overstatement. That many academics have been (and remain) *complacent* about the socially destructive society in which they live as privileged members is beyond dispute. The reductionist approach to much academic work, which encourages interest in, and responsibility for, particular actions within the confines of an academic discipline is correctly criticised for failing to foster responsibility for more general social well-being. But it should also be acknowledged that complacency by individual academics, professional bodies and academic institutions in free countries about social injustices in their own environments is widespread. Under these circumstances it is not easily apparent that academic sanctions can be considered as appropriate or proportionate. Encouragement or involvement in assisting South African colleagues to oppose more actively violations of human rights and thus to contribute more effectively to change would surely be preferable.

This view may be disputed by those who reject the 'liberal' position or who consider that even the open universities in South Africa represent white, racist, capitalist dominated institutions that, by their Eurocentric nature, serve to reproduce power relations and perpetuate injustices in our society.[17] Such criticism from an Afrocentric or any other world view does indeed deserve closer attention than it has received. Overemphasis on polar extremes and failure to engage in open-minded discourse between different ideologies has impaired access to the extensive mutual understanding, the basis for our common humanity, which needs to be developed in the quest for global peace.[18,19]

Politics and science

Concern for the role of politics in science has been expressed both in relation to the social implications of scientific work and to the role of the scientific community in upholding international human rights. The American Association for the Advancement of Science Committee on Scientific Freedom and Responsibility has expressed deep concern that disputes between powerful government forces and scientists regarding basic science programmes, secrecy in science, technology and

innovation should be dealt with and resolved in a responsible fashion, which includes fair hearings, due process and public access to all relevant information.[20] They also endeavour to apply the same criteria in dealing with controversies on the role of medicine and science in upholding human rights.

The Committee on Human Rights of the National Academy of Sciences[21] has also focused 'on the plight of individual scientists, engineers and medical personnel suffering severe repression', and in so doing has stated its intention to try to 'maintain the same standards of evidence, balance and open mindedness that characterises academy assessments on scientific matters'. While acknowledging Sir Andrew Huxley's statement that: 'If a scientific body publicly takes a step whose justification is political and not scientific, it will lose the right to claim that it is acting purely in the defence of science on some future occasion when it wishes to speak out . . .' the Human Rights Committee has also pointed out that: 'We find it more difficult to grapple with the continuum of repression, to determine just what is science and what is political.' Nevertheless, the committee has affirmed that: 'Our position continues to be to hold to the universality principle, to not restrict the channels of scientific communication in the name of trying to maintain and extend them.'[21] The committee acknowledges that this institutional position is not necessarily held by all individual scientists and it remains troubled (as we should all be), about the dilemma surrounding and dealing with 'the questions raised by the profound distortions of humanness, nationhood and science that follows in the wake of repression'.[21]

Ethical theory

Inability to resolve the dilemmas posed leads to consideration of the more formal alternative means of exploring the moral validity of academic boycott — by trying to determine whether it can be justified within an ethical theory. The complexity of this task requires an extent and depth of philosophical knowledge and wisdom that I cannot claim to possess. My limited exploration of justification in moral theory will, I hope, be viewed as a sincere attempt to grapple with and better understand justification, or lack of this, for an action (academic boycott) which seems to threaten widely acknowledged academic, medical and humanitarian values and as such calls for more than mere assertion. The gap between ethical theories and their direct application to everyday problems,[22] and the interactive relationship between theory and practice are acknowledged.[23]

Moral philosophy is a process of reflecting on 'morality' in an attempt to separate dogmatic, personal or group attitudes from a substantive moral position that can be justified on rational grounds. It develops ethical theories within which major ethical principles are offered to frame and justify moral decisions. The choice and analysis of principles and debate on these form the heart of modern ethical theories.[11] Controversies in moral discourse should be focused on the ways in which ethical principles are derived and applied and should be distinguished from disagreement about factual information (which, when it is of a social nature, may be almost incapable of resolution) and from major differences in ideological paradigms which determine 'world views' and are even more difficult to reconcile.[18,19]

One general ethical tradition (deontology) focuses on ethical principles, which subtend and justify right actions independent of their consequences, and on the moral agency of persons faced with making moral decisions.[22] Specific actions are considered right if they conform to an over-riding moral *duty* (principle) and wrong if they violate such duties. The moral principles that guide conduct can be derived from many sources, including divine will, intuition and pure reason, within a spectrum of deontological theories.

A chief deficiency in the deontological position is the lack of guidance on how one ought to act when two or more moral principles are in conflict. In relation to academic boycott, for example, it could be argued that to distance oneself from academics in a repressive country is a morally principled means of expressing moral outrage and of preserving moral integrity. But it could also be argued that actively to support education and academics who oppose the repressive regime is equally principled. How does one choose between these two courses of action? To choose the easier may be more popular and provide quick emotional satisfaction, but this would be an arbitrary rather than a reasoned choice.

These difficulties in deciding what is right lead to the consideration of an alternative group of ethical theories that argue for the selection of a course of action that will lead to the greatest net balance of good over bad outcomes. In this context it is the ends which justify the means. Stated differently it is the maximisation of good consequences and minimisation of bad consequences which determines the moral validity of specific actions, in contrast to deontological theories in which it is the universal moral imperative of the rules and principles themselves that determines the rightness of actions they permit. The central criticisms of consequentialist positions are, firstly, that, in weighing and balancing principles, they tend towards sacrificing the individual for the common good (to maximise the good) and, secondly, that it is not possible to know without empirical cost-benefit data whether the consequences will be good even in the short term let alone in the long term.[22] It is often very difficult to predict consequences, let alone the consequences of consequences. The utilitarian argument that the benefits of academic boycott will outweigh its adverse consequences[24-26] remains unsubstantiated. The adverse effects of the cry of 'liberation before education' have already become apparent in South Africa and they seriously undermine the hoped for effectiveness of academic boycott. The move away from total academic boycott towards selective support as outlined in the NAMDA document[10] reflects clear recognition of the harmful effects and inefficiency of boycotts and an attempt to diminish these in the future.

Yet another approach would be to argue that while moral principles and rules are valuable they should be treated merely as useful guidelines. This enhances the personal discretion of moral agents and allows for greater flexibility in reaching decisions in unique situations. Such a situational approach, which could lead to decisions to *boycott selectively* those academics who do not seem to be actively opposing the repressive regime and to support those who do, gives rise to the problems of determining the criteria for identifying these two groups and the method for implementing the intended actions consistently and effectively. This approach lends itself to arguments 'from authority'[24,26] and to symbolic gestures but fails to meet the clarity, internal consistency and comprehensiveness required of moral theories.

Academic boycott is essentially a non-violent political strategy aimed at stimulating much needed change in South Africa. *The arguments I have used neither attempt to negate the strategic value of academic sanctions at a political level nor to minimise the cogent reasons which give rise to the call for boycotts. They do attempt to show, firstly, that it is difficult to justify academic boycotts on the moral grounds that they are inherently right or that they have good consequences and, secondly, that there is a need to consider morally justifiable alternatives that, in addition to their anti-apartheid effect, may help to create the infrastructure necessary for a new South Africa.*

An alternative to academic boycott

Living and working as a scientist, academic or health care professional in South Africa demands not only high standards

of service but also entails the onerous tasks of challenging injustices, striving towards abolishing racial discrimination and achieving internationally recognised human rights by working towards human progress in ways that are true to the humanitarian ideals of science and the professions. Consistency and clarity in articulating and trying to uphold these ideals is demanding and poses risks that, at a minimum, may include unpopularity with the present government, with revolutionaries, counter-revolutionaries, some well-meaning do-gooders in other parts of the world, with economic and political opportunists and possibly post-apartheid South African governments. The strength and vigour of endeavours to uphold ideals with constancy (wherever this is needed in the world) is dependent on global co-operation and active support not only for those already working in this way but also for those who could and should be motivated to do so.[6,10,21,27-29]

The strong case made by Berwick[30] in favour of applying the very successful Theory of Continuous Improvement (which assumes that people are trying hard and will respond to encouragement) instead of the Theory of Bad Apples (which assumes that inspection, criticism, and punishment are the best ways to improve performance) in relation to health care can be extended by analogy to the way in which professional and academic interaction should be encouraged globally. This point is further emphasised by Shaw[31] in a skillful, sensitive and comprehensive analysis of the moral implications of economic, cultural and academic boycotts of South Africa. After correctly describing South Africa as a 'morally debilitated social system' and rebutting 'familiar apologies' for apartheid, he points out that slogans and moral counsel to abstain from all contact with South Africa are facile 'because of the difficulty of identifying a set of principles which would dictate these injunctions, yet permit us consistently to carry on other types of personal and national commerce, the legitimacy of which we take for granted'.[31]

While agreeing that it is naive to view academic and scientific discourse as something pure and above politics and that there are certain things of an academic or cultural nature that it would be wrong to do (with South Africa), he proposes (with caveats) that 'nothing but good for the anti-apartheid cause, it seems, could come from the freest exchange of ideas at the cultural, scientific and academic levels'. He does not find 'any reason for claiming that certain forms of intercourse with South Africa, though frequently reproved by anti-apartheid militants, are necessarily inconsistent with sincere and dedicated opposition to apartheid'.[31]

Colleagues in free countries have much to offer in analytical and negotiating skills, in the formulation of (for example) health policy, in ethical debate, and in striving to bring the forces of reason to bear on many issues regarding human rights, health care and education in South Africa. It is necessary for those who support academic boycott to consider whether they have accorded the appropriate moral weighting to these issues and to such principles as justice and beneficence if they advocate academic sanctions before they have made reasonable attempts to use these skills as fully as possible to help their colleagues maintain professional standards and through this to contribute to the development of a better society in South Africa.

Academic boycott is not the inseparable Siamese twin of opposition to apartheid. Interacting with South Africans can be a constructive academic, sociological and political endeavour. Contributing academically while experiencing and speaking out against apartheid can also be an enriching human activity as some with intellect, courage and an existentialist appreciation of life have found.[32] Neither the depth and breadth of the effects of apartheid nor the prolonged, intense efforts needed to reverse these should be trivialised by simplistic moralistic posturing.

Conclusions

It is correct to understand, to empathise with and to express the frustration, anger, despair and moral outrage that have led to advocacy for academic boycott as part of a physically non-violent political strategy to abolish racial discrimination in South Africa. It is also necessary to understand the political and sociological basis for these endeavours and to participate actively in the process of striving for a more just society in South Africa. It must, however, be acknowledged that the forces that motivate and drive political strategy are not necessarily the same as those we perceive as motivating scientists, physicians and educators in their professional roles (the pursuit of knowledge, truth, wisdom, virtue and advancement of the human condition), although we must recognise the pervasive interactions between politics, science, health and education and we must strive to achieve internationally recognised goals in human rights.[20,21,27]

World history, filled with the tragedies perpetrated in the name of politics or (religious) fundamentalism, should surely provide the lesson to caution scientists, physicians and educators about allowing enduring professional ideals to be coupled to and subverted by shifting, often internally inconsistent and coercive, political strategies. This is the message that the international medical profession conveyed to the South African medical profession after 'the Biko affair',[33] under which cloud the profession and many individuals have since laboured to try to rectify their previous complacency.[5-9,34-43] These considerations are also the basis for the formation of the organisation International Physicians for the Prevention of Nuclear War, and for the growing recognition of the need for an International Physicians Movement[44] concerned with global health interdependence.[44,45]

The sincerity of many who advocate or impose sanctions should not be doubted and neither should the sincerity of many others who oppose them. The anguish with which reputable academics have asserted both positions (without any attempt to structure any formal moral justification) is well documented in a book recounting the events leading up to the World Archeological Congress in 1986.[26] Unfortunately, an unintended by-product of academic boycott is the creation of opportunities for many others to turn this into self-serving activities that have the potential to brutalise science, medicine and higher education and to lead to great damage, in particular over a prolonged period of time. It must also be acknowledged that the concept of freedom is not the same in all ideologies,[18,19] that academic freedom is gravely impaired in repressive countries and that it is possible for completely unfettered academic freedom to be abused by privileged academics. Freedom must be used responsibly and in ways which expand freedom and which do not curtail the freedom of others — consistent with the concept of freedom built over centuries into the 'social contract' within the Western tradition.

The assertion that academic boycott can be labelled 'moral' cannot stand unchallenged. The ethical basis should be clearly explicated and justified as relevant and sufficient, as it is those who wish to impose restrictions on freedom who must be able to justify this. Coercive imposition of academic sanctions in the absence of ethical justification can both reduce its protagonists to the moral level of the regime of which they are quite rightly critical and have counter-productive effects on the human and institutional resources necessary for the well-being of post-apartheid South Africa.

The alternative, ethically justifiable, approach of pressure for change through active, involved support on a selective basis without attempts to combine this with selective boycott is now being publicised[46,47] and, it is to be hoped, will grow. The challenge of overcoming discrimination and violation of internationally recognised human rights, and of unravelling

the 'profound distortions of humanness, nationhood and science associated with oppression and repression'[21] involves global co-operation in working towards human progress in ways true to the humanitarian ideals of science and the professions.

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SOLOMON R. BENATAR
Republic of South Africa

Social, Cultural, Religious and Ethnic Constraints to Freedom of Scholarship and Science

Awe-inspiring scientific advances since the Enlightenment have testified to the need for freedom from restrictive religious, social and cultural dogmas which for centuries inhibited intellectual progress. As we approach the end of a century which has been characterized by almost undreamed of scientific and technological progress it is appropriate both to reflect on some of the milestones in history marking the ebb and flow of ideas which have influenced, and continue to influence science and scholarship, and to identify new ideas which could inform further progress.

I shall briefly trace the emancipation from superstition and theological dogma of the thought and inquiry which opened into the scientific revolution; outline the paradigm shift in thinking from classical to modern science; draw attention to some existential concerns about human life; describe the contextual nature of social theories and ideological standpoints, and refer to the relevance and impact of ideology on human progress. This will set the frame and the context for understanding the subjective nature of human "reality" which underpins religious, cultural, social and ethnic constraints to science and scholarship; for recognizing the need to avoid extremism and to communicate across ideological domains; and even to seek new avenues for progress which transcend the "ideology" of science if we are to diminish conflict within and between societies and prevent retrogression. I shall illustrate this by referring to the effects of apartheid in South Africa, to the imposition of Western values on Africans, and to the consequential concept of Africanization and its potential implications for scholarship and science. I shall conclude with two proposals for paradigm

shifts in thinking, offering the potential for a major leap forward in global human progress towards a better world.

Emancipation of Thought

Since ancient times the world has known free thinkers and dogmatists – and they have always been in conflict. The great ideal of democracy, philosophy and early science in ancient Greece – crushed by successive wars, diluted by the rise and fall of the Roman Empire, and stifled for centuries by the oppressive dogma and intense cruelty of the Church – was gradually revived in the fifteenth and sixteenth centuries. Renaissance artists, writers, scientists and philosophers pioneered the path out of intolerance and superstition into an era of great intellectual progress. The battle previously fought by the Church to establish its independence from the State was thus followed by conflict between the Church and free-thinking philosophers and scientists intent on establishing their independence from superstition and theological dogma. At least, since the Church intervention against Galileo (1633), the need for freedom of thought and opinion and for the pursuit of science have been increasingly cherished – most especially in the Western world.

Individual Freedoms

Individual rights to freedom have a long history in theological and non-theological moral theories. They were, however, first clearly articulated by Locke (1642-1734) and the classical liberal concept of freedom was formulated by Mill (1806-1873) who, in his *Principle of Liberty*, argued that interference with individual liberty was only justified by the need to prevent harm to others.[1]

Scientific freedom and the scientific revolution

The emancipation of science from the Church and René Descartes' (1596-1650) analytic and rationalist approach coupled with his doctrine of dualism opened the way for momentous scientific and human progress. The power of the scientific method, spelt out by Bacon (1561-1626) in

the 17th century, is apparent from the many and great successes which flowed from its application. A solid groundwork was laid by Renaissance philosophers and scientists for a new and modern world. By the 1860s, capitalist, industrial, urban and democratic revolutions were gradually fracturing the bonds of traditional society and creating the image of free persons making autonomous rational choices as consumers and citizens – a concept which has intensified over the following century.[2] The pre-17th century culture, which was intimately linked to religion, was thus transformed into a world view more closely linked to science.[3]

Classical science from the 17th to the 19th centuries created a deterministic view of the universe and a mechanistic, clockwork image of nature. Einstein's theory of relativity, his account of electromagnetic radiation and the quantum physics of Max Planck and Niels Bohr and others in the 20th century have, however, profoundly reshaped concepts of science. They have constructed a non-mechanistic image of the universe as a web of interconnections which does not permit explanation of the way systems behave merely in terms of the independent properties of their constituent parts, and which recognizes the influence of the whole on the parts and of the observer on the observed (the modern theory of light and the Einstein-Podolsky-Rosen Paradox).[3,4]

This new understanding reveals that

> ...all the phenomena of nature cannot be explained or described in terms of our familiar, common-sense concepts of space, time, causality, identity or even of locality. The behaviour of objects which are very small like atoms, or very large like the Universe, or moving with speeds approaching the velocity of light... are radically new experiences of the world, and to bring them within the discipline of science we have had to learn to think in new ways.[3]

Although the full implications of these discoveries are not yet apparent, modern physics has clearly softened the previously firm foundations of the classical ideal of a totally objective description of nature and in challenging the idea of a value-free science has led to the

realization that even scientific knowledge of the world is to some extent subjective.

> ...the patterns scientists observe in nature are intimately connected with the patterns of their minds, with their thoughts, concepts and values which are deeply imbedded in a particular framework of thought and human development.[4]

Existential Concerns

Many human problems remained unsolved by science, and European philosophy with its phenomenological, existential and hermeneutic emphasis was, in the 1830s, already turning to some of the non-scientific dimensions of human existence and grappling with questions such as the value, purpose, and meaning of social existence. Accordingly, the naturalist concept of man became seen as too simplistic and narrow, as it ignored some of the most important constituent features of human nature (eg. anxiety, despair and melancholy). Such constituent features, and others which enable us to function as autonomous individuals, cannot be revealed by empirical investigation alone and must also be pursued through philosophic reflection.[5]

While natural science methods that seek objective truth have contributed enormously to human progress, the claim is justifiably made that the hermeneutic process (which uses interpretation and introspective reflection to discover the subjective truth of the personal self) expands the concept of man (beyond that of merely a biological organism within a naturalistic framework) to include the existential aspects of the self-reflecting and free-willing person. In so doing it enhances our understanding of ourselves and of the world in which we live by preventing total separation of object from subject.[2,5]

Social Sciences, Ideology and Social Theory

The emergence of social science was closely linked to other aspects of a developing modern world, and social theories and practices have borrowed greatly from the mechanistic philosophy of 17th-19th century

science. In the behavioural sciences inductive reasoning is still used extensively, conditioned by the difficulty in framing and testing hypotheses, in quantifying data along nonparametric scales, in overcoming observer bias and observer error, and by the pervasive and almost inescapable influence of the measurer on the measurement.[6]

In the modern era the social constructionist view regarding selection of a social theory contends that the prevailing perspective of the reality we experience is shaped by social consensus derived from the objective criterion of truth and by the subjective identification with currently dominant world views.[2] The historical context, current events and the political culture of the time lead us to an arbitrary focus on certain aspects of reality, particularly social reality, while ignoring others. Kuhn has similarly argued that scientific terms and concepts cannot be totally separated from their historical context.[7]

We thus recognize that different political, cultural, moral and social positions mobilize different emotional and cognitive patterns. These are variably influenced by personal motives, by rationality and irrationality at both the individual and mass levels, by the mass media, and by the stability or otherwise of public opinion. Ideology, whether explicit or not, characterizes every established group and is both socially and objectively determined.[2]

The influence of ideology on human progress is illustrated by Sir Isaiah Berlin, who proclaimed the development of natural science and technology, and a series of great ideological storms, as the two major factors which have shaped human history in the twentieth century.[8] He affirms that we live in a violent world, that we cannot confine our attention to nature and man-made impersonal forces, and that we need to understand the roots, growth, essence and validity of the goals and motives that guide human action. In tracing the history of these concepts Berlin refers to belief in the still living Platonic ideal that could lead to a unifying and coherent set of solutions to "injustice, oppression, falsity in human relationships, imprisonment by stone walls and conformism", solutions entailing "rational reorganization of society which would put an end to spiritual and intellectual confusion, to the reign of prejudice and superstition, blind obedience to unexamined dogmas and the stupidities

and cruelties of the oppressive régimes which such intellectual darkness bred and promoted".[8]

But conflicting views also prevailed, and Berlin reminds us of Hegel's and Marx's disbelief in any timeless truths; of Machiavelli's views which highlight the "conflict between the true ends and the true answers to the central problems of life"; and of Vico's recognition that each society had "its own vision of reality, of the world in which it lived, and of itself and its relations to its own past, to nature, to what it strove for". These visions become "expressed and embodied in the kind of words, the forms of language that they use, the images, the metaphors, the forms of worship, the institutions that they generate, which embody and convey their image of reality and of their place in it; by which they live".[8]

An exemple in my country of the relevance of ideology is given by the African theologian John Pobee who highlights the centrality of community within the African concept of life by re-phrasing Descartes' "*Cogito, ergo sum*" (I think, therefore I am) to "*Cognatus, ergo sum*" (I belong through kinship, therefore I am) – "*umntu ngumtu ngumuntu*" (a human being is a human being because others are, or, I am because we are). The good of the individual is thus perceived as a function of the good of the community, which is somewhat different to the Western, liberal individualistic conception.[9]

Stackhouse's thoughtful and detailed text on human rights in three different religions/cultures (Western, Marxist and Eastern religions) eloquently exposes the conceptual differences that have emanated from "deep trajectories of thought and social movement which have become institutionalised in subsequent intellectual and social life so that they form a stratum of human presupposition and habit of which people are not always fully conscious".[10]

These considerations enable us to recognize that conversations and debates on many topics – including academic freedom, scientific freedom and human rights – are often rendered opaque by unperceived or unacknowledged presuppositions which pose major impediments to communication. We cannot avoid the need to try to understand value systems other than our own. That is not to say that we must accept them, but we should be willing to seek the common ground on which progress

can be built. On this point let me only say that concepts of rights, freedom, obligations, virtue and justice and their internal tensions vary considerably among different paradigms of thought (as well as within them).

Without recognition and acknowledgement of some of these fundamental differences, it is difficult to understand discussions in which the same words are used to describe different concepts and values, and even more difficult to embark successfully on consensus-seeking negotiations. Such "different realms of discourse" are revealed in a quotation from Abraham Lincoln: "We all declare for liberty; but in using the same word we do not all mean the same thing."

Given the greatly varied social, political, cultural, religious, economic and intellectual developmental histories of different societies, and the ongoing nature of such development, it should not surprise us that there is a wide range of ideological conceptions of science, human freedom, human rights, faith, ways of life, of the nature of community and of the meaning of life.[10] Perhaps it should surprise us, given the very short time span in human history that science has flourished, that there is as much consensus as currently exists.

The existence of elements of unity and of diversity between the biological and human sciences also draws attention to the need for cross-fertilization of ideas between these domains of scientific endeavour to enrich progress towards a more comprehensive understanding of *Homo Sapiens*. As Clements has suggested, and I shall return later to her proposals[11], a paradigm shift in thinking is required to achieve a unified scientific theory capable of bridging diversity between natural sciences and the social sciences.

Constraints to Scholarship and Science

Antagonism to scholarship and science may result from many different factors: from ignorance or fear of the power of rationality; from dissatisfaction with scientific achievements (which may stem from their seeming to bring advantage only to an elite); from frustration with their limitations (underpinned by unrealistic expectations); from religious fundamentalism and mysticism; and from the impact of science on global

militarism. Such factors provide the frame and context for social, cultural and ethnic constraints to freedom of science and scholarship in different societies. It is notable that (aside from the Russian example as illustrated by the Lysenko affair and the Sakharov saga) science and scholarship flourish least in those countries torn apart by conflict rooted in ethnic and religious rivalry. Some examples include: in Europe – Cyprus, Northern Ireland and the former Yugoslavia; in Africa – Angola, Ethiopia, Nigeria, South Africa, Sudan and Uganda; in Asia – Burma, India, Iran, Iraq, Lebanon, Pakistan, Syria, Sri-Lanka, Turkey and the Philippines.

Cultural imperialism and colonialism

The legacy of colonialism, the fear of cultural extinction and economic factors, also play a role in shaping conflicts which may be further fuelled by tyrannical forces intent on maintaining an unchallenged, authoritarian status quo or by anarchists with little stake in stability or in negotiated peaceful progress.

In South Africa, for example, apartheid policies have constrained science and scholarship through censorship, through infliction of inferior and distorted education on blacks, by obstruction of academic freedom at both institutional and individual levels, by banning, detaining and exiling academics and through other intimidating social forces. Many outstanding academics left the country in successive waves of emigration triggered by violence linked to repressive State action against growing opposition, and (since the mid 1970s) by progressive economic attrition and socio-political isolation from the Western world. Failure to foster democratic processes and human rights has led to social disintegration among the oppressed. Uneducated, unemployed, stigmatized and deprived of hope in a society where the privileged flourish, they came to despise the laws which oppressed them. As a result, some rejected Western, capitalist, Eurocentric values and turned to communist ideologies for hope; others resorted to alcohol and drugs for solace or to crime and gang violence to acquire power and influence. By the time the South African government realized the need to dismantle apartheid and embark on peaceful negotiations towards a democratic society, generations of young people had become brutalized and aspirations to

communistic socialism had become an ideologized solution to the failings of Western culture. The current social turmoil, in association with negotiations focused on a new constitution, on a Bill of Rights, on economic policies and on the desperate need for social upliftment, has regrettably desensitized all political parties, white and black, to the importance of scholarship and science in a new South Africa.

These attitudes, coupled to lack of resources for expensive tertiary education, tertiary health care and scientific progress, are weakening the educational institutions which will be necessary components of a society aspiring to democracy and economic progress.[12] Academic pursuits in South Africa have also been constrained by academic boycott, which has been naïvely and myopically propagated in the name of scholarship and science.[13,15]

We should thus not forget or deny the down-side of colonialism and cultural imperialism over many centuries. The nature of modern international economic policies is such that vast amounts of material and human resources are flowing from undeveloped or developing countries into the rich, developed nations of the world; thus widening the already cavernous intellectual and material gap between rich and poor, North and South, East and West nations.[16] The rich cannot have all their wants met and the poor have diminishing access to their minimal needs for survival. Overall the Third World sent developed countries 220 billion dollars more than was sent to it from 1982 to 1987; "a kind of colonial tribute exacted by the rich nations from the poorest people on earth".[17] The process brutalizes us all.

False consciousness

The infliction of one group's ideology on another group, when this does not reflect the objective conditions of the life of that group, has the potential to create a distorted picture based at least in part on an interpretation foisted upon the group in the interest of some other group.[5] Setiloane, an African theologian, describes this as the "internalisation of images which the conquering cultures have bestowed on Africans and which have led them to despise themselves, their past, their present and their future".[18] This imposition of what has been called a "false

consciousness" contributes to the rebelliousness against white, capitalist, Eurocentric, scientific, Western liberal ideology, and to the call for Africanization in response to oppression over many centuries.[19]

Africanization

The concept of Africanization is, however, not well defined. In the context of universities it is perceived to involve more than mere indigenization of staff or adaptation of curricula to African cultural and social contexts. According to Murphree it entails "a more embracing quest which lays upon the African university the task of assembling the entire gamut of African heritage and ensuring its continuity by an analysis and pedagogy which gives it a contemporary relevance to the needs and aspirations of the modern African nation state".[20] For Ashby the responsibility for the African scholar is "to concentrate and crystalize the ethos of African culture and social heritage by refracting it through an analysis of contemporary relevance."[21,22] Setiloane has expressed a radical view in proclaiming African theology as a partner with "black consciousness" in the struggle against the "threat to the soul of Africa, especially coming in through the back door of Western Christianity and its theology." "The liberation (that) African theology strives for is that of the very soul of Africa from the imprisonment in the vaults of Western conceptualisation and discourse, from cerebration and pseudo-scientific-ness to human-ness."[18] A broader exposition of some of the implications of Africanization is provided by Boahen.[19]

If we acknowledge that the Western ideology under which science has flourished in South Africa has to some extent nurtured a "false consciousness" within the indigenous people and that it may be displaced by a growing "black consciousness" movement (associated with the growing "African concept of colonialism" and the rewriting of Africa's history)[19] we must also recognize that this will, in turn, hold adverse implications for scientific and other freedoms in the Western tradition. The retention of strong allegiance to communist ideologies by some in our society raises similar concerns as we are reminded of the decay of Russian science in its attempt to control biological theory ideologically (the notorious Lysenko affair) and to obstruct academic freedom. The

recent upsurge in antiscience trends in association with political changes in the U.S.S.R. further demonstrates the effects of social upheaval on attitudes to science.[23] Africanization, with its acknowledged emotive and cognitive value to oppressed people, has, like colonialism, imperialism and communism, its own distinctive down-side, which also should not be denied or ignored.

As political change takes place in South Africa there is a need to appreciate the complexity of trying to move from an authoritarian state towards a peaceful democratic society, especially in the context of a shrinking economy,[12,24] and in the context of ideologies which provoke isolation from the mainstream of global developments.[18,19]

Scientific Imperialism

When science is viewed "as a creed with sufficient truth on its own" and is embraced with such commitment that it becomes institutionalized as the most fundamental guide to action, it may also begin to acquire the characteristics of a "religion". Such commitment to science alone as an ultimate metaphysical-moral vision provides the seeds for creating constraints to its own structures and functions.[10] The pursuit of science, as important as it is, and of the freedom for which we all strive, must also not become an ideology that excludes the pursuit of other human freedoms – for example, freedom from want and misery; these also require their fair share of human resources. Berlin reminds us:

> Those who live under a discipline which they accept without question, who freely obey the orders of leaders (spiritual or temporal) or who have, by their own methods arrived at clear, unshakeable convictions about what to do and what to be that brook no possible doubt are victims of myopia that make for contentment on a comfortable bed of dogma, but not for the understanding of what it is to be human.
>
> Both equality and liberty are among the primary goals pursued by human beings through many centuries; but total liberty for wolves is death to the lambs, total liberty of the

> powerful, the gifted, is not compatible with the rights to a decent existence of the weak and the less gifted.
>
> ...equality may demand the restraint of the liberty of those who wish to dominate; liberty – without some modicum of which there is no choice and therefore no possibility of remaining human as we understand the word – may have to be curtailed to make room for social welfare, to feed the hungry, to clothe the naked, to shelter the homeless, to leave room for the liberty of others, to allow justice or fairness to be exercised.[8]

Appropriation of science

Modern trends towards industrialization, militarization, politicization and bureaucratization of science counteract the principle values respected by the scientific community as described by Merton as Universalism, Communalism, Disinterestedness and Organized Scepticism – and undermine the public image of science.[3]

This is partially revealed in some of the concerns expressed (by the American Association for the Advancement of Science Committee on Science in the Promotion of Human Welfare) about the way science is being used:

> Science, the instrument which produces power, is being consciously exploited for industrial, military and political purposes. At the same time there is little recognition of the internal needs of science or of its purposes as a discipline of the human mind...
>
> Any effort to divide science into fragments which are delimited by national boundaries, and are dominated by a local social philosophy, will inevitably restrict the free discourse and communication of new knowledge that is the substance of scientific progress...

> There is some evidence that the integrity of science is beginning to erode under the abrasive pressure of its close partnership with economic, social and political affairs.[25]

Growing recognition of fraud in science has further contributed to public suspicion of the motives and integrity of many who profess to be scientists.

It is thus necessary to remind ourselves not only of the power of science, but also of the tendency for power to corrupt and of the responsibility towards society of those who are privileged to play a role in advancing knowledge. Our ability to produce new knowledge needs to be matched by the ability to use that power wisely and morally.

As Ericson has so eloquently stated:

> even in democratic societies a constant alertness...is needed to resist pressures to subordinate all institutions that shape the human spirit and to place them under the control of those who want to dominate the social order. Although there are profound differences between the extent of personal freedom within Western democracies and within one-party Communist societies (and these distinctions should not be minimized) it is nevertheless true that the future of the free mind is threatened by converging forces in both of these rival systems. In the Communist states and the Western nations, technological structures and bureaucracy instill in the individual citizen a feeling of helplessness and hopeless passivity... Both social systems are advancing towards corporate structures that efface individuality and freedom of expression. Both are managerial societies that tend to equate virtue with conformity, pliability and administrative efficiency... [even] teachers of ethics are reduced to functionaries controlled by a corporate mentality concerned most of all with "success" as measured in quantitative terms... The appeal of the free thinker, the skeptic, the liberator, the discoverer of new truth is always against established patterns and presumptions. As the founders of

> the American Constitution understood, a free and open society is one that inhibits the power of institutions, especially the State, from interfering with the life of the mind. A society of "heretics" is an uncomfortable and unstable community, yet that is what true spiritual democracy represents. It is an extremely difficult form of social organisation to bring about, as the dismal failure to establish democracy in historically unprepared cultures demonstrates. The free mind creates the free society, not the other way around. Freedom is not mandated, it is cultivated through experience.[26]

Prospects for the Future

The momentum of Renaissance philosophy and science has clearly carried reductionism and the individualistic approach deep into the twentieth century. But our satisfaction with current scientific and technological advances is diminished by their failure to provide solutions to many social problems and by the devastating threats posed to the ecology of the planet. The nuclear stockpile, overpopulation, pollution, depletion of natural resources, extinction of species, global warming, disruption of the ozone layer, global maldistribution of wealth with depletion of poor nations by the rich, cultural conflict and social ill health (drugs, violent crime, suicide, AIDS) are not problems which can be solved by science alone.

The realization of man's finitude as a species has added momentum to a view of the world as a global village – a world in which we are all interdependent on each other and in which individual health, social health and ecological health are linked.[4,27] But there is a long way to go before all nations will develop to the point at which they can acknowledge the need to participate in a global project. The path ahead must include dedication both to scientific advance and to a reflective interaction with the existential states of peoples at varying points in the relentless evolutionary process of intellectual and social development.

Habermas has suggested that because society is characterized by its power structure and by ideologies serving the interests of particular

groups at the cost of repressing others, greater understanding will require the development of an ideologically neutral social theory. This will involve supplementation of the scientific and hermeneutic approaches with a critical analysis of ideological distortions, with empirical studies of the structure of society and analysis of its historical development. Such an approach would endeavour to take into account the fundamental and basic human needs to exploit for self-interest the resources of nature, to communicate with others and to be free from repressive social constraints.[5]

Medicine, as a human activity which straddles science and the humanities, is well poised to serve as a model for enlightened human progress towards a better future.[28-30] It is therefore not surprising that it is a physician (Clements), who has proposed a scientific and philosophical model (based on hierarchical systems theory), in an attempt to bridge the diversity between an unworkable dualism implied by many core assumptions in the humanities and social sciences, which work against a unified scientific study of the human condition.[11]

> Such a systems synthesis would require an evolution of the traditional (but problematic) key assumptions in many philosophical systems, in political ideologies, in sociologic separatism and in aesthetic mysticism. It is a direct challenge to change the world view of how the humanities, which, like our languages, have accumulated the beliefs of cultural systems without any method for validation or revision.[11]

This would constitute a true paradigm shift in thinking and become a valuable heuristic tool for the development of a "firm conceptual basis for an integrated and reductive investigation of human behaviour".[11]

Maxwell, a philosopher of science, has also articulated with clarity and passion the need for a revolution in the aims and methods of science – from the pursuit of knowledge to the pursuit of wisdom.[31] In arguing his case he seeks not to undermine the necessary "intellectual institutional structure of the scientific/academic enterprise", but rather to emphasize that this is not sufficient to resolve the devastating social and ecological problems which confront us today.

In drawing attention to others who are contributing delicate strands to this as yet very loosely woven fabric of a new vision, Maxwell acknowledges the necessity for much greater intellectual and public support to bring it to fruition.[31] Clements' proposal for a paradigm shift towards a unified systems theory[11] has complementary exciting scientific intellectual appeal and will also require further study and elaboration.

Conclusions

Constraints to freedom of science and scholarship are longstanding, widespread, complex in their causality and diverse in their manifestations. Members of the scientific, medical, academic and other professions in all countries are among the most socially privileged and most intellectually advanced people. Although we do not all live in similarly developed and privileged societies, we are linked by a common obligation to assist and support human development globally. Science and scholarship recognize human frailty and uncertainty, and aspire to advance the human condition through processes which involve objectivity, logic, consistency, imagination, international and non-secretive collaboration, moral sensibility, and the ability to give and receive criticism. Science and scholarship also embrace humility, tolerance and other universal virtuous attributes necessary for leading good lives and sustaining meaningful interpersonal relationships. The best chance of peaceful human survival is offered by dedication to truthfulness, to the protection of scientific inquiry, to responsibility to society and other universal professional ideals, including respect for individual dignity, and, finally, dedication to meaningful communication and understanding in a threatened world in which we are all interdependent.

Wisdom will require recognition of and open-minded debate on the religious, social, cultural, economic and communication gaps which constrain scientific and human progress. Articulating the problems of living in our modern world and vigorously proposing possible solutions to the appalling conditions confronting humanity today must become intellectual priorities[31], if greater human freedoms are to be achieved

globally and if scholarship and science are to contribute to sustaining our ecosystem.

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Ethical responsibilities of health professionals in caring for detainees and prisoners

S. R. BENATAR

Summary

The provision of humane and effective health care for prisoners presents formidable challenges. The practical and ethical problems encountered are even greater in the provision of such care for detainees under a State of Emergency. The extent to which these challenges are faced and met reflect the level of civilisation of a society, the ethical integrity of prison medical services and the degree of support they receive from their colleagues and professional associations. The need to recognise these dilemmas, to discuss them openly and to seek humane solutions, including the abolition of detention without trial, are ongoing challenges for our society, in which the legal and medical professions can and should provide leadership.

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What are the ethical responsibilities of health professionals who care for people in places of detention? The question arises because of the lack of clarity regarding the precise role and responsibilities of the prison doctor. The Home Office which administers prisons in Britain has stated that in its opinion there are no special ethical problems associated with working in a prison.[1] A doctor is a doctor wherever he practises. A British court, however, recently argued that it is correct to regard a prison doctor as primarily a prison officer and only secondarily as a doctor.[2]

This conflict of opinion stems from the concern which inevitably arises about divided loyalties when a doctor is not self-employed and works for an institution which may impose requirements on him over and above those demanded by the traditional doctor/patient relationship. For example, doctors working in industry or for insurance companies may be pulled in opposing directions by the requirements of management in the interests of the organisation and by considerations central to the individual doctor/patient relationship and the patient's best interests. Similar conflict arises in entrepreneurial medical organisations, for example Health Maintenance Organisations (HMOs), where organisational and financial constraints imposed on doctors may inhibit actions they believe necessary in their patients' best interests. The dilemmas which face the prison doctor are similar in that there is the potential for mandated duties towards the prison's custodial and security needs conflicting with the traditional role of the doctor and the needs of the patient. This is further complicated by the negative influence of the coercive nature of prisons on the delivery of medical care.

In the USA and the UK it is made quite clear to doctors entering the prison system that they are responsible to the warden of the prison and that they share responsibility with him for its security. This also seems to apply, at least implicitly, in South Africa, despite the many recommendations that this should not be the case.[3] Over-ruling of medical decisions by prison staff is neither in accord with our conventional understanding of medical ethics (*vide infra*) nor compatible with the United Nations' Principles of Medical Ethics for Prison Doctors.[3,4] Maisels and De Villiers, in their report to the Medical Association of South Africa, imply that prison doctors may be acting unethically if they allow their recommendations to be over-ruled.[5] The President of the South African Medical and Dental Council has stated Council's view that prison doctors should take the matter to a higher authority if their recommendations are over-ruled, and Strauss states that the police are liable to prosecution if recommended medical treatment is disregarded.[6]

Clearly, under ideal circumstances the relationship between doctor and patient (prisoner or detainee) in the prison setting should be no different from that which pertains in ordinary civic life. There are many real and potential dangers if physicians allow themselves to be used to serve custodial ends. The medical profession sees its primary role as a service to the noble cause of protecting health, but the examples mentioned above point to other roles which society also attempts to superimpose on health care professionals. Richard Smith (who has written the first comprehensive review of prison health care problems and services in over 200 years since doctors have been working in English prisons[7]) recommends that there should be a separation of custodial and caring medical functions in British prisons and that this could be achieved by bringing the prison medical service and the National Health Service closer together.[8] This would protect the traditional medical role to the advantage of the prisoner, the profession and society. Although several organisations, including the Royal College of Psychiatrists, have argued that the National Health Service should take over full responsibility for prison health care, the British Home Office has opposed this suggestion.[8]

Prison doctors have a difficult role and they tend to feel that their good work and the pressures they are under are not understood, as a result of which they are maligned by the public, their colleagues and the news media. For example, an editorial entitled 'Perverted medicine' (*World Medicine*, October 1982) stated that the practice of medicine in prisons 'is being perverted for reasons of political expediency . . . the system is one which enables bad doctors, incompetent and maybe worse, to practise without controls or scrutiny. . . . men and women in our prisons are receiving what amounts to punitive medicine'.[9] Smith described the paper around which this was written as 'sensational, distorted and missing the point',[9] but he also pointed out that 'the idea that prison doctors drug prisoners, close their eyes to brutality, identify with prison governors rather than prisoners, and think of prisoners as prisoners first and patients second is deeply rooted — among both the public and doctors'.[9] This perception of prison medicine in England also pertains in South Africa where there are up to 5 times as many prisoners per 100 000 population as in the UK and where less resources are allocated to medical care.

The basis for popular attitudes to prison medicine

It is important to examine some of the factors which have

Department of Medicine, University of Cape Town and Groote Schuur Hospital, Cape Town
S. R. BENATAR, M.B. CH.B., F.F.A. (S.A.), F.R.C.P.

contributed to the development of these attitudes to prison medicine and to the truth they reveal.[10] The first is the magnitude of the workload and the inadequate access to specialised medical knowledge within prison medical services. Then there is the nature of the work: many of the patients have led disadvantaged lives, are impoverished and may be suffering from chronic disease or substance abuse. The incidence of mental disturbance is also higher among prisoners than in the population at large.[7] Prisons are overcrowded and unpleasant and the circumstances in which treatment can be provided do not match up to the needs of the patient. Richard Smith in his book *Prison Health Care*,[7] quotes Kenneth Ruck's introduction to Everyman's 1929 edition of John Howard's *The State of the Prisons in England and Wales* (1777): 'a prisoner is potentially in a worse condition than the slave, because the slave is the property of someone whose interest is to keep his property in serviceable condition, whereas the prisoner is owned by nobody, unless it be the State which is ultimately responsible for his imprisonment. Consequently the conditions of its prisons and its prisoners is no bad indication of the development of any society and its degree of civilisation.'[11] The very nature of prisons is such that they are places of endemic distress and many of the 'most insoluble problems are not clinical, but result from the mismatch of need and circumstance'.[7] Prison warders and their staff generally view their primary role as that of providing secure custody for inmates. They may even consider an element of physical or mental discomfort and punishment to be appropriate as part of society's retribution for proven crimes. Whether or not this is in keeping with retributive justice towards convicted criminals it must surely be considered thoroughly unjust and inhumane in relation to detainees who by law are innocent until proved guilty and, indeed, have not even been charged with criminal activity. The prison doctor may be seen by the prison authorities as having an important role in maintaining its custodial functions, and the extent of this role will be influenced by the level of humanitarian care deemed appropriate by prison authorities. Pressures on the doctor by the 'system' to see its aims and objectives as primary are counterbalanced by the doctor's perception of, and dedication to, his duty to provide ethical medical care for his patients.[3–5]

Professional isolation, the process of adapting to the distressing and inadequate environment in which they work (in the process possibly becoming less ethically sensitive), the degree to which prisoners consciously or subconsciously attempt to manipulate the prison doctor because he is a potentially beneficent, and therefore a weak link in the chains which bind them, and the fear of intimidation by prison personnel all contribute to create an impoverished image of the prison doctor. Institutional pressures (which may include filtering confidential medical information through the warden and other prison authorities) further inhibit the development of a trusting doctor/patient relationship in the prison setting.

Thus doctors who initially serve with high ideals in prison medical services may gradually succumb to the values they experience around them, and become subservient to the authorities who curb and confine independent thinking. A series of minor accommodations, mistakes of judgement and rationalisations can surreptitiously lead to a change of purpose and of heart, and in the process threaten, cheapen and betray professional lives. These gradual and almost innocent changes which can occur even in the everyday lives of doctors in civil life have been elegantly portrayed in novels.[12,13] While descriptions of doctors in prisons do not necessarily depict the entire reality of prison medicine they seem, regrettably, sufficiently true to achieve prominence.

What is the basis for the morality of medicine and what is the role of the doctor in society?

Moral norms and the criteria whereby people judge the moral character of their own actions are not uniform and are influenced by cultural traditions (including professional codes), various 'authorities' (including religious authority), 'gut feeling' or conscience, social pressures (often based on utilitarian considerations) and their legal outcomes, and last but not least by philosophical considerations. The morals of individual doctors result from interacting influences from all of these sources but should be particularly determined by the traditional ethos of medical practice. This, simply stated, is one which embraces the concept of the human person as an integral whole requiring consideration of bodily health, intellectual, spiritual and social well-being, by practitioners dedicated to the care of the sick.[4]

Societies' concepts of what doctors are and what they should be have, however, not been static and changes are reflected both in the evolution of medical codes and in the vast literature on medical ethics during the last 20 years, during which time the paternalistic framework, within which beneficence, trust and virtue have long been considered important components, has come under continuing criticism. With greater emphasis on patient autonomy (and other rights) and the monetarisation of medicine the doctor/patient relationship has been increasingly considered to resemble a contract between consumer and client contained within a legalistic framework. This has propagated the concept of medical practice more as a craft practised by entrepreneurs and contractors than as a profession in which an 'ethic of service' is considered the primary goal. *Pari passu* with this has come increasing emphasis on the need for doctors to develop responsibilities towards society and not only to individual patients. These demands have intensified the conflict between the doctor's primary role as a patient advocate and his duty to the 'common good' in society. Pressures and tensions in these different directions by opposing lobby groups without clarity on what *is* the 'common good', or how lines are drawn, are moulding and distorting the nature of the doctor/patient relationship and changing the popular perception of doctors and of their function in society. This is less evident in South Africa and Britain than in the USA, where it is clear that these developments are leading to an adversarial relationship between doctor and patient.

Ethical dilemmas for society

In South Africa it would seem that prisons and places of detention are increasingly being used for custodial and security purposes, with progressively less consideration for the humanitarian needs of prisoners. Detention without trial (instituted in South Africa about 25 years ago), particularly for prolonged periods or of children, is inhumane and strikes at the foundation of the Rule of Law. Detention under current emergency regulations is even more stringent. Under the 1986 regulations detainees can be held indefinitely without stated reason, and without the rights of other long-term prisoners to communicate with the outside world, to read or study, to exercise, or to consult doctors of their choice. Release is unpredictable and almost unaffected by legal representation. The risk of physical and mental abuse without redress is high under these circumstances and is further enhanced by control of the detainees' imprisonment being in the hands of security police rather than (trained) prison staff. With the large number of detainees (10 000 - 30 000 after June 1986 versus less than 400 in the preceding year) it is impossible to imagine that health can be preserved and brutalisation avoided. This threat to the sovereignty of law over authority needs to be addressed urgently by our society and by us as individuals within the society in

which we live. Society also needs to decide whether it wishes to have a medical profession with its traditional dedication to individual patients or whether it will force health professionals to become instruments of public policy.

Ethical dilemmas for doctors

A question which doctors must ask within the framework of military or coercive states where human rights enjoy a low priority is whether they should work in prisons at all if they cannot retain their professional independence? By merely serving in such prisons do they bear collective responsibility (guilt by association) for silently assisting in the violation of human rights? What about civilian doctors who may know about irregularities in prison and keep silent? Do they also lend *de facto* legitimacy to such actions by not challenging them? What moral theories should guide us in answering these questions — utilitarian or deontological theories? Within these theories how do we weigh and balance the principles of beneficence, justice, autonomy and non-maleficence?

It is important to remember that prisons are places of great human stress, both mental and physical. Pragmatically we recognise that someone must ameliorate this. If not doctors, who? If not medicine, what?[14] It is clear that considerations of health care needs of prisoners and detainees leave little alternative than for doctors to be prepared to work within the prison service, regardless of its controlling forces. But how are doctors appointed to prison services? To whom are prison doctors responsible and through what channels of authority do they operate? What changes need to be made to existing mechanisms to ensure that clinical independence, confidentiality and other high ethical standards are maximally preserved? In brief, what can and should the medical (and other) profession(s) be doing to improve the care of prisoners and detainees in our society, and to protect the integrity of the medical profession so that its members can carry out their vocation as autonomously in prisons as in civilian life?

Solutions

The answers to these questions lie in: (*i*) recognising the extent of the ethical dilemmas posed for doctors working in prisons;[3,4,6,7] (*ii*) formulating codes of practice which cater for the special circumstances in prisons;[15-18] (*iii*) campaigning for mechanisms to implement the concepts outlined in the codes and for better medical and rehabilitation facilities within prisons;[7] (*iv*) speaking out against the inhumanity of detention without trial and exerting formal pressure to change unjust laws;[3,6,12,19] (*v*) providing professional support for prison health care personnel and standing by those who may be victimised for taking highly principled stands;[20] and (*vi*) with our legal colleagues formulating clearer and fairer mechanisms of 'due process' to handle problems which may arise within the detention system as it exists.

Conclusions

In summary, the factors which could influence the function of health professionals in places of detention include:

1. The role that society sees and develops for its prisons (in particular the regulations it designs to effect their custodial/punishment roles and their rehabilitative functions) and the view it has of the role of health care professionals in society.

2. The attitude and integrity of prison staff and the extent to which they apply their duties in a humanitarian way.

3. The attitudes of prison doctors to their role, the moral standards to which they aspire, their ability to establish the vitally important, effective and professionally autonomous working relationships with prison management and with inmates, and the extent to which the medical profession as a whole identifies with the traditional role of doctors and within this moral framework is supportive of prison doctors.

4. The view that inmates have of doctors within the institution and, in particular, whether they view them primarily as doctors or as prison officials.

High standards of ethical conduct should be aimed for. The medical profession needs to make concerted efforts to ensure that these are implemented to the greatest extent possible in practice. It is also necessary to recognise that it is unrealistic to expect the medical profession, and even more to expect individual doctors, to be able to overcome all difficulties and injustices immediately or on their own without the support of other professionals, for example lawyers, and society at large. It is not appropriate for us to be indiscriminately and excessively harsh on all our colleagues who choose to work within the prison service and who may be trying within the limits of their capabilities to do good work without us as a profession and as members of society striving to rectify the many adverse factors affecting their performance. When we criticise their failure to live up to the idealised standards to which we aspire we need to ask whether we would be willing to take on their jobs, and if so how much better we could do and for how long. We also need to avoid succumbing to the very arrogance and cruelty we detest and fight!

We must, however, also not hesitate to condemn the participation of doctors in medical activities connected (even remotely) with torture, with falsifying medical reports to conceal acts of brutality, and with designing or changing rules and routines intended to undermine the health (mental or physical) of detainees.[21-23] Society has granted doctors and other professionals special places in society because of their chosen altruistic ethic of service to a noble cause. The medical profession needs to ensure that it does not overdraw on these privileges, or fail to meet its moral commitment if it wishes to retain its special status within society. It also needs to be a 'conscience to society' by holding its standards to those set internationally.[4] While recognising that doctors do have obligations to society and that we will have to meet these to a greater extent than in the past, we must also remain steadfast in our primary dedication to patient advocacy. The dilemma for society and for doctors will be to find solutions which will allow the profession to meet its just societal obligations without damaging the compassion and trust at the core of the healing relationship.[23-25] Unjust infringements of basic, universally recognised human rights, for example detention without trial and torture, must be vigorously opposed.[26,27]

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Ethics, Medicine, and Health in South Africa

by Solomon R. Benatar

Solomon R. Benatar is chairman of the division and department of medicine at the University of Cape Town and Groote Schuur Hospital, Cape Town, South Africa.

In many countries throughout the world, the health care professions and society as a whole are increasingly being confronted with ethical dilemmas. The spectrum of problems may be very similar across countries, but the specific issues raised by and the prominence given to a particular problem vary enormously from country to country. This divergence can be explained by differences in moral values and cultural traditions, in national development and priorities, in population structures and growth rates, in economies, and in ideologies underlying the struggle for political and economic power at national and international levels.

Although health care professionals are trained to provide care for ill patients as individuals and generally see this as their principal responsibility, it is increasingly necessary to reiterate to practitioners of Western medicine that health, medicine, medical education, and health care delivery systems cannot be considered in isolation from the political, economic, psychosocial, and communal factors that determine the milieu within which people live and that may promote their health or predispose them to disease.

South Africa is a country of paradoxes and contrasts. It is geographically beautiful, rich in natural and human resources, and has the potential to facilitate the economic development of many countries in southern Africa.[1] It is also a country in which the dehumanizing policies of apartheid have stultified and degraded the lives of millions, ingrained hatred, cynicism, and despair into many generations of its citizens, silenced or driven to other countries innumerable talented citizens, created an opposition in exile, and isolated the country internationally. This sociopolitical-economic milieu and its context have been alluded to in more detail elsewhere.[2]

The elimination of apartheid is the first and most important step towards reducing the very wide disparities between different groups in this country. Yet the road toward the reversal of this abhorrent policy and the establishment of an internationally recognized state in South Africa in which human rights are accorded to all on a nondiscriminatory basis has not been clearly identified, let alone embarked on. Moreover, other major social, economic, and political changes will be required, and debate centers on whether these can or should take place within the Western liberal paradigm or whether alternative ideological paradigms such as socialism offer greater potential for success.

Availability of Medical Services

Medical services in South Africa (comprising public, private, and voluntary organizations) are concentrated in major hospitals in urban centers and are typically Western in structure. They are equipped with most, but not all, modern diagnostic and therapeutic technologies, and focus predominantly on diagnosing and treating cardiovascular, neoplastic, degenerative, and infectious diseases, often in their advanced stages. Community hospitals are by comparison relatively poorly developed, especially in areas of high population density and low socioeconomic status where they are most needed. Family practice, primary care facilities, and ancillary medical services are disproportionately distributed among the affluent, and considerable development is needed in both urban and rural areas. Facilities for rehabilitation are likewise very inadequate. In addition, population growth and an influx of people into urban areas are creating demands that are outstripping the resources of teaching hospitals, resulting in erosion of the quality of clinical and academic functions. The

need for more primary and community health facilities is even more obvious now than in the past.[3]

Access to Health Care

More than forty years ago a National Commission was appointed to evaluate the need for an organized national health service for all the people of South Africa.[4] Its recommendations for the development of a national health service were unfortunately rejected by the government, and private medicine was encouraged alongside the development of public hospitals. As a result, by 1985 46 percent of South Africa's doctors were working in the private sector, which accounted for 44 percent of health expenditures, even though 87 percent of all hospital beds (and the sickest patients) are in public hospitals.

Three major factors now determine access to health care services in South Africa: ability to pay, geography, and racial discrimination. Persons of independent means or with medical insurance can obtain medical care in the private sector, which is reasonably well-developed and can adequately deal with common medical problems. Sophisticated forms of treatment such as chemotherapy or renal dialysis not available in the private sector are provided by the state in teaching and other public hospitals.

Access to major public and teaching hospitals for any form of treatment is largely contingent on geography. Any patient from any part of the country who presents at a public hospital can have access to its facilities, where treatment is provided at minimal or no cost and without consideration of ability to pay. The scale of fees is such that the wealthiest persons and those with medical insurance pay much less for any particular service than they would in the private sector, and the poor pay little or nothing. Proving that one lacks adequate means—for example, by declaring income, liabilities, and income tax details—allows prompt remission or waiving of fees. In 1986, patient fees made up less than 5 percent of the R175 million ($88 million, U.S.) operating budget of Groote Schuur Hospital complex in Cape Town.

Segregated Care

Public hospitals and hospital beds are officially segregated throughout the country, and the bed-to-population ratio and hospital facilities are much less adequate for blacks than for other population groups.[5] The fact that many blacks live in rural areas and need to travel long distances to reach major hospitals also limits access.

One of the less well known (and certainly less acknowledged) aspects of medical care in South Africa is the dedication with which health care professionals (including many with strong pro-government political affiliations) have looked after all their patients irrespective of race or ability to pay. There are some notable exceptions to the segregation of hospitals as well. Groote Schuur Hospital and the Red Cross Children's Hospital in Cape Town have de facto been progressively desegregated and are now run almost completely on nonracial, fully integrated lines, in relation to both staff and patients. Less than 25 percent of patients treated in these hospitals are white, and the Medical Faculty at the University of Cape Town has resolved to oppose reintroduction of segregation.[6] Some other teaching hospitals in the country are moving towards desegregation and endeavoring to offer the highest quality of service to all patients regardless of race. Most private hospitals are run on nonracial grounds, apparently without government interference.

Conflicting Ideologies in Resource Allocation

Questions regarding the nature of a health service in a country like South Africa and the equitable distribution of resources and facilities (including access to medical care) are *the* most important medical ethical issues facing the country, as they are intimately bound up with its economic, political, and sociological future. The problems of rising health costs, increasing demands for health care by a rapidly growing population, and allocation of resources have been forcefully thrust back into the public arena only recently in South Africa. Despite widening disparities in health of different groups, the increasing inadequacy of public health services, and deteriorating facilities at academic hospitals, the South African government insists on moving towards an even more fragmented and privatized health service.[7]

The way forward for health services in South Africa (and indeed for the country itself) is seen in very different lights by polar groups competing for ideological, political, and economic power. Some advocates of a free market economic system and some extreme right-wing groups oppose even the limited and very inadequate reforms being implemented by the present government, while extreme left-wing groups hold that answers to political and health care problems lie in a socialization program that includes nationalization of all forms of production in the country as a basis for ensuring an equitable distribution of all resources.

Regarding health care, the middle ground between these polar views is manifested in a resurrected appeal for the development of a unified national health service without complete elimination of private practice. The arguments advanced against privatization in medicine assert that health care is a public good requiring equitable distribution, that the economic behavior of the health care market does not (and should not) correspond to the idealized rules of the free market, and that free trading in health (especially in developing countries) has grave consequences. For example, privatization is held to be driven by perverse incentives that inevitably will increase costs and inequality of access and disparities in health within the society. Disparities in the health of subpopulations within countries is not unique to South Africa, of course, but the enforced racist dimension in a country identifying with the Western family of nations has justifiably given rise to intense moral indignation and opprobrium.[8]

The different ways that resources can and should be allocated to health care in South Africa have been openly debated recently by economists, sociologists, and medical practitioners, and intense discussion continues in medical

and political circles.[9] The failure of Western, curative-oriented medicine to give adequate consideration to preventive, promotive, rehabilitative, and other social aspects of health care is particularly relevant in South Africa, where greater attention must be directed to the social underpinnings of health and disease.[10]

The lack of consensus on questions of allocation can be attributed to different views of the nature of medicine, as well as to broader questions such as what it means to be human, how communities should be organized, and to the underlying struggle for power between groups with different value systems.[11]

The challenges faced by participants in this societal debate are first and foremost to acknowledge that the ideological gap is considerably narrower than simplistically depicted by advocates of the extreme positions and to create the prospect for negotiated solutions. Whether South Africa can become a social democracy incorporating features of the welfare state (for all) and private enterprise in combinations similar to those found in other Western nations (with annual per capita income in excess of $12,000 U.S.) or will only be able to achieve a democratic form of socialism like Yugoslavia's (with annual per capita income of $2,000 U.S. as in South Africa today) will depend as much on whether its economy can be boosted to its full potential as on other considerations

Occupational Health

That both industry and the state recognize the importance of occupational health is reflected in the history of efforts to promote mine workers' health in South Africa, and in research undertaken by the Medical Bureau for Occupational Diseases and the National Center for Occupational Health (NCOH) in Johannesburg. Their attention has focused predominantly on the mining industry, but in recent years there has been an escalating commitment to improving occupational health on a broader scale. Researchers at the NCOH and the Industrial Health Research Group (IHRG) at the University of Cape Town have conducted important studies of the sociological and social welfare aspects of occupational health and the epidemiology of occupational diseases. They have assisted in providing information and education in health and safety in occupational settings, and the services of the IHRG have been of great value to the independent black trade unions. However, much remains to be done to promote better working conditions and occupational health care services within a framework supportive of basic human rights.

Ethical Aspects of Medical Practice

The Physician-Patient Relationship. It is perhaps not surprising that patient autonomy has not emerged as a dominant force in medical practice in South Africa. Many patients, particularly those from lower socioeconomic groups, have had an inadequate education, face language and cultural barriers, and have become complacent about their subordinate role in society. Access to public hospitals unrestricted by financial considerations also tends to foster patients' expectation and acceptance of a paternalistic relationship with physicians. Public concern regarding human rights has focused on civil and political rights, rather than on rights to participate in medical decisionmaking.

Moreover, many health care professionals are (or are perceived to be) genuinely beneficent and altruistic. Even in the private sector, where patients are more educated and affluent, the traditional trusting relationship between doctor and patient has been preserved to a remarkable extent. Litigation has until recently been very uncommon. Malpractice insurance premiums have increased gradually over the years, but the maximum annual rate is R480 ($250 U.S.).

The movement toward patient autonomy is, however, gaining momentum, and students as well as established practitioners have become conscious of the conflict between professional paternalism and patient rights through political conflicts, programs on medical ethics at medical schools, and local medical publications.[12] It is hoped that in the movement toward greater emphasis on patient autonomy, ethical sensitivity will be enhanced and, while remaining linked to altruism and beneficence, will promote more effective communication with patients in an empathic, compassionate, and mutually respectful relationship.

Health Care for Detainees. Another bioethical issue of particular importance in South Africa is the role of health care professionals in caring for detainees and in opposing physical and mental torture. In 1982, the University of Cape Town Faculty of Medicine expressed concern that "detention and solitary confinement in jail or excessive and prolonged interrogation procedures present a high risk of injury and severe psychological disturbance, and an ever present possibility of suicide. As such these practices alone or in combination amount to torture...."[13]

The Faculty made several recommendations regarding the delivery of medical treatment to prisoners and detainees:

- The autonomy and judgment of the medical practitioner caring for the prisoner or detainee should at all times be paramount. No one should have the power to overrule such judgment, since under no circumstances can the health care professional practice his or her profession without ensuring that the health interests of his or her patient supersede all else.
- The rights of prisoners and detainees in respect of medical care should be statutorily defined and the prisoner or detainee should be informed of the right of access to medical attention.
- The need under certain circumstances for maximum security is understood, but this should not be at the expense of ensuring adequate facilities to enable the examining physician to discharge his responsibility to the patient in a proper professional manner.
- There should be clear instructions to ensure that the use of paramedical health service personnel is not in any way abused.
- The dangers of injury and depression resulting from isolation cannot be too greatly stressed.
- The standards laid down and adherence to them should come

under constant peer review in order that these rules not be allowed to lapse by default.

The Faculty called on the appropriate ministers of state, the Medical Association of South Africa (MASA, a signatory to the Declaration of Tokyo), and the South African Medical and Dental Council to do everything within their powers to ensure *in law* proper protection and health rights for persons held in South African jails, and to guarantee "constant peer review." MASA subsequently made similar recommendations.[14]

Yet the inadequacies of the responses from the South African medical profession and the delays in mobilizing support for the commendable efforts of individuals and groups to expose and oppose the violations of the human rights of prisoners and detainees have been clearly described in a recent publication from the American Association for the Advancement of Science Committee on Scientific Freedom and Responsibility.[15] This document provides a detailed account of the events that followed Steve Biko's death in detention in 1977, and there is little doubt that the South African Medical and Dental Council and the medical profession through its official body, MASA, could and should have acted more promptly and with greater professional integrity.

Two conferences have been held recently in Johannesburg (under the auspices of the University of Witwatersrand) on "Emergency Law" and "The Health Care of Detainees—The Law, Professional Ethics, and Reality."[16] At the latter symposium, it was proposed that resolving many of the difficulties facing professionals dealing with prisoners and detainees must include:

- Clear recognition of the ethical issues involved.
- Condemnation of health care professionals' participation in activities even remotely connected with mental or physical torture.
- Formulating codes of practice to reflect the special circumstances facing medical personnel in prisons, and campaigning for mechanisms to implement these codes.
- Speaking out against the inhumanity of detention without trial and exerting pressure to change unjust laws.
- Providing professional support for prison health personnel and supporting those who may be victimized for taking highly principled stands.
- Pressing for legal formulation of clearer and fairer mechanisms of "due process" to handle problems that arise within the detention system as it exists.[17]

Publication of these proceedings will, it is hoped, help sensitize professionals and the public to the conditions and implications of detention, and rally both the legal and medical professions to oppose more cohesively injustices in South Africa and to act more vigorously as a conscience for our broader society.

The Moral Validity of Medical Practice in South Africa

A question that professionals must ask, within the confines of a repressive authoritarian state where human rights are systematically violated, is whether their mere participation in such a society compromises their professional independence and moral integrity. I believe not. Many ascribe to whites who remain in South Africa, guilt by association with the apartheid policies that have had such devastating effects on the lives of many people and which so many South Africans detest. Yet these critics may be unaware of the intentions, actions, and aspirations of many fine institutions and people who are deeply concerned for the welfare of their fellow man and aspire to the highest human ideals in the practice of their professions. There is also little evidence to support the (often veiled) accusation that the practice of medicine in South Africa is less moral than elsewhere in the Western world. However, there are shortcomings in professionals' responses to violations of human rights in South Africa.

This inadequacy can be attributed to several factors. Global apathy about social affairs of which the medical and other professions have been accused (with some justification) reveals itself in South Africa in lack of widespread knowledge and interest in these issues. This complacency is further aggravated by censorship in literature and restriction of freedom of the press, which isolate and protect people from events and opinions around them.[18]

The South African medical community also lacks effective organization and consolidation of the efforts of those health care professionals who are involved and committed to societal change. The efforts of this small but growing group are becoming more visible through actions, statements, conferences, and publications.

South African professionals also receive minimal public support from international colleagues and institutions. With few exceptions, outsiders have either been silent or more willing to assume a position of moral superiority than constructively to encourage and assist South African professional and academic institutions to face up to situations they may have confronted themselves or with which they would have welcomed assistance under reversed circumstances.[19]

It has been suggested that a massive fantasy of reciprocal projection is being played out between South Africa and Western nations. South Africans of all races and ideological persuasions blame the West for contributing positively or negatively to the "enraging frustrations" in their country, while people in the West have used South Africa as "a ventilation valve for their own moral and political frustrations, finding it a convenient surrogate or an easy analogy for issues at home whose complexity has rendered them intractable."[20]

Estrangement from colleagues, like censorship of literature and the press, can result in the closing of minds, a restricted view of professional responsibilities, and complacency with the status quo. The personal and public support received by many individuals from perceptive and caring colleagues abroad undoubtedly plays an important role in overcoming constraints to maintaining personal and professional integrity.

The Challenge of the Future

The practice of medicine in South Africa, like that in many other com-

tries, has its shortcomings. The clarity with which these are seen, the importance attached to individual issues by those of us in South Africa and by colleagues abroad, and responses to these issues will be influenced by the perspectives and value bases from which they are perceived.

There are laudable aspects to medical care in South Africa that should not be overlooked in the process of spotlighting deficiencies. Professionals take pride in identifying with colleagues, fellow men and women from all walks of life, and with institutions in South Africa and abroad, who by their efforts and example help to make life better for many. With this pride is coupled an intense humility that arises from a sense of failure and futility engendered by the magnitude of the problems that must be overcome to achieve a peaceful and equitable future for all people in this country. Accusations of "bad faith" and indiscriminate public withdrawal of collegial support are likely to aggravate rather than alleviate the problems. This condemnatory approach should be discouraged by all who believe that a new health service need not arise only from the ashes of an existing system that first must be destroyed.

In our rapidly changing society, the challenges for medicine over the coming years will be to broaden medical education to include study of African languages and culture and of the humanities in general, to develop and implement efficient primary health care teams, and to help create movement toward an open society in which medicine is practiced both scientifically and humanely within an equitable health service.[21]

For South Africa to evolve into a social democracy in which its wealth, talent, and resources can be fully developed and used for the benefit of all its people, there will need to be not only political change with democratization of the development process, a deep commitment to human rights, and an active de-alienation program, but also rapid expansion of the economy and reincorporation of South Africa into the world market. This cannot occur until whites and blacks in the country agree to make the compromises necessary to travel the path toward rapid and peaceful achievement of these objectives, and even then only if this is legitimated internationally and facilitated by the active economic and political support of other nations. The enormity of the advantages of such peaceful progress over civil war, revolution, and vulgar socialism in an impoverished economy justify dedication to this cause.

In discussing the impact of religious diversity on medicine, Samuel Gorovitz has stated that:

> ...dogmatism, fanaticism and ideology are the enemies of tolerance, of careful listening, of reason and of understanding and compassion for those who are different. They foster divisiveness and conflict and the health of the people of the world is far too important for us to accept that. Instead we should turn our efforts to identifying that core of principles on which we can agree, and should strive to have them adopted as a basis for an international code of ethics for health policy. We must live with the reality of disagreement about some issues, but we should do all we can to translate our considerable agreement into better health for mankind.[22]

Such an attitude (unlike academic boycott) is in keeping with Western liberal thought and the true scientific spirit, and the medical profession in free countries should consider how they could assist colleagues elsewhere who strive to attain the highest ideals to which all who practice medicine should aspire.

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Detention without Trial, Hunger Strikes and Medical Ethics

S. R. Benatar

Introduction

Racism, which has pervaded and debased life in many countries, was given little attention by the international community before the Second World War when international law only governed relationships between states; the way in which individuals were treated within their own states was considered to be a purely domestic affair.[1] The revulsion engendered by the Nazi atrocities however had a profound effect on world opinion, and in 1945 the "United Nations" grew out of the League of Nations with the hope that this body could contribute to the maintenance of international peace and encourage worldwide respect for human rights and fundamental freedoms. Three years later, in 1948, the Nationalist Party came into power in South Africa and the racial attitudes of the time were committed to the statute books in this country.

The Universal Declaration of Human Rights, adopted by the UN General Assembly on 10 December 1948, proclaimed two types of rights—basic civil and political rights and basic social, economic and cultural rights (all to be recognized without distinction based on race, sex, language or political opinion). Although the Universal Declaration was not binding on states and there was no enforcement machinery, as a statement of faith and of aspirations, its impact on domestic and international legal systems has been profound and it has served as the basis for Bills of Rights in many countries (e.g., West Germany, Canada, India). Efforts to translate these rights into international conventions and treaties which are binding on states have influenced the evolution of international customary and common law which is potentially binding even on non-signatory countries such as South Africa.[2]

South Africa's governing National Party consistently rejected the Universal Declaration of Human Rights in word and deed between 1948 and 1970. Since Mr. Pik Botha's maiden speech in 1970 there have been some verbal acknowledgements of human rights but little in the way of substantive action, and it is South Africa's racist policies and poor record on human rights which have led to increasing political isolation, sanctions and economic decline.[3] The double standards and failure to respect human rights which are characteristic of some countries belonging to the United Nations are cause for concern in their own right, but these deficiencies do not exonerate South Africa.

In the 1986 international human rights rating scale[4] South Africa scored 22 percent; other percentages included Denmark 98, Canada 96, UK 94, USA 90, Israel 77, Mexico 62, Egypt 59, Ghana 50, Yugoslavia 50, Zimbabwe 45, Chile 35, Saudi Arabia 28, USSR 20, Ethiopia 13. The International Human Suffering Index scores living conditions in 130 countries, allocating up to 10 points for each of 10 measures: income, inflation, demand for new jobs, urban population pressures, infant mortality, nutrition, clean water, energy use, adult literacy and personal freedom (0=ideal, 100=great suffering). South Africa scores 52 points and is ranked 59 out of 130 countries (a better ranking than on human rights alone). Switzerland has the lowest score (4) and Mozambique the highest (95). (Cf. Denmark 9, Canada 9, UK 12, USA 8, Israel 32, Mexico 47, Egypt 55, Ghana 87, Yugoslavia 32, Zimbabwe 69, Chile 46, Saudi Arabia 56, USSR 19, Ethiopia 82.)

Detention without Trial

Legislation was introduced in South Africa in 1953 (Public Safety Act No 3) which made provision for the declaration of a State of Emergency. The first detainees were held under a partial State of Emergency in 1960. The 1963 legislation (General Law Amendment Act, Section 17) introduced detention without trial and since then many stringent Parliamentary Acts have progressively increased arbitrary power to arrest and detain persons indefinitely without trial and with almost no access to

the outside world.[5]

Concomitantly the power of the courts to pronounce on the validity of such actions or to reverse them has been totally eroded—all of this in the name of "state security."

According to the Human Rights Commission over 73,000 persons have been detained since 1960, most without trial and many for prolonged periods. Detentions in the last five years (i.e., since the tricameral elections of August 1984) have exceeded those in the preceding 20 years and 67 people have died in detention during the last 25 years, many under suspect circumstances.

Conditions of Detention

The conditions under which detainees are held have repeatedly been described as punitive, harsh and unrelated to the purposes of securing public safety.[6] Shortly after the declaration of the 3rd State of Emergency (11 June 1987) new rules were promulgated with the intention of regulating the treatment of emergency detainees on the same basis as prisoners awaiting trial.[7] This has to a large measure been achieved with the serious caveat that certain of the features of treatment of emergency detainees are consistently harsher than the treatment accorded to prisoners awaiting trial, e.g. solitary confinement,[8] which is generally considered to be a cruel and inhuman form of punishment.

It is within this structured and repressive system of detention without trial that medical practitioners are faced with the need to provide physical and mental health care for detainees and to make decisions on treatment of hunger strikers. Three undisputable statements can be made regarding this situation.

(i) The rights of detainees and their autonomy to make decisions affecting their health are seriously compromised.
(ii) The freedom of doctors to meet their responsibility to act beneficently and in their patients's best interests is severely restricted. Their responsibility to do no harm (*primum non nocere*) is thus greatly enhanced.
(iii) The doctor/patient relationship in this environment cannot begin to resemble the ideal aimed for in an open society, and it is not perceived to meet the requirements of the moral principle of justice.

The rights and duties of medical practitioners who are required to treat prisoners or detainees and the responsibilities of doctors during the State of Emergency have recently been fully reviewed by McQuoid-Mason.[9] He has made it clear that they retain all their internationally recognized professional rights and obligations and that they remain subject to the normal ethical rules of the profession. He lists these rights and responsibilities as the duties:

(i) not to place state interest above those of their patients;
(ii) not to falsify medical certificates in order to conceal acts of brutality;
(iii) not to fail to render adequate assistance in emergency situations;
(iv) not to disclose clinical information against the interests of their patients;
(v) not to condone or participate in torture;
(vi) not to diminish the will of detainees to resist cruel, inhuman or degrading treatment;
(vii) not to treat them in cruel, inhuman or degrading circumstances, except in emergencies;
(viii) and not to engage in treatment in which their clinical independence is compromised.[10]

Others have documented the very many harmful effects of detention without trial on health.[11] These include physical torture, depression, anxiety (post-traumatic stress disorder) and acute psychosis, all of which may be long lasting and lead to breakdowns in interpersonal relations even at the family level.

Ethical Dilemmas

Against the background described above, a series of ethical dilemmas are posed for medical practitioners.

1. Does their mere living and working in such a repressive society, however hard they try to do a good job, corrupt them and identify them as collaborators with the system? I should like to assert that it does not necessarily do so, particularly if they are sensitive to the many serious and damaging deficiencies in their society and remain dedicated to international professional ideals. (Arguments in support of this assertion have been presented.)[12]
2. Should they become involved in providing medical services for those who have been detained in an unjust system? Does serving in such an environment automatically make them guilty of assisting in the violation of human rights? Unless refusal to provide care could lead rapidly to the abolition of detention without trial, such refusal would surely prejudice detainees. It would seem that doctors are obliged to serve the sick wherever they are and that they must therefore be prepared to care for detainees.[13]
3. How can professional integrity be preserved in the context of caring for detainees? We must surely agree that responsibility for this is both individual and collective. Individual medical practitioners cannot carry the burden

alone. It is incumbent on professional medical bodies to help their members work towards creating conditions under which beneficent medical care can be provided in a manner supportive of an effective and therapeutic doctor/patient relationship. The autonomy of the patient and of the physician need to be protected from the societal interference which can be imposed through law enforcement agents. For justice to be done and to be seen to be done the mechanism of due process which pertains to the interaction between doctor and patient (detainee) needs to be clearly defined, open to independent scrutiny and subject to appropriate accountability. The difficulty in achieving these ideals has been well described in the medical literature since the "Biko affair" and they have certainly not yet been achieved in South Africa despite quite considerable efforts by many in the legal and medical professions.[15] Until detention without trial is abolished meeting these requirements will be the only way of protecting the health care interests of detainees and the ethical integrity of health care professionals.

Endeavors to resolve many of the difficulties facing health professionals caring for prisoners and detainees must include several measures:[16]

(i) Clear recognition of the ethical issues involved.
(ii) Condemnation of health care professionals' participation in activities even remotely connected with mental or physical torture.
(iii) Formulation of codes of practice which reflect the special circumstances facing medical personnel in prisons, and campaigning for mechanisms to implement these codes.
(iv) Speaking out against the inhumanity of detention without trial, calling for its abolition and exerting pressure to change unjust laws.
(v) Ensuring professional support for those who may be victimized for taking highly principled stands.
(vi) Pressing for legal formulation of clearer and fairer mechanisms of "due process" to enable reporting and redressing abuses that may arise within the detention system as it exists.

Inadequate progress towards meeting appropriate conditions for medical care of detainees and towards abolishing detention without trial also provides justification for medical practitioners to seek redress through legal mechanisms. That few medical practitioners have had the courage to pursue this course of action is a valid cause for criticism.[17]

4. Can refusal to provide care for detainees be justified? If all else fails and professional integrity and independence are obstructed, medical practitioners would need to consider refusing to provide medical care for detainees. This would not necessarily entail a strike, (which in South Africa could lead to being removed from the medical register without recourse to appeal[18]) as any medical practitioner is free to resign from his full-time or part-time post as a district surgeon. It would, however leave detainees without recourse to medical care (at least temporarily), especially if they do not have access to private medical practitioners of their choice. The dilemma here is to choose between the obligation to provide care and the obligation to refuse to do so in conditions which negate professional autonomy. The ethical principles which need to be considered in resolving these dilemmas include the principles of non-maleficence, beneficence, autonomy and justice. The balancing and weighing of these principles will be affected by contextual considerations. Given the nature of detention without trial, the requirement for health professionals to uphold international standards, the need to respect the wishes of the detainee when he has been unjustly deprived of many personal liberties in the process of being detained, and the danger of coercion by detaining authorities, it is clear that the responsibilities of health care professionals lie in doing what is in the best interests of their patient. This cannot be determined unilaterally and paternalistically by the doctor but rather mutually through compassionate dialogue within a relationship which respects both the autonomy of the patient and the ethical integrity of the health care professional. I use the latter term as nurses and others in the health care team are guided by the same considerations.

Hunger Strikes

Hunger strikes are a desperate action to which detainees are resorting in order to focus attention on their plight. How medical practitioners should respond to demands

by prison authorities to force feed prisoners and to the demands of prisoners to their right to refuse treatment have been the subject of considerable debate in several countries.[19] Annas has expressed the view that the context and the motive for refusal to eat or to accept medical treatment are relevant. He argues that if the prisoner's motive is to manipulate the prison system to his own advantage, the state can claim "compelling interest" that justifies over-riding the patient's wishes.[20] The subject is too broad to be dealt with in detail in this paper and I shall therefore limit my remarks to a few points.

1. The hunger strikes of detainees in South Africa cannot be interpreted as an attempt to manipulate the prison system to their own advantage.
2. Hunger striking is not the same as suicide.[21] The intention of the hunger striker is to draw public attention to his desperate plight in hopes that this will mobilize support for compassionate revocation of his detention order, when all other attempts to achieve this have failed.
3. Death is not desired but strikers recognize that this is the price they may have to pay (and many are willing to do so) if society is callous enough not to recognize the validity of their protest against such a gross abuse of human rights as indefinite detention without trial, without access to legal recourse or communication with the outside world.
4. The Declaration of Tokyo states that "where a prisoner refuses nourishment and is considered by the doctor as capable of forming an unimpaired and rational judgment concerning the consequences of such voluntary refusal, he or she shall not be fed artificially. The decision as to the capacity to form such a judgment should be confirmed by at least one other independent doctor. The consequences of the refusal of nourishment shall be explained by the doctor to the prisoner." The logistic difficulties in meeting these requirements should not be underestimated particularly in a mass hunger strike in which some may only be participating through intimidation.
5. The right of a hunger striker to be removed from the presence of his fellows if he does not wish to participate must also be defended if coercive participation is to be avoided.
6. That many hunger strikers may not have a clear understanding of their actions is illustrated by recent requests from detainees in Pietermaritzburg for intravenous support including central lines and total parenteral nutrition during the course of their protesting action.[22] The appropriate response of physicians to such requests remains the subject of debate.
7. Clear establishment of the autonomous wishes of patients, reliable documentation and networks of communication and other precautions are necessary to protect the autonomy of the hunger striker and to avoid intentional or unintentional damage to the moral agency of the physician who may be asked at short notice to deal with unconscious hunger strikers without having had sufficient prior interaction with them to acquire knowledge of their deepest wishes and of how these might evolve with changing circumstances.
8. The effectiveness of hunger striking as a method of protest is attested to by the release of most hunger-striking detainees in South Africa in recent months, although many remain under restriction orders.

The dilemma for the physician which arises from conflict between his duty to do all he can for what he considers to be the patient's best interests and his duty to respect the patient's autonomy, even if this means withholding life saving nutrition, can only be resolved by ongoing compassionate and empathetic communication between health care professionals and those to whom they provide their services. Without this there is great danger of brutalizing and dehumanizing the hunger-strikers and those who profess to provide health care for them. Some recommendations regarding the care of hunger-strikers have recently been outlined by the Witwatersrand Faculty of Medicine.[23]

The Role of Colleagues in Other Countries

International medical standards demand of local professional organizations and societies that they provide the moral leadership required to resist violations of human rights which seriously jeopardize health. The heavy burden which needs to be carried by the South African medical profession in their endeavors to protect human rights is shared by the legal and other professions. Responses from the professions to violations of human rights in South Africa have not been adequate. This inadequacy can be attributed to several factors. Global apathy about social affairs of which the professions have been accused (with some justification) reveals itself in South Africa in lack of widespread knowledge and interest in these issues. This complacency is further aggravated by censorship and restrictions of press freedom which isolate and protect the privileged from events and opinions around them. The professions also lack effective organization and consolidation of the efforts of those professionals who are involved and committed to societal

change. The efforts of this small but growing group are at last becoming more visible. Health care professionals whose suffering (or death), resulting from their defense of human rights, is brought to world attention through Amnesty International, the American Association for the Advancement of Science Committee in Human Rights or any other organization, usually receive the attention and accolade they deserve.[24]

But what else is being done by such bodies to try to prevent victimization of human rights activists? How much support have individual practitioners or medical organizations (in South Africa or other repressive countries) received from their internarional colleagues to assist them in meeting mutual professional obligations? Are they expected by those who are fortunate to live in free countries to achieve this all on their own? I would venture to suggest that there is a challenging role for fellow professionals and their organizations throughout the world to help to achieve these goals rather than accepting a comfortable and emotionally satisfying base in negative condemnatory attitudes and academic boycott.[25]

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Appendixes to this article, entitled "Some Legislation Concerning Political Censorship and Detention without Trial" and "States of Emergency," are available on request from Prof. Benatar at the University of Cape Town, Department of Medicine.

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Medical Ethics in Times of War and Insurrection: Rights And Duties

S. R. Benatar

INTRODUCTION

In this paper I shall take the Geneva Conventions and Additional Protocols as my point of departure and link these with the International Declaration of Human Rights as a statement of faith and of aspirations. I shall refer briefly to widespread violations of these rights, to some disparaging comments made by oppressed people regarding first world morality and to the wide range in human suffering throughout the world. This will serve as a reminder of the need for a global perspective when speaking of moral requirements at the international level.

The second part of my paper will focus on medical morality with brief reference to various languages of moral discourse and to differences in conceptual logic which underpin debates on duties and rights with particular reference to the circumstances of conflict. While acknowledging the value of talking of rights as primary I shall also suggest that the shift away from discourse on duties and obligations as primary undermines the likelihood of super-erogatory moral action.

I shall conclude by emphasizing the centrality of acceptance by the State and the military of their duty to the injured and to medical personnel caring for them, if man's inhumanity to man, particularly evident during times of war, is to be kept out of our concern for each other as human beings even when nations are pitted against each other in the ongoing, but hopefully not eternal, struggle for material and ideological power.

The Geneva Conventions and Additional Protocols have an interesting history which dates back to the efforts of the Swiss citizen Henry

Correspondence should be directed to S. R. Benatar, Department of Medicine, University of Cape Town Medical School, Observatory 7925, Cape Town, South Africa.

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Table 1. History of Geneva Conventions.

1859	Battle of Solferino – Italy
1863	International Committee for the Relief of the Wounded formed by the Committee of Five (Henry Dunant and 4 citizens of Geneva)
1864	First Geneva Convention signed by representatives of 12 states (for the Amelioration of the Conditions of the Wounded in Armies in the Field)
1899	Second Geneva Convention signed (for the Amelioration of the Conditions of Wounded, Sick and Shipwrecked of Armed Forces at Sea)
1929	Third Geneva Convention (Relative to the treatment of Prisoners of War)
1949	Fourth Geneva Convention (Relative to the Protection of Civilian Persons in times of War) All preceding Conventions reviewed
1977	Additional Protocols adopted
	Protocol 1: Protection of victims of International Armed Conflicts
	Protocol 2: Protection of victims of Non-International Armed Conflicts

Dunant, following the horrors he witnessed on the battlefields of Solferino in Italy in 1859. His tireless efforts and those of many others have helped to create International Humanitarian Law to protect victims of armed conflict and the personnel responsible for their care. (Table 1). The Geneva Conventions are considered to be binding on over 150 States, virtually the entire international community, and it is the responsibility of States and their citizens to publicize and comply with the provisions laid down.[1]

The rights and duties described in International Humanitarian Law have been defined to enable medical personnel to perform their humanitarian tasks. Their duties are described as being directly linked with the rights of protected persons placed in their care while the rights of medical personnel are directly connected with the duties incumbent on the state to which the medical personnel belong, and on the duties incumbent on all parties to the conflict.[1]

HUMAN RIGHTS AND HUMAN SUFFERING

The rights of victims of armed conflict and the rights granted to medical personnel by International Humanitarian Law can be seen as additional components of the basic human rights expressed and propagated through the Universal Declaration of Human Rights to which almost all states in the world are signatories. Although this 1948 Universal Declaration had no binding machinery, as a statement of faith and of aspirations, its impact on domestic and international legal systems has been profound and it has served as the basis for Bills of Rights in many countries. Efforts to translate these rights into international conventions and treaties which are binding on states have influenced the evolution of international, customary and common-law which is potentially binding even on nonsignatory countries.[2]

Regrettably many countries, including members of the United Nations, who on paper support such human rights, seem to have little success in putting these into practice. Amnesty International has made "repeated appeals over the past decade both to individual governments and to the United Nations to deal constructively and effectively with human rights abusers in all regions of the world." As this organization has pointed out, human rights are most at risk when "political, military and economic considerations become the overwhelming preoccupations of governments." In a discussion of why there are such widespread violations of the International Declaration, Fatima Meer, a South African activist, has been outspokenly critical of first-world morality.[3] Although many of her remarks refer specifically to South Africa, they also apply much more widely and especially during war. As her views are shared by many who consider themselves as oppressed and they have implications for those involved in war in the Middle East, I shall quote several passages from her paper.

With relevance to the statement that "all human beings are born free and equal in dignity and rights", she points out that this is neither a social fact in any liberal democracy rooted in the laissez-faire principles of capitalism nor in socialist countries. Furthermore, Hinduism tacitly acknowledges inequalities of birth and Islam acknowledges differential access to wealth and power . . . . "There is no equality between the peoples of the first and the third worlds and there is no equality between a child born in an African township and one born in a white suburb. The child in the slum is born neither within dignity nor in dignity and he or she is born with practically no rights . . . . Theologically we are born free and equal, sociologically we are born into differential socio-economic-emotional situations; and in the world in which we live sociology defines our reality . . . . Our

equality is a theoretical absolute towards which we aspire – an idea, a faith we live by – it is not an empirical reality – the empirical reality is far from the absolute; it is the world of power and awesome competition, of gruesome conflict and horrific license to exploit, to accumulate more power . . .. We are not born with rights, we are born with the stuff of conscience and the capacity to develop that conscience, to know what is (potentially) available to us and what has been denied us . . . . On a global level the International Declaration of Human Rights fails because of the ethnocentric satisfaction of developed countries with their own state of freedom and their general unconcern for the freedom of others . . . . Those under their jurisdiction, either as colonized or, in the sense of capitalist exploitation, continue to be treated as lesser people, deserving of lesser rights, whatever the noble articulations of the first world . . . . Self interest and expediency, and not mutual concerns for each others' freedom and dignity, govern international relations . . . . expediency has subjected us to conflict of values, and that very conflict provides us with rationalization, with a way out of commitment to high ideals. So the value of patriotism is in conflict with that of international peace. We take the choice that suits our purpose – usually a short range choice."[3]

Equality before the law is difficult enough to achieve even within nations and the inadequate achievement of human rights in many countries illustrates the difficulty in enforcing International Law. For those concerned not only with human rights, but more broadly with human suffering, the International Human Suffering Index (which scores human living conditions in 130 countries) provides insights into the wide disparities which characterize life across the globe (Table 2).

No attempt will be made in this presentation to explore the many inconsistencies between strident calls for human rights and simultaneous economic, military, racist or imperialistic behavior which fuel human conflict, intensify human suffering and threaten the future of mankind and our planet. But the global village concept must at least be mentioned when one is embarking on debates concerning morality at an international level.

MEDICAL MORALITY

Moral language is not a neutral instrument. Different moral vocabularies have distinctive conceptual presuppositions and implications for medical practice.[4] Gustafson has distinguished at least four types of moral discourse – ethical, prophetic, narrative and policy – none of which he considers to be sufficient in themselves. Although all varieties of moral discourse have a common concern for human values each perceives a different

Table 2. Human Suffering and Human Rights Around the World.

Country Rating	Human Suffering Index*		Human Rights**	
Ahead	%	Countries Ahead (130)	%	Countries (89)
MOZAMBIQUE	95	130	25	75
ANGOLA	91	129	NA	NA
ETHIOPIA	82	104	13	88
TANZANIA	75	89	NA	NA
ZAIRE	74	88	30	72
PAKISTAN	73	83	32	71
SOUTH AFRICA	52	57	22	81
BRAZIL	50	58	73	33
CHINA	50	57	23	79
MALAYSIA	48	56	53	52
MEXICO	47	54	62	38
LEBANON	46	50	NA	NA
ISRAEL	32	35	77	32
POLAND	25	28	41	64
IRELAND	23	27	87	22
USSR	19	23	20	84
UK	12	12	94	14
CANADA	9	7	96	9
USA	8	5	90	18
SWITZERLAND	4	1	95	10

*Human Suffering Index. Population Crisis Committee, Washington DC, 1987.
**Human Rights Rating. Freedom House, New York, 1988.
NA = not available.
NB = No direct correlation between Human Rights Rating and the extent of human suffering.

locus for such concern and uses language or forms of discourse and concepts appropriate to its perspective. Even within each of these forms of discourse there may be different modes of argumentation.[4]

In this presentation I shall briefly reflect on only one conceptual difficulty within the currently popular ethical variety of moral discourse and I shall relate this to medical ethics in times of war. This conceptual difficulty relates to combining talk of rights and duties in the absence of a clear understanding of which is primary rights or duties – and depending on this, of the relationship between them.

Let me begin by stating the commonly and long-accepted principles of medical practice:

1. To save or preserve life
2. To relieve or minimize suffering – physical and mental
3. To avoid doing harm

Traditionally these principles have been viewed as medical moral obligations or duties framed within a notion of beneficence – a moral agent giving to or reaching out to another – in the context of a relationship which has trust as a quality binding giver and receiver (even if incompetent) in a solidarity of common purpose.

Duties

In attempting to identify the basis for such duties or obligations several possibilities become evident.[5] By virtue of our common humanity we can conceive of a natural, unacquired, general moral obligation not to harm others, an obligation for which we can be held publicly accountable. This moral obligation can be extended to promoting human good, an obligation for which we cannot as easily be held publicly accountable. Together these promote us to treat all people in a like manner unless there is a moral reason for not doing so (the principle of justice). The natural moral obligation of a doctor would thus encompass refraining from harming others, assisting those in need, dealing justly with others and assisting in establishing and upholding just health care institutions for the benefit of society.

By virtue of their medical training, special skills and knowledge, physicians also acquire through the nature of their job, and their role in society, additional, more specific duties for which they can be held legally accountable through professional associations, statutory bodies and the civil courts. The institutionalized obligations of physicians include those recognized duties applicable to all medical practitioners (e.g., preserving confidentiality, truth-telling etc) as well as specific duties linked to particular technical skills or knowledge.

Over and above these institutionalized duties, we can conceive of another class of moral obligations – those acquired or voluntarily self-imposed by the exercise of free will. These include the supererogatory, caring actions taken on to varying degrees by medical personnel often with great courage, usually in relation to specific persons and for which great praise and recognition may be received but which cannot be seen as required legally or naturally. It is this 'higher calling' response within medical practice which many consider to be the true moral essence of a health professional's work.

During armed conflict the natural unacquired duties of medical personnel would remain unchanged. Their acquired duties would, however, go beyond those in civilian life and would include those specified by International Humanitarian Law. For these they would be accountable nationally and internationally within the framework of a military and State machinery which acknowledges these duties and in so doing meets its obligations to protect its medical personnel and their patients.

Supererogatory acts by medical personnel are likely to be encouraged in such circumstances where the State, the military organization, its soldiers and doctors all recognize both their natural and their role-acquired duties and especially if these are reinforced by efforts to monitor and facilitate implementation of International Humanitarian Law.

Moral dilemmas may, however, arise:

1. If the institutionalized, acquired obligations of doctors to specific patients conflict with their general non-acquired obligations to the broader society (e.g., confidentiality – HIV + ve etc) or
2. If the State or the military overtly or covertly fail to acknowledge their duty to facilitate the role-specific duties of physicians laid down in International Humanitarian Law and their right to protection, or if they obstruct or threaten them while they are performing these duties.

The ideal solutions to these dilemmas cannot be divorced from the concrete settings in which practical solutions must be found. Many questions arise: To what extent are supererogatory acts demanded under these conditions? Is it required of medical personnel to sacrifice their lives in attempts to meet the demands of International Humanitarian Law if their State or military overtly or covertly obstruct this? If so, is it moral to require them to do so? If not, how are the limits determined for morally supererogatory actions?

It should be noted that within an acknowledged ethic of duty, there are no correlative rights necessarily owed to the recipients of such duties although they may come to expect the duties of others as their right.

Rights

Indeed it is the failures of society at large or of individuals themselves adequately to deliver the 'promises' of a duty-based ethic that have fueled demands for rights. It is thus particularly in a world of competition, failed promises, adversarialism and conflict that the language of rights has come into existence. Du Toit has pointed out that rights talk has a distinctive

conceptual logic which distinguishes it from the moral idiom of moral obligations. The moral foundations for rights talk, comprise:[6]

1. a justified claim that holds despite the objections of other interested parties because of disadvantages to them;
2. a network of reciprocal correlative duties incumbent on other parties, without which rights claims would be meaningless. Such duties form the basis of rights talk as a significant instrument for the protection of basic liberties;
3. the power of individual rights as trumps over social utility and goals of public policy.

Rights, like duties, can be conceived of having a natural basis – on the grounds of human dignity or the moral worth of individuals – or they may be acquired/bestowed. They may be negative rights such as the right not to have one's freedom of thought, speech, worship or one's life interfered with, or positive rights such as the right to education, to the franchise etc. Some rights are automatic and do not need to be claimed, – for example the right not to be killed when not engaged in combat; others may only be acquired by claiming the right and satisfying the procedural requirements for acquiring it; for example in civilian life acquiring the right to life-insurance requires satisfying the entrance criteria and paying the premiums. Rights may also be considered as absolute or conditional.

In situations of armed conflict, victims could expect to have those automatic (largely negative, absolute) natural rights associated with basic human dignity as well as those positive rights claimed through the social apparatus for providing health care and rehabilitation as specified in International Humanitarian Law. The concrete acquisition of such rights is, however, conditional on the existence of both the institutions for providing care and the medical personnel to staff these. In wars between nations with differently developed health delivery systems, (aside from different commitments to International Law) the circumstances for meeting the claim rights of victims of one side may greatly exceed those available to the victims of the other side. Without monitoring and enforcement mechanisms for equality of health care, claim rights clearly cannot be fully satisfied and they remain ideal aspirations rather than a social reality.

The rights of medical personnel would include the natural right not to be harmed while 'hors de combat', the right to the facilities required to care for victims and the right both to non-interference in their medical work and to non-reprisal for action taken in providing health care. Absent an enforcement process (on all parties involved) to meet the correlative duties created by positive and negative rights, there are no guarantees for

the safety of health personnel or of their right to do their humanitarian job. Thus the rights of healthy personnel may also fail to become a social reality.

Because the requirements of rights automatically impose duties on others, the rights moral idiom is framed in terms of justice rather then beneficence and the relation between 'giver' and 'taker' tends to be adversarial rather than trusting (cf. in the ethic of duty). It is important to acknowledge that this is not as conducive to supererogatory acts by medical personnel who, being more likely in this context to become concerned for their own rights and self-interest, may see their duties falling short of self-imposed moral obligations.

Underpinning the trend away from duties as primary, to rights as primary lies distrust of the medical profession and a desire to influence medical practice through shared decision making. The establishment of rights in health care, for example the right to die, the rights of the foetus, the right to refuse simple life-saving treatment all, thus to some extent, go against the grain of traditional medical practice. By changing the locus of decision-making and reducing the power of physicians, patient autonomy and self-determination are enhanced. This is a laudable and now increasingly accepted goal but it does have the potential disadvantage of reducing beneficence in medical practice and of creating a less caring, rights orientation among health professionals.

The task for medical personnel of dutifully trying to meet the internationally acclaimed rights of victims in the absence of State of military support, or worse, in the face of threats from them, coupled to the need to be accountable as individuals to International Law places medical personnel "between a rock and a hard place". To some extent this arises from the fact that *victims rights as primary* create obligations for medical personnel which can only be met if States acknowledge and act on their *correlative duty* to provide the means and support for medical personnel to do their duty. But the *rights of medical personnel* to protection and non-victimization *are defined as secondary* to the duties of the parties to the conflict according to the Geneva protocols. Such rights are less convincingly derived from duties than vice-versa because of the different conceptual logic which underpins the language of duties when these are primary as compared with the conceptual logic underpinning the language of rights as primary. While these differences may appear to be subtle they have important practical implications. Not the least of these would be the propagation of a "minimalist ethic" within a system in which health personnel are caught between conflicting demands of unenforceable International Law and a State/military which adopts either a passive attitude or overtly obstructs their humanitarian work. In order to avoid making

victims of health personnel their right to practice according to International Humanitarian Law should, like the rights of victims be seen as primary, and not merely as arising from the duty of the State. But of course this again raises the question of how to enforce the State to uphold its duty to comply with International Law. The reports from Amnesty International, International Physicians for the prevention of nuclear war (IPPNW) and many other organizations testify to the ongoing failures to achieve this.

CONCLUSION

The military might of the modern era poses devastating threats to humankind. Wars result from struggles for material or ideological power. In this context the probability of flouting agreements made during peaceful times is great. The rights of victims and the rights of medical personnel are vulnerable to State and military momentum in the quest for sovereignty. Scholars, scientists and physicians enjoy little enough influence during times of peace and we should be sanguine about their influence during war. But we also must avoid becoming co-opted by partisan political forces. The universal ideals for which we strive, need to be cherished and kept central in our field of vision if we are to rise above man's basest instincts and if we are to preserve professional integrity, individuality and humanitarian concern for the sanctity of life – even the lives of our foes who are engaged in battle against us. Such compassion also recognizes the coercion implicit in recruiting persons into wars they detest and which pits them against their own image. Man's inhumanity to man, most evident during war, must not be allowed to pervade the sanctuary of medical care. Health professionals must constantly be encouraged to serve humankind with empathy and compassion and great social effort needs to be expended to facilitate this role globally and under all conditions.

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Special Section: Expanding the Boundaries of Bioethics

Just Healthcare beyond Individualism: Challenges for North American Bioethics

SOLOMON R. BENATAR

Medical practitioners have traditionally seen themselves as part of an international community with shared and unifying scientific and ethical goals in the treatment of disease, the promotion of health, and the protection of life. This shared mission is underpinned by explicit acceptance of traditional concepts of medical morality, and by an implied link between individual human rights and the ethics of medical practice long enshrined in a range of World Medical Association (WMA) and other medical codes.[1-4] These have been powerful instruments exhorting individual practitioners to promote health and to defend universal principles in order to protect their patients and the physician-patient relationship even in the face of authoritarian state coercion and imposed national ideologies and policies. There has been widespread support for this approach and this should be intensified.

Modern medical practice, the result of close collaboration between advances in science and technology and their application under the scrutiny of the scientific method, offers much to improve the lives of individuals. Improvements in population health have, however, been less striking. Declarations by the WMA, Amnesty International, and other powerful organizations about the role of health professionals in torture and "crimes against humanity" have also been less effective than hoped for.[5] I suggest that while there may be many potential reasons for these shortcomings, including the propagation of self-interest by the medical profession[6] and lack of credibility of professional organizations such as the WMA,[7] the most important is almost certainly failure to see healthcare in its broadest social context[8-10] and failure to link concern for population health and human rights to actions that challenge those powerful economic and political forces that shape the context in which health and human rights can or cannot flourish.[11,12]

Any proposal for enhancing population health at national or global levels presents major challenges for North Americans and requires a broader concep-

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tion of bioethics (or perhaps "decisionmaking in medicine" as a more complete description) and the role of medicine in advancing health in a rapidly changing world than currently prevails.[13-15] In an attempt to outline these challenges I shall presume that most readers, like me, have been raised in relative privilege within the liberal, western, and scientific world view, conscious at only a superficial level of the different cultural and social contexts of life experiences of so many people in the world, and of the extent to which their own privileged lives are "subsidized" by complex and divisive social forces, both historical and contemporary. It is necessary to acquire an awareness of, and empathy for, how exploitation and racism deny the human identity of 'others' and divide people into 'haves' and 'have nots' within and between nations,[16-20] and to understand reactions to these that manifest in such forms as black consciousness, multiculturalism, feminism, postmodernism and other countercurrents—each advocating changes that call for scholarly and open-minded debate in the endlessly self-revising quest for knowledge.[21]

I shall suggest that justifiably deeply held interests in promoting individual dignity/rights (autonomy) and concern for doing good (beneficence), which have been the major focus of bioethics over recent decades, must become more intensively linked with greater concern about rectifying increasingly divisive inequities at the social level (justice), as all these moral principles are inextricably linked. The need for active endeavors to achieve social justice in healthcare is especially important in relation to longer-term perspectives in all societies. I shall suggest that: (1) a narrow individualistic interpretation of liberal philosophy and its application to morality in medical practice is inadequate; (2) there is a need to link healthcare to a concept of human rights that encompasses more than civil and political rights; and (3) moral responsibility for promoting health must extend beyond the physician–patient relationship, to include institutions and communities with a view to fostering the social solidarity required to advance population health at national and global levels.[22]

Healthcare Ethics

The reasons for the transition from the traditional concept of medical ethics to a new multidisciplinary discourse on ethics are varied and are located within the complex context of profound, generally liberalizing, social change evolving particularly in the United States but also elsewhere since the 1950s.[23-29] The rise to dominance of the principle of (patient) autonomy over (physician) beneficence, fundamentally based on respect for human dignity, has served to promote patients' rights, improve the communication essential for trust in the physician–patient relationship, and reduce the imbalance of power between physicians and patients in the modern technological age, and has allowed pluralistic perspectives to thrive. Debate, however, continues regarding: (1) the appropriateness of the absolute priority accorded to autonomy—even within the United States,[30-32] and (2) the often unacknowledged link between respect for individual autonomy and the responsibility this implies for individuals to others and their society as a whole.[33]

The principle of justice, particularly in relation to the allocation of resources,[34,35] has achieved less prominence. Reasons for this may include the high level of social justice built into health services in some social democracies (e.g., Canada, Britain, and many countries in Europe), but also the high profiles

given to technological interventions at the beginning and end of life in the U.S.A., where intense focus on individual liberty and the free market tends to eclipse considerations of social justice.[36]

Bioethics and the Medical-Industrial Complex

The complex social context in which North American bioethics has developed is, in its totality, specific for the U.S.A. However, a similar profile of change is evident in other countries, with wide application of rapid scientific and technological developments contributing to evolution of the physician-patient relationship from a somewhat paternalistic, personal relationship imbued with (at least some) trust, toward a rights-based, but also more impersonal and adversarial (but accountable) relationship between 'strangers.'[37,38]

American physicians generally deal with a better educated public who distrust medical authority and the power of medicine. The underlying national political philosophy fostering this attitude is that of liberal democracy in which self-determination, civil and political rights, and free trade are highly prized, but socioeconomic rights are limited, government control over healthcare services is feared, and civic duties are underemphasized.[39] Concern about excessive state power, potentially subject to public accountability through the democratic process, however, seems to have been traded for the progressive accumulation of (almost anarchic) power by private corporations that have been freed from accountability by "deregulation"—even though this permits them to diminish the freedom of the market.[40,41] These social changes, their ongoing evolution, and reactions to them, have implications for the universal ethos of medical practice and bioethics in a rapidly changing world characterized by increasing polarization into a core of privileged nations that are growing richer and a periphery of deprived nations that are becoming poorer.[42,43] Manifestations of the core-periphery spectrum within individual nations draw attention to the need to apply advances in both medical science and bioethics for the benefit of whole populations as well as for individuals.

Some Questions

Against this background some questions can be posed from the perspective of a foreign physician admiring of so much in the U.S.A. but skeptical about how universal healthcare goals can be modeled on a highly individualistic political philosophy that neglects community by sustaining a system of healthcare that, despite annual expenditure of over $3,500 per person per year on healthcare (more than 10 times the per capita GNP of half the world's population), fails to provide all citizens with access to a basic minimum healthcare package.

Why is the expenditure on health in the United States (14% of GNP) so maldistributed and the payoff as reflected in health statistics so poor in comparison with other industrialized nations?[44–46] What justification can there be for insurance companies to make massive profits within a medical-industrial complex increasingly shaped by economic and bureaucratic considerations, rather than by concerns for patient welfare? If the answers to these questions are linked to healthcare becoming merely another commodity to be traded at great profit in the marketplace[47] the implications are very adverse for the future of medical practice, for the nations' health, for the example set for other countries,

and even for the so-called freedom of the market, which is distorted and diminished by monopolies and oligopolies.

Why is there such a gap between the size and intellectual strength of a flourishing bioethics enterprise[48] (that has so enriched thinking and discourse about medicine) and its impact on improving patients' health and satisfaction with medicine in the U.S.[49-51] Is bioethics being subtly co-opted into the medical-industrial complex and serving (through a common cultural mind-set) to perpetuate the social injustices associated with U.S. economic values, or is bioethics sufficiently independent to be able both to pioneer reform and reshape healthcare services on the rational grounds bioethics is supposed to encourage?

Is the liberal political philosophy upheld for the nation believed in sufficiently to be applied coherently and consistently? Are the theoretical boundaries between the private realm of personal choices and the public realm of political and civic activities in a liberal society respected in practice? Is there consistency in the overriding of individual choices by state interest in protecting life? If the private and the public realms are considered separate, with the rights of individuals to shape their own lives taking precedence over any public conception of the good life, why isn't there greater respect for freedom of choice, for example, regarding abortion, physician-assisted suicide, and gender roles/relationships? In a liberal, secular, pluralistic society (where church and state interests are supposed to be separated) are some (religious or other) highly valued conceptions of the good being selectively propagated in the public realm in preference to promoting public neutrality? If so and if this relates to concern for the adverse effects excessive individual freedom may have on society, then this should be made more explicit. If state interests in life can be used to override individual interest for the alleged benefit of the public good, why is this not used as an argument for the role universal access to healthcare could play in shaping a cohesive society respectful of autonomous citizens and the common good? Autonomy has been respected and many measures taken to implement its application in practice. Why not the same for justice? Is the Canadian healthcare system more or less just than the U.S. system? Why is there so little serious attention to this question in the U.S. despite the excellent documentation available?[52,53]

Why has there been so little attention to the right of access to healthcare in a nation that upholds the idea of human rights so vigorously? While civil and political rights are vital, what example does a powerful and wealthy nation set for other nations when the social and economic rights that are also considered to be an essential component of the Universal Declaration of Human Rights are denied to its own citizens, and its monitoring of human rights abuses excludes self-assessment?[54]

Are ethical considerations in the U.S. framed from a universal perspective or are they contextually shaped? What relevance does this have for bioethics elsewhere? What are the scope and boundaries of moral concern in medicine? Should ethical considerations be limited to interpersonal considerations, or should there be more attention to the ethics of institutions (as cogently argued for by Thompson[55,56] and Wolf[57]) and international ethics (as advocated by others[58])? Can a universal ethics of medicine be sustained if the ethos of medicine is eroded?[59] Should ethical considerations focus only on individuals and the present or should consideration also be given to the implications of current practices for whole populations and future generations?

Just Healthcare beyond Individualism

From Treating Disease in Individuals to Improving Population Health

Escalating healthcare costs, disparities in access to healthcare, and the problem of rationing raise questions of social justice relevant to the restructuring of health services to promote and sustain the dignity and autonomy of all citizens, including the poor, and particularly in the longer term. The recrudescence of tuberculosis and the spectre of multi-drug-resistant tuberculosis, even in the U.S., despite great strides in science and the availability of drugs that can cure any individual patient, illustrate the need to view the science and ethics of healthcare in a broad social context.[60-63] The well-recognized responsibility of physicians for the individual good of their patients must be extended to include consideration and acceptance of medicine's social responsibility for improving health at a community level.[64-66]

Broadening the Scope of Bioethics

Bioethics is a relatively young field of professional activity that has arisen and flourished through skepticism and critical attitudes, particularly by philosophers, to traditional, professionally oriented moral decisionmaking in medicine within the narrow framework of scientific and professional medical values. This is not surprising in the turbulent cultural milieu of the U.S. that has generated widespread and intensifying interest in ethics.[67,68] Multidisciplinary interest in medical decisionmaking involving philosophers, lawyers, physicians, nurses, and professionals from the humanities has facilitated and enriched both teaching and practical aspects of an expanded conception of medical ethics—now commonly called bioethics. While this transformation is spreading through many countries,[69] it is not surprising that in countries with different pathways and patterns of social progress the contextual application of the new bioethics is less clear.

But healthcare has also become a focal point within a complex social battle for power, prestige, and wealth, and the relevance of a dominant role for a liberal individualistic approach is being challenged. The need to extend the influence of bioethics in promoting population health is especially apparent in poorer nations, but also applies in industrialized countries. Critics of the "new bioethics" have expressed concern about a perceived overemphasis on conceptual analysis and ethical theory, on the difficulty in bridging the gap between ethical theory and clinical practice, and on the tendency for the focus on individual self-determination to foster selfishness and erosion of such virtues as self-effacing care for others and a sense of duty that when combined with judgment, skills, trust, and rapport with patients enrich the quality of the healing endeavor.[70-83]

Such criticisms, of a medical moral decisionmaking process influenced to a large extent by a secular philosophical approach,[84,85] come from theological,[86] anthropological,[87] social science,[88-90] feminist,[91] cultural,[92,93] and other perspectives.[94-97] These criticisms include: (1) opprobrium for the erosion of faith and the shift from the 'sanctity of life' principle to 'quality of life' calculations; (2) calls for attention to patient narratives of illness and ethnographic considerations; (3) advocacy for developing caring and empathetic approaches; (4) greater concern about pervasive racial and gender discrimination; (5) supplementation (*not replacement*) of the analytical philosophical approach with

existential, phenomenological, and hermeneutic philosophical approaches; (6) greater attention to the concept of a more holistic primary healthcare and biopsychosocial approach to health; (7) pleas for a deeper understanding of challenges to medical practice in cultural contexts very different from those of North America and Western Europe; and (8) for a less "ahistorical universalistic" and more sociological approach to healthcare decisionmaking in widely diverse contexts. While these criticisms are not without their own flaws, they deserve the constructive deliberation that together with ongoing challenges from many academic disciplines will certainly further shape the evolution of what is now called bioethics to encompass valid contributions to medical practice and medical decisionmaking from many perspectives.

A rational framework for analyzing and dealing with the imperialism of dominant perspectives is provided by Minow's lucid exposition of the 'dilemmas of difference' in American culture and law, of how these have grown "from the ways in which this society assigns individuals to categories and on that basis determines whom to include and whom to exclude from political, social and economic activities," and the unstated assumptions that underlie these dilemmas.[98]

Health and Human Rights

The idea of access to healthcare as a universal human right has gained widespread credibility in recent years. Basic good health is indeed seen as "one of the indispensable conditions for the expression of personal autonomy" in a liberal society.[99] It should however be noted that the conception of liberalism in the United States differs significantly from the liberalism of social democracies in Canada and many European countries where, unlike the United States, the concept of human rights includes socioeconomic rights.[100] Opposition to the idea of the right to access to healthcare in the United States has been challenged recently by the American Association for the Advancement of Science's project to influence healthcare reform by promoting the right of all citizens to a level of healthcare commensurate with their country's wealth.[101] This was a commendable (but also long overdue) attempt by a prestigious organization to state with conviction the role of medicine and healthcare in the U.S.A. As stated in the preface of this publication:

> Health care is first and foremost a social good dedicated to the improvement of the health and well-being of the entire community, not a private commodity. A great deal more than individual needs and advantage is at stake. Health care reform involves the renegotiation of the social covenant defining social obligations and commitments between the government and the society and between members of the society. The nature and humaneness of the society in which current and future generations will live will depend on decisions made regarding the structure and standards of the healthcare system. A determinant will be whether the reform process primarily protects the insurance coverage and benefits of groups that are amongst the "haves" or, consistent with a human rights approach, accords priority to improving the health status of "have nots". Another question is whether a commitment to the common good can outweigh the influence of the "medical industrial complex" in setting the agenda for reform.[102]

Recent failed attempts to reform American healthcare are thus distressing. Explanations for the failure that focus on proximate causes and (relatively) medicine-specific historical considerations are insufficient.[103] Reflection is also required on the history and nature of American culture and politics to reveal the difficulty in achieving a conception of human rights that goes beyond civil and political rights in a society that has elevated the admirable concept of individual liberty to a level that (with the best of intentions for individuals) seems to undermine the concept of community to the detriment of both society at large and many of its citizens.[104–107]

The liberal–communitarian debate that has gained prominence in the past decade (in response to both practical failures in the implementation of liberal policies and to perceived deficiencies in liberal theory itself) seems relevant here.[108–112] Emanuel has argued that it is the inadequacies of the political philosophy of liberalism (in particular the idea of neutrality regarding the common good) as applied to medicine that accounts for the inability to resolve many of the ethical dilemmas currently being faced in healthcare.[113] The communitarian critique of liberalism poses challenges to four central tenets of liberalism, each of which has implications for healthcare. These are: (1) the concept of the self as a presocial, autonomous, self-determining individual, (2) the concept of community as made up simply of such individuals, (3) the priority of individual rights (civil and political) over any particular conception of the (common) good (implying neutrality in the public realm), and (4) the distribution of resources predominantly through the pursuit of free trade (conceived of as if free and not as in reality distorted by powerful political forces). However, communitarians should not all be stereotyped into the same mold, as the critique spans a range from radical to cautious communitarianism.

It is also necessary to understand liberalism as a spectrum that ranges from libertarianism to welfare liberalism.[114,115] Elegant responses from liberals, for example, Buchanan,[116] Rosenblum,[117] Gutmann and Thompson,[118] and Gutmann,[119] illustrate the power of the political philosophy of liberalism to deal constructively with communitarian criticisms. In the absence of any adequately developed communitarian theory, these liberal responses show that it is not liberal theory in its fullest sense that is necessarily deficient but rather the seemingly narrow, individualistic interpretation of liberalism that has been implemented in practice. Walzer's description of liberalism as a self-subverting doctrine that requires periodic communitarian correction to reinforce pursuit of its community values,[120] Buchanan's elegant and penetrating analysis of the communitarian critique of liberalism,[121] and Mulhall and Swift's explication of the liberal–communitarian debate[122] identify much common ground for building a deeper understanding of liberal values and making progress toward achieving community goals.

Whereas liberalism in the United States has allowed some individuals to flourish at the expense of others and without adequately pursuing a sense of community, the inability of liberalism to achieve its broader goals in other countries[123,124] and the debate between liberals and communitarians set the scene for greater attention to the crisis of liberal internationalism described by Hoffman[125] and to the need to build a concept of international justice capable of contributing to peaceful global development. This is a vital task at a time when marginalization of billions of people threatens to undermine all in the long term.[126–128] Statements by Western economists that "two thirds of the

world's people are superfluous"[129] profoundly undermine the cherished concept of human dignity, mock the concept of universal human rights, and could propagate hideous exploitation and degradation, even within medical practice if this identifies with such economic thinking.

The fundamental cultural and social forces that contribute to human rights violations and the role and the limitations of human rights education have been described in the Latin American context, where linkage of human rights education to justice is seen as a means of achieving reconciliation.[130] The recent Commonwealth Medical Association's project on the role of medical ethics in protecting human rights represents a very small but potentially important step toward addressing these issues at a wider level. It takes as its starting point the fact that physicians are among the first to become aware of human rights abuses and that: "the ethical regulation of their professional conduct is, therefore, an important, though little recognized, component of the observance and enforcement of human rights." In formulating a set of guiding principles linking medical ethics and human rights the CMA has also acknowledged that: "the quest for political, economic and military power has polarized the world into a small, stable, privileged core of people and a large, growing, marginalised periphery," and "it is increasingly recognized that exploitation of the human and material resources of developing countries threatens the health and dignity of those societies and ultimately the well-being of all."[131]

The CMA goes even further in pointing out that the inability of many people in the world to enjoy the benefits of basic human rights is clearly linked to those economic forces that have arisen through complex global economic and political patterns of change, and that health, human rights, and justice for all can only be approached through probing and transforming those forces that drive the acquisition and use of economic resources. I should like to propose that it has been the failure to acknowledge this that has been a major impediment to the promotion of human rights at a global level.[132] Some introspection seems appropriate at this point.

Examining Ourselves

Recognizing Privilege

Those who live, work, and think in rich material and intellectual environments understandably tend to take for granted their wealth, democracy, and civil society.[133,134] They may have little direct knowledge or understanding of how their societies have acquired the resources that enable them to lead comfortable lives. They are also remote from the "world of victims"[135] and from the difficulties faced by colleagues who are endeavoring to sustain universal professional ideals and accessible services in poor, nondemocratic, and oppressive countries in which a myriad of overt and covert forces influence and obstruct them. These divergences in perception are abundantly clear to those from the 'Third World' who participate in international meetings on 'human rights' and observe how colleagues from privileged societies often speak from their own socially determined perspectives with inadequate understanding of complex contexts beyond their own.

Humility, empathy, and a broad intellectual approach are necessary (1) to understand fully the pervasiveness of powerful economic and political forces

that have shaped the past and will shape our future,[136,137] (2) to overcome somewhat imperialistic expectations of others in vastly differing societies from whose cultural perspective we can also learn, (3) to understand the contextual implications of "universal theories," and (4) to acknowledge that privilege and power acquire legitimacy by generating moral obligations that go beyond exhortation and the elaboration of theories to include exemplary action.

Recognizing Coercion

Those who live in democratic societies also need to recognize that pervasive ideological forces that coercively affect healthcare professionals in oppressive countries also operate (albeit in a more subtle and less oppressive fashion) in their world. As Ericson has stated,

> Even in democratic societies a constant alertness . . . is needed to resist pressures to subordinate all institutions that shape the human spirit and to place them under the control of those who want to dominate the social order. Although there are profound differences between the extent of personal freedom within Western democracies and one-party communist societies (and these distinctions should not be minimized) it is nevertheless true that the future of the free mind is threatened by converging forces in both these rival systems. In the Communist States and the Western nations, technological structures and bureaucracy instil in the individual citizen a feeling of helplessness and hopeless passivity. Both social systems are advancing towards corporate structures that efface individuality and freedom of expression. Both are managerial societies that tend to equate virtue with conformity, pliability and administrative efficiency . . . (even) teachers of ethics are reduced to functionaries controlled by a corporate mentality concerned most of all with 'success' as measured in quantitative terms.[138]

Recognizing Subversion

The American Association for the Advancement of Science (AAAS) many years ago expressed similar concerns regarding the appropriation of science for parochial purposes:

> Science, the instrument which produces power is being consciously exploited for industrial, military and economic purposes . . . there is little recognition of the internal needs of science or of its purposes as a discipline of the human mind. . . . There is some evidence that the integrity of science is beginning to erode under the abrasive pressure of its close relationship with economic, social and political affairs.[139]

About 20% of the world's research scientists and engineers work entirely on military research and development. If only physicists and engineering scientists are considered this percentage rises to 50%—a sobering insight into the extent to which scientists are co-opted into projects associated with human aggression. The ongoing relevance of these concerns and their global implications are reflected in the National Academy of Sciences' document, *Responsible Science*,[140] and in The Toronto Resolution.[141]

Co-option into Ideologies

Physicians in some countries have been justifiably exhorted and expected to stand against the overtly coercive ideologies of their governments and unjust institutions (even at the risk of their lives) in defense of the rights of their individual patients, for example, in South Africa[142] and Chile.[143] I should like to suggest that physicians in other, more privileged societies cannot be complacent. They too are co-opted into powerful, albeit more covertly coercive, social systems that influence thought.[144] It can be argued, on grounds analogous to the role of physicians in South Africa and Chile, that their power and privilege also generate moral obligations to take similar stands against the powerful ideologies operative in their societies. This is necessary not only to defend the rights of people in their own nations but also to ensure that their own nations' policies do not include political domination or military and economic exploitation that may deprive billions of access to even the most basic of human rights.[145-150]

The enormous responsibility of privileged health professionals (in wealthy and in poor countries) to understand these social forces and to help convert a rhetoric about universal human rights into reality for billions of marginalized people in the world must surely be as openly acknowledged and pursued as the obligations of those who must defend individual human rights in oppressive countries. Selective moralizing from positions of privilege and power lacks credibility, at least at the intellectual level. The potential danger alluded to here, of philosophers and ethicists in wealthy nations being covertly co-opted into national ideologies or the medical-industrial complex, needs to be recognized and resisted.[151-153]

For example, with regard to contributions from bioethicists to the problem of rationing in healthcare Seedhouse has suggested that by accepting their context, and working within it, bioethicists act to legitimize the context either by making it look ethical through endorsement or by becoming part of the fabric of the context. He proposes that

> there are two potentially productive pathways open to bioethics, neither of which are being pursued by most bioethicists at the moment. The first is to stand outside the system and not take it for granted—to do political philosophy in the traditional sense. The second is to take healthcare systems for what they really are—that is, to see them as tribal systems, to grasp their nature as it appears to those within that culture and then—if this is felt desirable—to change the system by using the ways of the culture . . . to work in a partly logical, partly emotional fashion . . . in a way that acknowledges history and culture (and so to be logically corrupt in a way accepted by that tribe). The alternative for bioethics is stagnation and, ultimately extinction.[154]

His expressed preference is to try to examine the system from outside. Buchanan's recent article is a masterly example of this approach.[155]

The concept of intellectuals and academics becoming apologists for the dominant culture within which they live or work is largely undisputed in relation to some contexts, for example, Russian psychiatry. However, suggestions that this may also apply within the western world (for example, to the way in which British and North American anthropologists once served colonial ends

despite their perceptions of themselves as mediators trying to diminish the effects of imperialism, more recently the role of social anthropologists in promoting apartheid,[156] and of medical anthropologists in relation to the dominant biomedical model of healthcare[157]) are intensely debated.[158–160] There is, however, no place in such debates for the personal vendettas that have marred their scholarship. Agich's discussion of the conflicting aspects of the ethicists role in the clinical setting is a model of a scholarly approach to the debate on the 'objective' and 'subjective' aspects of the observing/witnessing roles.[161]

Summary and Some Proposals

In the 19th and early 20th centuries medical morality was largely concerned with unarticulated aspects of professional virtue and with openly discussed conflicts of interest between practitioners (fee-splitting, self-referral, advertising etc.). In the first two decades of modern medical ethics, these gave way to preoccupations with application of liberal political principles to the practice of medicine, for example, to fostering patient autonomy with all the associated implications this has for interventions at the beginning and end of life,[162,163] and for participation in medical research.[164]

In the past decade, however, commercialization and corporatization of medicine within an increasingly dominant economic paradigm of thinking is turning medicine into a medical-industrial complex in which economic and conflict of interest considerations are becoming dominant.[165,166] Normative aspects of traditional virtue and compassion are being eclipsed and self-interest is being fostered. The medical profession seems to have lost its soul, with greed being turned into a virtue under the influence of powerful medical corporations that are not democratically accountable and that have been transformed from institutions serving the means of providing expanding healthcare services, to an end in themselves—the accumulation of wealth through the exploitation of human vulnerability in illness.[167] The medical profession seems unwilling or unable to use its institutional strength to reverse these trends.

Yet, the need for social justice in the delivery of healthcare is being acknowledged and there is increasing urgency both to reclaim much that is being lost in the practice of medicine, and to redefine what is considered necessary for the provision of preventive, promotive, and curative healthcare services that meet individual and community needs.[168–176] To ensure that those who participate in the provision of healthcare are motivated by long-valued virtues will require intense and sustained intellectual and social opposition to those powerful social forces that may undermine the ideals of medicine. These forces result in the overt co-option of health professionals at the individual level into "crimes against humanity," or their covert co-option at national levels into activities that deprive millions of access to basic human rights. For example, a powerful ideology that commodifies medical care in a marketplace in which healthcare professionals are dominated by the procedural and business priorities of corporate managers is replacing the ethos of medicine with a business ethos that adversely affects individual patients and whole populations.[177–181]

Given the power and influence of the great American nation, it should not be surprising that the example it sets through the way it structures its healthcare services has a profound symbolic and material impact (positive and negative) on the practice of medicine in many other countries. This applies not only to

scientific and ethical issues that have received much attention, but also to social and political aspects of healthcare. The legitimation of medical care as predominantly a marketable commodity is undermining the ability of less affluent nations to sustain or develop appropriate healthcare services for their citizens in very different sociopolitical contexts. Even in some social democracies such as Canada and Britain healthcare systems are fracturing under this influence.[182,183] In a middle income country such as South Africa struggling toward a democracy embracing respect for individual liberty, human rights, and more equitable access to healthcare, and education to begin to reverse the legacy of apartheid, it is becoming almost impossible to sustain or build a strong public healthcare service.[184]

The challenge for those concerned with justice in the delivery of healthcare and with sustaining moral behavior in medical practice is to provide rational and coherent arguments for just healthcare (as Buchanan has done[185]), and to find ways of supplementing philosophical ethical debate with restructuring of healthcare services within which teaching methods and exemplary practice could propagate a science and art of healthcare that addresses more humanely the health of individuals and of whole populations. This will require recognition that while individual preferences, values, and perceptions are pervasively influenced by the particular social and institutional structures within which they operate, and in turn influence these, healthcare services as social constructs can be progressively reshaped through a social activism and clear exposition of the rationale for change. This process involves acknowledging that implementing sound ethical values within nations, and worldwide, must include some courageous collective action and new approaches to our understanding of achieving moral behavior as an enterprise influenced as much by practice as by theory.[186-191]

Many countries lag behind North America and Europe in debating individualistic bioethical issues in a multidisciplinary milieu and in offering these deliberations to public scrutiny. However, there is also a gap in wealthy countries between ethical concern at the individual level and the institutional and population levels at which ethical debate and action is required. Hopefully, this will change as the deficiencies of extreme forms of liberal individualism are unraveled, liberal and communitarian responses are formulated,[192-198] rights become recognized as embedded within relationships,[199] interpersonal ethics is supplemented by institutional ethics,[200,201] new metaphors of medicine are forged,[202] and international relations are transformed.[203,204] As physicians in the U.S. seem to be unable to respond adequately to the call for social justice in healthcare, North American bioethicists are challenged to take a leadership role by recognizing their responsibilities to populations, national and global, and using their intellectual and moral power to help shape equitable healthcare systems in their own countries. Through this example and other efforts they can contribute to sustainable development programs that could hopefully improve health and human rights worldwide.

Healthcare professionals in poor and nondemocratic countries need encouragement and support in upholding the rights of their individual patients, and in shaping appropriate healthcare systems in their countries. Those in wealthy countries need to be sensitized to, and to take on, their wider moral responsibility to strive beyond the limited perspectives of their nations in the quest for high ethical standards in the delivery of healthcare services, and through this

for the progressive achievement of human rights and health at a global level. Bioethicists and bioethics institutions have a crucial role to play in helping the healthcare profession to renew and strengthen its vocational commitment. Loss of public faith in the ability of physicians to achieve this for themselves places a particular burden of responsibility on the bioethics establishment.

A report from the United States Office of Technology Assessment documents the extent to which bioethics initiatives are developing worldwide, and it advocates the need for incorporation of bioethical analysis into national policymaking.[205] This, together with the global agenda for bioethics proposed in the Declaration of Ixtapa[206] and a proposal (Appendix) that has been accepted by the WMA as a working document,[207] could form the bases for steps toward more open and honest debates on disparities within nations and between nations and for approaches to these that are both locally and globally relevant.

In this brief overview I have only been able to allude (I recognize somewhat simplistically, and optimistically) to the potential for an expanding and increasingly important global role for bioethics in a complex world in which social, economic, political, and health issues are intimately related. Considerable scholarship from a diverse range of intellectual sources is enriching our understanding of health and disease and could influence the way in which medicine will be practiced in the future, but much remains to be done to convert 'knowing good' to 'doing good.'[208]

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APPENDIX

Proposed World Medical Association Statement on Health and Human Rights

Whereas the World Medical Association:

A. Recognises that:

1) We live in a divided world, a world in which 23% of the world's population lives in affluence on 85% of the annual global economic output, while 77% live poorly, often in misery, on 15%;
2) These disparities have deep roots in centuries of complex human development and progress that has regrettably been associated with military and economic conflict and exploitation;
3) The gap continues to widen as human and material resources flow from poor countries into the rich;
4) These disparities and their causes aggravate population growth, human misery and ecological degradation in all countries;

5) Vast resources are wastefully expended year after year on militarisation worldwide;

B. Notes that healthcare professionals have:

1) Traditionally seen themselves as part of a global medical community with shared goals for the protection of life and health;
2) Formulated codes of ethics that reflect the universal nature of these professional obligations;
3) Committed themselves through their nations to support universal human rights, including health for all;
4) Responsibility towards the common good as well as their individual patients;

C. Acknowledges that

1) The principle of justice requires access to health care in all countries as a basic human right without which people will suffer individually and communities collectively;
2) We live in an interdependent world in which modern communication and transport systems inform us about and expose us all to individual and collective threats to human health and survival.

The World Medical Association urges all health care professionals and their professional associations to:

1) Acknowledge that their responsibility for individual and population health should not be subverted by political and other ideologies either in wealthy or in poor countries;
2) Expose and contest actions taken by their respective governments that may adversely affect the health of individuals or populations, at home or abroad;
3) Assist professional organizations in other countries in their efforts to achieve this; and
4) Accept the challenge to work towards creating national and international concepts of the practice of medicine that will contribute to the health of populations as well as to the health of individuals.

SAMJ

Editorial

Commentary and debate

Medicine and social responsibility — a role for South African doctors

In recent decades medical associations and other professional organisations have focused to a much greater extent on scientific and professional issues than on many matters of profound social importance. In the context of a world filled with hostilities and conflict it is to be regretted that a profession dedicated to humanitarian ideals has failed to play a more vital role in shaping for the better the societies in which it functions.

The betrayal of medicine by doctors involved in human rights abuses is the most prominent example of defection from high professional ideals.[1] However, the medical profession is also failing in other ways. I refer particularly to the role of medicine and science in sustaining a way of life in which economic and military dominance by some over others has been associated with widening disparities in health and human rights worldwide, both within countries and between countries.[2,3] It could be argued that medicine is impotent against such powerful social forces affecting population health and that the business of medicine is to deal with the health and diseases of individuals. However, a justifiable alternative view is that medicine can, and should, address social issues affecting population health.[3]

The implications of nuclear war highlight the vulnerability of our world to destructive forces against which medicine would indeed be powerless.[4] In response to this, physicians have banded together in a worldwide movement, initially against nuclear war, but more recently with a mandate to advocate global peace and security on a much wider platform than only abolition of nuclear weapons — a platform which includes consideration of powerful and pervasive economic forces.

International Physicians for the Prevention of Nuclear War (IPPNW) was founded in 1980 by a small group of Soviet and American physicians, as an inspiration born of the Cold War. The message from IPPNW that nuclear war would constitute the final epidemic, with no meaningful medical response, was backed by meticulous scientific research into the consequences of nuclear warfare, and reached millions of people around the world. For its efforts in educating the medical profession, the public and political leaders about the medical and environmental consequences of nuclear warfare IPPNW was awarded the UNESCO Peace Education Prize in 1984, and the Nobel Peace Prize in 1985. Through the process of affiliation with associations in many countries, IPPNW has grown to become a world federation of national physicians' organisations dedicated to safeguarding health through the prevention of war, to supporting humanitarian causes and to promoting the development of marginalised peoples. The combined organisations comprise 20 000 physicians, health care workers and concerned citizens in more than 80 countries. The agenda for the abolition of nuclear weapons is being expanded to include prevention of all wars.

A growing commitment to a reordering of global priorities that could lead to justice and peace entails attention to environmental degradation and inequitable use of the earth's resources; efforts to promote the re-allocation of resources from military to civilian needs, especially health care and basic human necessities; and to promoting sustainable, ecologically sound economic policies. Affiliate organisations, exemplified by MEDACT in the UK, are undertaking a wide range of activities for promoting peaceful world progress. These include working towards nuclear abolition, work on psychosocial issues that relate to war, conflict resolution, the effects of international debt, landmines, chemical and biological weapons, arms conversion and expansion of the medical curriculum.[5]

In 1994 IPPNW launched its multi-pronged Abolition 2000 worldwide campaign to secure the commitment of the world's governments to a convention mandating the abolition of nuclear weapons within a firm timetable.[6] The campaign aims to educate, mobilise and influence political leaders and the general public to oppose the existence of nuclear weapons on medical, legal and moral grounds.War and militarism are seen to represent a theft of resources desperately needed to secure adequate food and health care for billions of people and to secure the economic development required to narrow the North/South social and economic divide. IPPNW's creation of SatelLife, a health education project employing state-of-the-art communications technology to exchange critically needed medical information between North and South, is enabling physicians working in countries characterised by very poor communications systems to maintain close and rapid communication with colleagues all over the world.

At the 12th IPPNW World Conference, with the theme 'Peace Through Health', in Worcester, Massachusetts, USA in August 1996, presentations and debate on topics ranging from the abolition of nuclear weapons through debt relief for poor countries to methods of moving from a culture of conflict and violence towards a culture of peace provided many insights into the magnitude and the complexity of the issues facing a nuclear abolition campaign in our divided and hostile world.

Some presentations were of particular interest. Douglas Roche, special advisor on disarmament matters to the Holy See and former ambassador for disarmament for Canada, gave the following reasons for optimism during a new window of opportunity for peace: the recent World Court advisory opinion on the threat or use of nuclear weapons, the indefinite extension of the Non-Proliferation Treaty, ratification of START II by the US, the movement towards a

comprehensive test ban treaty (CTBT), the achievement of more weapon-free zones, the award of the 1995 Nobel Peace Prize to Joseph Rotblat and Pugwash International, the report of the Canberra Commission on the Elimination of Nuclear Weapons and the increasing pressure from citizen groups. He described the intimate connection between nuclear weapons and complex and nuanced global security concerns. A new agenda for global security must include a nuclear weapons convention, reduction in conventional arms and control of the arms trade, greater expenditure on development to reduce the North/South imbalance and new spending priorities to advance the global security agenda. As others have done, he emphasised that there is no shortage of money, only deficiencies in the prioritisation of its use.

This optimism was somewhat countered by Robert Green, retired Commander from the Royal Navy and Chairman of the World Court Project, UK. He described how the military system functions as a 'tribal system with taboos' and has powerful techniques for isolating and breaking those who attempt to oppose the 'fundamentalism' of military thinking. He viewed his leaving the military as the intellectual equivalent of withdrawal from hard drug addiction. In advocating the need to learn how to negotiate with military personnel he cautioned against seeing them as psychopaths. They should rather be seen as 'patients with a nuclear addiction' who should not be driven further into their corner. He expressed the view that a crucial advance would be in making the use of nuclear weapons illegal, and hence the importance of the World Court Project and the now established illegality of nuclear testing. However, he also warned that the nuclear powers may ignore orders to get rid of nuclear weapons. He drew an analogy with the anti-slavery campaign, the bedrock of which was to make slavery illegal. The knowledge that slavery was wrong and the fact that it was cruel were not enough. It had to be made illegal for abolition to become effective. He concluded on a hopeful note by pointing out that the three great slaving nations were the USA, the UK and France and that slavery was eventually abolished, even though this took 50 years to achieve.

Robert Musil, IPPNW, USA, confirmed the importance of legitimising the idea of abolition in the USA, and the difficulty in doing so because of the 'great cover-up' that goes on at US government level with regard to decisions such as those made by the World Court. He suggested that US citizens work through the electoral process by probing and challenging political candidates on the action they would take against nuclear weapons.

Scilla Elworthy, Director, Oxford Research Group, highlighted the importance of changing public opinion through creative personal dialogue with nuclear decision-makers — not just politicians but also those working closely in the design and production of such weapons. Converting the 'power over' metaphor to the conception of 'power with' was her theme for enabling people to find common ground on difficult issues.[7]

Jackie Cabasso, Director, Western States Legal Foundation, described how over the next 5 years the USA plans to spend billions of dollars to construct and operate an elaborate system of technologically sophisticated laboratory facilities to preserve its capacity to maintain, test, modify, design and produce nuclear weapons well into the 21st century, even under a CTBT. Nuclear weapons will be advanced through computer simulations coupled with archived data from past tests and new diagnostic information obtained from above-ground laboratory experiments and 'zero-yield' underground tests. Many of the new facilities will be as big as stadiums, filled with state-of-the-art, industrial-scale, industrial scientific equipment. Large above-ground and underground non-nuclear explosions involving radio-active and other hazardous materials will be conducted, as will miniature, contained thermonuclear explosions. The data generated by these experiments will be analysed by the world's fastest supercomputers. The ultimate objective of this 'Stockpile Stewardship and Management Programme' is to create a virtual testing and prototyping capability for nuclear weapons. When President Clinton announced his support for a 'zero-yield' CTBT by 1996, he also endorsed the 'science-based Stockpile Stewardship' programme as a means of '. . . maintaining our nuclear deterrent . . . without nuclear testing'. The other nuclear weapon states, in collaboration with the USA and each other, are developing their own 'computer simulation' programmes. This is seen to undermine Article VI of the Non-Proliferation Treaty, given that replacing underground nuclear testing with an expanded laboratory infrastructure demonstrates a continued commitment to nuclear weapons as core instruments of national policy.[8]

Discussions on the impact of intractable debt and continuing militarisation on the lives and health of billions of people resulted in the formation of a small working group to formulate a resolution for an IPPNW initiative to inaugurate a project focusing on debt cancellation. New approaches to the generation and management of debt and to overcoming exploitation were seen to be of more central importance for poor and non-industrialised countries than any direct nuclear threat. However, as weapons of mass destruction represent the economic power of wealthy industrialised nations over the destiny of the weak and poor of the world, and are regrettably maintained to some extent for this purpose, the programme against weapons and war must be widely supported.

Workshops at the conference reflected the wide range of issues being addressed by affiliates of IPPNW around the world. These included: (*i*) children and war; (*ii*) debt, structural adjustment and health; (*iii*) landmines; (*iv*) environment and sustainable development; (*v*) non-violent conflict resolution in the Middle East; (*vi*) the international trade in arms, and militarism; (*vii*) medicine, human rights and global health; (*viii*) family violence and handguns in society; (*ix*) conflict resolution and war prevention strategies; (*x*) controlling fissile materials and preventing nuclear terrorism; (*xi*) nuclear politics, nuclear arsenals and nuclear weapon-free zones; (*xii*) peace and disarmament issues in north Asia; (*xiii*) health and environmental costs of the nuclear arms race; (*xiv*) nuclear disarmament in south Asia; (*xv*) building peace through health; (*xvi*) medical education for peace; (*xvii*) creating political will; (*xviii*) medical strategies to promote nuclear abolition; (*xix*) communications for peace through health; and (*xx*) mobilising religious and moral forces in partnerships for peace.

Some of the major questions raised during this conference included: (*i*) how the peace movement could become a

mass movement; (*ii*) how attempts to abolish nuclear and other weapons of mass destruction could be linked to dealing with the problems that face particular communities; (*iii*) how solidarity could be inculcated into the youth of today who are highly individualistic; (*iv*) how the media could be used optimally to foster peace issues; (*v*) how equality and human rights could be promoted; and (*vi*) how money could be redirected away from military endeavours and towards the complex issues facing our world and its survival. Clearly a new vision for international solidarity is needed for human development. Each part of the world will need to recognise that it has a stake in this vision.[9]

Father Brian Hehir, International Relations, Harvard University and Catholic Relief Services, offered the following analysis. The world in the 1990s has to deal with two powerful and conflicting world transformations in politics. The first is the context in which international politics functions. The second is the relationship between processes and movements. The structural changes following the happy collapse of the Cold War led us to face changing principles of order in our thinking about states and nations. The ideas of the sovereign state and of non-intervention, which have been respected for 300 - 500 years, are being eroded, although not abolished. This new context is complex and has the potential to degenerate into a politics of chaos in which there is loss of control over money, weapons and power. The processes which must be seen through at state level relate to the movements or activities at non-state level within countries to develop and sustain a vision of a future in which linkages and interdependence are achieved without coercion.

At the world conference many dedicated professionals, deep thinkers and sensitive people spoke about profoundly important global issues and peace initiatives. It was a privilege and a pleasure to renew, strengthen and create friendships with many colleagues from, *inter alia*, Africa, Sweden, Britain, America, Malaysia, Latin America, Germany and The Netherlands, all of which expressed interest in and admiration for South Africa.

After many years of being marginalised from global peace endeavours and professional associations the time is now ripe for South African doctors concerned about peaceful progress, both in our country and worldwide, to become more closely associated with colleagues through such organisations as IPPNW and its many affiliates. Collaborative endeavours are needed to expand their vision of the requirements for developing broad social agendas for the global progress that could positively influence the future of Africa — the most vulnerable continent in an increasingly threatened world. The transition process in South Africa has a message of global significance, which could be turned to maximum advantage through the commitment of South African professionals to helping develop the social justice aspired to in our country and globally.

I would appreciate hearing from colleagues interested in joining a South African affiliate organisation — 'Medicine and Social Responsibility' — and participating in developing an agenda for local and international action.

Solomon R Benatar

Department of Medicine
Groote Schuur Hospital and
University of Cape Town

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SPECIAL ARTICLE

The meaning of professionalism in medicine

Solomon R Benatar

The challenges facing the professions (and perhaps especially the medical profession) in the new South Africa are complex and far-reaching. Here an attempt is made to place these challenges in local, global and historical perspectives to facilitate a deeper understanding of their implications. A brief outline of forces influencing the social construction of health services is followed by some sociological and professional concepts of professionalism, and some reasons are provided for the public's concern about the image professionals have of themselves. The inadequacy of defensive responses by professions is emphasised and the need is outlined for introspection and deeper understanding of ethics, human rights and values in relation to medical practice.

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South Africa is crossing the threshold of transition into a future which hopefully will improve the lives of all its people through economic growth and increasing equity. While the enormous challenges that face us may seem entirely related to our local context, they are nevertheless deeply embedded in profound transformative processes at a global level. I shall not revisit here a previous attempt to explicate these forces of change and how we may cope with them,[1] although I shall refer briefly to a scholarly sociological perspective on this intriguing topic.[2] It is also not my intention to describe the state of health and health care services in South Africa, as these have been well documented in previous publications.[3-6]

Rather, my aim is to suggest that it is especially necessary for health care professionals in South Africa to look beyond their local context and narrow self-interest: to historical traditions, to an understanding of health services as social constructs, to the ethical aspects of professionalism, and to how we live in a changing world in which these traditions and foundations are being deconstructed, reinterpreted and reconstructed. Hopefully, this will provide a vantage point from which to view more clearly the profound challenges we must face.

As a starting point, it is appropriate to acknowledge how daunting a task it is to rebuild a nation emerging from an embattled past, under circumstances characterised by simultaneous needs: (*i*) to achieve economic growth while redistributing resources; and (*ii*) to create a culture in which respect for the liberty and freedom of individuals is associated with a spirit of community. The widespread admiration for our endeavours to move peacefully towards these goals is both real and fragile. If we can succeed, as a country and as professionals, in meeting these challenges we could maintain that interest, admiration and support well into the future.

Our starting point for change (the material legacy of decades of apartheid to health care services and the health of our people) is complicated by the pervasiveness of racism.[1] We can appreciate that this will not easily be eradicated when we reflect on the extent to which racism continues in other societies in which it should have been obliterated by apparent long-standing commitment to human rights and individual dignity.[7] Racism is not limited to one group of people or to a few countries; no people — white, black or any other — are immune from stereotyping and discrimination against others. Gender discrimination is another example of oppression that reflects powerful social forces. The great challenge that we face in South Africa, where racism has been so intense, is to show that as a nation we can more effectively rise above the discriminatory attitudes and structures that so divide human beings and, in the process, set an example of understanding, tolerance and co-operation where others have failed to do so.

Another point that needs to be re-emphasised is the extent to which social circumstances determine the health of populations as well as that of individuals. Living conditions, economic status and other social factors profoundly affect health.[8,9] Health care services and how health care professionals function in society are also socially constructed phenomena and hence there are marked differences in the way health care is delivered, even between countries of similar wealth and culture, e.g. the USA, Canada and the UK.[1] Many aspects of life have been 'medicalised' into these social constructs through which the medical profession and society have created very high and unrealistic expectations of what a health care system can deliver. Even realistic demands in affluent countries exceed the available material and human resources required to provide all that could be done and is desired.

The admirable social and health goals we would like to achieve are explicitly outlined in the Reconstruction and Development Programme and in various health plans. These ideas are ambitious and laudable, but we face the critical question of what should guide us towards achieving them at a sustainable rate of progress.[6]

Against this background, I would like to review some views of the concept of professionalism, consider how different perspectives might influence the attitudes of society and of professionals towards their roles now and in the future, and suggest some implications of these considerations for our profession in South Africa.

Historical aspects

To 'profess' was, in its earliest use, the public declaration of one's religion, and it signified a commitment to a particular way of life. Later the term 'profession' came to mean earning one's living from a set of skills in which one had expertise. The complex nature of professional relationships

Department of Medicine, Groote Schuur Hospital and University of Cape Town

Solomon R Benatar, FRCP

can be traced historically from the earliest magico-religious era, through the early scientific stages in ancient Greece, the Christian era and medieval Europe, to the age of modern science and technology that is becoming increasingly dominated by the ideology of the free market.[12,13] The threads of this rich and varied history, with changing impact over time, have become inextricably woven into a complex tapestry of modern professionalism that is interpreted and played out from a range of overlapping perspectives in different social contexts.

Sociological perspective

Sociologists view the professions as social phenomena comprising a set of role characteristics: (*i*) possession of specialised knowledge and training that enable professionals to know what to do in particular circumstances, to be able to provide a rational explanation for their actions, and to undertake the action safely; (*ii*) dedication to public service; and (*iii*) socially approved self-governance.[14] These characteristics resemble those outlined by the Interim National Medical and Dental Council as the essential elements of medical professionalism.

The sociological concept of a profession has as its starting point a social context in which classes, status groups and other social entities, e.g. political parties, compete for economic, social and political rewards. The overall objective is to acquire a monopoly in the market for services rendered and to enjoy high social status. Achieving these involves working with the state, other professions, educational institutions and the public to acquire control over the educational process and over access to professional privileges. Different social and cultural frames of reference for the construction of medical relationships result, as indicated above, in a range of different systems for delivering health care.[14]

Professional perspective

An alternative view of medicine claims that the sociological concept of professionalism is cynical, somewhat minimalist and inadequate, does not reflect its higher ideals and, if encouraged as the norm, cannot adequately serve the public or the profession.[12]

Traditionally, professionals and (some) philosophers have had a broader concept of professionalism that goes beyond the sociological description to include a complex of virtues and ideals involving habits of mind and character. This concept includes an idea of what professionals 'ought' to do — an 'ought' that derives from dealing with people who are in a dependent, vulnerable, exploitable state of weakened humanity.[12]

Such standards of professional behaviour also describe a way of being: the kind of good conduct, the virtuous character and the commitment to excellence as the internal purposes of the professional role. Professionals are expected to have integrity, to be worthy of trust, to be more concerned with caring for others than with making money, and to have a substantial commitment to their clients' welfare. They are admired and respected for an ethic of service and for commitment to the use of professional skills and knowledge with excellence and in morally acceptable ways, i.e. with honesty, impartiality and integrity in the pursuit of justice, wisdom and truth, all for the good of society and the profession.[12]

None of these virtues is seen as natural but rather as acquired, both through education and in the practical setting where one learns to understand what they mean.

Aristotle described two components of virtue: the intellectual virtues (rigor and objectivity in one's work), and the practical or moral values (honesty, compassion and temperance), which derive from the habits of working practically within one's professional field. Within this concept of the profession it has been claimed that the only protection gainst exploitation is the moral character of professionals.[12]

Flores[12] has described MacIntyre's argument[15] that although differing conceptions of virtue have been advanced over the ages, they can all be understood in terms of a single, complex core concept involving three dimensions, each with its own history and conceptual background.

Firstly, a virtue is properly understood as an excellence displayed within the context of socially co-operative practices that contribute to the realisation of goods which make up and define these practices. Practices provide the context for developing those virtues crucial to achieving valued social goods. Those goods that depend on the exercise and skill of experience and are internal to a practice must be distinguished from external goods (such as fame, fortune and social power) that are only connected to a practice as a result of social, economic or political circumstances. The internal goods of a profession, only achievable by those whose virtuous behaviour is the norm, have the value of enriching the life of the professional, of the profession and of society.[12]

Secondly, virtues sustain a lifetime quest to define the good by which all other goods are properly understood. Here it is important to recognise that the institutions in which we practise tend to erode virtues, as institutions are more concerned with the acquisition and control of external goods. So practices can become corrupt and out of touch with the internal goods of professional practice,[12] and the question 'what is good' becomes 'what is good for me and my institution'.

Thirdly, virtues contribute to the preservation of those historical traditions that underpin professional practices, and the life stories of individual quests for the good. The expression of professional virtue helps define and shape the tradition, without the influence of which a profession is cut off from its historical foundations and its future possibilities. The result is a loss of mission and an undermining of the meaningful conduct of a profession.[12]

Clearly implied in MacIntyre's work is the concept of professionalism as a commitment to the ideal of excellence in the exercise of professional skills, as the best way of achieving the internal ends of a profession. Because the ends of professional practice generate goods of value both to society and the professions, persons who pursue the professions and are committed to ideals of excellence are expected to uphold standards of conduct beyond those an ordinary individual accepts. Being a professional in this

complex sense means being a certain kind of person, who believes in and aspires to such specific ideals as integrity, justice, wisdom and truth. A person whose routine conduct is so informed is therefore an exemplary person.[12]

Social criticism of the professions

This broader concept of professionalism is, however, vigorously challenged by social critics and by the public, who perceive an alternative and very different set of professional motivations. These alternatives, rather than being internal to professional practice, are external to its main purpose, and comprise behaviour that is self-seeking and self-serving in the quest for wealth, power and status. This description fits George Bernard Shaw's claim that the professions are 'a conspiracy against the laity'.

While it is inevitable, and indeed acceptable, that there should be two aspects of professionalism, one serving the admirable internal purposes of the profession, the other comprising an external, socially and economically understandable accompaniment, social critics believe that the balance between 'calling and professionalism' and 'career and entrepreneurship' is tilting towards the latter, particularly in the context of the powerful and pervasive market ideology.[12,16-19] According to the commercial view, practising of a profession is no different in principle from selling one's wares in the marketplace. Beyond some basic obligations not to coerce, cheat or defraud others, the professional would have no obligations to anyone except those voluntarily undertaken with specific individuals or groups, and there is no specific professional morality that transcends the morality of all citizens.[14] It has also been argued from a philosophical perspective that the moral expectations of doctors should be less strongly differentiated from those expected of all citizens.[20]

Professional introspection

We need to ask ourselves why there is this social distrust of the professions, and whether it is valid. How well do we actually live up to the ideals and moral dimensions to which we claim allegiance, and which serve as the basis for the monopoly granted to us by society and its expenditure on our training to serve the common good and the public interest?[21] Are we committed, and seen to be committed, to these or have we become fully co-opted into selfish professional pursuits and the market economy?[16-19,22] How is our professionalism monitored, audited and promoted? What actions are actually taken against unprofessional action and how are these reported to the public? Are the codes and the minimalistic legalistic approach adopted by such bodies as the Interim National Medical and Dental Council and the MASA enough to do anything more than sustain the sociological concept of the profession? Has the dead hand of the law been substituted for a vital moral commitment?

It seems to me that such concerns are indeed justified in many societies, perhaps particularly in South Africa and the USA, and that our professional bodies do not do enough to encourage the kind of health care services in which the virtues of professional life could be sustained. If we are not prepared to examine ourselves and take action for failure to meet some of the higher aspirations of professionalism, we should not be surprised if the public loses trust in us and we should be willing to accept a sociological description of the professional role and all that goes with this!

It is important to try to understand some of the complex interacting reasons for growing societal mistrust of the professions.[23-26] These include the ways in which major advances have been made and applied in medicine; the cost associated with their use, often for individual gain; the changing face of death in a technological world; the growing gap between the knowledge and power of the medical practitioner and that of the patient; high and often unrealistic expectations from patients regarding what they should receive from professionals; the need for rationing because of increasing costs; erosion of professionals' commitment to the internal purposes of their role; and not least the expansion of bureaucracy with 'commodification' of medicine in a world in which economic considerations have become supreme.

The tendency towards entrepreneurship by professionals in the modern world is evident in the adoption into medical practice of some characteristics more typical of modern industry. Relman has coined the term 'medical industrial complex' to indicate the extent to which medicine has become more like an industry and less like a profession;[17] and Kassirer has described how managed care and the morality of the market place have adversely impacted on medicine.[18] The emphasis on careers, self-interest and money is associated with the risk that professionalism could degenerate into special interest groups engaged in a socially harmful struggle for power, position and privilege. The time is indeed ripe for a new metaphor for medicine.[19]

Other recognised areas of tension include conflicts of interest in research, scientific fraud in the context of competitiveness for fame,[27] and a changing balance in the emphasis between the care of individual patients and measures required to improve the health of whole populations.[10] The latter applies especially, as we all know, in South Africa.

The new medical ethics

It was against such a background of revolt against authority and professional power in North America in the 1950s and 1960s that a new concept of ethics in medicine emerged.[28] A more critical perspective on medicine developed, the debate about medical ethics became multidisciplinary and was translocated from a position almost exclusively within the profession to the public arena. The growth of the new formal discipline of bio-ethics has involved rigorous intellectual endeavours, particularly by philosophers and lawyers, and more recently by sociologists, anthropologists and others, who have systematically examined what may be right and wrong in medicine and advanced appropriate arguments for various concepts of morality in medicine.[11] The new bio-ethics has focused on patient autonomy, patient rights and questions of public policy — how the

latter is formulated and how resources are allocated. In calling for greater professional accountability, these developments perhaps favour a morality for professionals that more closely resembles that expected of people in many other jobs, than any specific professional morality.

Human rights and medical ethics

The abuse of human rights in situations often highly visible to health care professionals, e.g. in prisons, and especially in less developed countries, has, in recent years, stimulated increasing attention to links between protection of human rights and medical ethics.[29-32] Given medical responsibility for relieving pain and suffering, and the position of relative power that doctors hold in society, it is appropriate that human rights should be protected through attention to the ethical responsibilities of doctors toward those in their care, especially when in a vulnerable state. In some repressive countries meeting these expectations may require great courage and virtue.[23]

The global context of change

It is also necessary to reflect briefly on some aspects of life in the global context that are crucial to us as professionals. In a globalising world in which: (*i*) natural resources are being depleted by population growth and environmental degradation; (*ii*) concepts of time and space are being radically altered by modern forms of communication and transport; and (*iii*) we can prolong life, transplant organs and manipulate genetic structure, the bonds of long-standing traditions are being loosened and our understanding of what constitutes disease, health and nature is changing.[2]

The world is also increasingly being polarised (within and between countries) into a small and shrinking core of people who have access to more and more resources and a large and growing periphery with access to less and less through exploitative processes that are sometimes overt but often covert, and that involve transfer of resources from one group of people to another.[33] Political and economic agendas have also been changing since the end of the cold war, and some 'universal values' are being challenged, while others are supported.[2] South Africa is in these respects a microcosm of the world.

Values

This leads to questions about the nature of values, which values are important to us, and why.[34-37]

Societal values — respect for persons, respect for liberty and respect for the law — are enduring civic values essential to peaceable democratic societies and should be taught in schools and in institutions of learning. The creation of a constitution in South Africa is the blueprint for the pursuit of these goals.

Our personal values — derived from our culture, from our sense of morality and aesthetics and from our economic, political and religious values — can vary widely without threat to the social order.[35] Indeed, a mark of a stable democracy is its tolerance of a broad range of personal values and their teaching in the home, in churches and in private groups. But there has not been adequate dialogue in the public arena on deeply held personal values, especially in South Africa, and how these can be respected in pluralistic societies, bound by a common set of values. Without such dialogue, there is great potential for violence between those with dogmatically held views who are in a battle for social and economic power.

Professional values, which include competence, beneficence, benevolence, non-maleficence, concern for justice, keeping of promises, telling the truth, compassion and respect for the person and dignity of others, are expressed in ethical codes and in guidelines that govern a specialised body of knowledge and skills, and should be taught at universities, in professional associations and in practice.[34-37] Respect for human rights, for the preservation of species and for future generations also needs to become more pervasive.

But we should also understand that the process of valuing is an activity undertaken within a culture, and that there is a complex and highly debated relationship between culture and morality. The way in which we combine societal, personal and professional values identifies us as the individuals and the society that we are and that we wish to be.[34-37] These are profound issues for health care professionals in this country to address for themselves as well as through their professional bodies.

Challenges of change

I should like to suggest that there are many questions that we as professionals in South Africa need to address. For example, are members of our profession united? If so, what values unite members and how are these values justified? What divides professions internally? Should more common ground be sought? Can we, as professionals, accept without question our society's policies and if not, why not? What is the meaning of academic freedom? Do privileged professionals have responsibilities on the international scene beyond those to their own countries? Are we consistent in our expectations of ourselves and our colleagues as professionals? How can we promote and sustain the idea of being a professional?

In South Africa, as elsewhere, it must be acknowledged that we live in a rapidly changing world and that as much as we value old professional traditions, these are not fixed in stone. Re-evaluating and reinterpreting our traditions provide the opportunity to respond to the need for constructive change. To achieve this means understanding that the nature of professional autonomy and power is changing (R Crawshaw — unpublished manuscript).[38]

Professional autonomy, which has until recently been dominated by the science and art of medicine, is being transformed by economic and bureaucratic considerations. The science of medicine (rooted in factual knowledge of basic and clinical science and a thinking mode based on logic), coupled with the art of medicine (which involves fulfilling psychological needs and a traditional doctor/patient

relationship characterised by empathy for suffering) have been in reasonable balance in the past. However, in the modern era, economic and bureaucratic considerations are increasingly intruding on decision-making in medicine. There is more concern today about health service budgets and about laws and regulations pertaining to health and the health care professions. The focus is on material means and/or profit in the delivery of health care. Accountants and managers are becoming increasingly influential in making decisions that affect patients and health care professionals (R Crawshaw — unpublished data).[16-20,38]

The nature of professional autonomy and the extent to which professionals have control over what they do are shifting because of changing ideas about what is valued in the practice of medicine. We have to understand how to work with and live with those changes. We must indeed hold on to and fight for the retention of those virtues and values that we cherish, but we must also be prepared to live by these standards. At the same time we must be open-minded enough to accept those criticisms that can be justified from alternative perspectives and work constructively to adapt to new circumstances.[1,2] We cannot go backwards. We have to use the best available scientific evidence with an understanding of the limitations of knowledge and of the pervasiveness of uncertainty — and combine these with defensible professional ethics and respect for good professional judgement.[39]

As professionals we must acknowledge our moral commitment not only to our patients, but also to the common good and the public interest.[21] Professionals must help to sustain and revitalise shared values and goals that underlie common purposes and a democratic way of life. True professionals are not created either by universities or by licensing bodies. They are created by the quality of the human experiences of those who promise to help people in distress. Professionals make a commitment to help other people. That commitment has a long history.[13]

Education and experience are necessary to encourage development of those special virtues. These issues have been thought about deeply by other societies and medical education in South Africa needs to include the broader study of ethics, human rights and the humanities to enhance our understanding of the professional role and its responsibilities.[40]

I share the concern of many that the medical profession and other professions, in South Africa and elsewhere, are to a considerable extent neglecting professional virtues and losing their 'soul'.[10-43] As we become more like an industry so the whole nature of health care changes, in my view adversely; this has long-lasting implications for our society. We need vision and courage to sustain what is vital to professionalism and to forge new and important responsibilities that can supplement those activities in medical education[44] and medical practice[45] that are crucial to the well-being of individuals and society.

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BIOETHICS: POWER AND INJUSTICE: IAB PRESIDENTIAL ADDRESS

SOLOMON R. BENATAR

ABSTRACT

A major focus within the modern bioethics debate has been on reshaping power relationships within the doctor–patient relationship. Empowerment of the vulnerable has been achieved through an emphasis on human rights and respect for individual dignity. However, power imbalances remain pervasive within healthcare. To a considerable extent this relates to insufficient attention to social injustice. Such power imbalances together with the development of new forms of power, for example through new genetic biotechnology, raise the spectre of increasing social injustice. Attention will be drawn to the need to extend the bioethics debate to include ethical considerations regarding public health. Changes in political philosophy will also be required to reshape international power relations and improve population health.

It is a great privilege for an African to have the opportunity to give the IAB Presidential address at this World Congress. I should like to begin by congratulating our Brazilian colleagues for their choice of such an important theme and for all the hard work and enthusiasm they have devoted to organising this congress.

The congress theme – 'Bioethics: Power and Injustice' – is highly relevant at this distinctive time in world history when living conditions for millions continue to deteriorate despite many decades of so called development. As Brazil and South Africa have the infamous distinction of being the two countries with the widest disparities between their rich and poor citizens, it is relevant that it is a South African who is addressing you today in Brazil. Disparities in wealth and health between and within nations have been described in detail elsewhere and will not be restated now. However, it should be noted that such disparities

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touch all our lives directly or indirectly and reveal both abuse of power and our toleration of injustice. I share with the organisers the hope that our discussions on bioethics and on the nature and use of power during this Congress will advance our understanding of how to pursue the goal of a fairer world.

REFLECTIONS ON BIOETHICS AND INJUSTICE

We should begin by recalling that the shift from centuries old traditional medical ethics to the new bioethics took place a mere forty years ago. The context that shaped such change included both increasing applications of costly new life-prolonging technologies and growing respect for the rights of patients to participate in medical decision-making. Today, at the threshold of the new genetic biotechnology era and in the face of threats from new infectious diseases and environmental degradation, bioethics, broadly defined as ethics about all aspects of life, is even more important.

Ethics is about relationships and as relationships involve considerations of power, there is an intimate link between ethics and power. Power is generally conceived of as influence over others. In healthcare this has meant the power of physicians to make decisions on the balance of harms and benefits to which patients may be subjected, and to decide who may live and who may die through having access to life saving technologies. The nature of power in healthcare is of additional particular concern because it relates to having access to intimate knowledge about people that can be used to expose and exploit vulnerability. All of us are vulnerable and can be hurt by others. When information about our bodies or our minds is made public we are particularly vulnerable. Hence the importance of confidentiality and trust in the encounter with professionals.

The thrust of developments in bioethics towards reducing physicians' power and increasing the power of patients, nurses and other healthcare workers has profoundly affected the lives of many – most often for the better. However, despite such progress, it is true to say that the distribution of power within healthcare continues to give some people advantages over others. New forms of power becoming available through genetic biotechnology have the potential to aggravate this power imbalance. The challenge for bioethics is to find ways of sharing power in ways that could optimise advantages for patients and sustain professional integrity.

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Extending the ethics discourse to include population health

The understandable focus on ethical issues at the interpersonal level has undoubtedly eclipsed ethical issues that need to be addressed in dealing with public health issues. The HIV pandemic and possibilities for improving health that are opening through new genetic biotechnology in particular remind us of the need to extend our perspective beyond individual health to include health of whole populations. In a globalising world, perhaps best described as a de-territorialising world, in which boundaries are becoming blurred and the lives of geographically disparate people are more intimately interconnected than ever before, we need to re-evaluate traditional ideas of what it means to be an ethical professional.

Achieving improvements in human life and health globally will require a broader moral agenda that includes, but goes beyond, interpersonal ethics and civil and political rights. Extension of the ethics discourse beyond the doctor-patient relationship includes considerations of order and fairness within institutions that serve the communities in which individuals are socially embedded and in which medical practice is 'constructed.'[1] The responsibility of physicians here must be viewed more broadly to include concern for equitable access to healthcare, for improved public health and for the allocation of scarce resources in ways that promote the common good. The work of Norman Daniels on priority setting in healthcare illustrates how power sharing in resource allocation can be achieved through appropriate representation on decision-making bodies, and through transparency, accountability, and the provision of a mechanism for appeals.[2]

Achieving an improved balance between the needs and rights of individuals and the requirements for advancing public health will require a shift in mind-set away from exclusive and often selfish individualism, towards respect for individuality that is combined with a strong sense of duty, community, and civic citizenship. Essential steps will include: firstly, acknowledging the need for a new balance; secondly, developing the political will to undertake ambitious projects (for example seeking ways of reducing

[1] S.R. Benatar. Millennial Challenges for Medicine and Modernity. *Journal of the Royal College of Physicians of London* 1998; 32: 160–165. S.R. Benatar, A.S. Daar & P.A. Singer. Global Health Ethics: A Rationale for Mutual Caring. *International Affairs* 2003; 79: 107–138.

[2] N. Daniels & J. Sabin. 2002. *Setting Limits Fairly: Can we Learn to Share Medical Resources?* Oxford. Oxford University Press.

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poverty and dependency); and finally, placing high value on the longer term economic and social justice required for meaningful and sustainable progress.

In a world in which individual health is increasingly linked to population health, both within countries and between countries, there is a need to develop a coherent language of Public Health Ethics.[3] The language and scholarly discourse on public health ethics is as yet inadequately developed but a start has been made and eloquent arguments have been offered in favour of a language of public health that 'speaks to the reciprocity and interdependence that characterise community.'[4] Considerations of justice, the 'social contract' and conflicts of interest will clearly impact on the physician/patient relationship as the ethics discourse is broadened to encompass the ethics of public health and of professional responsibilities to society. This raises the perennial problem of how to strike a balance between the rights (and needs) of individuals and the common good of societies. While the focus on individual rights is vital and necessary for the well being of individual persons, such focus is not sufficient for the achievement of improved public health.

The dilemmas regarding public health ethics will be greatest for those societies that are intolerant of any infringement of individual liberties in the name of the common good. The challenge for societies more oriented towards the common good will be to avoid excessive infringements of individual rights in the pursuit of public health goals. Realistically, a middle ground will have to be forged because the choice is not between polar extremes but rather about achieving an optimal balance between competing goods.

Today, many countries consider access to basic healthcare an essential human right which nation states should be committed to honouring for their citizens. However, we also need to go beyond advocacy for rights to include consideration of the duties necessary for rights to be widely satisfied. Acknowledgement of such public duties has resulted in some form of socialised and equitable healthcare in all western European nations and in Canada. Regrettably, the example set by the US – the wealthiest nation in the world – of medical care as a marketable commodity is increasingly being imitated by many developing countries.

[3] A. Robertson. Critical Reflections on the Politics of Need: Implications for Public Health. *Social Science and Medicine* 1998; 47: 1419–1430. D. Buchanan. 2001. *An Ethic for Health Promotion.* New York. Oxford University Press.

[4] Robertson, *op. cit.* note 3.

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Grotesquely widening disparities in wealth and health and the implications of consumption patterns that damage the environment on which all are dependent suggest that we live in an amoral world. We could perhaps even conclude that we live in a morally depraved world, one that promotes preference for continuing economic growth and the acquisition of luxuries for a small proportion of the world's population over ensuring the production of and access to essential subsistence requirements for the majority. Our modern system of values with emphasis on market values and on bureaucratic processes promotes economic slavery, tolerates gross abuses of basic human rights, and even turns a blind eye to genocide.[5] It also discounts the importance of a safe environment for future generations. Such a world, characterised by an unstable economic system, the potential for political and other terrorism, the threat of infectious diseases and other biological hazards, as well as environmental degradation, poses threats to the self-interest of us all globally.[6]

Extending the ethics discourse to include considerations of global security and the environment would require conceiving of individuals as autonomous persons sharing equal rights with all other citizens in the world, in a relationship of interdependence in which the rights of some should not be acquired at the expense of the rights of even distant others. Modern communication, transport, methods of money exchange, the creation of nuclear and other potential weapons of mass destruction and the emergence of new infectious diseases have shrunk distances and differences, and created common global risks. In this context, and with a deeper understanding of the impact of adverse forces shaping the wealth and health of nations, we need to appreciate how we are all deeply implicated in the lives of others, and cannot hide with moral credibility behind the barrier of physical distance while billions of people live impoverished lives.

Altruism and reparations aside, the importance of physical and moral interdependence is so great that longer-term self-interest alone should be sufficient to drive policies toward sustainable development. Some degree of humility, and empathy, are essential ingredients for progress. Jonathan Glover, in his book *Humanity: A Moral History of the 20th Century*, has revealed how difficult

[5] S. Power. 2002. *A Problem from Hell: America and the Age of Genocide.* New York, Basic Books.

[6] S.R. Benatar. The Coming Catastrophe in International Health: An Analogy with Lung Cancer. *International Journal* 2002; LVI Autumn 2001: 611–631.

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this will be to achieve.[7] However, it should be noted that unless such progress is made, the prospects seem bleak for dealing adequately with such threats as the HIV/AIDS pandemic and the growing burden of non-communicable diseases. Empathy and consequent 'justice without borders' is the challenge for the future.

The level of complexity here is much greater because of the way in which the foreign policies of some countries may covertly enhance the lives of their own citizens through exploitation of unseen persons elsewhere. The commitment of physicians, scientists and all healthcare professionals would need to be broadened to include universal professional ideals and concern for the health of whole populations as well as the health of future generations.

In summary, I am proposing that our moral perspective should be extended from 'interpersonal morality' to 'civic morality' and to an 'ethics of international relations', that has dimensions intimately linked to political, military, cultural and economic issues. These ideas are consistent with the identification of medical practice and health as social constructs and of bioethics as an activity that falls within the realm of social philosophy.[8]

REFLECTIONS ON POWER

I should now like to turn to some further considerations about power. First we should remember that there are different forms of power.[9] 'Hard power', defined as military power, is the power to use military might directly or indirectly to ensure maximum advantage for those who wield such power. Military power has clearly played a major role in world history and in the acquisition of wealth. Today, economic power remains intimately linked to military power and to the weapons industry. It is likely, however, that the role of military power will diminish in the 21st century because of the emergence of new threats that cannot be overcome with such power. For example, the threats of biological weapons, and in particular the deliberate spread of infectious diseases, will neither be dependent on classical weapons of mass destruction nor on the enormous resources required to produce these. In addition, the social instability resulting from mass poverty poses

[7] J. Glover. 2001. *Humanity: A Moral History of the 20th Century.* New Haven. Yale University Press.

[8] K.W. Wildes. Bioethics as Social Philosophy. *Social Philosophy & Policy Foundation* 2002; 19: 113–125.

[9] J. Nye. 2002. *The Paradox of American Power.* New York. Oxford University Press.

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major security threats to the health and lives of all globally, and calls for new approaches to the use of power.

Two 'soft' forms of power are likely to become more important. The first is financial power. Both the way in which money is made and how it is used can have a profound impact on human lives and security. The other is the power of knowledge. The economic system is increasingly driven by use of sophisticated knowledge and the ability to use modern communication technology to manipulate vast sums of money across international borders. The recent exposure of how some people in powerful positions have used inside information to make money fraudulently and at disabling costs to others who are vulnerable – for example Enron, WorldCom etc – is revealing. Criticisms of overt corruption in the Third World have less moral weight in the face of such corruption in the First World, which exposes the covertly corrupt manner in which the global economy operates to enrich some people, nations and corporations at the expense of some of the most vulnerable people in the world.[10]

It is necessary to understand that the generation of wealth has become so important to some that they are willing to sacrifice the lives and well-being of millions of others to achieve their narrow materialistic goals. Trade protectionism, insider trading, the weapons trade, the way in which international debt is generated and sustained, and the use of intellectual power and knowledge (for example through excessive use of patents and intellectual property rights), provide only short term advantages. When carried to excess over prolonged periods, leading to disparities that are obscene, perpetrators lose their moral bearings and in the process devalue their own lives in the eyes of the deprived. This is a recipe for anarchy and chaos.

Neglect of those whose lives are gravely damaged by such practices and their marginalisation from the mainstream economy is associated with a rapidly growing informal economy. While this includes legitimate 'home industries' that enable many to survive harsh economic systems, it also includes such illicit and dehumanising practices as trade in drugs, sex, child labour, small weapons, and organs/tissues for transplantation.[11] Those who perpetuate such illicit practices have little respect for legal systems and practices that exploit and marginalise them, and they are thus

[10] R. Falk. 1999. *Predatory Globalization: A Critique*. Cambridge, UK. Polity Press.

[11] H.R. Friman & P. Andreas, eds. 1999. *Illicit Global Economy and State Power*. New York. Rowman and Littlefield.

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willing to harm others in pursuit of their own selfish interests. Of course, like those who exploit the formal economy, leaders in the informal economy lose all sensitivity to the impact of their practices on the lives of their victims. Thus the difference between, on the one hand, corrupt accountants, corrupt governments and corrupt transnational corporations and, on the other hand, 'drug lords' and other leaders of the informal economy may be less marked than many believe.

The way in which money is spent is also important. Vast sums of money are wasted in so many ways. Money in abundance is also spent daily on trivia, advertising harmful products to create 'needs', gambling and propaganda to support frivolous and unthinking patterns of life in which buying and consuming are glorified.

An examination of so-called international financial development aid reveals that the magnitude, the motives and the impact of aid expenditure vary widely.[12] For some, 'aid' is a means of controlling others in the name of development that is actually exploitative and anti-development. Others have a genuine desire to make real contributions to development and capacity building in order to ensure that recipients do not remain forever in states of dependency. Thankfully the tide seems to be turning and there is apparent growing sensitivity to the need for meaningful progress that could be sustained. The soft power of money and knowledge should not be under-emphasised. The growth of the global economy over recent decades could usefully be turned towards production and sharing of global goods through a more moral global economic system. The thoughtful deliberations of such scholars as Joseph Stiglitz,[13] Richard Falk[14] and others[15] on this topic provide some hope that such progress could be made.

Another form of soft power is moral power. The extent to which such power can reshape the world is revealed in the struggle against such practices as slavery and apartheid, and more recently the adverse effects of economic globalisation. The politics of moral capital has been described through an expanded definition of 'capital' to include 'knowledge, skills and social relations', and the use of such social capital through social networks of trust that

[12] G. Rist. 1997. *The History of Development: From Western Origins to Global Faith.* London. Zed Books.

[13] J.E. Stiglitz. 2002. *Globalization and its Discontents.* New York. W.W. Norton & Co.

[14] Falk, *op. cit.* note 9.

[15] Royal Danish Ministry of Foreign Affairs. 2000. *Building a World Community: Globalization and the Common Good.* Copenhagen.

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serve broad and beneficial functions. Moral capital goes beyond being good, being respected and having good intentions. It includes the political ability to put good intentions to effective use. Such moral capital inspires trust, belief and allegiance, and when used by individuals, institutions and societies, provides valued returns.[16] Inspirational examples set by people such as Mahatma Ghandi, Nelson Mandela and Vaclav Havel illustrate the power of moral capital.

MAKING PROGRESS

It is clear that the use of soft forms of power has been both underplayed and undervalued. I suggest that in a world in which the use of hard power will yield diminishing returns, it will become increasingly necessary to wield the soft power of money, knowledge and moral capital to shape a better world. This will require a shift in political leadership and indeed changes in political philosophy.

How could such a shift in the conception and use of power be achieved? I have no simple solutions but I should like to suggest that changing the metaphor of power maybe a useful first step. So instead of thinking of power as 'power over others' (might is right) we could think of power as 'power with others.'

For example, within the doctor-patient relationship the sharing of power enables patients to take care of themselves with the assistance of a physician rather than in a dependent relationship. Such a change in relation to the care of patients with chronic diseases like asthma and diabetes has had a major impact on both individual well-being and physician satisfaction. Within a family such a shift would entail a change from the power of a patriarch over his wife and children to the sharing of power within a family by encouraging each member to co-operate within a team. This concept can be extended to institutions by, for example, sharing power with employees through processes of transparent and accountable decision-making and shareholding. At the level of nations, power sharing can be achieved by avoiding excessive central control and by devolving power with responsibility to local levels. At the international level, power can be shared by promoting economic policies that do not allow the currencies and material goods of some nations to be manipulated and devalued. Such policies coupled with capacity building could reduce the

[16] J. Kane. 2001. *The Politics of Moral Capital.* Cambridge, UK. Cambridge University Press.

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need for charitable development aid and promote independence rather than dependency.

New trends in political philosophy

In recent decades new trends in political philosophy are being formulated and debated,[17] and it is not unreasonable to imagine that even powerful hegemonic countries will develop these perspectives on their role in the world. Brian Magee, who wrote almost two decades ago, foresaw such progress:

> *My central thesis is that the whole world is now changing so fast that we all have a tendency to see it in terms that have been left behind by events and are therefore outmoded, and that one of the ways in which this shows itself is in our use of an exhausted political vocabulary, a vocabulary whose key terms were coined many generations ago in a society quite different from the one we live in today.*[18]

In addressing the question of how we might live and what global ethics we can develop for the 21st century, many scholars have emphasised the value of thinking holistically about interconnected human lives within a complex global system. This will require promotion of a greater degree of global consciousness among leaders and ordinary citizens. Making greater progress towards sustainable improvements in the lives of currently marginalised people calls for rejection of determinism and the opening up of new possibilities by focussing on choice and responsibility. Moral reasoning is essential for this process. The mutuality of politics and ethics will have to be acknowledged in a world in which globalisation has resulted in changing material realities, new referents for justice are appearing, and false oppositions in world politics such as cosmopolitanism/communitarianism and universalism/particularism must be rejected.[19]

Recent trends in socio-political action

The recent report from the US Council of Foreign Relations and the Milbank Memorial Fund, outlining the importance of health to US foreign policy, offers a glimmer of hope. By acknowledging the relationships between health, social capital, political stability,

[17] N. O'Sullivan, ed. 2000. *Political Theory in Transition*. London. Routledge.
[18] Ibid.
[19] K. Booth, T. Dunne & M. Cox, eds. 2001. *How Might We Live: Global Ethics in the New Century*. Cambridge, UK. Cambridge University Press.

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the economy and war, a deeper commitment could be developed by the US and other nations to the moral and strategic importance of improving global health.[20] In addition, the Millennium Development Project, the Commission on Macroeconomics and Health, the inauguration of a Global Health Fund, and the recent announcement by President George Bush that the US will increase its annual development aid from $10 billion to $15 billion, reveal a deeper understanding of the importance of global health and an acknowledgement of the responsibility of developed nations to address this constructively. Joseph Nye's recent book, *The Paradox of American Power: Why the World's only Superpower can't go it Alone,*[21] also offers hope that conservative scholars are beginning to appreciate the need for change that has been obvious to others for many decades.

CONCLUSIONS

As difficult as it may be to make paradigm shifts in thinking and action, we should be encouraged by the fact that much has been achieved through the bioethics discourse in reshaping the power balance between doctors and patients. It is rational to believe that even more could be achieved as we begin to consider health and bioethics in a much broader context than in the past. I suggest that achieving improved health at the population level will be less dependent on new discoveries or on technological advances than on achieving greater social justice through moral progress. Making such moral progress will require recognition that contemporary applied ethics is impoverished by failure to acknowledge the extent to which applied ethics is parochial. Allen Buchanan has eloquently described the need to improve our understanding of how social practices and institutional functions facilitate or impede the formation, preservation and transmission of morally relevant beliefs required for the proper functioning of the virtues.[22]

We have the freedom to make choices that could dramatically improve the lives of billions of people – and in the process, all of our lives. Acknowledging interdependence and the need to respect cultural diversity, as well as our stewardship role, add

[20] J.S. Kassalow. 2001. *Why Health is Important to US Foreign Policy.* New York. Council on Foreign Relations, Milbank Memorial Fund.

[21] Nye, *op. cit.* note 9.

[22] A. Buchanan. Social Moral Epistemology. *Social Philosophy & Policy Foundation* 2002; 19: 126–152.

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further levels of complexity. This calls for political leadership, the creation and use of moral capital and the development of international strategic alliances utilising varied expertise and multiple spheres of influence – in the public and private sectors. Herein lies the challenge for bioethics in the 21st century.

Solomon R. Benatar
Bioethics Centre
Department of Medicine
University of Cape Town
Observatory
Cape Town
South Africa
sbenatar@uctgsh1.uct.ac.za

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Ethics and SARS: lessons from Toronto

Peter A Singer, Solomon R Benatar, Mark Bernstein, Abdallah S Daar, Bernard M Dickens, Susan K MacRae, Ross E G Upshur, Linda Wright, Randi Zlotnik Shaul

The SARS epidemic showed how easy it is for infectious diseases to spread round the world. Ethical as well as clinical issues need to be resolved to improve the response to the next epidemic

The outbreak of severe acute respiratory syndrome (SARS) in the Toronto area earlier this year forced medical and government workers to make hard choices, often with limited information and short deadlines. Healthcare providers were on the firing line, and were the people most affected by the disease.[1] Decision makers had to balance individual freedoms against the common good, fear for personal safety against the duty to treat sick people, and economic losses against the need to contain the spread of a deadly disease. Such decisions have to be guided by both scientific knowledge and ethical considerations. The SARS outbreak showed that Canadian society was not fully prepared to deal with the ethical issues.

Evaluating ethical issues

We formed a working group to identify the key ethical issues and values most important for an analysis of ethical dimensions of the SARS epidemic. The final list of issues and values was agreed by a consensus process and found to have face validity and credibility. We then developed a framework for looking at the ethical implications of the SARS outbreak, identifying 10 key ethical values relevant to SARS (box), and five major ethical issues faced by decision makers.

We examined the underlying ethical values for the five major issues and drew lessons from how each was tackled. The following case studies illustrate the issues and are an amalgam of our experiences.

Ethics of quarantine

A medical clerk is asked by public health officials to remain at home in quarantine for 10 days because of possible exposure to SARS. She wants to comply but fears this could cost both her job and her apartment.

Five ethical values were associated with this issue, starting with individual liberty. Even the most highly valued individual liberties have to be balanced against

Ten key ethical values

- Individual liberty
- Protection of the public from harm
- Proportionality
- Reciprocity
- Transparency
- Privacy
- Protection of communities from undue stigmatisation
- Duty to provide care
- Equity
- Solidarity



CP/KEVIN FRAYER/AP

a second value—that of protecting the public from harm caused by the uncontrolled movements of people who may be infectious.[2] Under the value of proportionality, authorities exercising public health powers should do so in a way that is relevant, legitimate, and necessary. They should use the least restrictive methods that are reasonably available to limit individual liberties and should apply restrictions without discrimination.

The value of transparency requires stakeholders to be fully informed about issues, including the risks and benefits, particularly if they affect their health, wellbeing, and personal liberty. Finally, the value of reciprocity requires society to ensure that those quarantined receive adequate care and do not suffer unfair economic penalties.[3]

Privacy of personal information and public need to know

A nurse at a hospital affected by SARS feels unwell and has a fever. After weighing the risk of having the disease against losing income and placing a burden of extra work on her colleagues, the nurse takes a commuter train to work. She is later found to have SARS. Medical officials choose not to name the nurse but use the media to warn people who may have been on her train that they should be tested for SARS.

Although the individual has a right to privacy, the state can over-ride this right if it would greatly help protect the public from serious harm. As a general rule, the privacy and confidentiality of individuals should be protected unless a well defined public health goal can be achieved by making personal information public.

In the initial stages of the outbreak, authorities named the woman who carried SARS to Canada from China, and her son, with the family's consent, because they believed it would provide additional public health benefit. Although public health officials took great pains to avoid linking ethnicity and illness, the linking of SARS with someone who had travelled from China,

University of Toronto Joint Centre for Bioethics, 88 College St, Toronto, Canada M5G 1L4

Peter A Singer *Sun Life financial chair and director*

Abdallah S Daar *director, programme in applied ethics and biotechnology*

Susan K MacRae *deputy director*

Linda Wright *bioethicist*

Randi Zlotnik Shaul *bioethicist*

Department of Public Health Sciences, University of Toronto

Solomon R Benatar *visiting professor*

Division of Neurosurgery, University of Toronto

Mark Bernstein *professor*

Faculty of Law, University of Toronto

Bernard M Dickens *Dr William M Scholl professor of health law and policy*

Sunnybrook and Women's College Health Sciences Centre, Toronto

Ross E G Upshur *director, primary care research unit*

Correspondence to: P A Singer peter.singer@utoronto.ca

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P+ *The decision making tool is available on bmj.com*

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combined with the public's limited understanding of transmission, resulted in many people unnecessarily avoiding Chinese businesses.

Proportionality requires that private information be released only if there are no less intrusive means to protect the public health. For example, naming an individual or releasing a photograph could be justified if that person violates a quarantine order. Transparency can be achieved without naming individuals or communities. Indeed, the need to protect communities from undue stigma is an important lesson for future epidemics.

Duty of care

An intensive care nurse is afraid of contracting SARS at work and infecting her husband and three small children. She feels torn between the potential danger posed to her family and her professional duties.

For the first time in more than a generation, Canadian healthcare workers faced a deadly infectious disease for which there was no known effective treatment. Dozens of healthcare workers, many of them nurses, were infected with SARS because of their work. Some infected their families, and two died. Many others had to wear cumbersome equipment to protect themselves, causing appreciable discomfort, reducing their ability to work, and reducing contact with their patients.

Healthcare workers were forced to weigh serious and imminent health risks to themselves and their families against their duty to care for the sick. This duty is mainly determined by professional ethics. By analogy, firefighters do not have the freedom to choose whether to face a particularly bad fire and police officers do not get to select which dark alleys they walk down.

Nonetheless, these professional duties do have limits. For example, healthcare workers also have a professional obligation to maintain their own health and ability to provide care for patients.[4] However, the nature of such limits is contested. Some believe that under dire circumstances professionals should have minimal self regard and pursue their duties at potential cost to their own lives. Others claim that it is unreasonable to demand extreme heroism as the norm, and even more unreasonable to demand that the lives of children and families should be held hostage to professional duties. How these two positions are balanced is intensely personal but has vital implications for handling pandemics.

The value of reciprocity requires healthcare institutions to support and protect healthcare workers, to help them cope with very stressful situations, to acknowledge their work in dangerous and difficult conditions, and to have workable plans for emergency situations. Ontario's minister of health acknowledged the heroic work of healthcare workers, and this was an important act of reciprocity. In addition, measures such as an insurance fund to cover healthcare workers who become sick or die through work should be considered for future epidemics. Although many doctors and nurses have supplemental insurance, other healthcare workers, such as technicians and clerks, do not.

We could not reach consensus on the issue of duty to care, particularly regarding the extent to which healthcare workers are obligated to risk their lives in delivering clinical care. This issue requires urgent attention from researchers, regulatory bodies, and the public.

Collateral damage

Surgery for a patient with breast cancer is postponed during the SARS outbreak, increasing the anxiety of the woman and her family about the spread of her disease.

Severe restrictions on entry to hospitals affected by SARS in the Toronto area meant that thousands of people were denied medical care, sometimes for severe illnesses such as cancer and heart disease. Some of these patients died before receiving treatment. Those who were admitted, with or without SARS, suffered loss of contact and emotional support from family and friends as hospitals closed their doors to visitors.[5]

Strong measures taken to contain the spread of a deadly disease will inevitably cause considerable collateral damage. Authorities in the Toronto region had to make hard choices about which medical services to maintain and which to place on hold. They had to weigh risks, benefits, and opportunity costs. How such decisions can best be made needs thorough re-evaluation. Clearly, they should be made in a fair manner, preserving as much equity as possible between the interests of patients with SARS and those who need urgent treatment for other diseases. Procedural fairness should also be ensured in making such decisions.

The collateral damage of the SARS outbreak has yet to be fully quantified and may be substantial. Health systems need to have plans for setting priorities in place for future epidemics.

SARS in a globalised world

In Guangdong province in rural China a farmer develops a severe respiratory infection. Normally, the disease would have stayed in the community, but family travels begin a chain of events that takes SARS around the world. The World Health Organization issues travel warnings for areas with large numbers of cases.

The SARS outbreak sounded a dramatic wakeup call about global interdependence and the increasing risk to global human security from the emergence and rapid spread of infectious diseases. SARS leapt the Pacific Ocean to Toronto on an aeroplane. This shows the urgent need for people around the world to adopt the value of solidarity as much for self interest as altruistic reasons. Infectious diseases can spread in either direction between poor rural areas and rich urban areas, anywhere in the world.

The SARS epidemic also showed the urgent need to strengthen the way the world deals with emerging infectious diseases. This will require new visions of global solidarity and cooperation.[6]

Transparency, honesty and good communications on health issues also need emphasis. It took months for China to acknowledge that it was the source of the outbreak. It is no longer acceptable for countries to hide health information that can protect others. Sharing public health information is part of maintaining the global public good of health protection, and should be encouraged and admired.

University of Cape Town

Next steps

The lessons learnt from the ethical choices in the Toronto SARS crisis can inform efforts to control the disease elsewhere and guide our responses to future epidemics. The approach outlined here is provisional and derived from reflection on recent experiences. Nevertheless, the values identified are a useful starting point for evaluating the ethical dimensions of outbreaks of communicable disease. Our evaluation points towards a broader, public health focused approach based on a more comprehensive set of guiding values than usually considered in the ethics of interpersonal relationships.

Further research, both conceptual and empirical, is needed. As a first step we have created a decision tool derived from the values identified above (see bmj.com). Further work is required to examine how the values identified relate to moral theory. A review of professional codes and communicable disease legislation would help to clarify professional duties and define the acceptable extent of professional obligation and public health power. Additionally, public discussion about the acceptable limits to individual liberty in public health emergencies and the expected scope of healthcare workers' duty to care would help to harmonise the actions of the health community and public expectation.

We thank Sheela Basrur for comments on an earlier version of this paper.

Contributors and sources: The authors formed the working group and are scholars in bioethics who come from various disciplines, including medicine, surgery, health law, social work, teaching, nursing, and epidemiology. Several of the team members worked in directly affected hospitals and some were involved in decision making regarding the outbreak. Michael Keating drafted the report on the basis of the discussions of the working group, and it was then reviewed and revised by all authors.

Summary points

The response to the SARS epidemic by public health, governmental, and healthcare workers raised new ethical issues

Analysis of decision making in Toronto provides lessons for dealing with a global public health threat

Five key ethical issues were identified and 10 underlying values

Public discussion is required to resolve issues surrounding acceptable limits to individual liberty and healthcare workers' duty of care in an epidemic

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1 Booth CM, Matukas LM, Tomlinson GA, et al. Clinical features and short-term outcomes of 144 patients with SARS in the greater Toronto area. *JAMA* (in press). http://jama.ama-assn.org/cgi/content/full/289.21.JOC30885v1 (accessed 26 Oct 2003).
2 Upshur RE. Principles for the justification of public health intervention. *Can J Public Health* 2002;93:101-3.
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4 Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, et al. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ* 2003;168:1245-51.
5 Bernstein M, Hawryluck L. Challenging beliefs and ethical concepts: the collateral damage of SARS. *Crit Care* 2003;7:269-71.
6 Benatar SR, Daar AS, Singer PA. Global health ethics: a rationale for mutual caring. *Int Affairs* 2003;79:107-38.

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Q&A

Alcohol and the genitourinary tract

Question
Is there such a phenomenon as alcohol induced kidney pain?

Fergus J Dignan, *Lyneham*

Answer
Intermittent pelvi-uretereic junction obstruction (PUJO) is a reasonably common condition, and it often presents (usually in young men) as severe loin pain after drinking alcohol. The partially obstructed pelvi-ureteric junction, where the kidney drains into the upper ureter (the tube that conveys urine into the bladder), can handle the normal fluid load given to it. When the subject takes alcohol, however, the amount of urine produced suddenly and dramatically increases (a commonly observed event). The partially obstructed junction then cannot take the volume produced, and expands, causing pain—usually severe, like that caused by a kidney stone. In fact, PUJO is a differential diagnosis in stone disease.

Diagnosis requires an x ray examination (intravenous urography), but often a radioisotope scan is needed to show the obstruction. There are several causes of PUJO, but usually it is just a functional inability of that part of the ureter to carry the normal peristaltic wave. Treatment is surgical if the symptoms are severe and frequent enough to warrant an operation—that is, not just every time the patient goes on a bender. There's an easier solution, then.

John F Bolton *clinical fellow in urology, Bristol Royal Infirmary, Bristol*

http://bmj.com/cgi/qa-display/short/bmj_el;40367

This exchange was posted on the Q&A section of bmj.com. If you want to respond to the question, or ask a new question of your own, follow the link above or go to: http://bmj.com/q&a

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PUBLIC HEALTH AND PUBLIC HEALTH ETHICS*

Solomon R. Benatar**

Abstract: Spectacular achievements in the health of individuals have not been matched by equivalent improvement in the health of whole populations. Indeed it is against the background of deterioration in levels of population health in some parts of the world and the emergence and re-emergence of infectious diseases in association with powerful globalizing forces that there has been a recrudescence of interest in 'Public Health'. Here attention is drawn to the dominant values that have shaped our world, to the differences between broad and narrow definitions of public health, to some values that need to be promoted, and to an ethic of public health that considers both human rights and human needs.

Key Words: Public health, medical ethics, rights, needs, duties, values, solidarity, epidemics, global health

SALUD PÚBLICA Y ÉTICA EN SALUD PÚBLICA

Resumen: Los espectaculares logros alcanzados por la salud de los individuos no han sido equiparados por una mejoría equivalente de la salud de las poblaciones en su conjunto. Justamente, ha habido un aumento del interés por la "Salud Pública" debido al deterioro del nivel de la salud de la población en algunas partes del mundo y a la emergencia y re-emergencia de enfermedades infecciosas asociadas con poderosas fuerzas globalizadoras. Aquí se llama la atención hacia los valores dominantes que han moldeado nuestro mundo, hacia las diferencias entre definiciones amplias y/o restrictivas de la salud pública, hacia algunos valores que deben ser promovidos y hacia una ética de la salud pública que considere tanto los derechos como las necesidades humanas.

Palabras clave: Salud pública, ética médica, derechos, necesidades, deberes, valores, solidaridad, epidemia, salud global

SAÚDE PÚBLICA E ÉTICA EM SAÚDE PÚBLICA

Resumo: Os avanços espetaculares alcançados pela saúde pública individual não foram acompanhados por uma melhoria equivalente da saúde das populações. Em algumas partes do mundo aumentou o interesse pela "saúde pública" devido ao deterioração do nível de saúde da população e a emergência e re-emergência das enfermidades infeciosas com poderosas forças globalizantes. Chama-se atenção para os valores dominantes que moldaram nossos mundo, em relação às diferenças entre definições amplas ou restritivas de saúde pública, para alguns valores que devem ser promovidos e para uma ética de saúde pública que leve em conta tanto os direitos como as necessidades humanas.

Palavras-chave: Saúde pública, ética médica, direitos, necessidades, deveres, valores, solidariedade, epidemia, saúde global

* Based on a Summary presentation at the end of a two day symposium on Public Health Ethics at the University of Toronto in May 2002.

** MBChB, FRCP. Professor of Medicine. Director Bioethics Centre, University of Cape Town. Visiting Professor Departments of Medicine and Public Health Sciences, University of Toronto.
Correspondence: sbenatar@uctgsh1.uct.ac.za

Introduction

Spectacular achievements in the health of individuals as a result of the application of many major biomedical advances are the hallmark of medicine at the beginning of the 21st century. New medical breakthroughs –both preventive and therapeutic in nature– are promised by the eventual clinical application of the revolution in molecular and cell biology and in genetics. Despite these advances and their potential, it is noteworthy that there has been much less striking improvement in the health of whole populations. Indeed, in some parts of the world the health and life expectancy of billions of people have deteriorated in recent decades, especially since the re-emergence of infectious diseases in multi-drug resistant forms (for example tuberculosis and malaria), and the emergence of many new infectious diseases, of which HIV/AIDS has been the most catastrophic.

At the end of the 20th century patterns of diseases and of longevity differ markedly across the world. Of the approximately 52 million people who die each year 17.5 million die of infectious and parasitic diseases (16 million of these - many in their youth - in the developing world), 10 million die of diseases of the circulatory system (4.5 million of these in the developing world) and 6 million die of malignant diseases (3.5 million of these in the developing world)*(1)*. Among the poorest quintile of people in the world 55% die of communicable diseases, as compared with 5% of the richest. The WHO estimated that in 1998, 11 million children and young adults died of six infectious diseases that could have been prevented at the cost of $20 per life saved. Poor countries bear over 80 % of the global burden of disease in disability adjusted life years (DALYs). This burden is likely to increase as the epidemiological transition progresses, with added disability and suffering from non-communicable diseases such as vascular disease, malignant neoplasms (especially of the lung associated with smoking), neuro-psychiatric disease, accidents and trauma.

Life expectancy at birth ranges from well over 70 years in highly industrialized countries to below 50 years in many poor countries. Wide disparities in life expectancy are also observed between rich and poor in rich countries. In sub-Saharan Africa gains in longevity achieved during the first half of the 20th century are rapidly being reversed by the HIV/AIDS pandemic.

Globalization and new threats to public health

Globalization is a complex and ambiguous concept with social and ecological manifestations that reflect a long, interwoven economic and political history in which peoples, economies, cultures and political processes have been subject to international influences. The pace of globalization has escalated during the past 40 years under the influence of advances in information and transport technology, decreasing barriers and homogenization of activities through the imposition of a set of ideas that accord higher priority to market transactions than to other human values and activities. Positive, and widely appreciated manifestations of progress associated with globalization include advances in science and technology; increased life-expectancy; enhanced economic growth; greater freedom and prosperity for many; improvements in the speed and cost of communications and transport; and popularization of the concept of human rights. About 20% of the world's population have benefited maximally from such progress.

Negative effects of globalization include widening economic disparities between rich and poor (within and between nations) and increases in both absolute and relative poverty. In addition to progressive widening of the economic

division between nations, and growing external control over the economies of small countries through the 'debt trade' and markets that are increasingly global, other powerful global forces radically are disrupting the lives of many*(2)*. These include new patterns of war and ethnic conflict, illicit trade in arms, money, drugs and people, toxic waste dumping, sexual exploitation and child labor and animal abuse on a wide scale. The trajectory of progress has thus excluded a large proportion of the world population from the benefits of globalization because the process fragments and divides as much as it unifies*(3)*.

It is against this background of rapid and profound change, contributing to the creation of new ecological niches and to adaptive evolution of microbes, emergence of new infectious diseases and the recrudescence of multidrug resistant tuberculosis and malaria that the resurgence of interest in Public Health is so relevant. The recent SARS epidemic is a further reminder that the whole world is threatened by the ongoing potential for emergence of new, rapidly spreading infectious diseases.

If we contemplate the meaning of these developments it is not difficult to conclude that at the least we live in an amoral world. A harsher diagnosis is that our world, in which some live short miserable lives while luxuries for the few are favored over essentials for the majority, economic slavery is tolerated and sustained, gross abuses of basic human rights are ignored and threats to long-term self-interest are discounted, is morally depraved. We would surely also conclude that an economic system that generates vast wealth but increases poverty is unstable, that the risks of political and other terrorism are growing, and that the emergence of new infectious diseases and other biological threats together with environmental degradation are wake-up calls for new ways of thinking about our world and ourselves*(4,5)*.

In this article I begin by outlining the dominant values that have shaped our world. Against this background I then address an evolving understanding of what we mean by public health by drawing attention to differences between broad and narrow definitions and to the fact that public health is 'at the crossroads'*(6)* The discussion proceeds with a description of public health ethics and its implications, a review of values that need to be promoted and some consideration of human rights and needs approaches to public health. I shall conclude by asking what prospects there are of making progress in public and population health.

Dominant Values

Understanding the dominant values driving behavior in the modern world can assist our understanding of how our polarized world has developed. Firstly, there is great faith in the belief that many of the problems we face will be ameliorated though scientific progress. For example, the solution to the specter of millions of starving and sick people in the world is seen in the development and use of genetically engineered crops and in the application of new genetic technology through vaccines and novel treatment*(7)*, (although the threats as well as the promises of biotechnology have been recognized*(8)*) This emphasis on acquiring new knowledge distracts us from applying knowledge we already have. In relation to the above example the focus could profitably be broadened to include improved means of distributing the excess food produced in the world (much of which is wasted), and making essential drugs and health care more widely accessible.

This shortcoming is amplified by a second idea in which much faith is placed: namely that economic growth is the answer to poverty. Sadly not enough attention is given to how massive economic growth in recent decades has

failed to alleviate poverty in the absence of fair reward for work and greater justice in the redistribution of resources towards those in most need.

A third 'belief' that aggravates this situation is the exclusive focus on 'human rights' as a modern civilizing moral agenda. While the human rights approach has great potential this is much diminished by a narrow focus on uninhibited individual freedom with little sincere attention paid to the whole range of human rights as an indivisible whole, as described in the Universal Declaration of Human Rights *(9,10)*.

Finally, the disproportionate belief in the pursuit of short-term self-interest, fostered by market fundamentalism, emphasizes production of goods for consumption by individuals while long-term interests and the production of public goods are undervalued.

What is Public Health?

The 'crossroads' in public health described by Beaglehole and Bonita*(6)* 'lead in two directions: a broad direction, addressing the sociocultural foundations of health, and a narrow direction, focusing on more proximal risk factors'*(11)*. The modern biomedical approach to medicine, described as a model that 'uncouples the etiology of disease from its social roots', has spawned a narrow definition of public health with its practitioners focusing on statistics, epidemiology and measurable risk factors. As a result public health has become increasingly divorced from practice, and public health workers have become 'tame counters of events' rather than professionals 'doing' anything to improve public health*(12)*.

Because of the shortcomings of such a focus a broad definition is currently advocated. The Institute of Medicine's definition is 'What we as a society do collectively to assure the conditions for people to be healthy*(13)*'. Public health in the United Kingdom is defined as 'the science and art of preventing disease, prolonging life and promoting health through organized efforts of society*(14)*'. The report 'Healthy People 2010'*(15)* describes four constructs: a healthy body, high-quality personal relationships, sense of purpose in life, and self-regard/resilience. Further it is argued that a broad definition is necessary 'because public health cannot be separated from its broad socioeconomic context,' and public health professionals cannot silently witness such egregious social injustices as poverty, discrimination, inequality and violence*(11)*. Clearly it is necessary to acknowledge that now, more than ever, addressing upstream causes of widening disparities is essential in confronting public health issues. 'Compared with the narrow perspective of public health, the broad perspective has intellectual merit because it identifies the fundamental causes of many public health problems, providing more complete and parsimonious explanatory models'*(12)*.

Medical Ethics and Public Health Ethics

The traditional concept of medical ethics is centered on standards of professional competence and conduct broadly outlined by formal codes of practice to which individual medical practitioners and medical organizations claim allegiance*(16)*. Training in medical ethics has, until recent decades, relied almost exclusively on apprenticeship. Its practice was dependent on the conscience of individual practitioners and on exhortation through professional associations and various codes. Role modeling served to pass professional norms from one generation to the next. Although the emphasis was on medical etiquette, two major principles of medical morality were also propagated: '*to do good and no harm to others*' and '*to respect human life and the dignity of the individual.*'

These, combined with compassion and confidentiality, have formed the basis for the desired relationship of trust between patient and doctor and the investiture of authority in medical doctors by society. Ethics was considered largely from the perspective of the duties of physicians.

The focus of much of the bioethics discourse over recent decades, driven by the dominant value placed on individualism and autonomy in the USA, has been on reshaping the nature of the health professional-patient relationship. Narrowing the power gap in decision-making has empowered patients to over-ride dominating medical decisions made from within what has been pejoratively labeled paternalistic medicine. An approach based on autonomy allows for a wide range of patient perspectives, and has been widely advocated and adopted especially in the Western world.

The understandable focus on ethical issues at the interpersonal level has undoubtedly eclipsed ethical issues that need to be addressed in dealing with public health issues. Widening disparities in health, the HIV pandemic and possibilities for improving health that are opening through new genetic biotechnology remind us of the limitations of such an approach and the need to extend our perspective beyond individual health to include the health of whole populations. In a globalising world, perhaps best described as a de-territorialising world, in which boundaries are becoming blurred and the lives of geographically disparate people are more intimately interconnected than ever before, it is necessary to re-evaluate traditional ideas of what it means to be an ethical professional*(17)*.

We have suggested that achieving improvements in human life and health globally will require a broader moral agenda that includes, but goes beyond, interpersonal ethics and civil and political rights. Extension of the ethics discourse beyond the doctor-patient relationship should include considerations of order and fairness within institutions that serve the communities in which individuals are socially embedded and in which medical practice is '*constructed*'*(4,18)* The responsibility of physicians here must be viewed more broadly to include concern for equitable access to health care, for improved public health and for the allocation of scarce resources in ways that promote the common good. This calls for an understanding of what the public good is and for a balance between individual rights and the common good –both of which pose the intellectual and social challenges of how to strike a balance between the rights (and needs) of individuals and the common good of societies*(19)*.

In a world in which individual health is increasingly linked to population health, both within countries and between countries, there is thus a need to develop a scholarly and coherent account of Public Health Ethics. A start has been made and eloquent arguments have been offered in favor of a language of public health that "speaks to the reciprocity and interdependence that characterize community"*(20)*. A broad outline of the terrain of public health has also been offered 'without suggesting that there is a consensus about the methods and content of public health ethics'*(21)*. The latter account, however, is not designed to be a universal public health ethic but rather a focus on public health ethics in the particular setting of the United States. In my view it is vital to understand that in a globalizing world public health ethics should extend well beyond parochial considerations to include considerations of global social justice and the nature of the 'social contract' within a broader interdependent global society struggling to achieve sustainable development. How these considerations and the conflicts of interest that accompany them will

impact on the physician/patient relationship will also need attention as the ethics discourse is broadened to encompass the ethics of public health and of professional responsibilities to society. While the focus on individual rights is vital and necessary for the well being of individual persons, such a focus is not sufficient for the achievement of improved public health*(22)*.

The American Public Health Association's Public Health Code of Ethics, describing 12 Principles of ethical practice of public health, is supported by an explanation of the values and beliefs underlying the code and notes on the individual ethical principles*(23)*. Several ethical principles have been proposed for the discourse on public health –especially in relation to constraints that may have to be imposed on individual liberties to prevent the spread of infectious diseases*(21,24)*. The 'effectiveness principle' requires demonstration of the effectiveness of a measure in improving public health if other moral considerations are to be infringed. The 'necessity principle' requires that there is no other method that would conflict with other moral considerations. The 'proportionality principle' calls for a positive balance between benefits and adverse effects. The 'harm principle' states that the only justification for restricting the liberty of an individual or group is to prevent harm to others. The 'least restrictive means principle' requires that less coercive means (for example, education, facilitation and discussion) must first be tried before it can be justified to use the full force of state authority. The 'reciprocity principle' requires that the state should assist individuals to meet their public responsibilities through support and compensation for time and income lost in the process of so doing. The 'transparency principle' refers to the decision-making process, requiring that it be as clear and accountable as possible and free of political interference. The importance of these principles became apparent in dealing with the SARS epidemic in Toronto recently[1].

Achieving an improved balance between the needs and rights of individuals on the one hand, and the requirements for advancing public health on the other, will require a shift in mindset away from strong individualism towards respect for individuals within the context of a sense of duty towards the community. Essential steps will include: firstly, acquiring deeper insight into the upstream causal factors influencing public health; secondly acknowledging the need for a new balance between individual and population health; thirdly, developing the political will to undertake ambitious projects (for example, seeking ways of reducing poverty and dependency and of increasing access to health care); and, finally, placing high value on the longer term economic and social justice required for meaningful and sustainable progress.

The dilemmas regarding public health ethics will be greatest for those societies that are intolerant of any infringement of individual liberties in the name of the common good. The challenge for societies more oriented towards the common good is to avoid excessive infringements of individual rights in the pursuit of public health goals. Realistically a middle ground will have to be forged, because the choice is not between polar extremes but rather about achieving an optimal balance between competing goods*(25)*.

Making Progress - expanding the discourse on ethics and human rights as a first step

Morality is about right and wrong in relationships. Ethics is the branch of philosophy that examines the basis for right and wrong or good and bad. Morality and ethics are usually

[1] Singer PA, Benatar SR, Bernstein M, et al. Ethics and SARS: learning lessons from the Toronto experience. *British Medical Journal* 2003; (in press)

considered between individual persons –interpersonal ethics– or within groups such as families and religious groups. We have proposed that the discourse about relationships should be extended to relations within institutions (institutional or public health ethics) and between nations (ethics of international relations). Similarly the discourse on human rights needs to be extended beyond civil and political rights to include social, economic and cultural rights as well as environmental rights and the right not to be exploited at the level of international relations. The process of extending the bioethics discourse will require promotion of several crucial values*(18)*.

Values to Promote

Concern for the common good

Constructing new and acceptable ways of achieving economic redistribution is the key to resolving many global problems*(26)*. Widespread appreciation is needed for the likelihood that further widening of disparities in wealth and health, beyond the already grotesque differences that currently characterize our world, is a guaranteed recipe for disaster. If the privileged care progressively less for the lives of those whom they consign to living under inhumane conditions, the lives of the privileged will become meaningless and inhuman to the underprivileged masses. This global trap, in which neither rich nor poor care if millions of the other group should die, is the precursor to conflict and loss of life on a grand scale. If rational self-interest plays any role in human life, it should not be difficult to agree that such conflict must be avoided.

Achieving widespread access to such public goods as education, basic subsistence needs and work requires collective action, including financing, to make sure they are produced, and good governance to ensure their optimum distribution and use. The current international system is very effective at stimulating the production of private goods (e.g., the role of WTO in promoting international trade) but not at the production of public goods –for example education for all children, equitable access to health care and the realization of labor rights and human rights*(19,26,27)*.

While economic equality is an impossible goal, narrowing the current gap is surely well within our grasp. Fair trade rules, debt relief, various forms of taxation, such as the Tobin tax on currency trades across borders (that could generate US$100-300 billion per year) and environmental taxes, have been suggested as ways of facilitating the development of the solidarity required for peaceful co-existence in a complex world*(5,27)*. It should also be acknowledged that greater value needs to be placed on such non-economic aspects of life as a sense of personal worth and dignity.

Belief in and promotion of all human rights (and duties)

"Human rights", as a secular concept for promoting human dignity, has the potential to transcend religions, national borders and cultures. In recent decades the human rights movement has flourished and more countries seem to be accepting universal human rights as a "civilizational" standard*(28)*. Although human rights are widely accepted in the rhetorical sense, much argument continues about the nature and extent of rights. Since the early 1990s a complex debate has also emerged regarding the Western bias and origins of human rights. The extension of human rights from the West to the rest of the world, while superficially successful, must still be considered as largely 'unfinished business*(29)*'.

Today many countries consider access to basic health care as a basic human right that na-

tion states should be committed to providing for their citizens. Some form of socialized and equitable health care is provided in all western European nations and in Canada. Regrettably the example of medical care (as a marketable commodity - albeit with considerable state assistance for the poor and the aged) set by one the wealthiest nations in the world (with damaging effects on that society that are increasingly being acknowledged in the USA*(30)*) has been followed by many developing countries. Such privatization of medical care, aided and abetted by structural adjustment programs promoted by the IMF and the World Bank, has adversely affected health in many poor countries. Acknowledging the need for, and the right to, universal access to a basic health care package and achieving this goal pose challenges for the future. The WHO's renewal strategy for health-for-all places emphasis on equity, solidarity and appropriate technical, political and economic strategies that could promote health and sustainable health care systems as central requirements for development*(31)*.

The application of human rights must extend beyond civil and political rights to include social, cultural and economic rights and their close integration with the reciprocal responsibilities required to ensure that rights are honoured and basic needs are met. Just as the concept of 'political citizenship' requires non-discriminatory enfranchisement of all, so the concept of 'social citizenship' requires access to the basic requirements for survival and potential flourishing –a requirement of modern democracy. Considerations of group rights to protect minorities add another layer of complexity*(32)*. Protecting minorities is more than an extension of human rights and is an essential component of the quest for international peace and security. Much remains to be achieved if human rights are to become an integral aspect of global politics and law*(33)*.

The different perspectives from which rights are discussed include consideration of rights as entitlements under law, rights as ethical standards and rights as aspirational ideals. Medical ethics is also addressed from a range of perspectives –including, but not limited to, deontological ethics, consequentialist ethics, casuistry, virtue ethics and caring. Medical ethics and human rights are linked indirectly and directly. Indirect links are evident from the concerns of health care professionals to improve the health and lives of individuals and of society, and to treat all patients with equal respect. Direct links include recent declarations to respect human rights and an increasing discourse about rights within bioethics. Human rights proponents and bioethicists share values regarding human dignity. However, these two sets of activities use different discourses and methods and have different implications. The scope of medical ethics or bioethics is more comprehensive than the human rights discourse, embracing concepts of duties and virtue, empathy, compassion and communication skills that cannot be dealt with through a rights approach. However, rights are powerful and have a specific role in medicine. For example the special role of health care professions in witnessing and responding to abuses of human rights provides the opportunity and the responsibility to act on these*(34)*.

There are several ways in which health care professionals can protect or promote human rights: Firstly, by *promoting commitment to high ideals in medicine* through exhortation and other means of sustaining idealistic aspirations. Secondly, by promoting greater knowledge and understanding of the content of ethics and human rights through *education*. Thirdly, by implementing *due process* through international statutes and international law. Fourthly, by developing *strategies* to enlist assistance from national and international Medical Associa-

tions. Finally by operationalizing ideals through the *actions* of Human Rights Commissions and other Non-Governmental Organizations such as Amnesty International.

Sense of solidarity with others

Solidarity is a complex concept the nature of which, its justifications and implications are all contested depending on how self-interest, the common interest and identity are conceived and balanced*(35)*. However, the term seems to have special relevance in a dangerously polarized world. Developing a global state of mind about major global health problems is arguably the most crucial element in the evolution of global health ethics. Given the plurality of deeply held perspectives solidarity will also be difficult to achieve –as illustrated by the struggle to develop global alliances on the environment, nuclear deterrence, debt relief for highly impoverished countries, on the tobacco trade and on universal access to basic drugs. Its importance, however, is not diminished by such difficulty.

Long-term self-interest

While advocating for both the desirability and the necessity to develop a global mindset in health ethics, we do not suggest that this should be based solely on altruism. In addition there should be greater attention to enlightened long-term self-interest*(18)*. In the past, the achievement of security has depended on striving for *competitive* advantage and on building fortresses for protection. With the progress of nuclear and other weapons of mass destruction it becomes evident that this approach is inadequate and could destroy all life on the planet. As all of our lives become increasingly dependent on environmental preservation and on the improved living conditions that could reduce the emergence of new infectious diseases, security will become increasingly dependent on *co-operation* within a mindset that allows us to see ourselves as intricately linked to the lives and well being of others globally.[2] There may be no clearer example of self-interest, mutual interdependence and the need for co-operation than in facing the threat posed by the HIV/AIDS pandemic. Politicians are coming to recognize this, as illustrated by former President Clinton's declaration that HIV is a national security threat to the USA and the agreement at the 1999 meeting of Commonwealth Heads of Government that HIV/AIDS is a global emergency.

From rights to needs and a broader moral agenda for public health

Inadequate attention has been paid to the fact that rights and duties are intimately connected - the conceptual logic of rights entails corresponding duties. Thus duty bearers need to be identified to ensure the realization of rights. If all claim rights but none are willing to bear duties, rights will not be satisfied. Our ability to enjoy rights is thus determined by our willingness to accept our responsibilities. The recently proposed Declaration of Universal Duties could further strengthen the rights approach*(36)*. A focus on duties would expose the responsibility of developed nations not to act in ways that may abrogate the rights of people in developing countries. It could also promote recognition of the role developing countries themselves play in causing and perpetuating the misery of their peoples.

Both the Universal Declaration of Human Duties, recently offered as a supplement to the UDHR, and a detailed formulation of how rights and responsibilities (which are indeed inextricably related), can be reintegrated*(37)*, illus-

[2] Much greater attention will also be required to the ways in which we use and abuse animals – creatures whose lives are more closely intertwined with ours than is currently appreciated

trate how the power of human rights language could be enhanced. Of concern is that political discourse is impoverished by a human rights discourse in the US, which "far more than in other liberal democracies, is characterized by hyper-individualism, exaggerated absoluteness, and silence with respect to personal, civic, and collective responsibilities*(37)*." The reintegration of rights and responsibilities offers three advantages: (i) moving the human rights debate in the direction of who has to do what if these rights are to be realized, (ii) more focused and specific discussions of questions of priority among rights and other important social goals, and (iii) discussions of the inadequacies of the contemporary international political and economic order*(38)*. A shift is required from an excessively liberal human rights paradigm to a social model of human rights that links benefits and entitlements with the acceptance of a series of responsibilities - the starting point for such rights being the principle of respect for all persons in the context of community*(37)*.

While the necessity of the highly commendable rights approach should be acknowledged, it would be wrong to imagine that it is a sufficient moral agenda for the achievement of greater social justice. While rights language is effective in meeting some needs, and is thus a necessary component of the moral vocabulary, it cannot meet all. The language of needs is another essential means of pursuing progress towards achieving decent societies*(39)*. '[It] provides a moral discourse for health promotion and the common good and would be conducive to *'a moral economy of interdependence'* that goes beyond the individualistic oriented 'political economy,' takes account of the inherently 'political nature of need,' 'situates the definition and adjudication of needs in the common life of the community, and incorporates notions of reciprocity that go beyond the dichotomy of dependence and independence. A theory of human need provides the justifying framework for such an approach*(40)*.

Conclusions

The world is changing rapidly, with new threats arising to human health at both individual and population levels, and new ideas are needed to make moral and social progress. While new ideas take time to impact there is now a glimmer of hope that advancement towards improved global health is possible. For example, the recent report from the US Council of Foreign Relations and the Milbank Memorial Fund acknowledges the relationships between health and social capital, political stability, the economy and war*(41)*.This could facilitate deeper commitment by the USA and other nations to the moral and strategic importance of improving global health. The work of the Commission on Macroeconomics and Health*(42)* and the inauguration of a Global Health Fund*(43)* also reveal a deeper understanding of the importance of global health and an acknowledgement of the responsibility of developed nations to address this constructively. A recently proposed method of promoting a market in global public goods draws attention to how international institutions could promote the production of global public goods by steering a middle path to development between the goals of avid pro-globalization advocates and aggressive anti-globalization groups*(44)*.

However, these are very modest beginnings and much more is required to build a moral global community*(26)*. Public health is a complex notion. Justice and social justice are also complex notions. While there is no satisfactory theory of social justice that could improve public health, injustice is easy to recognize and much progress could be made through new scholarly approaches and the application of common sense conceptions of what could be

done to reduce injustice. While achieving justice may be impossible, it is feasible to reduce injustice if we focus on global injustice and develop a public health ethics discourse capable of reshaping how we think and act*(18)*.

While it may seem daunting to individual physicians to consider that they could make any impact on global problems of such magnitude several suggestions can be made. First, we should acknowledge our obligation to know about the impact of global forces on health. Second, we should become more introspective about our privileged lives. Third, we should appreciate that our personal skills, developed on the basis of labor and investment by previous generations, represent social capital and involve social obligations for us. Fourth, we should become a force in coupling excellent treatment of individual patients to national programs that improve public health within nations. Finally, we need to locate our activities within the global context described above and promote new ways of thinking about local and international activities that have the potential to improve well-being and health at the global level. If physicians, scholars and other influential persons (individually and collectively) were to accept these responsibilities there would at least be some hope of moving beyond the present impasse towards healthier and better lives for all.

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Special Section: International Voices 2006

Bioethics in South Africa

SOLOMON R. BENATAR and WILLEM A. LANDMAN

Since the early 20th century, bioethics in South Africa has moved through several stages, responding to the same forces and developments as elsewhere, for example in the United Kingdom and United States. In addition, some unique developments in South Africa, for example the death of Steve Biko (the Black Consciousness leader), the HIV/AIDS pandemic, and a peaceful transition to democracy with increased focus on human rights have given bioethics in South Africa its own dimension. Bioethics in South Africa reflects the general concerns of the field elsewhere, but it also stands at the intersection of the concerns of both developed and developing worlds. Thus, issues such as resource allocation, HIV/AIDS, and medical research take on an urgency and character that reflect South Africa's particular historical, geographical, and social conditions.[1]

Background

The South African Medical and Dental Council (SAMDC), a statutory body, was established in 1928 with the primary purpose of protecting the public through the maintenance of high professional (including ethical) standards of practice, and with a view to serving the interests of the medical and dental professions—insofar as these interests are compatible with high standards. The wide range of powers vested in SAMDC included the power to institute inquiries into any complaint, charge, or allegation of improper or disgraceful conduct of its members and to exercise disciplinary power over them.

As in most other Western countries in the first 60 years of the 20th century, discussions on medical ethics in South Africa largely took place within the framework of the authoritarian, beneficent, paternalistic behavior expected of professionals supposedly adhering to the Hippocratic Oath and similar codes. The first South African text on medical ethics was limited to discussion of ethics' codes, professional secrecy, advertising, the conduct of consultations, fees and financial matters, and upholding the "traditions" of medicine, with only brief reference to abortion and sterilization and to the ethics of investigative medicine. This text, based on Professor Guy Elliot's experience of deliberations on ethical matters by the Medical Association of South Africa (MASA) and the SAMDC, provides a succinct outline of accepted medical ethics in South Africa (and in many Western countries) in the first half of the 20th century.[2]

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Rebirth of Bioethics in South Africa

In South Africa, as in the United States, theologians played a pioneering role in reawakening an interest in bioethics; several conferences were held in South Africa in the 1960s and 1970s under church or theological auspices. The first, stimulated by the historic heart transplant in Cape Town in December 1967, was on the ethics of tissue transplantation.[3] Others followed on abortion,[4] euthanasia,[5] professional secrecy,[6] and clinical experimentation.[7] Regrettably, these led to very little ongoing immediate public or professional debate.

A Milestone Event in Bioethics in South Africa

A milestone event that did evoke public interest in medical ethics in South Africa was the Steve Biko case. Failure of the SAMDC to exercise its duty to protect the public by acknowledging the unethical behavior of state-employed medical practitioners toward Biko prior to his death during detention without trial in 1977 and failure to take appropriate disciplinary action against them met with resounding criticism nationally and internationally.[8] The sequence of events through which the efforts of a small group of members of the profession (Frances Ames, Trefor Jenkins, and Phillip Tobias) led to a Supreme Court injunction against SAMDC, which resulted in a reversal of its previous decisions and the imposition of disciplinary action, is well documented.[9] Such shortcomings show how public and even professional debates on ethical issues in medicine were limited in a repressive, authoritarian society lacking a patients' rights movement and unaccustomed to public discourse on civil and political liberties.[10]

The National Medical and Dental Association (NAMDA), formed in 1982 as a result of discontent with MASA's actions following the death of Steve Biko, received international acclaim for its outspoken advocacy against discriminatory practices. MASA, which came under considerable criticism for its inadequate reactions to the Biko affair, subsequently, to its credit, took some steps in an attempt to rectify its previous shortcomings. (MASA and NAMDA have subsequently amalgamated into what is now the South African Medical Association [SAMA].) The statements about medical ethics made by MASA following the Biko affair are part of the public record, and the ongoing challenge is to ensure their implementation in practice. Greater attention to ethical responsibilities toward prisoners, detainees, and hunger strikers was another gratifying response to the Biko case.[11] The public confession of guilt by the district surgeon who bore major responsibility for Biko's medical care emphasizes the need to maintain professional independence in the face of state security and other coercive pressures. Recent events in the Abu Ghraib prison and at Guantanamo Bay are noteworthy reminders of how physicians anywhere may violate ethical norms.[12]

Bioethics Education at Medical Schools

In the late 1970s and early 1980s, some medical schools in South Africa began developing modern bioethics education programs, but progress has been slow and somewhat erratic. Generally, such programs remain in a fledgling state, dependent on enthusiastic physicians who have heavy professional responsi-

bilities and minimal training in philosophy or the humanities, and with inadequate financial and institutional endeavors to develop formal programs with committed support from other disciplines (e.g., philosophy, sociology, law). The importance of transdisciplinary cooperation was recognized, and at the University of Cape Town the Bioethics Centre included faculty from several disciplines.[13]

In 2003, The University of the Witwatersrand, whose medical school was the first to begin teaching the new medical ethics to undergraduates in the late 1970s, created a Division of Bioethics with a full-time post for a bioethicist in its Faculty of Health Sciences.[14] The Division is responsible for teaching undergraduate modules and courses for students of medicine, dentistry, and pharmacology, offers an MScMed (Bioethics and Health Law) degree for graduates who wish to gain competency in both medical ethics and medico-legal issues, and has made substantial contributions to international bioethics literature.[15] The idea of an international journal focusing on bioethics issues from a developing world perspective—*Developing World Bioethics*—originated in the Division.[16]

The University of Cape Town (UCT) Medical Faculty initiated a new course in bioethics for undergraduates in the early 1980s. Regular postgraduate educational activities followed and the undergraduate program continues to be modified and developed. Several faculty symposia have been held and the proceedings published.[17] These symposia have included theological, philosophical, and sociological debates on death and dying, resource allocation, the doctor/patient relationship, abortion, in vitro fertilization, research on humans, principles of biomedical ethics, moral reasoning, withholding and withdrawing of treatment, healthcare of detainees, hospital ethics, the right to healthcare and the structure of health services, ethical considerations in relation to acquired immunodeficiency syndrome (AIDS), teaching medical ethics, and human rights, human needs, gender, and medical ethics. These proceedings reflect progressive movement toward the views being popularized in bioethics debates in the United Kingdom and the United States. By including colleagues from several disciplines in our bioethics activities at UCT (philosophy, sociology, anthropology, political science, law, etc.) we have attempted to retain a degree of "cultural sensitivity" while seeking to avoid the pitfalls of both "ethical imperialism" and "ethical double standards."[18] Clinical consultations, research projects, and many educational activities are now well embedded in everyday clinical practice in the UCT Faculty of Health Sciences' teaching hospitals.

Other universities have also been active. The University of Stellenbosch has a long-standing successful post-graduate program in applied ethics (including medical ethics), based in the Department of Philosophy, and faculty have published several books on ethical issues.[19] An undergraduate educational program in bioethics has recently been established in their Faculty of Health Sciences.[20] The Law Faculty at the University of Kwa-Zulu Natal has a long-standing program in Medical Law, Ethics and Human Rights and has published many documents of academic and educational value.[21] The Centre for the AIDS Programme of Research in South Africa (CAPRISA) has established an ethics program to provide ethical and legal advice for all CAPRISA's projects and for organizing community outreach programs.[22] The Nelson R. Mandela Faculty of Medicine in Kwa-Zulu Natal has also recently appointed a

full-time bioethicist. The Dean of the Faculty of Health Sciences at the University of Transkei has had a long commitment to bioethics and he actively participates in national bioethics activities.

Health Professions Council

The Health Professions Council of South Africa (HPCSA) is the statutory body responsible for licensing and disciplining members of the medical professions, including doctors and dentists in the new South Africa. The HPCSA gives professional guidance on bioethics issues by publishing and distributing a series of booklets on general ethical guidelines for health professionals and medical researchers, as well as more specific guidelines on a range of ethical issues such as confidentiality, informed consent, HIV/AIDS, and perverse incentives.[23]

The HPCSA is also responsible for the Continuing Professional Development program for doctors, dentists, and other health professionals. In addition to ongoing education in their area of medical activity, doctors and dentists, for example, need to acquire two ethics points per calendar year, each point representing a 1-hour contact educational session. Accredited institutions, such as medical schools, administer this ethics program, in terms of both quality control and delivery of educational sessions, on behalf of the HPCSA.

Ethics Institute of South Africa

The inauguration of the Ethics Institute of South Africa (EthicSA), an institution independent of all universities, other public organizations, and the private sector, is another important milestone in promoting applied ethics in South Africa.[24] In the short time it has been in existence, EthicSA has achieved a high profile by, among other things, undertaking several empirical research projects on healthcare ethics—the ethics of doctors' business practices[25] and ethics audits of major public hospitals.[26]

Research Ethics

Medical Schools

All medical schools have had research ethics committees (RECS or IRBs) for many years. These have been staffed predominantly by senior faculty who have not had any formal training in ethics or research ethics. In recent years, there has been a trend toward a wider spread of committee members. In addition, specific educational programs have aimed at building the capacity required to participate actively in reviewing international collaborative research with a view to avoiding exploitation and enhancing benefits for research subjects and their communities. (See below.)

South African Medical Research Council (MRC)

Guidelines on the ethics of medical research were first formulated by the MRC in 1979. These were subsequently updated in 1987, 1993, and 2002. On the latter

occasion, the guidelines were separated into five booklets to make for easier updating in the future.[27]

Interim National Health Research Ethics Committee (INHREC)

In the early 2000s the minister of health appointed an INHREC to initiate the work of a newly envisaged National Health Research Ethics Council, a statutory body that was being planned for in the new Health Act. The INHREC, during the 3-4 years of its life, produced a set of national guidelines for medical research and developed plans for the registration, and ultimately accreditation, of all RECs in the country. These guidelines have recently been published.[28] With the passage of the Health Act in 2004, the National Research Ethics Council, legislated for in the Act, will now be formed. This council will play an important role in setting standards for research ethics committees and for ethics review and in creating a database of all clinical trials in the country.[29]

Education in Research Ethics

Major awards to the Universities for Cape Town and Pretoria from the U.S. National Institutes of Health through its Fogarty International Center are making highly valued contributions to capacity building in international research ethics in Southern Africa.[30] These educational and capacity-building endeavors are of great importance in an era in which international collaborative research is expanding rapidly and cross-cultural understanding is required.[31] A newsletter on research ethics activities in the country facilitates networking.[32]

HIV/AIDS

The HIV pandemic poses many practical and ethical dilemmas for physicians worldwide, not least in South Africa.[33] Ethical considerations on, for example, confidentiality, but perhaps most notably in relation to the allocation of scarce healthcare resources, have featured prominently in public debate, particularly since the advent of Thabo Mbeki's presidency in 1999. Mbeki holds dissident views about HIV/AIDS, and this, together with support from the minister of health, crucially influenced his government's resistance to rolling out antiretroviral drugs (ARVs) in the public healthcare sector and explains the lack of political will to address the devastating pandemic coherently and urgently. This gave reason for high-profile court cases, most notably involving the Treatment Action Campaign (TAC), a nongovernment organization that forced the government, on constitutional grounds, to roll out an ARV program to combat mother-to-child transmission of the HI virus, thus giving specific content to the constitutional socioeconomic right to healthcare.[34]

The minister of health has had protracted battles—first with pharmaceutical companies and later with pharmacies—to bring down the cost of drug delivery to the end user in the public and private healthcare sectors. New legislation is having some success in cutting out excessive profits in the chain of drug delivery (e.g., the *Medicines and Related Substances Control Amendment Acts*). The impact of HIV/AIDS on South Africa has been extensively documented,[35] and scholarly work has been done on the ethics of HIV vaccine trials.[36]

A recent detailed study, by colleagues associated with Physicians for Human Rights, has identified discriminatory attitudes and abuse of the human rights of HIV/AIDS patients by physicians in Nigeria.[37] An accompanying article in the same journal has drawn attention to the need to study physicians' attitudes and behavior in wealthy countries as well as in very poor nations—where evidence from prisons and medical research suggests that failure to respect human rights and to meet the requirements of ethics codes is not confined to physicians in poor countries.[38] The elusiveness of progress in achieving human rights in health in South Africa has also been described.[39] The rollout of ARV treatment poses many additional dilemmas—as recently outlined in this journal.[40]

End-of-Life Decisions and Legislation

Although life-saving treatments are often withdrawn in South African hospitals, on such widely accepted grounds as outlined in a published statement on the rationale for withholding and withdrawing treatment,[41] South African law does not expressly permit such action.

Following an appeal to the then president, Nelson Mandela, by the Living Will Society, the South African Law Commission (SALC), a statutory body tasked with researching draft legislation, wrote a report, including a draft Act, on a spectrum of end-of-life decisions—namely, pain control and a natural death, the definition of death, advance directives, withholding and withdrawal of life support, physician-assisted suicide, and active voluntary euthanasia.[42] The final report has been dormant on the desk of the minister of health since 1998 because, according to unofficial sources in the SALC, she believes these end-of-life issues are concerns only for the minority wealthy section of the population, and therefore do not justify the cost of legislative intervention. The gap between the law and ethically accepted medical actions has recently been reviewed.[43]

The Way Forward

There has been admirable progress in bioethics in South Africa in recent years, but much remains to be done.[44] In addition to fostering more and improved bioethics education for professionals, there is a need to ensure that ethical discourse takes cross-cultural issues into consideration and significantly contributes to health policymaking and to healthcare practices. Resource allocation decisions need to be formulated with transparency and accountability and with contributions from the public at large.[45] Given the gap between what is potentially possible medically in wealthy countries and what can actually be delivered in resource-constrained settings, open dialogue and participation in policy development could contribute to promoting more realistic expectations, by both healthcare professionals and those who need treatment, of what is achievable in South Africa. Formal employment positions for bioethicists will need to be created in Faculties of Health Science in the country to sustain education, provide clinical ethics consultations, and undertake research. Increasingly, such positions will also be required in the private sector.

The greatest ethical challenges for medicine in South Africa and elsewhere arise through the erosion of professionalism by powerful market forces, the widening disparities between care available to those with resources and those

without, the threats from new and recrudescent infectious diseases in an interdependent world, and from the tension between the ethics of individual patient care and the ethics of public health—with its focus on whole populations and the common good. The newly developing field of public health ethics offers opportunities to augment the discourse on bioethics and to address, from new perspectives, the many global and local challenges facing us in the 21st century.[46]

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Facing Ethical Challenges in Rolling Out Antiretroviral Treatment in Resource-Poor Countries: Comment on "They Call It 'Patient Selection' in Khayelitsha"

SOLOMON BENATAR

It is widely acknowledged that the HIV and AIDS pandemic is a global emergency and that cheap, effective treatment should be provided for as many people as possible worldwide. But there are many challenges to rolling out antiretroviral (ARV) treatment in resource-poor settings. These include the cost of drugs (although these are falling rapidly), sustaining their supply and distribution, the complexity of treatment regimens, selection of patients for treatment, shortage of medical and nursing personnel, inadequacy of healthcare facilities, the need for uninterrupted, lifelong treatment, and monitoring for drug resistance.[1] Great efforts, nationally and internationally, are required to meet these challenges.

Médecins Sans Frontières (MSF) is an organization whose members put into practice values that have generally atrophied in our modern world. Its mission to empathize and "be with" fellow humans who are suffering miserably (usually as a result of the actions of other fellow humans), to witness their plight, and to improve it is morally exemplary. MSF has made striking contributions in many countries, not least in facilitating access to treatment for multi-drug-resistant tuberculosis and HIV/AIDS.

Renée Fox and Eric Goemaere describe how MSF has laid the foundations for an ambitious program of expanded access to ARV treatment in South Africa,[2] a country undergoing profound sociopolitical change and struggling to cope with HIV/AIDS.[3] MSF's documented success in Khayelitsha, an impoverished township, has been inspirational both nationally and internationally.[4] Fox and Goemaere also acknowledge that rolling out treatment to all who could potentially benefit is a daunting prospect and one that is fraught with ethical dilemmas. In particular, they point to the dilemmas associated with

- Selection of patients for treatment
- Reluctance by physicians to refuse anyone for ARV treatment
- Reluctance to accept patients' refusal to begin or continue ARV treatment
- "Queue jumping"
- Balancing public health needs against individual patients needs
- Confidentiality in settings where revealing HIV status is required to qualify for ARV
- Patient mobility across a large country

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- Treatment of women who have participated in mother-to-child prevention programs

It is these ethical dilemmas that constitute the subject of this commentary. Instead of attempting to resolve each dilemma on its own, I shall describe the various ethical principles that need to be considered in such a context. The application of these principles and their ranking requires moral reasoning and consideration of contextual issues to formulate justifiable solutions. This process extends beyond the ambit of this commentary and will not be discussed here.

Ethical Principles

In considering the many ethical dilemmas associated with providing ARVs, it is important to acknowledge that these dilemmas are located in more than one domain. First, and most important for healthcare professionals, are the ethical dilemmas involved in the interpersonal relationships between health workers and individual patients. These have been, and continue to be, the appropriate focus of much attention. Second, and as important, although less well recognized and less deeply felt by clinicians are the ethical dilemmas that arise in the course of working to improve public health.[5] Just as there may be conflict between ethical principles in interpersonal relationships, so there is the potential for conflict among several principles of public health ethics and between the ethics of individual care and public health ethics.

I begin by examining the implications of well-known principles of bioethics for ARV roll-out programs. Then I consider newly formulated principles of public health ethics and how these may conflict with the ethics of individual patient care. Decisionmaking on moral dilemmas requires the ability to consider not only all these principles but also morally relevant aspects of context and the moral agency of healthcare professionals in order to craft, through a process of moral reasoning, a justifiable solution to the dilemmas. I shall conclude with some pragmatic considerations that cannot be avoided.

Beneficence and Autonomy

Given our ability to reduce suffering greatly and prolong life with ARV treatment (even in resource-poor settings) and the extremely adverse implications of nontreatment for individuals, families, and society, the ethical principle of "beneficence" (doing good) requires that as many people as possible receive treatment and the best possible outcomes be achieved. Widespread acknowledgment of the importance of this principle has generated extensive national and international endeavors to expand treatment programs. The fiduciary responsibility of physicians to their patients has been deeply ingrained in medical professionalism for many centuries, and beneficence and respect for individuals lie at the heart of MSF's mission.

Respect for patient autonomy in decisionmaking about their health has become widely accepted, even though contested by some in the way it might be applied in various settings.[6] Beneficence is deeply ingrained in medical practice and an essential aspect of humanitarian medicine together with the most understandable form of paternalism toward those who persistently refuse to comply. It is necessary to reflect on how beneficence may both overshadow autonomy and thwart public health goals. This is a difficult tension, as healthcare workers see their responsibility predominantly as doing good for individuals under their care (even

if some patients appear to be unwilling and even if the chances of being successful are low), rather than to society at large. Such attitudes coupled with a tendency to practice "rescue medicine" encourage attempts to offer terminal patients treatment that may snatch them only very temporarily from the clutches of death. This approach to everyday clinical care, one that fosters understandable "queue jumping," needs to be tempered by other considerations about public health (vide infra). Moreover, beneficence, in the absence of patient choice and when resources are limited, also requires that in the face of inevitable death (conceded as a difficult judgment to make with any precision) medical care be directed toward palliation and appropriate terminal care.

Justice

Justice in the distribution of healthcare is most commonly thought of in terms of equity. Equity can be defined as the provision of equal shares for equal needs or the allocation of unequal shares for unequal needs as long as proportionality is maintained. However, proportionality is difficult to assess because of incommensurability.[7] Some inequalities in wealth, health, and disease are inevitable aspects of life; therefore eliminating all inequalities is not possible. In addition, not all inequality is inequitable. Inequity refers to those inequalities that are considered to arise from unfairness. In recent years, inequitable disparities in health have become a major focus of attention worldwide. In the HIV era, one of the challenges faced by the South African government is how to institute a program of treatment with ARV drugs in a manner that will meet the equity and human rights requirements of the South African Constitution.[8] Many inequities in healthcare arise because of the vast differences in access to healthcare in the private and public sectors and across wealthy and poor regions in the country.

As many more people require treatment than can be treated immediately, the ethical principle of justice (as fairness) is relevant in selecting those who will be treated. Being fair to all people means, at the least, providing equitable access to treatment with ARVs. Therefore children and people in rural areas must be included early in rollout programs, as they are the least likely to access treatment without additional support. As equity also requires avoiding discrimination, there may be a need to give priority to redressing inequities based on previous discrimination.[9]

Because there is no universally accepted theory of justice that will allow implementation of fairness on substantive grounds, it has been necessary to resort to a fair process in the allocation of scarce resources. American scholars Daniels and Sabin have proposed a process for priority setting that they have called "accountability for reasonableness."[10] This framework requires that four conditions be met.

1. Decisions regarding which healthcare needs are to be given priority must be based on evidence and reasons considered by fair-minded people to be contextually relevant.
2. The rationale for decisions must be publicly accessible.
3. Allowance must be made for appeals so that previous decisions can be reconsidered in the light of new evidence or arguments.
4. There must be a process of regulation or enforcement that facilitates the implementation of the previous three conditions.

Application of this priority setting process allows for the development of

rational practices that can be applied consistently and that avoid problems associated with the total clinical freedom desired by many physicians when resource constraints have to be faced and equitable public policies developed. Such a process, although required in setting policies for priorities in ARV roll-out programs when resources are limited, conflicts with the desires of physicians to do everything possible for each and every patient under their care. This illustrates how even within the individual care paradigm there may be conflict between ethical principles.

Fairness to patients with many other chronic and treatable diseases, and even those for which only palliation can be provided, requires that an ARV roll-out program should not be carried out separately from healthcare for other diseases. So instead of isolated vertical programs only delivering ARVs, the latter should be provided within integrated and strengthened primary healthcare facilities so as not to eclipse or undermine other essential components of healthcare.[11] The priority-setting process should include such considerations too.

Public Health Challenges

As the HIV pandemic is a problem for whole populations as well as for individuals, ethical principles that focus on the rights of individuals to be treated equally and fairly should be balanced against the need to achieve the greatest potential public health benefits. Although caring health professionals will have difficulty acknowledging this, it is a fact that although population health is influenced by the health of individuals, it is also more than merely the aggregate of the health of many individuals. Public health activities must therefore of necessity be directed at enhancing the health of whole populations. This goal may conflict with the desire to always place the rights and needs of individuals above those of society.

The needs of society also require giving consideration to preferential access to treatment to healthcare workers, teachers, and those whose work is essential for social stability. Placing the needs of public health above the rights of individuals and discriminating in favor of those who would seem to be somewhat privileged (another form of queue jumping) are problematic from rights and equity perspectives, and should only be undertaken through transparent and publicly accountable decisionmaking processes.[12]

As failure to take medication regularly may lead to multi-drug-resistant infection, with profoundly adverse cost and health implications for individuals and society, it is an ethical imperative within the public health agenda to prevent emergence of resistance.[13] Consideration of this ethical imperative can allow selection of patients who are willing to share confidentiality if there is empirical evidence that requiring candidates for ARV treatment to disclose their status to at least one family member enhances adherence.

The need for a high degree of adherence to treatment for life, and therefore to sustain large and growing ARV treatment programs, poses major challenges to the public health system. It should be recalled that it was not possible to ensure adherence to 6 months of treatment to cure tuberculosis for less than 100,000 new cases per year in South Africa in the pre-AIDS era.[14] So the challenge of ensuring life-long adherence to treatment with ARVs for 500,000 people while simultaneously treating escalating numbers of people with tuberculosis is formidable.

Long-term adherence is dependent on having an appropriate infrastructure for healthcare delivery with ade-

quate access through clinics, well spaced across the country, to facilitate accessibility for all,[15] especially in a country where patients are migratory and may move from one part of the country to another for social or economic reasons. Maintenance of a continuous supply of drugs, monitoring of compliance, and active involvement of communities are also essential. One of the major challenges to ambitious roll-out programs, for example, the World Health Organization's 3 × 5 program, is to develop and sustain the primary care infrastructure and staffing required to deliver appropriate care.[16]

Selecting patients who are most likely to adhere to treatment for the long term can reduce the possibility of drug resistance. The public health necessity to prevent the emergence of multi-drug-resistant HIV may justify overriding individual rights to treatment for those who may not be able to adhere. Compassionate healthcare workers will wish to treat every patient, even those who are close to death or may not be able to adhere to treatment long term and who will probably benefit minimally. They may also be tempted to begin treatment in patients who will move out of the area and become potentially nonadherent because they cannot be tracked. On the one hand, placing the good of society at large ahead of the good of specific individuals is painful for healthcare staff, as illustrated by Fox and Goemaere's paper. On the other hand, the greater social good should not be ignored. Public health practices, like personal medical care, need to be supported by justifiable principles of public health ethics and due process in their application—to ensure consistency and accountability in practice.[17]

As indicated earlier, beneficence, paternalistic attitudes, and a tendency to practice "rescue medicine" with no attempt spared in treating terminal patients in the hope that death can be averted are understandable aspects of conventional daily medical practice. But these need to be tempered by some understanding of the limits of medicine and of the rationality of policies that could be developed to promote equity and social utility in tandem with good care for individuals.

Principles of Public Health Ethics

Public health ethics, a new field within bioethics, is receiving considerable scholarly attention, prompted in part by experiences with the HIV/AIDS pandemic and other new infectious diseases like SARS.[18] Several principles of public health ethics have been proposed and how these are to be used with justification in different circumstances will be the subject of ongoing studies and debate. At this stage their potential relevance to rolling out ARV treatment can be briefly summarized as follows:

- The *effectiveness principle* requires evidence of the effectiveness of a measure in improving public health if other moral considerations (such as individual rights and freedoms) are to be infringed. ARVs are effective but only if taken with a high degree of adherence for prolonged periods. If adherence falls below 80%–90%, then the effectiveness of treatment diminishes and the risk of resistant strains emerging increases.[19] Unless high levels of adherence can be achieved, the long-term effectiveness of treatment at the level of individuals and the public will be diminished.
- The *proportionality principle* requires that a positive balance be achieved between potential benefits of a public health interven-

tion and the adverse effects of infringing individual human rights. As the potential benefits of adherence are great and the potential for resistance increases as adherence decreases, this principle also supports measures that increase adherence—even if this should require exclusion of some patients.

- The *necessity principle* requires that no other method of achieving the required adherence would have less conflict with other moral considerations—in this case the right of individuals to treatment.
- The *harm principle* states that the only justification for restricting the liberty of an individual or group is to prevent harm to others. As allowing resistance to emerge is potentially harmful to others, the harm principle supports exclusion of nonadherent patients if the other principles are met.
- The *least restrictive means principle* requires that less coercive means (e.g., education, facilitation, and discussion) must first be tried before it is justified to implement more intrusive public health measures. For example, systematic attempts must be made to facilitate adherence with ARVs (preparing patients for treatment) before excluding those who are likely to be nonadherent or removing nonadherent patients from treatment programs.
- The *reciprocity principle* requires that the state provide appropriate assistance to individuals to facilitate their meeting their public responsibility to adhere to treatment. This should include linkages between treatment centers in different parts of the country to ensure that patients who move have continuous access to treatment.
- The *transparency principle* requires that the public health decision-making process be as clear and accountable as possible, as well as free of political interference. Thus decisionmaking policies must be undertaken openly and with as wide public participation as achievable.

Balancing Individual Rights against the Common Good

Clearly a balance or harmony must be achieved between the rights of individuals and the public health needs of society. The aim is to maximize adherence by enhancing social ownership and cooperation, reducing stigma, and preserving individual dignity. Social destabilization must also be prevented, for example, by treating all, and not only some, members of families and close-knit societies. This consideration makes it desirable to treat HIV-positive mothers who participate in mother-to-child prevention programs. If women are migratory, then every effort should be made to ensure that ARV treatment can be provided close to their homes. Social stability can also be preserved by ensuring that those suffering from HIV/AIDS are not given highly preferential treatment with neglect of those who need treatment for chronic and other diseases requiring medical attention. For example, it would be distressing and disruptive for the family if ARV treatment is provided for a patient while neglecting to treat the diabetes and arthritis of the spouse. The need for individuals to take some responsibility for their own health should also be stressed.

Dilemmas regarding implementation of public health ethics and overriding the freedoms of individuals will be greatest for those societies that are intolerant of any infringement of individual liberties in the name of the common good. Putting public health above the needs of individual patients

will also be extremely difficult for healthcare workers. But it should be acknowledged that organizations such as MSF and other large medical institutions have a responsibility to meet public health expectations while also providing care for individual patients and sustaining the moral agency (virtues) of physicians.[20] The challenge is to create harmony between the rights of individuals and responsibility to society in ways that promote both individuality and solidarity and that also sustain the moral integrity of caring health professionals. There are no simple solutions to such complex challenges. Ongoing dialogue, operational research, and incorporation of learning experiences will be essential components of the roll-out process.

Preventing New Infections

If the pandemic is to be attenuated, it is as important to prevent new infections as it is to treat those who are infected. Therefore prevention programs are also vital and should include the most effective and simple method available—prevention of mother-to-child transmission. However, more will be required—including alleviation of poverty, improvement of nutritional status and living conditions, education, promotion of safe sex practices, and other behavioral changes. Both good treatment and good prevention programs are required, as these complement each other in a broad and holistic approach to dealing with the pandemic.[21]

Some Pragmatic Considerations

As existing disparities in South Africa and many developing countries are so wide, and it will be difficult to achieve all the desired goals, it is necessary to consider and implement some trade-offs early in the roll-out process. For example, the feared adverse long-term consequence of using cheaper generic drugs (emergence of resistance) has to be balanced against providing treatment for more patients to alleviate suffering and save more lives in the short term. Safe and effective long-term use of generic drugs requires that their quality be sustained at high levels.

There are insufficient doctors and nurses to provide for all the healthcare needs in developing countries, including South Africa. One reason for this is that many of those trained locally and poorly paid are regrettably recruited by other countries or leave for other reasons.[22] Recruitment of healthcare personnel from developing countries to the industrialized world, without provision of any compensation to developing countries for their investment in the training of professionals, is now increasingly acknowledged as unethical. Because of shortages of conventionally trained health professionals, additional personnel will have to be included in the delivery and monitoring of ARV treatment. They could include community health workers, traditional healers, and people living with HIV/AIDS. Trade-offs will have to be made in balancing the level of knowledge and training required by such personnel against the need for treating large numbers of patients.

To avoid delays in initiating the roll-out of ARVs and subsequent loss of life while rural healthcare facilities are being developed, a trade-off is also required between the right of individuals to equity in access to ARVs and the public health need to maximize good outcomes. So roll-out programs should begin where healthcare facilities exist, and every effort must be made to include deprived areas as rapidly as possible.

The Future

The emergence and spread of HIV/AIDS (like the emergence and spread

of multidrug resistance to old diseases such as malaria and tuberculosis, as well the emergence of other new infectious diseases—including SARS and Avian flu) should be viewed as evidence of instability in a complex global system. Such instability cannot be neglected. Although medical care for individuals and generous provision of resources from the Global Fund and other sources are necessary, philanthropy and biomedical care are only short-term responses and they are not sufficient. For sustainable improvement in population health, it is also essential to address the upstream global economic forces that cause and perpetuate the poverty that promotes the emergence and spread of infectious diseases.[23]

Our humanity depends on showing some solidarity with our fellow humans.[24] Unless ways can be found for reducing global injustice by remodeling the global economy to allow a modicum of redistribution of massive economic growth toward the marginalized poor majority of the world, the lives of all everywhere will be less secure. The ethics of how nations and powerful transnational corporations interact with each other to influence global health directly and indirectly are, I venture to suggest, the most important ethical and practical issues facing humankind in the 21st century.[25]

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B. SOUTH AFRICA

The histories of medicine and of medical ethics in South Africa are intimately linked to political, social, and economic aspects of that country's development, dominant components of which include racial discrimination and

social segregation. A brief review of some key political events will provide an illuminating backdrop to a description of the evolution of medical services and the ethics of medical practice in this controversial country, which typifies in microcosm many of the world's diverse human problems and arguably poses the most challenging contemporary opportunity to demonstrate human ability to resolve conflict peacefully.

Political background

During the period of the Dutch settlers (1652–1820) the indigenous Khoi-Khoi (pastoral people) and the San (hunter-gatherers) were treated with the arrogance and paternalism that for subsequent centuries epitomized European domination over blacks and exploitation through enslavement and colonial/cultural imperialism. These attitudes, together with warfare and the introduction of new diseases (e.g., smallpox in 1713), led to the decimation and destruction of the organized cultures of these indigenous peoples (Burrows, 1958; Laidler and Gelfand, 1971).

British annexation of the Cape (1795) and the arrival of British immigrants in Algoa Bay were followed by ninety years of conflict that included devastating wars between rival black tribes, the freeing of slaves (1833), the "importation" of Indians to work in the cane fields of Natal (1860), the first Anglo-Boer War (1880), several wars against the Zulus, and the bitter second Anglo-Boer War (1899–1902), during which twenty-six thousand Afrikaner women and children died in British concentration camps.

The British Parliamentary Act of Union (1910), which gave whites the right to self-determination, and the subsequent failure of the British to exercise their veto powers to restrain the Union Parliament from enacting oppressive racial laws (Native Land Act of 1913, depriving blacks of their land, and the Native Administration Act of 1927, depriving them of their right to self-determination), set the scene for the growth of Afrikaner political and economic dominance. The rise to power of the Nationalist Party in 1948 was followed by proliferation of apartheid policies, relentlessly entrenched through legislation that oppressed and dehumanized the black people of South Africa.

Black opposition evolved from powerless peaceful protest into a politically powerful process of potentially peaceful progress. It was hampered, however, by a growing culture of individual and group violence, fueled by brutal elements within the state security forces and by internal sources of conflict that horrified the world (Schlemmer, 1992).

Intensification of black resistance, more clearly articulated demands for human rights globally, and changing foreign policy agendas progressively isolated South Africa from its previous friends and from international markets. By the 1980s economic decline, rapid population growth, urbanization, destabilization in the neighboring states, and collapse of communism in eastern Europe and the Soviet retreat from regional conflicts constituted the matrix from which arose the Nationalist Party's acceptance of the need to seek, with the black opposition parties, a negotiated settlement as a step toward developing a democratic South Africa (Benatar, 1992).

Legislative changes since the "unbanning" of the black opposition movements in February 1990 have included repeal of the 1913 Native Land Act, the 1927 Native Administration Act, the 1950 Population Registration Act, and the 1950 Group Areas Act, which together formed a powerful core of statutory discriminatory policies. While the transition period abounds with ironies and ambiguities, optimism that peaceful and constructive pathways to progress could and would be found followed the December 1991 Convention for a Democratic South Africa (CODESA) Conference and the March 1992 referendum. It is against this background that the history of medicine and medical ethics in South Africa can now be briefly reviewed.

History of medicine

The first manifestation of any formalized medical service was the erection of hospital tents following a smallpox epidemic introduced by a visiting fleet in 1713. Further episodes of smallpox (1751 and 1755) led to the construction of two rudimentary hospitals, one for poor Europeans and the other for slaves, the well-to-do being treated at home.

Medical practice developed in two directions: a private commercial venture predominantly for those who could afford to pay, and a public service for the poor, to which the mission medical service (introduced by the Missionary Society of London) made a major contribution in rural areas for well over a century. Concern for public health, stimulated by the 1918 influenza epidemic, generated decades of successful research on infections in close collaboration with the World Health Organization. Public health services of a high standard were developed through the creation of medical schools with public teaching hospitals open to all—on a segregated basis; ostensibly separate but equal.

The developing systems of medical practice and of medical education mirrored the diverse characteristics of South African society. Undisputedly high standards of medical education in the Western tradition, dedication of generations of practitioners to high standards of medical practice and patient care, considerable goodwill

between doctors and patients of all races, extensive public-health facilities—including teaching centers of excellence and well-funded private medicine—reflect the successes. Privileged access to medical education; fragmentation and duplication of health services; lack of planning; wide disparities in health and in access to health care (predominantly on a racially discriminatory and unequal basis); focus on curative hospital-based medicine; paucity of preventive, promotive, and rehabilitative services; paternalistic attitudes to patients; and dismissive attitudes to African traditional medicine reflect the racist and oppressive aspects of a system doomed to failure through its institutionalized neglect of civil and social justice (Van Rensburg and Benatar, 1992).

Deficiencies in the health-care system were clearly articulated in the 1940s, and the case for reform toward a unitary health service has been the subject of intense debate since the 1980s (Benatar, 1986, 1990b, 1991). Traditional African medicine continues to be practiced, particularly in rural areas. While black Africans have increasingly accepted Western medicine, they eclectically choose varying combinations of modern and traditional medical advice (Edwards, 1986).

Medical ethics

The South African Medical and Dental Council (SAMDC), a statutory body, was established in 1929 with the primary purpose of protecting the public through maintenance of high professional (including ethical) standards of practice and with a view to serving the interests of the medical and dental professions—insofar as these interests are compatible with high standards. The wide range of powers vested in SAMDC included the power to institute inquiries into any complaint, charge, or allegation of improper or disgraceful conduct of its members and to exercise disciplinary power over them.

As in most other Western countries in the first sixty years of the twentieth century, discussions on medical ethics in South Africa largely took place within the framework of the authoritarian, paternalistic behavior expected of professionals supposedly adhering to the Hippocratic Oath and similar codes. The first South African text on medical ethics (Elliott, 1954) was limited to discussion of ethical codes, professional secrecy, advertising, the conduct of consultations, fees and financial matters, and upholding the "traditions" of medicine, with only brief reference to abortion and sterilization, and to the ethics of investigative medicine. This text, based on Guy Elliott's experience of deliberations on ethical matters by the Medical Association of South Africa (MASA) and the SAMDC, provides a succinct outline of accepted medical ethics in South Africa (and in many Western countries) in the first half of the twentieth century.

Issues of bioethics have usually been stimulated by the widespread application of technological advances in everyday medical practice, the social changes that challenge many traditional professional values, cost considerations, uncertainty regarding the effectiveness of innovative treatments, and increasing concern for individual autonomy and shared decision making in the United States and Europe.

The pace of social change, and of change in medicine and bioethics in South Africa (a middle-income country—per capita GNP less than one-tenth that in the United States and falling), has been much slower. Expenditure on health has increased only marginally and, despite their high profile, modern lifesaving medical treatments are available only on a limited scale. Public and even professional debates on ethical issues in medicine have been very limited in a repressive, authoritarian society lacking a patients' rights movement and unaccustomed to public discourse on civil and political liberties (Benatar, 1988).

As in the United States, theologians have played a pioneering role in reawakening interest in bioethics; several conferences were held in South Africa (in the 1960s and 1970s) under church or theological auspices. The first, stimulated by the historic heart transplant in Cape Town (December 1967), was on the ethics of tissue transplantation (Oosthuizen, 1972). Others followed on abortion (Oosthuizen et al., 1974), euthanasia (Oosthuizen et al., 1978), professional secrecy (Oosthuizen et al., 1983), and clinical experimentation (Oosthuizen et al., 1985). These provoked little ongoing public or professional debate. In the 1980s some medical schools began developing modern bioethics education programs, but progress has been slow and the programs remain (1) in a fledgling state, (2) dependent on enthusiastic physicians who have heavy professional responsibilities and minimal formal training in philosophical ethics, and (3) without the financial and institutional support to develop formal programs with committed support from other disciplines (e.g., philosophy, law). One medical faculty has published the proceedings of four symposia on bioethics (Benatar, 1985, 1986, 1988, 1992). These have encompassed theological, philosophical, and sociological debates on death and dying; resource allocation; the doctor/patient relationship; abortion and in vitro fertilization; research on humans; principles of biomedical ethics; moral reasoning; withholding and withdrawing treatment; health care of detainees; hospital ethics; the right to health care and the structure of health services; ethical considerations in relation to acquired immunodeficiency syndrome (AIDS); and teaching med-

ical ethics. These proceedings reflect progressive movement toward the views being popularized in bioethics debates in the United Kingdom and the United States. By retaining a degree of "cultural sensitivity" they endeavor to avoid the pitfalls both of "ethical imperialism" and of "ethical double standards."

A milestone event in the history of medical ethics in South Africa was the inadequate SAMDC and MASA responses to the unethical manner in which state-employed medical practitioners provided professional attention to prominent black activist Steve Biko prior to his death during detention without trial in 1977. Failure of SAMDC to exercise its duty to protect the public by acknowledging the unethical behavior of Biko's doctors and taking appropriate disciplinary action against them, and MASA's response to SAMDC's deficient protection of the public met with resounding criticism nationally and internationally (Nightingale et al., 1990). The sequence of events through which the efforts of a small group of rank-and-file members of the profession led to a Supreme Court injunction against SAMDC, which resulted in a reversal of its previous decisions and the imposition of disciplinary action, is well documented. The National Medical and Dental Association (NAMDA), formed in 1982 as a result of discontent with MASA's actions following the death of Steve Biko, has received international acclaim for its outspoken advocacy against discriminatory practices. MASA, which came under considerable criticism for its inadequate reactions to the Biko affair, has, to its credit, taken some sincere steps in an attempt to rectify its previous shortcomings. Its statements are now clearly on public record, and the challenge ahead is to ensure their further implementation in practice. Greater attention to ethical responsibilities toward prisoners, detainees, and hunger strikers has been a gratifying response to the Biko case (Benatar, 1990a; Kalk and Veriava, 1991). The public confession of guilt by the district surgeon who bore major responsibility for Biko's medical care, emphasizes the need to maintain professional independence in the face of state security and other coercive pressures.

Professional institutional responses intended to stimulate higher standards of ethical practice include the MASA and the Medical Research Council (MRC) guidelines on professional ethics and the ethics of medical research, respectively (both currently under further revision), and the publication by the College of Medicine of South Africa of its Credo. The long-standing requirement by some universities that all proposals for human and animal experimentation need approval by institutional ethics committees is spreading to other universities, and such prior approval has now become a requirement for all funding applications to the South African Medical Research Council.

Conclusion

In a period characterized by national economic attrition, real per capita expenditure on health of less than one-twentieth of what is spent in the United States, burgeoning population growth, rapid erosion of financial support for academic medicine, and political liberation with rapidly escalating human expectations, development of the discipline of bioethics in South Africa has been initiated and sustained more as a hobby by a few enthusiasts than as an integral component of medical education and practice. The need to include formal teaching of bioethics and clinical ethics in professional schools, which has gained widespread acceptance in the developed world, remains to be achieved in South Africa, as in other developing countries. Who should teach, what should be taught, how teaching of this discipline can be made most effective, and the ways in which such teaching can enrich medical and social education and practice are, as in any new discipline, matters of ongoing debate. If South Africa can learn from the developments in other countries and, with international support, use these lessons to build a national bioethics program and a better health-care system in South Africa, this could contribute toward restructuring a new South Africa that could play a vital role in helping to rehabilitate southern Africa.

SOLOMON R. BENATAR

While all the articles in this entry are relevant, see especially the companion article in this section: SUB-SAHARAN COUNTRIES. *Directly related to this article is the entry* AFRICAN RELIGION. *For a further discussion of topics mentioned in this article, see the entries* ALTERNATIVE THERAPIES; HEALTH-CARE RESOURCES, ALLOCATION OF; MEDICAL CODES AND OATHS; MEDICINE, ANTHROPOLOGY OF; MEDICINE, SOCIOLOGY OF; *and* RACE AND RACISM. *Other relevant material may be found under the entries* OBLIGATION AND SUPEREROGATION, PATERNALISM; PROFESSION AND PROFESSIONAL ETHICS; *and* PUBLIC HEALTH. *See also the* APPENDIX (CODES, OATHS, AND DIRECTIVES RELATED TO BIOETHICS), SECTION II: ETHICAL DIRECTIVES FOR THE PRACTICE OF MEDICINE, OATH OF HIPPOCRATES.

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A Perspective from Africa on Human Rights and Genetic Engineering

Solomon R. Benatar

Eric Hobsbawm has described the twentieth century as 'The Age of Extremes'.[1] One extreme is exemplified by the many scientific and technological advances which have increased our life-span and improved life in a myriad of ways. Advances in molecular biology and the promises offered by genetic engineering to benefit human life typify the success achieved through the scientific reductionist approach to micro-structures. The other extreme is reflected in the magnitude of human suffering flowing from poverty, belligerence, and disregard for nature. The production of weapons of mass destruction with the potential to destroy all life, the extent of socially caused human suffering, and the escalating impact of modern lifestyles on the environment illustrate how short-term gains may in time become outweighed by greater losses through failure to consider effects at the macro level.

The African continent, a paradigm example of an underdeveloped region, offers another example of extremes in our modern world.[2] The successful and peaceful political transition in South Africa, from the abhorrent apartheid regime to a democratically elected government with a liberal Constitution and Bill of Rights,

represents almost undreamed of success. However, this success is in stark contrast to the social and economic disarray in Africa. Intense poverty, widespread starvation, recurrent wars, infectious diseases—including escalating rates of HIV infection—and failure to achieve widespread democracy, are all manifestations of failure at the level of whole systems which cause untold misery and may in the long term undermine progress throughout Africa, including South Africa.

Recrudescence of tuberculosis in recent years is yet another example of extremes.[3] Scientific advances, which include (i) discovery of the microbial cause, (ii) understanding basic pathobiological processes, (iii) the development of new diagnostic tests, a vaccine, and highly effective drugs, and (iv) the design of cost-effective treatment regimens, represent the successful end of the spectrum. These successes which could have resulted in the eradication of tuberculosis (as was achieved for smallpox) are being eclipsed by the emergence of multi-drug resistant organisms through failure to implement treatment programmes effectively at the community level. The result could be that instead of its eradication, tuberculosis may become untreatable worldwide.[4]

In this chapter I should like to describe some of the grotesque disparities which mark the polarized state of our increasingly unjust world, and then discuss how exploitation and disregard for fellow humans have become central causes of these disparities. This will set the scene for appreciating some fears from Africa of potential adverse implications of advances in biotechnology. I shall then discuss how deficiencies in our contemporary approach to human rights may play a role in sustaining the divide

between extremes or, at the least, failing to narrow them. I shall suggest that acknowledging the powerful forces which sustain social injustice is the first step towards new ways of thinking that could promote a broader notion of moral behaviour and a socially responsible concept of rights. Finally some suggestions will be made for enhancing the achievement of human rights more widely.

Extremes and Disparities

One billion people live well, some in great luxury in a rich core, and 3 billion live in profound poverty on less than $2 per day in the poor periphery. The gap between the richest and poorest quintiles of people in the world is widening inexorably and increased from 30-fold to 60-fold between 1960 and 1990.[5] In 1994, 45 per cent of the world's population (2.5 billion people) lived on 4 per cent of global GNP, while 358 billionaires owned the same proportion of global resources.

Associated extremes of biological suffering are reflected in the spectrum of disease patterns, and wide range of life expectancies, infant mortality rates, nutritional status, and living conditions around the globe. Wide disparities are also evident in the social health and suffering generated through socially determined life patterns and hierarchies of power. Witnessing the squalid conditions of life and facilities in public hospitals in central Africa evokes the feeling of being transported back into the middle ages and vividly portrays the extent to which spectacular developments in the modern era have not even remotely benefited billions of people.[6]

Disregard for Others and Exploitation as the Major Cause of Disparities

South Africa's history and the extremes in wealth, in health status, and in the quality of life associated with 40 years of apartheid are well known.[7] That 20 per cent of the population owned 80 per cent of the country's resources, and that this was brought about by racial discrimination and exploitation, correctly horrified the civilized world.

Human life has long been characterized by discriminatory attitudes and exploitative processes, many centuries of which have contributed to constructing the lifestyles of the privileged and poor worldwide.[8] With the passage of time and the growing complexity of life, previously overt and crude discriminatory and exploitative processes in the battle for resources have become more covert and sophisticated. Under such new guises national and international economic policies driven by wealthy industrialized countries have profoundly transformed the global economy in the second half of the twentieth century. The minimum prices paid for raw materials associated with devaluation of the currency of poor countries, payment of demeaning wages to workers in foreign countries less committed to human rights, protectionist trade practices, and the trillion dollar a day market in foreign exchange across financial networks (only 10 per cent of which is for trade in goods and services) have resulted in extremes of wealth and poverty.[9] While material conditions of life have generally improved, not all have benefited, as wealth and misery are generated simultaneously.[10]

The external debt of developing countries is another major force sustaining poverty, obstructing the develop-

ment of human potential, and creating an instability that threatens all nations. Such debt has grown by $100 billion annually, doubling from $650 billion in 1980 to $1.3 trillion in 1990. At $2.2 trillion by 1997 it amounted to 45 per cent of the gross national product of developing countries. This represents a debt of almost $400 for each person in the Third World—much more than a year's earnings for many. The ways in which such debts have accumulated (despite many noble intentions) under the influence of

(i) excessive spending by some wealthy nations,
(ii) the backlash from oil producers,
(iii) the sale of weapons to developing countries and
(iv) collusion with corrupt leaders,

are now well documented but not widely appreciated.[11]

Sophisticated forms of fraud on a large scale pervade economic activities. Insider trading, corporate takeovers, corporate greed, false information in investment promotion, and episodes of what J. K. Galbraith calls 'speculative insanity', all unfavourably affect income distribution.[12] Wealthy banks have held on to illegally acquired resources, and accepted into secret accounts deposits from corrupt despots, knowing that these resources have been diverted from the purposes intended by benefactors and that debt repayment would cripple the citizens of indebted countries.[13] The implications for countries unable to repay their debts, and the boomerang implications of the debt crisis on rich nations, give us good cause for reflection on economic policies and market forces designed to sustain unrealistic economic growth for rich countries at the

expense of world ecology and some of the most vulnerable people in the world.[14]

In post-industrial countries where human services have become a major component of the economy, exploitation is extending into services that are essential for the basic well-being of citizens. In the USA, where taxation is lower than in any other industrialized country (tax revenue accounts for 32 per cent of the overall economy in the USA as compared with up to 58 per cent in some Nordic countries and up to 50 per cent in Western Europe as a whole) and the cost of petrol is one fifth of that in Europe, many services supportive of human development are being withdrawn from its most vulnerable citizens. Indeed erosion of welfare programmes is becoming the norm within a globalizing economic paradigm.[15] For example, medical care is being transformed into a marketable commodity available to those who can pay, and rationed for those who cannot. Resulting adverse social effects include the creation of widely disparate health statuses even within rich countries.[16] In the USA, reform towards universal access to health care, offered by all other advanced societies, has been thwarted by the power of those with entrepreneurial interests in health-care delivery.[17] Against such forces even authoritative advocacy for health care reform by such a prestigious organization as the American Association for the Advancement of Science has been ineffective.[18]

Other aspects of health care are also being transformed by the profit motive. International pharmaceutical companies, unsatiated by their profits in the industrialized world, are selling drugs through intermediaries in poor countries at prices higher than in the wealthy world.[19]

Counterfeit drugs are pervading the market, technology is being used excessively and inappropriately, profit-making by entrepreneurs has become a major aspect of health-care insurance, research is increasingly being driven by fiscal considerations, and doctors are being swayed away from patient advocacy by financial and other conflicts of interest.[20] Health-care systems throughout the world are fracturing under the influence of these forces which are relegating the caring and professional aspects of health care to second place. The poor example being set by some wealthy countries is having devastating effects on attempts to provide health-care services on a more equitable basis in poor countries.[21]

Economic considerations also influence attitudes to war and the industries which sustain conflict. Following the Second World War the superpowers perpetrated their ideological differences through wars in distant countries, often in collusion with despots and at the cost of many lives, while profiting through proliferating arms industries creating weapons of mass destruction and a nuclear stockpile that will pose hazards for thousands of years.[22] The extent to which the military has become autonomous in many countries (including the USA) and immune to democratic control has been described with foreboding by J. K. Galbraith. Virtually all wars since 1945 have been fought in Third World countries, resulting in 23 million deaths. More recently, civilian wars, often linked to historic ethnic enmities, opposition to oppressive governments, or arising from artificial geographical boundaries created by colonial powers, have resulted in millions of deaths. UNICEF estimates that in 1994, 30 million children died due to wars and poverty—300 times

as many deaths as resulted from the bombing of Hiroshima and Nagasaki. It would seem that within a few hundred years 'enlightenment' has been eclipsed by conflict that has destroyed, maimed, and displaced millions of people.[23]

The deliberate destabilization of Mozambique by South Africa and the USA in the 1980s is an example of a war that resulted in over a million deaths and created one of the most indebted countries in the world.[24] Such ideological wars, and the structural adjustment programmes imposed by powerful financial institutions and nations have resulted in retrogression from the initial gratifying gains made in educational, health, and social services following independence from colonial powers in the 1960s.[25]

Against this background of war and economic extremes torture has become a growing problem and medical professionals are participating willingly or through coercion in such barbarous practices.[26] The torture and abuse of Steve Biko and others in South Africa has received widespread publicity, but less well known is the extent to which torture and cruelty persist in prisons in many countries. In chillingly describing cruel prison conditions in Europe, Antonio Cassese, a distinguished professor of international law, makes a forceful plea for efforts to ensure that the principles of the Enlightenment penetrate into these 'dirty worn out parts of the social fabric' in Europe.[27]

Within a globalizing economy, economic power has been shifted from potentially accountable governments within nations, to multinational corporations and other unaccountable transnational market forces. The fear of big government has resulted in the creation of big business wielding enormous power that cuts across nations. The result is a reduction of the power of nations over their own

economies, the marginalization of a growing proportion of people in all countries, the defeat of liberal ideals, and the potential for implosion.[28] We now face a situation in which

(i) the combined assets of the top 300 firms in the world constitute roughly 25 per cent of the world's productive assets,
(ii) 20 per cent of the US population owns 80 per cent of the nation's wealth, and
(iii) 20 per cent of the world's population owns 80 per cent of global wealth—and the divide continues to widen.

It is interesting and disappointing to reflect on the fact that these disparities, persistence of the underlying mechanisms sustaining and aggravating them, and the threats they pose to the freedoms of individuals and the well-being of society, do not arouse intense international indignation and concern. It seems as though when others are dehumanized and exploited by sophisticated methods, covertly or at a distance, this is accepted as an inevitable aspect of life not to be resisted! Against this background we should perhaps not be surprised that Isaiah Berlin described the twentieth century as the worst century in Western history.

Some Considerations from Africa

Africa has been most adversely affected by the complex interaction between all the above aspects of modern life. It contains 33 of the 50 poorest countries in the world, and two-thirds of Africans live in absolute poverty. A brief

reminder of Africa's history may facilitate empathy for its plight and the concerns of its people regarding human rights and the implications of the genetic revolution for their future.

Africa has long been central to the aspirations of the West.[29] Initially presenting great challenges to circumnavigation, it became a continent inviting exploration which resulted in a clash of civilizations, colonization, brutal enslavement of its people, and relentless extraction of its rich resources. Since the release of Africa in the 1960s to independence, powerful nations have colluded with selfish leaders co-opted into neo-liberal economic policies, and enslavement has continued to obstruct development under the more covert and sophisticated guises I have described.[30] It has been argued that in time it will be recognized that the impact of these processes, and in particular the creation of an unpayable debt, will greatly exceed the horrors of slavery.[31]

Africans must, of course, take some responsibility for the state of their continent since post-colonial independence. Poor leadership, corruption, internal exploitation, nepotism, tribalism, authoritarianism, military rule, and overpopulation through patriarchal attitudes and disempowerment of women have all contributed to its sad state, although, to be fair, these shortcomings must be seen in the context of powerful external disruptive forces acting over several centuries.[32] The tragedy of Africa is now being aggravated by its elimination from the foreign policy agendas of powerful countries and its marginalization because of crises conveniently perceived to be of its own making, and 'of such diffuseness and magnitude that the world at large shrinks from engaging them'.[33]

While for privileged people it may seem that the balance in the use of power flowing from scientific knowledge and technological achievements has been in favour of beneficence, different perceptions prevail among those who have been marginalized. Close links between science, technology, the military (defence), money, and those with global power,[34] and the use of power and secrecy to protect privilege has undermined confidence that there is any significant concern for the future of the people of Africa.

The viewpoint I shall express from an African perspective regarding modern biotechnology should be seen against this background, but not as an attempt to provide an all embracing view. Africa is a large continent, its many cultures are not static, there is some optimism for its future and it would be inappropriate to make a stereotypic case. Africa's problems have been so enormous that debate on genetic engineering has not had much of a profile there, and I can only provide a synoptic perspective that may resonate with views held by many in Africa.

When biotechnology is used to mass-produce drugs such as insulin and vaccines, to develop more resilient crops, to increase the efficiency of food production, or in other ways that improve the lives of individuals, this is uniformly welcomed, especially if costs are reduced and access increased for all to drugs, vaccines, and food.[35] However, it is possible, perhaps even likely, that such advances may not be available to those in poor countries because they are too costly—as for example with new drugs for treating HIV infection.

Worse scenarios can be envisaged. For example, techniques that are paving the way to controlling farming and world food production by giant agrochemical companies

may threaten subsistence farmers. Reduction of the genetic diversity of agricultural products or excessive protection of intellectual property rights locking farmers into corporate control of production could have profoundly adverse impacts on the economies of developing countries and the lives of their citizens. Attempts to patent products developed with information derived from the practices of indigenous healers, and eagerness to patent components of the human genome for exclusive economic gain are seen as new forms of exploitation that exclude considerations of the humanity of those living in economic misery.

Recent developments in biotechnology are also contributing to the development of biological weapons. Such weapons, together with anti-personnel acoustic[36] and blinding laser weapons,[37] are adding new dimensions of military horror to future conflicts. There are also fears, as unrealistic as these may seem to some, that biotechnology will allow the development of genocidal tools to propagate racism and supremacism through eugenics in a modern guise.[38]

In describing the implications of the Human Genome Project (HGP) in the USA Nickens reminds us of the numerous historical examples of what has happened when genetics are drawn into arguments over the causes of social inequalities. He refers to the Tuskegee syphilis experiment, genetic theories of intelligence, sickle-cell anaemia, and the potential for discrimination in access to health insurance, health care, jobs, and public assistance programmes. He also reminds us that the HGP will introduce information into a 'United States social context which: (i) already has a long and disturbing history of drawing sharp distinctions among our citizens on the basis of race and

ethnicity, and (ii) has a long tradition of belief in biological determinism'. He expresses concern that scientific theories and data have often been used to buttress prevailing biases, and points out that some have asked whether the HGP may create a new 'biologic underclass'.[39] These concerns extend beyond the USA into many other societies.

Secular western attitudes to the concept of the self as highly individualistic, and unconnected to the community or the spiritual world, further undermine the confidence of Africans who view people as both uniquely individual and as intimately connected by relationships to others in the present, past, and future. This African conception of humanity, which places great value on both the individual and on the collectivity of people, views the life-forces of an individual both during life and after death as incompatible with both organ donation and the cloning of an identical body. While this view, expressed through abhorrence for organ transplantation and a fear of the implications of twins for the individual soul, may be waning as African cultures transform under the influence of other cultures, the concept remains powerful. We should not be surprised or derogatory about this unless we are consistent in applying our attitudes to the religious beliefs, myths, and superstition which persist in a scientific and secular era in the west. Given the pervasiveness of a deeply spiritual and communal world-view in Africa, and the fact that many Africans perceive most sources of modern power to be used against them (or not for their benefit) by those lacking spiritual awe for life, and by those whose political and economic decisions are focused on individualism and materialism, it is not difficult to imagine why Africans should lack confidence that the

ability to alter genetic structures will suddenly be used for the benefit of all humans—including them.

In summary, it can be said that, in the context of

(i) exponential population growth;
(ii) epidemics of diseases (such as HIV)—which some blame on African sources;
(iii) ongoing worldwide supremacist attitudes; and
(iv) the exclusion of the African continent from the foreign policies of powerful nations after many years of exploitation,

we should have some empathy for suspicions of Africans that research into the human genome may lead to new forms of control over groups of people who are seen to be too numerous and irrelevant to market economies.

Human Rights

The concept of Human Rights has developed from endeavours to achieve respect for the freedom, dignity, and equality of individuals. It is a vitally important concept for protecting individuals from oppressive authoritarianism and for allowing them to develop their full potential for fulfilled lives.[40] Since the Enlightenment demands for respecting human rights have succeeded in progressively emancipating many people from the control and indignities suffered under oppressive rulers, religious institutions, tyrannical governments, and private oligarchical power such as that wielded by ruthless industrialists and slave-owners in previous eras. The Universal Declaration of Human Rights and the development of International Law in the twentieth century were expected

to extend the benefits of such freedom throughout the world and to enhance the quality of all human lives. While the idea of human rights is firmly established as universal, it is not uniformly interpreted. For some the concept is limited to civil and political rights. For others, the liberal ideal and human rights include the economic, social, and cultural rights considered to be essential for human flourishing in social democracies. Growing appreciation of the need for solidarity in the face of now well-known ecological and demographic dangers has extended the claim for rights to include rights to a clean and safe environment for present and future generations, and to relations between nations which could foster the development required for peace and social justice.[41] Regrettably insufficient progress has been made and we seem to be receding from, rather than advancing towards, a more just world.

We cannot be complacent about this. J. K. Galbraith reminds us that deriving comfort from high-minded debate about human rights in the contentment of privilege reflects our co-option into false images of beneficence and global progress.[42] We seem generally unaware of how high ideals have been distorted by the powerful political and economic forces that propagate injustice, and of the psychological processes that allow us to believe in a just world by detaching ourselves from the profound misery of so many.[43] I should like to suggest that while this sad state has complex foundations, to which I have been able to allude only briefly, it has also been contributed to (or at least not ameliorated) by several deficiencies in the approach to human rights.

A Narrow Concept of Human Rights

In recent years the long-standing dilemma regarding the balance of attention to the good of individuals and to that of society has re-emerged in many forms, which include an intense debate between liberals and communitarians. At the core of liberalism as an ideology lies a commitment to the freedom of individuals to be self-determining and self-governing with as little external interference as required to ensure equal liberties for all.[44] The interpretation of how this can best be achieved spans a wide range. At one end of the spectrum are those concerned about maximum freedom for individuals and markets. At the other end are those who acknowledge the need for a social contract within social democracies to ameliorate the potentially profound adverse effects of selfish individualism and unfettered material progress. While the challenges from communitarians are diverse and the complexity of the debate cannot be reviewed here, I believe that there is an analogy with the criticisms I shall make about a narrow concept of human rights. It is also relevant that in both cases solutions can be found within the framework of liberalism.[45]

When the focus on the concept of human rights is limited to the civil and political rights which are the minimal requirements of the political philosophy of liberalism it is not widely appreciated how this narrow interpretation of liberal philosophy has combined with another major tenet of liberalism—*laissez-faire* expansion of free trade—to facilitate exploitative processes[46] that obstruct the widespread achievement of human rights by impairing the ability of many to acquire even the most

basic resources for living minimally decent human lives.[47] The triumph of freedom in economic life, in the thrust towards a global economy, has created a huge zone of unaccountability that results in defection from other liberal values, such as those supportive of community and social reform. The concern has been expressed that this may foster the unfolding of a tyranny of unaccountable economic rulers—that is to say economic totalitarianism in place of the political totalitarianism that was feared by Hayek as the road to serfdom.[48] This increasing dominance of an economic way of thinking is illustrated by comments from some US economists that 'Two thirds of the world's population are . . . superfluous from the standpoint of the market. By and large we don't need what they have; they can't buy what we sell'[49] . . . and 'In the perspective of world capitalism as we know it these people just do not count . . . Unless that part of the world develops the capacity for terrorist blackmail they will be in the charity ward for a long time.'[50] Such considerations remind us of the danger to the world from violence among the poor and dispossessed and the potential for mass migration and social chaos when poverty and disaster cause law and order to disintegrate.

While liberalism may be the only comprehensive and hopeful vision of world affairs, it is not of necessity only tightly linked to capitalism. Some who are committed to the ideals of capitalism recognize that the perception of this tight link has been formed in a period that is now moving to a close, and that there is a need to search for new ways of understanding that go beyond believing that behaviour driven by economic considerations alone can be the order-generating force for any society.[51]

From the human rights perspective it is necessary to appreciate that one of the fundamental underpinnings of the international consensus on human rights norms is that the two major categories of rights—civil and political rights on the one hand and economic, social, and cultural rights on the other—are interrelated and indivisible.[52]

Neglect of the Conceptual Logic of Rights

In popularizing the concept of human rights there has also been a failure to emphasize that the conceptual logic of rights includes reciprocal duties. Unless duties are honoured, claims for rights cannot be actualized in practice. Who will meet the co-relative duties if members of society see themselves only as holders of rights? Surely all members of a community must be seen as holders of rights and bearers of duties? As a duty-bearer each citizen enjoying rights is responsible for respecting and protecting the rights of others and for promoting conditions conducive to the implementation of human rights. This applies within nations and between nations. Human rights cannot be satisfied in poor countries if rich countries do not honour their duty not to exert economic and military power in ways that undermine the rights of others.

Inconsistencies in Monitoring Human Rights Abuses and in Applying Human Rights

Since the mid-1960s several western democracies have monitored and assessed the human rights performance of other countries. The United States is notable for two aspects of its programme. First, it selectively monitors and reports on human rights in other countries but fails to monitor/report human rights abuses within its own

borders. In so doing there is denial and masking of the extent to which the freedoms of its own citizens to control their lives have been eroded by powerful economic forces. This allows human rights assessments to become vulnerable to ideological manipulation by a country wishing to promote its own political system while criticizing others.[53] Second, the exploitation and control of the economy of poor countries, which obstructs the development necessary to provide conditions conducive to respecting civil and political rights, is further aggravated by setting human rights standards for itself that exclude socio-economic rights. By ignoring the impact of its economic and foreign policies on the rights of citizens of other countries the USA seems oblivious to the damage done to the concept and the achievement of human rights by its own actions.[54] The propagation of human rights without respecting these in the universal manner intended, and assessment of human rights standards inconsistently by a country which most actively espouses the concept, also fails to instil confidence in those who have long been oppressed, and leads them to fear that the economic and security interests of the rich will always take precedence over humanitarian considerations.

This fear extends to the potential use of genetic engineering, notwithstanding UNESCO's Universal Declaration on the Human Genome and Human Rights, and the statement by the United Nations Convention on Biological Diversity that

> the recognition of genetic diversity of humanity must not give rise to any interpretation of a social or political nature which could call into question the inherent dignity and . . . the equal

and inalienable rights of all members of the human family, in accordance with the Preamble to the Universal Declaration of Human Rights.

The Rights of Future Generations

The paucity of concern for the human rights of future generations is apparent in the face of the ecological degradation which proceeds unchecked as citizens of the industrialized world generate ten times as much (or more) waste per capita than the poor, while calling for measures to protect the environment in the developing world. For example, the USA contains 5 per cent of the world's population but consumes 24 per cent of global resources, while China contains 20 per cent of the world's population and consumes 10 per cent of its resources.[55] Some industrialized countries acknowledge their excessive consumption and urge environmental and population control but show scant concern for the needs of others by focusing on control of population and pollution of the environment in poor countries, without making a serious commitment to reducing their own unsustainable patterns of consumption.

Garrett Hardin, the evolutionary biologist, wrote in 1968 of two types of rationality: one which strives for the good of the individual, and one which strives for the good of the group. He acknowledges that these are in inevitable conflict, and warns that when individuals are unaware of their joint plight, and blindly go about their business as though they lived in isolation, their

> defections from social responsibility are re-created many times over on a grand scale . . . These individual decisions about the futility of working actively towards the good of humanity

amount to a giant trend of apathy, and this multiplied apathy translates into insanity at the group level. Narrow minded selfishness will drive us to extinction unless we band together and form strong organisations dedicated to global ecological goals.[56]

Continuing advances at the micro level, at which science is directed, are clearly necessary and desirable for the great benefits they offer. Indeed scientific progress may offer as yet unimagined future benefits. Similarly, endeavours to protect the rights of individuals must be sustained. However, it is being more widely appreciated that whole communities also need protection and that global instability is the price paid for ignoring long-term effects at the macro level. Little has been done since the 1992 Earth Summit to implement Agenda 21 and the costs of inaction grow. Unrelenting environmental abuse is thus leading to profound changes within our ecosystem which facilitate the recrudescence of infectious diseases such as malaria and cholera, the emergence of many new infectious diseases, relentless land degradation, rising sea levels, changing temperature gradients, and shifts in the ecological balance which will affect food production. Failure to consider the ecological costs of industrial and personal consumption patterns constitutes a 'tragedy of the commons' on a grand scale.[57] These threats to future generations will not be confined to poor countries (although they will suffer earlier and more intensively) and the spread of infectious diseases will be enhanced by travel, emigration, and refugeeism.

Some Directions for Change

Is it possible to change the unstable state of a world threatened by polarizing extremes? It would seem to me that at least some progress could be made, and is even now being made, in this direction. Despite the many failures to foster international peace, hope must be retained for the inspired leadership that could foster wider appreciation of the interdependence of all at a global level, and the realization that neither rich nor poor countries can continue to ignore internal and external threats to prospects for widespread and sustainable well-being.

The example set by South Africa through its dramatic political transition supports the view that profound change can be achieved through peaceful means. However, it must be realized that South Africa now has to work towards the more difficult social and economic transitions required to narrow some of the disparities for which it was despised. Its ability to do so will depend, at least in part, on whether in acclaiming South Africa's success other countries have come to learn anything about themselves and the exploitative processes that sustain their privileged economic lives. South Africa's endeavours to diminish the legacy of exploitation are most likely to be successful if other countries work to achieve the same ends for their own citizens and in a global context. For example, unless the industrialized world alleviates Africa's $200 billion external debt burden, and enables the benefits of free markets to be matched by improvements in human rights, South Africa's example in achieving a political transition will have much less social and economic impact on sub-Saharan Africa

than might be hoped for. Africa may remain a continent of despair rather than becoming one of hope.[58]

Visionary insights from those thinkers who can see the world in all its complexities,[59] recognition of the crisis of liberal internationalism,[60] and, since the end of the Cold War, a better understanding of the failures of capitalism,[61] reveal how (altruism and reparations aside), rational self-interest alone should be enough to drive global progress in new directions. The time has come for a new mind-set, one in which a highly individualistic concept of human rights based on the notion of individuals as merely selfishly autonomous, is broadened into a socially responsible concept of human rights which recognizes both our individuality and the mutually advantageous relationships between individuals and nations.

Imaginative and ambitious national agendas and global development strategies are needed. These could be coupled with progressive deflection of resources away from military might to moral right. Diverting a small fraction of the almost $1 trillion annual military expenditure to human development could prevent more than 95 per cent of the premature deaths of over 30,000 children in the world every day in infancy, childhood, and adolescence from starvation and preventable infectious diseases.[62] Greater commitment to more equitable economic policies could lead towards living conditions that reduce population growth rates, and billions living in inescapable poverty with their energy sapped may, through hope for the opportunity to live decent lives, have their energies released to achieve this goal.[63]

Some specific and complex economic and political

activities will have to be initiated. To begin with such an approach would encompass commitments to

(i) the recent United Nations Special Initiative on Africa;
(ii) the World Bank's changing agenda on debt and poverty;
(iii) the Highly Indebted Poor Countries initiative;
(iv) serious endeavours towards achieving modest reductions in military expenditure;
(v) the development of new attitudes to international relations;
(vi) alterations in consumption patterns;
(vii) implementing some form of taxation on electronic financial transactions;
(viii) and redirecting some of the resources generated in these ways towards enhancing social justice globally.

It is sobering to reflect on the fact that the cost of eradicating poverty has been estimated at about only 1 per cent of global income. Effective debt relief for the 20 poorest countries is even cheaper at $5.5 billion—the cost of building Euro Disney![64] The resources allocated to the Human Genome Project, more than $3 billion over 15 years, is illustrative of the power of the will to achieve specific goals. It does not seem inconceivable that the economic, political, and symbolic power of industrial nations could be harnessed to a moral commitment to promoting global social progress.[65]

For those who continue to believe that the 'free hand of the market' is the best way to achieve optimum human living conditions, Heilbroner provides several cogent reasons why the market system does not operate in this

idyllic way. First, the units of operation within the market are no longer small, adaptable enterprises. The growth of powerful transnational companies has destroyed the stability and adaptability associated with smaller enterprises, and has created 'giant beams in the superstructure of capitalism' that destabilize national economies. Second, ignoring the cost of external effects such as pollution allows for inaccurate and irrational cost–benefit calculations with serious adverse long-term implications. Third, promotion of a culture of selfishness with emphasis on the consumption of saleable goods diminishes investment in those public goods—such as education, health care, and the environment—that are essential for the long-term survival of the social system within which the market operates.[66] Capitalism as an economic system is closely linked to liberalism as a political order and the integral connections between the two are often overlooked. However, the market, as the conduit for the energies created by capitalism, is acknowledged as imperfect and potentially subversive of some of liberalism's broader ideals. The design and implementation of new forms of control may make it less dysfunctional.[67]

It is surely clear at the end of the twentieth century that neither the concept of the individual as atomized, entirely free, and self-sufficient, nor that of the state, market, community, or culture as Leviathan can serve to enhance the achievement of human well-being in the broadest existential and physical senses. The interdependent and mutually advantageous links between individuals and nations need to be both appreciated and constructively advanced to foster a concept of human rights that is truly universal both in theory and in practice.

Work towards promoting sustainable development and renewing confidence in solidarity in an interdependent world will require a much broader approach to ethics and the moral life than can be constructed merely through a narrow conception of human rights. Human rights cannot be widely achieved while exploitation of people and nature continue unchecked. New approaches will need to go beyond the ethics at the micro level of individual relationships, to include ethical considerations at the meso level of whole populations of people within nations, and to ethical considerations at the macro level of the environment and the interests of future generations. In the quest for greater social justice it should be acknowledged that in the face of limited global resources the redistribution which all have agreed must take place in South Africa, is also necessary, and for very similar reasons, within other nations and at a global level. Galbraith's account of the good society and how this could be achieved within the constraints of our abilities is inspiring.[68] It seems reasonable to suggest that Rawls's description of the minimum requirements for a well-ordered society[69] can be extrapolated to considerations of the minimum requirements for a well-ordered world.

There is some cause for optimism that a gradual shift in mind-set is taking place towards such a new paradigm for the world. Many scholars are thinking and writing imaginatively about such issues. This is reflected in the Declaration of Human Duties, which was drafted because:

> Whereas the Declaration of Human Rights represents one of the great advances of the twentieth century, it fails to address Human Duties and Responsibilities as necessary counterparts

of these Rights . . . Recognition of and respect for human rights demand the acceptance of specific duties, in order to assure an adequate quality of life for all people and the persistence of a favourable environment for future generations. We therefore consider a binding responsibility for ourselves, not only as human beings, but especially as scientists and educators, to carefully and explicitly carry out these duties to the best of our ability, even if their enactment may run counter to established policies generated by traditional sources of power and influence.[70]

See Appendix 1.

Other trends in scholarly work also reveal slowly emerging new paradigms of thinking that provide hope for such progress. These changes include a deeper understanding of history and of the social forces which shape the world, gradual shifts towards new ways of economic thinking, new directions in political philosophy, broadening conceptions of the self, enhanced ecological sensitivity, shifts in understanding how power can be used more constructively, greater respect for other cultures, and new perspectives on international relations.[71] It is in such changing conceptions that there is hope for wisdom in the use of new forms of power that will flow from genetic engineering and other scientific advances. (See Appendix 2.)

Future generations will judge our commitment to human rights by the extent to which we can make progress in these directions and not by how much we talk and write about human rights. My approach will be considered too idealistic by those who are satisfied with the state of the world, or who believe that we do not have the capacity to make the changes suggested. However, we should retain

ambitious aspirations for human progress as all change has its origins in ideas, and history demonstrates that even spectacular change is possible. Our idealism cannot rest at the level of drawing up International Declarations, or focusing merely on abuses of individual human rights—as important as these are. We need to conceive of systems approaches within which patterns of behaviour at individual, national, and international levels could contribute to achieving our high ideals. Such ideals may be attainable if we could be more self-aware, more honest about ourselves and about our dependence on others for our existence—and more concerned about future generations.

While I am fully cognizant of the great complexity of the tasks that lie ahead I should like to (again[72]) echo the words of Chinua Achebe, the distinguished Nigerian author:

> Despair should not eclipse hope . . . neither history nor legend encourages us to believe that a man who sits on his fellow will some day climb down on the basis of sounds reaching him from below. And yet we must consider how so much more dangerous our already very perilous world would become if the oppressed everywhere should despair altogether of invoking reason and humanity to arbitrate their cause.[73]

Appendix I. Declaration of Human Duties

IT IS THE DUTY OF EVERY HUMAN BEING TO:

1. Respect human dignity as well as ethnic, cultural and religious diversity.
2. Work against racial injustice and all discrimination of women and the abuse and exploitation of children.

3. Work for the improvement in the quality of life of aged and disabled persons.
4. Respect human life and condemn sale of human beings or parts of the living body.
5. Support efforts to improve the life of people suffering from hunger, misery, disease or unemployment.
6. Promote effective voluntary family planning in order to regulate world population growth.
7. Support actions for an equitable distribution of world resources.
8. Avoid energy waste and work for reduction of the use of fossil fuels. Promote the use of inexhaustible energy sources, representing a minimum of environmental and health risks.
9. Protect nature from pollution and abuse, promote conservation of natural resources and the restoration of degraded environments.
10. Respect and preserve the genetic diversity of living organisms and promote constant scrutiny of the application of genetic technologies.
11. Promote improvement of urban and rural regions and support endeavours to eliminate the causes of environmental destruction and impoverishment which can lead to massive migrations of people and overpopulation in urban areas.
12. Work for maintenance of world peace, condemn war, terrorism and all other hostile activities by calling for decreased military spending in all countries and restriction of the proliferation and dissemination of arms, in particular, weapons of mass destruction.

Appendix 2. Emerging Changes in Paradigms of Thought

Understanding History

An 'integrated systems approach'.

Shifting Economic Paradigms

From '*laissez-faire* or authoritarianism' to 'globalization' to 'freedom with accountability'.

New Directions in Political Philosophy

From 'liberalism/capitalism and communism/socialism' to 'social democracies and neo-liberalism' to 'communitarianism'. From 'rights' to 'rights and responsibilities'.

Changing Conceptions of the Self

From the 'anomic self' to the 'embedded self'.

Changing Relationships of Science, Technology, and Philosophy to Nature

From 'dominion over' to 'stewardship'.

Shifts in Power Relations

From 'knowledge and power over' to 'wisdom and power with'. From 'military might' (might is right) to 'moral example' (right is might).

Cultural Relations in an Interdependent World

From 'imperialism' to 'multiculturalism'.

International Relations in an Interdependent World

From 'realism' (power and force) to 'pluralism (order) and solidarity (justice)'.

Peace Movements

From 'acceptability of weapons of mass destruction' to their 'illegality'.

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SOLOMON R. BENATAR

The Biotechnology Era

A Story of Two Lives and Two Worlds

Solomon R. Benatar is a professor and chairman of the Department of Medicine at the University of Cape Town and the head of the UCT Centre for Bioethics. He is actively involved with the US National Academy of Sciences' Committee on Human Rights as well as the Commonwealth Medical Association's Project on Health and Human Rights.

A CONFERENCE CELEBRATING THE FIFTIETH ANNIVERSARY of the Universal Declaration of Human Rights is an important milestone event. Much has been achieved in advancing the quality of human life in the past fifty years and human rights has become a new standard of civilization by which nations are being judged.[1] However, it must be acknowledged that an enormous amount of work remains to be done to ensure the achievement of even basic human rights for a large proportion of the world's population.

While we celebrate the achievements of the past fifty years, we cannot be complacent with our successes. It is through an approach which is both critical and constructive that further progress can be made. Simply stated, the goals of human rights are to safeguard human dignity and the fundamental rights and freedoms of individuals. This much is hardly contentious. Neither is the value we place on the concept of human rights, as evidenced by this conference. However, we must surely concede that despite many thoughtful documents and statements, considerable debate continues on what counts as a human right, how such rights can be justified and, even more important, how they can be achieved in practice. This task will become more difficult as biotechnology provides information that has implications beyond the rights of individuals, making it possible to take decisions with implications for future people.

We have entered an era in which the application of advances in biotechnology will have a profound impact on human life. In order to understand how

the power of new biotechnology may affect our lives in the future I shall begin by describing two very different lives and then, in the context of these, reflect on the state of the world fifty years after the Universal Declaration.

Two Lives

The year is 1998, the place Zimbabwe, and the person is a twenty-eight-year-old black woman. She is emaciated, hungry, HIV positive, suffering from tuberculosis and pregnant with her fourth child. She has no hope of access to drug treatment for tuberculosis, one of the most cost effective treatments available in the world at one American dollar per year of life saved. She has lost two children from lack of access to a few days of appropriate treatment for malaria and diarrhoea. Her third child is stunted from malnutrition and is emotionally listless as a result of the social and intellectual deprivation which has characterized her life. This small family represents over 600 million people who live in Africa and a total of one billion people in the world who live on less than one dollar per day. Another three billion people live under marginally better conditions on about three dollars per day.

The year is 1998, the place Edmonton, the person a fifty-six-year-old white Zimbabwean-born physician. Access to regular insulin injections for over forty years has enabled him to survive childhood, to receive tertiary education, to enjoy a fulfilling family, academic and social life and to provide similar opportunities for his children. He represents one billion people in the world who have been able to achieve their human potential and live privileged lives without knowing hunger or deprivation of any kind. The gulf that separates the life experiences of these two people and their families makes it almost impossible for the one to truly understand the life-style of the other.

The State of the World

It is necessary to acknowledge with regret that gross violations of human rights continue on a massive scale around the world (including Europe and the US) in association with proliferating wars, torture, ethnic conflict, refugeeism, police brutality, exponential population growth, economic exploitation and widespread poverty which reflect the dark side of progress during the 20th century.[2–7]

As we approach the next millennium we need to ponder the view expressed by the recently deceased Sir Isaiah Berlin, a distinguished Western philosopher, that "the 20th century has been the worst in Western history."[2] The evidence for this deteriorating state of the world includes widening economic disparities between rich and poor, flagrant disregard for others (especially distant others) and for our natural environment, failure to achieve sustainable development in many countries, growth of the underclass in wealthy countries, recrudescence of infectious diseases such as tuberculosis which could have been conquered, the

spread of several new infectious diseases, including HIV infection, across the globe and progressive ecological degradation which threatens future generations and planetary survival.[2,3,5,7,8]

The polarization of the world, into a shrinking core of people with access to all they want and an enlarging pool of people at the periphery who are denied even basic human rights, can be explained (at least in part) by the abuse of power. The privileged world needs to better understand and acknowledge this if there is to be any hope of even beginning to rectify such disparities and to ensure that new forms of power associated with control of biological processes will be used to enhance human well-being universally rather then selectively.[3,5-7]

In the past, domination of some by others was overtly manifest within the power structures of empires, feudal states, religions, kingdoms and the institutions of slavery and racism. New and more sophisticated forms of power in successive eras have been covertly used to perpetuate the domination which was previously maintained through more overt processes. Expenditure on modern forms of warfare and weapons of mass destruction has diverted resources away from the development necessary to enrich human life. In addition, a considerable portion of the resources loaned to poor countries for the purposes of national development has been misused for the purchase of weapons.[3] Military and imperial oppression have been supplemented by increasingly powerful forms of economic oppression during the past fifty years. This has been achieved not only through the efforts of powerful nations, but also through major transnational organizations (such as the International Monetary Fund [IMF] and the World Bank) that are much less accountable than governments.

Control has been gained over the economies, lives, health and suffering of billions of people through such modern economic processes as the unscrupulous creation of massive and unpayable debt by the linkage of aid to the purchase of military weapons and repayment mechanisms which impose austere structural adjustment programs; the eclectic application of free trade and protectionist practices to facilitate the extraction of natural resources required for economic growth in the industrialized world; and the use of modern information technology to repackage money and manipulate massive transactions over vast distances almost instantaneously, with devastating effects on the currency of weak nations.[3,5,10] These processes, together with the support for despots by powerful nations merely to satisfy their foreign policy aspirations, form the substance of a history that in due course should be unravelled in the equivalent of a global Truth and Reconciliation Commission. While the poor are not themselves blameless, there is a need to examine more thoroughly the role of industrialized nations in creating a polarizing world, and the consequent moral obligations which must extend beyond interpersonal relationships to connect all the peoples and nations in the world.

Following his extensive travels through "the landscapes of modern ethnic war" in Serbia, Croatia, Bosnia, Rwanda, Burundi, Angola and Afghanistan, Michael Ignatief wrote eloquently about the mixture of moral solidarity and hubris which impels powerful nations to embark on a "brief adventure in putting the world to rights." With regard to exploitation he notes that, "[I]n the 19th century, imperial interests bound the two worlds together: ivory, gold and copper sent the imperial agents into the heart of darkness. During the fifty years of the cold war the presence of one superpower's agents, spies, or other mercenaries in any particular ethnic war guaranteed the presence of the other on the opposing side." He goes on to ask how, "[N]ow [that] there is no narrative of imperial rivalry or ideological struggle that compels the zones of safety to make the zones of danger their business...what is left of a narrative of compassion...?"[11]

The example of South Africa "making its arduous journey back from the abyss", is used to counter despair and he argues that "as weak and as narrow as the narrative of compassion and moral commitment may be, it is infinitely stronger than it was only fifty years ago.... We are scarcely aware of the extent to which our moral imagination has been transformed since 1945 by the growth of a language and practice of moral universalism expressed above all in a shared human rights culture."[11]

Hosle, a German philosopher, in reviewing the state of the Third World as a philosophical problem linked to progress in the industrialized world, concludes that rather than seeking solutions in compassion, altruism or reparations for past actions, rational self-interest provides sufficient reasons for wealthy nations to address these issues.[12] In his view, and others who have written similarly, the growing populations of deprived people within rich nations and within the poor periphery now pose threats from which none can escape and which therefore cannot be ignored. "Violence from below", massive refugeeism, the rise and spread of new and recrudescing infectious diseases, and adverse ecological effects threaten us all.

Medical advances have also imposed major modifications on human life. Prolongation of life through a range of life support systems and transplantation, control over the ways in which we die through new approaches to death and dying, and more recently the ability to initiate life and even create it *in vitro*, with all the new problems these bring, are part of such progress. The influences of multinational drug companies and of the technological imperative on medical practice have led to unsustainable forms of medical practice and to major injustices in access to health care, even within wealthy nations that claim or desire to be just societies.[13] Unless more rational approaches are devised for the delivery of health care within nations, two- or three-tier systems will be perpetuated through discriminatory rationing processes. This may be further aggravated by the exploitation of newly available genetic data.[14]

Human Rights and Biotechnology

When we speak of biotechnology and human rights we need to ask ourselves whether we are speaking about the rights of the four billion people who live under wretched conditions or the one billion who live so well and have so much to look forward to through the benefits of scientific progress.

It is necessary to ask this question firstly because the disparities between the two types of lives I have mentioned have been constantly widening over the past thirty years and there is little evidence that this pattern will be reversed; secondly, because the abuse of power has been a significant force in contributing to wide disparities in human lives and to gross violations of human rights; and thirdly, because there is little to suggest that the new power which will be available in the biotechnology era will be used any more wisely than other forms of power have been used in the past.

We also need to ask several other questions. What counts as a right, how are rights justified, and how they can be achieved in practice? What does the concept of human rights and the Universal Declaration mean to our young Zimbabwean woman, and why has she not enjoyed the benefits of even basic human rights in her life? While she may have been enfranchized and never unjustly detained or tortured, she has certainly not had access to the basic biological and social resources required for human flourishing. Even after her country acquired independence from its colonizing power, wealthy nations concerned about sustaining their own economic growth have relentlessly continued to extract resources from her poor country at low prices. Massive deprivation has been created for her and for citizens of other poor nations through the sale of arms to corrupt leaders, enabling them to accumulate vast wealth and to wage unnecessary wars, often against their own citizens. Global economic processes have also continuously eroded the value of her country's currency and placed the economy of poor countries at the mercy of such unaccountable organizations as the IMF and the World Bank.[3, 9, 10]

What will happen in the era of biotechnology to improve her life? Will advances in plant, animal or human genetic engineering be of any benefit to her? Will the sentiments expressed in the Universal Declaration of the Human Genome be respected? Is it possible that genetic data from some groups of people will be exploited for economic benefit, or even more horrifyingly, to develop genocidal weapons? Will major agrochemical companies enable cheaper food to be produced or will the insistence on intellectual property rights and reduction in the biological diversity of agricultural products disrupt the economies of poor nations and ensure that food prices continue to rise and malnutrition be aggravated? If drugs for malaria and tuberculosis have not been made available in poor countries is it likely that the poor will benefit from advances in biotechnology? These questions cannot be avoided as we celebrate the fiftieth anniversary of the Universal Declaration of Human Rights.

While the Universal Declaration on the Human Genome, the first universal instrument in the field of biology, sets out to safeguard human rights, fundamental freedoms and the freedom of research, it is clear that there are many obstacles to achieving the high ideals expressed in this document.[15] Despite the statement in Article 4 that "the human genome in its natural state shall not give rise to financial gains," and in Article 6 that "no one shall be subjected to discrimination based on genetic characteristics...," there is already evidence to suggest that these requirements will be ignored. Considerations of "who will offer what to whom and at whose expense in health care in the US" have been explored in detail and concern expressed that genetic information will be used adversely to influence access to health care in a nation with "a long and disturbing history of drawing sharp distinctions among [its] citizens on the basis of race and ethnicity" as well as "a long tradition of belief in biological determinism."[14]

The implications of genetic testing for medicine and for the rights of privacy and confidentiality of individuals are many, varied and problematic. Shifting the frontier of medicine from curing diseases and caring for individual persons, towards the public health goals of preventing suffering in future generations, and even to the possibility of enhancing physical and mental capacities, poses major challenges to the concept of human rights. The ability to improve public health through mandatory vaccinations, at the cost of potential suffering of some who may have adverse reactions to vaccines, is widely accepted. While this acceptance of social benefit over individual rights does not apply to predictive and carrier testing for genetic abnormalities—and indeed the analogy drawn here is not exact. It is possible that in time public health considerations may also achieve over-riding importance and that the coercion required for such programs will threaten the rights of individuals.

Another problem is the generation of massive amounts of genomics data which is driving megamergers by companies seeking patents. The US patent and trademark office has received thousands of requests for patents on nucleic acid sequences. Major biotechnology, chemical, pharmaceutical and agribusiness companies are investing in molecular technologies. Techniques that are paving the way to controlling farming and world food production by giant agrochemical companies may threaten subsistence farmers in poor countries. Reduction of the genetic diversity of agricultural products or excessive protection of intellectual property rights, locking farmers into corporate control of production, could have profoundly adverse effects on the economies of developing countries and the lives of their citizens.[16] Attempts to patent products developed from information derived from plants used by traditional healers in developing countries and eagerness to patent components of the human genome for exclusive economic gain are viewed by the less fortunate in our world as new forms of exploitation that ignore the plight of those living in economic and social misery.

There are at least three key risks associated with the new life science industry: that the excessively high valuation of some life science conglomerates could substantially influence the international stock market; that genetically engineered products may be widely used before they have been rigorously tested; and that developments in biotechnology are outstripping public understanding and hence eroding both the trust and confidence of the public.[16]

In 1991 when the Human Genome Diversity Project was proposed, critics of the project argued that minority populations struggling for survival needed economic support and not the preservation of their genes or "immortalization" in laboratories. Recently described plans to put the health records of every Icelandic citizen into a huge database and then grant a private company the right to analyze and market the data and to exploit the genetic composition of Icelanders are other examples of practices that cause great concern.[17]

During the Truth and Reconciliation Commission's investigations into biological warfare in South Africa it was revealed that there had been programs designed to investigate methods of interfering with the ability of Africans to reproduce. This gives some credibility to more widespread fear among the marginalized and oppressed of the world that knowledge gained from the Human Genome Project and the Human Genome Diversity Project may be used for genocidal purposes.

How will individual human rights be protected under these circumstances? More declarations will not be sufficient. Against the background of power abuse in this century, it can be justifiably concluded that human rights declarations, despite their best intentions, have not achieved as much as desired to guarantee widespread access to even the most basic requirements for a decent human existence. It therefore becomes necessary to ask whether in the era of biotechnology the language of human rights alone can enable achievement of the respect we desire for all individuals.

In defence of the human rights approach as the single most powerful means of promoting human well-being, it can also be argued that failure to achieve human rights more widely is not the result of an inadequate concept of human rights, but rather that the full potential of the human rights approach has not been achieved because of simplistic or insincere use of the term and a lack of commitment by powerful nations to what a more wholesome concept of human rights means and implies for them as well as for others. A more coherent and comprehensive approach to human rights is required, with full consideration of the conceptual logic of rights language, as well as its moral grip.[7,18]

Duties and Responsibilities: Consolidating and Expanding the Notion of Human Rights

It is generally agreed that the human rights approach to achieving human well-being has been a powerful and necessary tool. Jack Donnelly, who has written

extensively about human rights, has made a strong case for the concept of human rights as a "new international standard of civilization" which has replaced the "classic" (19th century) imperialistic concept, and the subsequent (inter-war) "state-centric" logic of the sovereign equality of states. Despite arguments regarding the "size of the step taken [or] the distance remaining from the ideal," he argues that the move towards a form of international norms and law represents moral progress.[1]

The continuing violations of human rights, however, even in wealthy industrialized countries, and the intensified polarization of our world in the 20th century illustrate that more is required to ensure the moral progress we desire.[4, 6] The human rights approach must be extended by asking ourselves what responsibilities we have to others. Are rights meaningful without responsibilities? Who has these responsibilities? How can we ensure that responsibilities are honoured and reintegrated into the rights approach? Can the aims of the human rights approach be complemented by the use of other moral languages?

Both the Universal Declaration of Human Duties, recently offered as a supplement to the Universal Declaration of Human Rights, and Audrey Chapman's detailed formulation of how rights and responsibilities (which are indeed inextricably related), can be reintegrated, illustrate how the power of human rights language could be enhanced.[19, 20] Chapman expands on Mary Ann Glendon's concern that political discourse is impoverished by a human rights discourse in the US which, "far more than in other liberal democracies, is characterized by hyper-individualism, exaggerated absoluteness and silence with respect to personal, civic and collective responsibilities."

In her thorough argument for reintegrating rights and responsibilities, Chapman draws attention to the three advantages claimed by James Nickel for paying greater attention to the duties related to specific rights: moving the human rights debate in the direction of who has to do what if these rights are to be realized; more focused and specific discussions of questions of priority among rights and other important social goals; and discussions of the inadequacies of the contemporary international political and economic order. She eloquently describes the shift required from an excessively liberal human rights paradigm to a social model of human rights which links benefits and entitlements with the acceptance of a series of responsibilities. This is the starting point for such rights is the principle of respect for all persons in the context of community.[20]

The languages of virtue, love, care and solidarity are also increasingly being articulated and we should not underestimate the power of these in helping to shape our perceptions of what sort of people we should be.[21] Nelson Mandela and Desmond Tutu have been inspirational models, demonstrating the power of moral behaviour that embraces respect for human rights, tolerance, a deep sense

of virtue, the ability to show solidarity with others and a spirituality which allows vengeance to be tempered by forgiveness.[23]

Bioethics and Human Rights

Both bioethics and human rights are relatively new approaches to moral behaviour which have flourished independently over the past thirty years. In recent times there has been a growing interest in linking the work of bioethics with human rights activities. While these endeavours are disparate in their intellectual and social approaches, both are concerned with fostering human well-being. The human rights movement is driven predominantly by lawyers and focused on conflict situations. It has been, to a very considerable extent, prescriptive and activist in its orientation. It has indeed been a powerful movement in the context of fear of excessive state power over individuals, the escalation of war and the pervasiveness of conflict in the 20th century, even though its full potential has not been remotely achieved.[24]

Bioethics, driven predominantly by the critical and questioning approach of philosophers, with a special focus on the doctor–patient relationship, has had a powerful influence on the balance of power in the context of medical decision-making in the complex milieu of modern medical practice. Given that health care professionals may be the first to witness human rights abuses, for example in the intimacy of families, within mental institutions, in prisons, in times of war and increasingly in relation to genetic information, it is undisputed that they have a special role in responding to human rights violations and in extending advocacy for human rights. The universality of human rights and the universality of medical ethics are thus linked by their common goal of advocacy for individuals and the task of improving human flourishing.[24–27]

It should be noted, however, that neither the thrust of bioethics nor that of human rights have included sufficient attention to issues of social justice. The limited efforts to promote social justice have enjoyed a singular lack of success. For example, the admirable rights-based argument for universal access to health care in the US proposed by the American Association for the Advancement of Science and the advocacy of the American College of Physicians for such universal access have been dismal failures. The impotence of such a rights approach is especially noteworthy within a powerful nation in which the notion of human rights is championed.

Complacency and self-satisfaction with an approach to human rights which suffers from the defects described by Glendon, Nickel and Chapman and which focuses on the abuses perpetrated against identifiable individuals, especially in other nations, should not be allowed to eclipse a more comprehensive and self-critical approach which could have profound effects on the lives and well-being of many.[5,7] Of course a more comprehensive approach will be more difficult to

implement than merely chastizing others. As Mark Twain wrote: "Tis noble to do good, and nobler still to teach others to do good, but also more difficult."

New Ways of Thinking Required to Make Moral Progress

More than bioethics and human rights advocacy will be needed to make moral progress. A deeper understanding of what it means to be a citizen in an increasingly interdependent world will need to embrace renewed concepts of civic citizenship, solidarity and concern for others, even those very distant from our own lives. New ways of thinking about ourselves, our relationships to others, including future generations and our ecological system, are necessary in order to link concepts of human rights to bioethics in its broadest interpretation and to promote social justice within and between nations.

Shifts in both mind-set and attitude are essential. This will involve going beyond mind-sets characterized by a narrow conception of human rights, egotistical forms of individualism, linear mechanistic formulations for societal functions, institutional ways of thinking that tend to become tyrannical and international relations based on "realism," power and short-term perspectives on human life and well-being.

A new paradigm would emphasize a broader conception of human rights closely integrated with responsibilities, a concept of individualism within a context of interdependence (solidarity) which includes concern for population well-being as well as individual well-being, a deeper understanding of the ways in which complex, interdependent systems function, an ethic for institutions which prevents them from eclipsing the moral lives of individuals, and an ethics of international relations which recognizes the responsibility not to harm weak and poor nations and groups of people through economic and other forms of exploitation.[3, 5, 7, 28, 29]

The Power of Moral Example

As powerful as human rights and other moral languages may be, setting a moral example is potentially much more influential. The need to set a moral example applies especially to powerful nations. Amnesty International's 1998 report on the extent of human rights violations in the US and Cassese's description of such violations in the prisons of Europe provide both insight into how such abuses can continue even in wealthy democratic countries, and a realization of the great need for setting moral examples.[2, 6]

Neglect of the poor within rich societies, perpetuation of unsustainable consumerist lifestyles, lack of universal access to health care within wealthy nations, and the continuing production of weapons of mass destruction, are also poor examples for other nations. A shift from the idea that "might is right" to the idea that "right is might" is needed. The Jubilee 2000 program to relieve poor nations of crippling debts exemplifies the need for moral leadership.[29]

Widespread support for this endeavour could provide concrete evidence of the power of rational persuasion in dealing with the intractable problem of poverty and human misery.

Operationalizing These Ideas

What will it take to build a more robust human rights framework and to foster greater human well-being on a global scale? First, it will be necessary to acknowledge that unbridled materialism and wasteful consumerism are associated with impoverishment of the human spirit and do not necessarily bring happiness. Perpetual economic growth for some cannot continue at the expense of others without sacrificing our humanity. Second, the root causes of poverty should be studied more seriously and openly debated. The poor are not poor because they are lazy, incompetent or corrupt. While the poor must also accept some blame for their condition, the causes of poverty are much more complex, and wealthy industrialized nations are deeply implicated in creating and sustaining poverty.

Third, powerful nations need to resolve to deal with the root causes of unconscionable economic disparity through such constructive processes as debt relief, more accountable methods of loans and repayments, progressive displacement of military goals, and expenditure towards programs of sustainable development and ecological preservation. If the gradual reduction in global arms expenditure from a peak of $1 trillion in 1987 to $750 million in 1997 can be accelerated and the resources rediverted to much needed sustainable development processes and effective peace endeavours, there will be optimism that some of the folly of the 20th century need not be perpetuated.[30,31]

Crucial to this approach will be the recognition that it is not merely altruism which is called for but a long-term perspective of rational self-interest in an increasingly interdependent world. Sustainable development and the widespread achievement of respect for human rights is in the interest of all, and can only be achieved through the active promotion of solidarity and the avoidance of economic, cultural and ethical imperialism. We should also acknowledge that all cultures have something to contribute to the development of a true form of universalism. To achieve this will require a broader approach to morality that goes beyond the concept of human rights.

Conclusions

Considerable progress has been made in human relations in the past fifty years and the human rights approach has been of great value. But it has not been enough to improve the lives of billions of people in the world. Additional moral approaches and strategies will have to be used to supplement and strengthen human rights activities. These are not beyond us if we can avoid being complacent and self-satisfied. As Douglas Roche has pointed out, "The present political process perpetuates a double standard of gross proportions in which money is

readily found to wage war but is unavailable to build the conditions for peace, including comprehensive social programs to benefit children. The result is a world fractured by countless alienations." He suggests that solutions lie in finding ways to operationalize the four main lofty objectives outlined in the UN Declaration on its fiftieth anniversary: peace, development, equality and justice.[31]

The new forms of power being unleashed by biotechnology will have to be harnessed and used with greater wisdom than power has been used in the past. Like nuclear power, biotechnology has the capacity for great harm and this must be avoided. The resources and energy being devoted to ethical aspects of biotechnology reflect our awareness and concern for potential abuse. But can we be successful? I would like to be cautiously optimistic that we can, but only if the forces moving toward some of the new ways of thinking and acting can be transformed into more widespread attitudes among citizens, governments and multinational organizations.[32]

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5 *Perspectives from Physicians and Medical Scientists*

5.1 *Transdisciplinarity: A Personal Odyssey*

Solomon Benatar

I understand the concept of transdisciplinarity as an integrated approach to complex problems using the methodology and insights from a range of disciplines with differing perspectives on the problem under consideration. Clearly, the term needs to be distinguished from what is meant by multi- and interdisciplinarity, but these three terms can be seen as a continuum, with transdisciplinarity as the most evolved version of an interaction that transcends individual disciplines.

Within science, major advances have been made through inter- and transdisciplinary activities. The example of the progress made within the American Unity of Science movement that emerged after World War II is illuminating. Despite the reservations of some that this endeavor would promote superficiality, quite the opposite ensued, and mathematicians, physicists, chemists, engineers, psychologists, and sociologists found it possible to work together in an integrated and productive manner. The examples of how the disparate disciplines of physics and chemistry came together in nuclear physics, how "in geometry, general relativity guided the physicist into the heart of mathematics," and how an understanding of science had to be coupled with an understanding of relations between science, religion, and government, illustrate how the development of hybrid fields was made possible by the combination of analyses and insights from logico-empirical and sociopsychological perspectives. The nature of such relationships between science and culture have recently been eloquently described (Daedalus 1998).

Similarly, within medical research and practice, major advances have resulted from collaborative work between chemists, physiologists, anatomists, cell biologists, pharmacologists, clinicians, and many other specialists. The

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value of such collaborative work is undisputed and is clearly apparent in the major theoretical and practical advances made in medicine in the second half of this century. Within the social sciences, there has perhaps been less collaboration of this type and greater scepticism of its value, although such scepticism has been eroding over recent decades, and the field of transdisciplinarity is beginning to flourish.

I was introduced to the concept of transdisciplinarity in the social sciences through reading the translation of Fernand Braudel's book *The History of Civilizations*. The history of the *Annales* (as recounted in the preface of this book) is an illuminating narrative:

> The *Annales d'histoire économique et sociale* was founded in Strasbourg in 1929. Its first editorial committee included two professors of history (neither of whom were orthodox historians), an archivist, a bank Governor, an expert on economic history and a professor from each of the following fields – sociology, Roman history, political economy and political science. The *Annales* sought to broaden the scope of historiography, introducing economic and social concerns alongside politics and diplomacy. "Nothing could be better than for each person concentrating on a legitimate specialization, laboriously cultivating his own backyard, nevertheless to force himself to follow his neighbors work. But the walls are so high that, very often, they hide the view . . . It is against these schisms that we intend to raise our standards."

In 1929, this was a radical departure from conventional scholarship, the program was called "aberrant and ludicrous," and there was a deep rift between this school and the Sorbonne. Braudel joined the *Annales* editorial board in 1937, and, under his editorship, it became highly innovative and the most influential historical organ in France – perhaps in the world at that time. It went well beyond the more traditional forms of economic and social history, deriving its subjects from anthropology, sociology, demography, psychology, even semiotics and linguistics. It aimed at the "demasculinisation of history and the development of a history of women, of youth, of childhood, of oral cultures, of voluntary associations, of non-Western civilizations, of non-consensual cultures." The net was cast even wider in the quest for total history and included geography, climatology, physics, biology, religion, mythology, navigation, literature, and cinema.

This school was considered heretical until the Sorbonne collapsed in 1968 and was divided into many different institutions of higher learning. Braudel was criticized for his Olympian approach but he had long distanced himself from the "over simple theories" and "sweeping explanations" of Arnold Toynbee and Oswald Spengler. He was equally dismissive of Marxist social models, which had become "congealed in their simplicity" and given the value of law. Braudel found an answer to criticisms of his approach by measuring

time on three scales. The first, *la longe durée*, is devoted to history, whose passage is almost imperceptible: that of humans in relationship to the environment, a history in which all change is slow, a history of constant repetitions, ever recurring cycles. The second, an intermediate scale of "*conjunctures*" has slow but perceptible rhythms – a social history of groups and groupings. The third is the *rapid-time scale* of events – a traditional history on the scale not of humans but of individual humans – the most exciting of all and richest in human interest but also the most dangerous. "We must learn to distrust this history with its still burning passions, as it was felt, described, and lived by its contemporaries whose lives were short and as short sighted as ours."

Braudel was perspicacious in his analysis of the past and visionary regarding the future, and he was able to shift his focus from one scale of history to another without difficulty. He saw the teaching of history not as an "educational story" but rather as a "tale of adventure," with the secret to telling this lying in simplicity – not "simplicity that distorts the truth, produces a void, and is another name for mediocrity, but simplicity that is clarity, the light of intelligence. Find the key to a civilization: Greece, a civilization of the Aegean from Thrace to Crete – not a Balkan peninsula; Egypt, a civilization that tamed the Nile."

We live at a momentous time in the history of the world. Population growth, prolongation of the human life span, the development of weapons of mass destruction, interminable internecine belligerence, refugeeism on a massive scale, exploitation in increasingly sophisticated guises, widening disparities in health, wealth, and human rights, the recrudescence of old and the emergence of new infections diseases, rapid travel, instantaneous communication around the globe, ecological instability, and the rise of fundamentalisms could be the seeds or the portents of chaos and entropy (McMichael 1993, Last 1998).

The great divide between the scientific and literary cultures was clearly described by CP Snow in his influential 1959 lecture "The Two Cultures." He recognized the link between this cultural gap and the economic gap between rich and poor nations, and he believed that these gaps could be narrowed. However, the gaps continue to widen – although it is now being recognized, and, more importantly, acknowledged, that this cannot continue (Benatar 1998).

In his book *Geopolitics and Geoculture*, Immanuel Wallerstein (from the Fernand Braudel Center for the Study of Economics, Historical Systems, and Civilizations), also uses a transdisciplinary approach to analyze the events leading up to the dramatic changes of the 1980s, their short-term impacts and their implications for the probable course of world geopolitical realignments in the twenty-first century. The breadth of his approach is exhilarating as is his insightful analysis elsewhere of the evolution of the social sciences.

Richard Tarnas's book *The Passion of the Western Mind* is yet another example of how knowledge of contributions from many different disciplines,

and from varied aspects of human endeavor over many centuries is essential to understanding both the evolution of Western thinking and culture and the continuing changes in Western thought which characterize our time. However, caution is necessary in interpreting historical periods in which our own lives have been lived and shaped (Hobsbawm 1994).

Transdisciplinary study and the operationalization of new insights which may be revealed would seem to be an exciting and viable key to solutions for averting tragedy on a vast scale and for restructuring social relations within and between nations in ways which could allow sustained development and peaceful coexistence.

EXPERIENCES WITH TRANSDISCIPLINARITY

Living and working as a physician (especially as a leader in a medical school within a country undergoing momentous change) and studying disciplines which reach beyond the immediate confines of medicine have been enormously enriching experiences for me. An intellectual awakening began with an interest in ethics as it applied to medicine and has grown to embrace interests in philosophy, the history of ideas, sociology, anthropology, economics, political science, world politics, law, multiculturalism, the structure and function of health-care systems and considerations of the concept of human rights as a sincere goal rather than as a rhetorical weapon – initially as applied to medicine but also in relation to national and global problems.

My work has included: interaction with philosophers, theologians, sociologists, physicians, lawyers, nurses, administrators, hospital chaplains, and lay people within a multidisciplinary Bioethics Center at the University of Cape Town (UCT) Medical School; interaction with scholars from diverse fields in South Africa and abroad; developing and teaching medical ethics to medical students in close collaboration with a philosopher for more than ten years; the opportunity to engage in transdisciplinary academic activities during a sabbatical year in the program in Ethics and the Professions at Harvard University; and participation in several international and multidisciplinary conferences/research projects on such topics as constraints to freedom of science and scholarship, medicine and the market, institutional ethics, health and human rights, equity and ethics in health care, the ethics of cloning, and now on transdisciplinarity.

These activities have enabled me to realize the profound need to broaden medical education and practice to include a much deeper understanding and consideration of: i) human nature; ii) the power of social influences on disease and health; and iii) the forces which have shaped our world and will continue to shape it. Living, working, and becoming immersed in South Africa's problems has also sensitized me to the worldview of black people, who, for

centuries, were considered sub-human and who were successively enslaved, exploited, and marginalized. Understanding the anguish of those involved in the struggle to overcome apartheid and entrenched racism, and reading the brilliant works of Africans from all areas of this vast continent, from the USA and from the Caribbean, reveals the narrowness and dogma which pervades our world. It also exposes the potential for human progress through broader conceptions of scholarship and the understanding of other worldviews that could be achieved through such integrative processes as transdisciplinarity.

SUCCESSES

The rebirth, growth, and evolution of bioethics is in my view a success story. Medicine is an ideal discipline within which to transcend the boundaries between science and art. Both are necessary for excellence in medical education and practice. Neither on its own is sufficient. Transdisciplinarity in medicine is a process in transition – much has been achieved but much also remains to be achieved.

I see the successes as embracing the creation of an academic and practically oriented forum for bioethics within medical schools, which has given members of the various disciplines involved in the group the opportunity to: i) be part of a medical school; ii) mix with a wide range of medical staff and students; iii) hear about and discuss ethical dilemmas that must be dealt with at a practical level; and iv) work in an accountable public forum to craft documents and policies which can be widely debated and applied.

Sensitizing health-care staff to the ethical issues which pervade medicine and human life and to the role of non-medical colleagues in addressing health-related issues and the introduction of ethics and the humanities as a serious academic endeavor within a medical school, have stimulated medical students to broaden their education. Public education about ethical issues in medicine has empowered citizens in health decision-making and contributes to the development of a culture of democracy. The influence of bioethics on medicine has been enhanced by including the study of humanities in medicine. Though in their infancy, these changes in medical education will hopefully be associated in time with changes in practice which will enhance the care of suffering people – as individuals and collectively.

FAILURES

In environments where specialization and sub-specialization have become dominant, it has been difficult to promote broad general attitudes to subjects requiring transdisciplinary and comprehensive approaches. For example, within medical practice, family practitioners accuse specialists in internal

medicine, surgery, oncology, and other disciplines of having lost sight of the overall health of the patient and of focusing on particular aspects of health and disease. Similarly, even within a discipline such as internal medicine, it is claimed that sub-specialization into organ-based disciplines has further narrowed the perspective on illness and suffering. Furthermore, many sub-specialists have knowledge of only portions of there own organ specialties so that, for example, cardiologists may only be interested in some specific aspects of heart disease or even specialize in molecular aspects of cardiology to the extent that skill is lost in providing care even for those aspects of cardiac disease related to their own scientific interest.

More broadly, anthropologists and sociologists consider all medical practitioners to be excessively focused on biomedical aspects of disease and as failing to consider suffering in a broad social context. Despite the intellectual advances made in transdisciplinarity in medicine and in medical education, some of which I have mentioned, these have not been even remotely translated into effective practices. This is in part due to the fact that in medicine, and especially in the most highly industrialized countries, those interested in ethics, sociology, economics, law, anthropology, and other disciplines which impinge on and affect health have become isolated into academic enclaves unexposed to each other's thoughts.

I have experienced this in my work with three groups of people concerned with ethical and humane aspects of medical practice. Within a group focused on philosophical, legal, and political science perspectives on professional ethics, bringing together scholars from diverse fields (such as medicine, law, philosophy, political science, and economics) resulted in successful interaction across these disciplines. Participants were able to achieve some insight, although perhaps on a limited scale, into the methodology and thinking processes of other disciplines and to begin integrating these into their modes of thinking. In another group of scholars, focusing on anthropological perspectives on medicine, similar insights were achieved across another set of disciplines. In a third group, based in a medical school environment the emphasis on scientific aspects of medicine and more applied aspects of medical ethics touched only superficially on the above-related disciplines. It seemed to me as I interacted with these three groups that, while they were internally successful, they were too isolated from each other, both intellectually and in practice, to achieve the goals of transdisciplinarity. Such relative isolation leads to a measure of self-satisfaction within narrow groups – perhaps an inevitable aspect of super-specialization. While it should be acknowledged that sincere efforts were made to break down barriers, the main point I wish to make is that, in the academic world, it is not easy to achieve a broad degree of transdisciplinarity even at the intellectual level, let alone in practice. So I see this aspect of transdisciplinarity as in its infancy with much needing to be done to propagate it within professional education and professional practice.

TRANSDISCIPLINARITY IN THE SERVICE OF PRESSING SOCIETAL ISSUES

I consider that there at least three major societal issues which need to be addressed in a more thorough, scholarly, and transdisciplinary manner than has yet been attempted.

World debt

Its origins, how it has grown and been sustained, its implications for health and human development, and how these could be addressed. Unless this issue is addressed successfully, it would seem that the wide disparities which characterize and threaten both the "core" and the "periphery" will intensify to the detriment of all nations.

The social construction of human rights abuses

Despite the Universal Declaration of Human Rights almost fifty years ago and much effort devoted to propagating belief in, and commitment to, this ideal, the greater part of the world's population live in situations where even basic human rights are not achieved and where human-rights abuses are rife. Why this is so, what needs to be done, and how change can be achieved are urgent issues that intellectuals from a range of disciplines could address.

Military expenditure and the implications of military influence on foreign policy and international relations

Poverty, a major scourge in our modern world, could be effectively addressed if even a minor proportion of military expenditure were to be redirected towards human development. How this could be achieved is worthy of study.

In attempting to deal with these complex issues, it is necessary to affirm that imaginative research seeking new knowledge, perceptive integration of existing knowledge, inspirational teaching, and skill in transforming knowledge into practice are different aspects of scholarship that all need to be recognized and rewarded. The hope is that a broader conception of scholarship both within disciplines and in transdisciplinary work holds much promise for the future.

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CHAPTER 1

Ethics and Cardiovascular Therapy: Lessons from the third to the first world

Solomon R Benatar

INTRODUCTION

Human health and well being worldwide are profoundly affected by complex interactions between economic, social, and political forces as well as by behavioural patterns and modern medical practices. The balance of these forces and the nature of health services that affect health vary greatly, especially between wealthy and poor countries. When comparing health services and expectations for health care in countries around the world it is necessary to appreciate that economic conditions, consumption patterns and the way of life in industrialised countries cannot become the norm for the whole world.

For example, the USA, with 5% of the world's population, accounts for over 20% of global energy use, and 50% of annual global expenditure on health care (over $4000 per person per year) – yet there is no universal access to health care for all US citizens. In addition of US$70 billion spent annually on medical research, 90% is spent on diseases that account for only 10% of the global burden of disease. Such ways of life, consumption patterns and health care practices cannot be emulated in most countries and are probably not sustainable in the USA.

Improvements in human health globally and the achievement of better lives for all people throughout the world pose the 21st century challenge. The ability to achieve such goals will be dependent on developing new paradigms of thinking about sustainable development and about levels of effective health care that can be made universally accessible. To achieve such goals it will be necessary to couple the quest for individual health to processes that could improve population health. It is proposed that this could be facilitated by broadening the discourse on ethics and health from its current focus on ethics at the interpersonal level of the doctor-patient relationship to embrace the ethics of public health and the ethics of international relations.

As all debates about ethics start with a description of the facts, I begin with an outline of the burden of disease/cardiovascular disease, expenditure on health and a brief review of the global forces influencing health and medical research. This will set the scene for a discussion of how an extended discourse on ethics could contribute to global health.

THE GLOBAL BURDEN OF DISEASE

At the beginning of the 21st century life expectancy and patterns of diseases differ markedly across the world. Life expectancy at birth ranges from well over 70 years in highly industrialised countries to below 50 years in many poor countries. Wide disparities in life expectancy are also observed within wealthy countries. In sub-Saharan Africa gains in life expectancy achieved during the first half of the 20th century are rapidly being reversed by the HIV/AIDS pandemic.

Of the approximately 52 million people who die each year (mid-1990s) 17.5 million die of infectious and parasitic diseases (16 million of these – many in their youth – in the developing world), 10 million die of diseases of the circulatory system (4.5 million of these in the developing world) and 6 million die of malignant diseases (3.5 million of these in the developing world) (Table 1-1).[1] Among the poorest quintile of people in the world 55% die of communicable diseases, as compared with 5% of the richest quintile. The World Health Organisation (WHO) estimated that in 1998, 11 million children and adults of working age died of six infectious diseases that could have been prevented at the cost of $20 per life saved.

TABLE 1-1: CAUSES OF DEATH IN 1997 BY MAIN CAUSES AND BY LEVEL OF DEVELOPMENT (WHO 1997)[1]

	Developed world (12 million deaths)	Developing world (40 million deaths)	World
Infectious and parasitic diseases	1%	43%	33%
Perinatal and maternal causes	1%	10%	8%
Cancers	21%	9%	12%
Diseases of the circulatory system	46%	24%	29%
Diseases of the respiratory system	8%	5%	6%
Other and unknown causes	23%	9%	12%

Poor countries bear over 80 percent of the global burden of disease in disability adjusted life years (DALYs). This burden is increasing as the epidemiological transition progresses, with added disability and suffering from non-communicable diseases such as vascular disease, malignant neoplasms (especially of the lung associated with smoking), neuro-psychiatric disease, accidents and trauma. Poverty (defined as lack of economic resources, lack of education, lack of access to basic life resources such as food water and sanitation, and

lack of control over the reproductive process) directly accounts for almost one third of the global burden of disease. Poverty leads to poor health, which in turn aggravates poverty. Despite the difficulty in making accurate inter-country comparisons it is clear that improvements in economic status are associated with better health, and that economic growth is necessary to improve the living conditions conducive to good health, independent of benefits that may arise directly from health care.[2]

The global burden of cardiovascular disease and the epidemiological transition

It has been estimated of the 56 million deaths in 2001, coronary artery disease accounted for 7 million and stroke for 5.5 million. Most of these deaths occurred in the developing world and 75% are accounted for by the major risk factors (high body-mass index, unfavourable lipid concentrations and raised blood pressure).[3]

Pearson has described four phases of the epidemiological transition in relation to cardiovascular disease. In the first phase – the age of pestilence and famine – rheumatic valvular disease and cardiomyopathies, account for 5-10% of all deaths. Sub-Saharan Africa, parts of South America and South Asia currently fit into this phase. In phase two (parts of Africa, North Asia and South America) there is a gradual reduction of infectious diseases, nutrition status is still marginal and salt intake has become excessive. Here, hypertensive heart disease and stroke dominate cardiovascular deaths – and account for 10-35% of all deaths. In phase three – characterized by economic development, smoking, a diet rich in calories, and less exercise as a result of new forms of transportation – stroke and cardiovascular diseases account for 35-55% of deaths. The upper and middle classes of South America, Asia, and Eastern Europe fall into this category. Phase four, typified by efforts to reduce risk factors, is evident in North America, Western Europe, Australia and New Zealand where atherosclerotic cardiovascular diseases accounts for more than 50% of deaths with most deaths occurring over the age of 65 years.[4]

Expenditure on health and medical research

Since the 1960s major advances in medicine and technology have been associated with escalating expenditure on health care – most of this in highly industrialised countries. Currently annual per capita expenditure on health care ranges from $4000 in the US down to less than $10 in the poorest countries in Africa. It is now well established that there is a definite relationship between economic status and health and life expectancy, although this relationship is complex and not linear. For example, one of the wealthiest nations in the world (the USA) has worse health statistics (infant mortality and longevity) than some other highly industrialised countries,

and a particularly poor state (Kerala) in India has achieved lower infant mortality rates and greater longevity than many wealthier nations.[5] Both absolute and relative wealth affect health. Among the developed countries it is not the richest societies that have the best health but rather those with the smallest income differentials between rich and poor.[5] Despite the non-linearity of the relationship between wealth and health, the existence of this relationship underscores the need to see health and disease as intimately linked to social and economic conditions.

Half the world's population live in countries that cannot afford annual per capita health expenditures of more than $5-10, and many people do not have access to even such basic drugs as penicillin. The WHO has estimated that in 1990 the annual per capita cost of providing a basic package of public health and essential clinical services in a low-income country was at least $12. In most such countries annual health care expenditure is typically less than $10 per person. Even though some parasitic diseases (for example onchocerciasis, schistosomasis and lymphatic filariasis) could be controlled by mass treatment campaigns using inexpensive drugs, the infrastructure required to provide such coverage is inadequate. Effective treatment of diseases such as tuberculosis and leprosy, and HIV/AIDS requires more complex infrastructures than can be afforded on current health care budgets in poor countries.

In the 1990s 89% of annual world expenditure on health care was spent on 16% of the world's population who bear 7% of the global burden of disease expressed in DALYs.[6] Less than 10% of medical research expenditure was on health problems of the developing world that account for 90% of the global burden of disease.[7] These are examples of global injustice that we should surely find intolerable if we have a real commitment to universal human rights and human dignity. Vaccine development programs and drug donation programs for poor countries, admirably promoted and supported by pharmaceutical companies, are necessary but insufficient responses to such injustices.[8] Modest increments in economic status combined with provision of a basic health care package have the potential to improve health in poor countries significantly – acknowledgement of which has given rise to advocacy for a global health fund.[9]

Expenditure on cardiovascular disease

In rich countries cardiovascular disease accounted for 46% of all deaths and 20% of DALYs in the early1990s.[10] In that period 25% of health care expenditure in the USA was on cardiovascular disease.[6] The proportion of expenditure was thus a little higher than might be expected in proportion to the burden of disease as expressed in DALYs. During the same period cardiovascular disease accounted for 10.7% of deaths and 8.3 % of DALYs in poor countries.[10] In South Africa about 5% of health care expenditure in 1991 was on cardiovascular

disease[11] – somewhat less than might be expected for the local burden of cardiovascular disease in a developing country and substantially less than might be expected for a middle income country. The rate of pacemaker implantation across the world (from 571 per million population in the USA, and 345 per million in Australia to 35 per million in South Africa) reflects both the differing spectrum of cardiovascular diseases and the range of expenditure on such disorders (R Scott Millar – personal communication).

THE GLOBAL CONTEXT OF HEALTH, MEDICAL RESEARCH AND CARDIOVASCULAR THERAPY

The 20th century is considered by many to have been the most successful in world history with spectacular achievements in science, technology and health care – all reflected prominently in the practice of cardiovascular medicine and surgery. However, it is also necessary to acknowledge the down side of progress – as reflected in widening disparities in economic and health status, massive expenditure on weapons of mass destruction and the extent to which even basic human rights are not enjoyed by more that half the world's populations.[12, 13]

This factual situation leads to such questions as why there should be such disparities and how these have arisen. Providing answers to these questions is a more complex task than merely describing the facts. The analysis that follows is an attempt to provide a synoptic review of some plausible answers. A more comprehensive approach has been attempted elsewhere.[14, 15]

Globalisation is a currently popular term used to refer to a process characterised by increasing interconnectedness between money, business, people and popular culture across the globe. The driving forces are neo-liberal economic policies and free market forces that are seemingly closely associated with the propagation of democracy and human rights. Globalisation is, however, a complex and ambiguous concept with social and ecological manifestations that reflect a long, interwoven economic and political history in which peoples, economies, cultures and political processes have been subject to increasingly pervasive transnational influences. Compression of time and space through new communication technology has sped up the process of globalisation in recent decades uniting many across the globe but also creating new and wider divides.[16-21]

Positive and widely appreciated manifestations of progress associated with globalisation include advances in science and technology; increased life-expectancy; enhanced economic growth; greater freedom and prosperity for many; improvements in the speed and cost of communications and transport; and popularisation of the concept of human rights. About 20% of the world's population have benefited maximally from such progress. However, the negative aspects of

globalisation need to be considered and addressed. At the beginning of the 20th century the wealthiest 20% of the world's population were 9 times richer than the poorest 20%. This ratio has grown progressively - to 30 times by 1960, 60 times by 1990 (Fig 1-1) and to over 70 times by 1997. The extent of absolute poverty has also increased. Today almost half the world's population lives on less than US $2 per person per day and more than a billion people live on less than US $1 per day. Tens of millions of people, including many children, die every year of starvation - in a world with enough food to feed all.

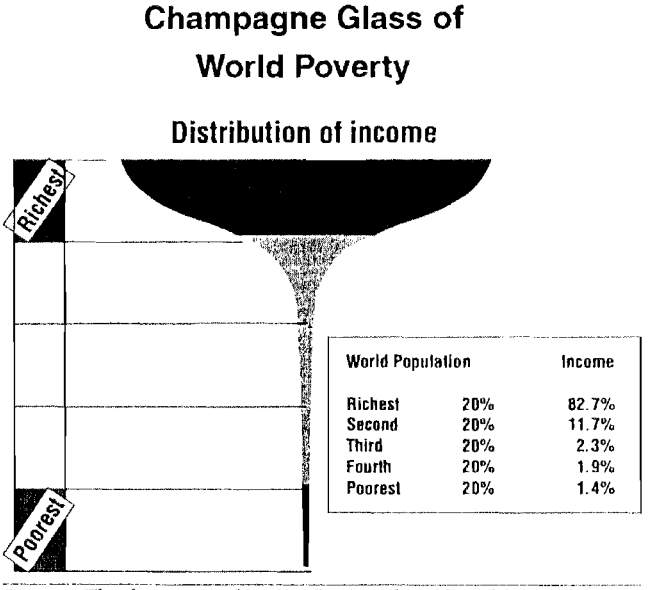


Fig 1-1. The champagne glass distribution of world wealth in 1990.

The latter half of the 20th century has been characterised by more striking changes than ever before - the world's population doubled from 3 billion to 6 billion and economic disparities have widened dramatically. New patterns of war and ethnic conflict have resulted in displacement and migration of millions of people.[22] Industrialised countries spend on average 5.3% of GNP on the military but only 0.3% on economic aid to developing countries.[23] The arms trade (with its link to economic aid) has contributed significantly to the escalating number of wars, conflict and widespread torture since the second World War that have rendered over 25 million people to refugee status and displacement - with profound disruptive effects on life and health. Global military expenditure in 1990 amounted to US$ 1 trillion,[23] while the annual budget of the WHO was equivalent to merely 2.5 hours of global military expenditure. Military expenditure has decreased in recent years but released resources have not been channelled towards effective human development processes. Indeed development aid has been falling steadily in the past decade.

World debt grew from $0.5 trillion in 1980 to $1.9 trillion in 1994 and to $ 2.2 trillion in 1997. Although third world debt

accounts for a small proportion of total world debt, it has reached obscene levels in relation to income levels. The way in which such debt has been created, the fact that third world debt is a small component of total world debt and can never be repaid and that in sub-Saharan Africa four times as much is spent on debt repayment each year than on health and education combined has led to debt being described as the modern equivalent of slavery.[24] Most countries that were required by the World Bank to pursue structural adjustment programs are in greater debt than ever before. All the adverse effects of progress are felt most severely by 80% of the world's population.

Changing spatial dimensions of human relations resulting from numerous low intensity wars, migration, travel and new forms of communication have radically disrupted the social lives of many. Widespread ecological damage is resulting from escalating consumption of the earth's resources far out of proportion to population growth.[25] Erosion of the economy of many poor countries, under the impact of globalisation and the 'debt trade,' has obstructed the introduction of effective forms of modern medicine into many poor countries and thus prevented achievement of widespread access to even basic health care for billions of people.

Negative effects of globalisation also include both overt and covert forms of exploitation. Exploitation, a long-standing feature of human life, has become increasingly covert because globalisation is in reality only superficially linked to democracy and human rights.[26] Sincere propagation of a coherent human rights agenda is not a feature of a world in which economic globalisation is pervasively imposing a set of ideas and beliefs that favour market transactions above all other values.[27-29]

The development of a complex web of material, institutional and ideological forces and powerful massive multinational corporations in a globalising world has profound implications for the accumulation of capital and for the way in which resources are controlled. In 1973, global market exchanges amounted to $ 15 billion daily and 70% of all money that exchanged hands on a daily basis was payment for work, while speculative financial transactions accounted for 30%. By 1998, daily global market transactions had escalated to $1.5 trillion daily of which 5% was payment for work while speculative transactions accounted for 95%.[30] Such a striking shift in the distribution of monetary transactions arguably reflects devaluation of the lives and work of most people in the world, and has particularly serious implications in Africa where unemployment rates are extraordinarily high.

The influence of a shift in the locus of economic power from the nation state to global corporations is altering the balance of power in the world. Boundaries between states, and between foreign and domestic policies are becoming blurred – in the process undermining small states' control over their

own economies, and threatening their ability to provide for their citizens. Economic disparities have become so marked and their adverse effects so apparent that a very significant degree of incompatibility has arisen between neo-liberal economic policies and the goals of democracy.[26, 31, 32 *] This has important implications for many countries, not least South Africa now freed of its apartheid legislation but challenged to cope with the power of the global economy while struggling to become a social democracy.[14]

As I have indicated elsewhere, the facts and interpretations offered above are not intended to imply that the wealthy, productive and fortunate in the world should bear the whole burden of the blame for the complex series of historical developments that polarise the world. Political realities within developing countries, including corruption, ruthless dictatorships, ostentatious expenditure by elites and under-investment in education and health, have contributed greatly to the suffering of billions. However, it is vital for privileged people, and especially physicians who have responsibilities to society as well as to individual patients, to have insight into the extent to which these deficiencies in many developing countries have been facilitated by the policies of wealthy nations in pursuit of their own interests. Insight into how the lives of some are sustained by overt and covert exploitation of unseen others could allow those of us who live comfortable lives anywhere in the world to appreciate that we do not have a monopoly of entitlement to the benefits of progress.[33]

Changing concepts of security. In a world in which there is already a massive stockpile of nuclear weapons of mass destruction that has the potential for devastating adverse health effects in the future, new threats arising to security include the possibility of biological warfare and the emergence of new diseases and multi-drug resistant infections. Many more people are dying today from preventable diseases than from war. Yet massive expenditure is directed towards the military in comparison with health care. Diseases such as HIV/AIDS that afflict predominantly those marginalised by poverty (80% of HIV positive persons live in the poorest countries in the world), have been attributed to the social and environmental niches created by the nature of the global political economy and its ideology.[34] Failure to appreciate such associations will result not only in failure to control such diseases as HIV/AIDS (as with tuberculosis in the past [35]), but more importantly, will probably favour the emergence of new infectious diseases in the future. The changing spatial dimensions of human relations resulting from urbanisation,

* Several mechanisms are operative: the influence of transnational corporations on the power of governments of small/weak nations to pursue development, full employment or other national goals; lack of corporate accountability at the national level; trade agreements such as the North America Free Trade Agreement and the World Trade Organisation treaties; the restrictive power of international financial institutions such as the World Bank and International Monetary Fund over national, state and local governments' control over their economies; and the complicity of these organisations in the denial of human rights.

migration, travel, ethnic conflict, displacement of people and refugees, facilitates the spread of such diseases from which no-one should feel immune.[15] While many suffer from poverty and malnutrition, obesity, diabetes and cardiovascular disease are also becoming much more common in the developing world. These are to a considerable degree preventable.

THE PHARMACEUTICAL INDUSTRY

Against this background it is necessary to question the dominating role of drugs in the management of cardiovascular disease. As pharmaceuticals have a central role in modern health care and the cost of these increases more rapidly than other aspects of health care, the influence of the pharmaceutical industry on medical practice must be understood. A few facts provide the backdrop for such understanding.

United States' annual expenditure on health care amounts to 50% of annual global health care expenditure. The pharmaceutical industry is dominated by nine US companies, with market values ranging from $198 – $59.3 billion each. The US market accounts for 40% of the global pharmaceutical market and 60% of its global profits.[36] The margin of profit in this industry is greater than in many others and expenditure on marketing is disproportionally high.[37] In 1999 GlaxoSmith-Kline made $234 million profit from a single drug (Combivir) while the combined GDP of 15 African Countries was $158 million.[38] Sadly, of 1223 new drugs developed between 1975-1997, only 13 were for tropical diseases.

As there are more well people in the world who are willing and able to pay for medical drugs that could improve their lives than ill people who can afford to do so, there is a powerful trend towards developing "lifestyle drugs" for improving quality of life and a desire to make vast sums of money from medicinal drugs – a modern version of the "gold rush." The World Health Organisation has noted that ... *" The multinational pharmaceutical industry operates like any other industry. It makes investment decisions to maximise the present value of future returns from the money invested. As such, it responds to economic demands rather than to statements on social or human needs."*[7]

While being appropriately critical of the pharmaceutical industry, some positive aspects of the industry should be recognised and acknowledged. For example it provides 44% of global expenditure on health research and development. Major benefits flow from intensive drug development activities, there has been recent renewed attention to tropical diseases and the industry has bowed to pressure concerning generics as occurred recently in South Africa. Of course it should be appreciated that the pharmaceutical industry is only one manifestation of the modern global economy. However, it is a lens through which modern medical practices can be viewed as an unsustainable global norm.

EXPANDING THE DISCOURSE ON ETHICS

In a rapidly changing global social context it is necessary to consider what it means to be a professional.[39] A scholarly analysis of forces influencing modern life has shown how the current overemphasis on the values and language of 'the market' and on the values and language of 'bureaucracy' are both submerging and eroding the ethos of professionalism. A strong case is then made for the essential role of professions in democratic societies, and it is argued that such societies cannot flourish without trustworthy professionals.[40] Professional moral responsibilities therefore need to be re-examined.

Morality can be described as defining what is right and what is wrong within relationships. Ethics is the branch of philosophy that examines the arguments for and against what is right and wrong, good and bad in human relationships. Most of the debate about ethics and medical ethics has focused on ethical issues at the inter-personal level, for example on the doctor/patient relationship – and most especially on confidentiality, informed decision-making, individual human rights and the harm/benefit balances for individuals involved in clinical research. At this level the primary ethical value is respect for human dignity and for the self-determination of individuals conceived of as rational and autonomous beings. In this context the physician is viewed as committed to the care of each individual patient within various models of the doctor/patient relationship embracing the concepts of contract, respect for autonomy, covenant and trust in beneficence.[41]

The justified focus on ethical issues at the interpersonal level (with profound implications for individuals), has somewhat eclipsed ethical issues that need to be addressed in dealing with public health issues. However, with the growth of institutions, in particular health care institutions that have powerful effects on those they serve and who work within them, it is becoming clear that ethics must extend to the broader web of relationships required to protect and promote public and population health.[13,42] At this level ethical considerations extend towards such considerations as order and fairness within institutions that serve the communities in which individuals are socially embedded and 'constructed.' [43,44] The responsibility of physicians here must be viewed more broadly to include concern for (i) equitable access to health care, (ii) improved public health and (iii) the allocation of scarce resources in ways that promote the common good. Considerations of justice, the 'social contract' and conflicts of interest will clearly impact on the physician/patient relationship as the ethics of interpersonal relationships is broadened to encompass the ethics of public health and of professional responsibilities to society.

Such considerations raise the perennial problem of how to strike a balance between the rights (and needs) of individuals

and the common good of societies. While the focus on individual rights is vital and necessary for the well being of individual persons and has a high social utility value, such focus is not sufficient for the achievement of improved public health. Today many countries consider access to basic health care as a basic human right that nation states should be committed to providing for their citizens. Some form of socialised and equitable health care is provided in all western European nations and in Canada. Regrettably the example of medical care (as a marketable commodity – albeit with considerable state assistance for the poor and the aged) set by one the wealthiest nations in the world is being followed by many developing countries.

Privatisation of medical care, also encouraged by structural adjustment programs promoted by the International Monetary Fund (IMF) and the World Bank, has adversely affected health in many poor countries. Acknowledging the need for, and the right to, universal access to a basic health care package, and achieving this goal, pose challenges for the future.

The World Health Organisation's renewal strategy for health-for-all places emphasis on equity, solidarity and appropriate technical, political and economic strategies that could promote health and sustainable health care systems as central to development.[45] The language and scholarly discourse on public health ethics is as yet inadequately developed but a start has been made[46,47] and eloquent arguments have been offered in favour of a language of public health that "speaks to the reciprocity and interdependence which characterise community."[48]

There is also a need to go beyond advocacy for rights to include consideration of the duties necessary for rights to be widely satisfied. Lack of attention to civic responsibilities and public health considerations allows individuals and powerful groups to place their own needs above those of all others – and to thwart the achievement of such goals as universal access to health care,[49] and the curbing of spread of infectious diseases. We argue that a broader moral agenda – one that includes but goes beyond human rights – is required to achieve high moral goals in the public realm. Achieving an improved balance between the needs and rights of individuals and the requirements for advancing public health will thus require a shift in mind-set away from exclusive and often selfish individualism towards respect for individuality that is combined with a strong sense of community and civic citizenship. Essential steps will include: acknowledging the need for a new balance, developing the political will to undertake ambitious projects and placing a high value on the longer term economic and social justice required for meaningful progress and sustainable development.[28,50]

The rapidly expanding debate on research ethics in developing countries and on international research ethics is an illumi-

nating example of how complex it is to broaden the ethics discourse to include public health considerations.[51-53]

In a world in which disparities are widening to grotesque levels and consumption patterns are damaging the environment on which all are dependent, there is also a need to extend the ethics discourse to the level of global security and a safe environment.[54] The desired conception of the individual in this context becomes that of an autonomous individual sharing equal rights with all other citizens in the world, in a relationship of interdependence in which the rights of some should not be acquired at the expense of the rights of even distant others. The level of complexity here is much greater because of the way in which the foreign policies of some countries may covertly enhance the lives of their own citizens through exploitation of unseen persons elsewhere. The role of physicians, scientists and all health care professionals needs to be broadened further to include commitment to global professional ideals, to the continuing advancement of knowledge and to concern for the health of populations globally, as well as the health of future generations.[39, 50-57] The moral perspective is thus extended from 'interpersonal morality' to 'civic morality' and to an 'ethics of international relations,' that has dimensions intimately linked to political, military, cultural and economic issues.[42, 58-61]

Modern communication, transport, methods of money exchange, the creation of nuclear and other potential weapons of mass destruction and the emergence of new infectious diseases have shrunk distances and differences, and created common global risks. In this context, and with a deeper understanding of the impact of historical forces on shaping the wealth and health of nations, we need to appreciate how we are all implicated in the lives of others, and that it is increasingly difficult to hide with credibility behind the barrier of physical distance while billions of people live impoverished lives. Altruism and reparations aside, the importance of physical and moral interdependence is so great that longer-term self-interest alone should be sufficient to drive policies toward sustainable development.[62] Unless such progress is made the prospects for dealing adequately with such threats as the HIV/AIDS pandemic and the growing burden of non-communicable diseases seem bleak. Justice without borders is the challenge for the future.

Some signs of hope for improving global health. The recent report from the US Council of Foreign Relations and the Milbank Memorial Fund, outlining the importance of health to US foreign policy is most encouraging. By acknowledging the relationships between health, social capital, political stability, the economy and war a deeper commitment could be developed by the USA and other nations to the moral and strategic importance of improving global health.[63] In addition the work of the Commission on Macroeconomics for Health,[64] the inauguration of a Global Health Fund,[9] and the recent announcement by President George Bush that the USA will

increase its annual development aid from $10 billion to $15 billion[65] reveal both a deeper understanding of the importance of global health and an acknowledgement of the responsibility of developed nations to address this constructively.

LESSONS FOR CARDIOVASCULAR THERAPY IN A GLOBAL CONTEXT

The above considerations provide a fresh perspective against which to view cardiovascular disease and therapy in a global context. In the absence of risk factors cardiovascular disease is a rare cause of death, and only 5% of adults in developed countries are at low risk. I hope that all at this conference will give their support to the recommendations by Beaglehole and Pearson that the attention of scientists should increasingly be directed to addressing the more challenging task of identifying how to lower risk status most effectively and thus favourably influence the distorted distribution of the burden of disease (Table 1-2).[3, 66] The population approach to primary

TABLE 1-2: CONTRIBUTIONS TO GLOBAL CVD: 1990 (GLOBAL BURDEN OF DISEASE STUDY, 1994)[68]

Region	CVD mortality	Coronary mortality	Stroke mortality	CVD DALYs
Established market economies	22%	30.3%	17%	14.9%
Economies in transition	15%	21.7%	14.3%	11.5%
Developing countries	63%	48%	68.7%	73.6%

CVD = cardiovascular diseases; DALY = disability adjusted life years

prevention, as the only strategy with the potential to increase greatly the proportion of the population at low risk, would embrace reducing the salt content of manufactured food, the promotion of physical activity, controlling tobacco consumption and promoting a healthy diet. Recent studies in South Asia support the need for preventive strategies, as the only means of dealing with the growing epidemic of cardiovascular disease in developing countries.[67, 68] However, it will not be easy to implement such strategies. Considerable research will be required into the functions of complex systems function and into ways in which effective changes could be achieved in human behavior within such systems. This is a challenge that can neither be underestimated nor ignored by professionals who recognize that their moral responsibilities extend beyond the care of individual patients to include improving the health of whole populations.

CONCLUSIONS

New infectious diseases such as HIV/AIDS, the recrudescence of tuberculosis and malaria in multi-resistant forms, the growing epidemic of non-communicable diseases, ecological

degradation, escalating ethnic conflict and persistent poverty and hunger in the midst of plenty are all signs of an increasingly unstable world at the end of a period of major progress.[17-22, 27]

At this time in history when the dark side of progress is becoming so obvious, old ways of thinking about progress and of improving health, in particular when these are narrowly defined in economic and individualistic terms, are becoming obsolete. It is unlikely that relying solely on advances in scientific knowledge, free-market forces, simplistic notions of human rights and interpersonal ethics will provide sufficient solutions to problems within an unstable complex system.[69] Imaginative and creative new practical approaches, associated with the wise application of scientific and social knowledge using systems theory and supported by a broader ethics framework are required to ameliorate the adverse effects of rampant market forces.[27, 28, 58-61, 69, 70]

Physicians have an obligation to know about and understand the impact of global forces on health. Deeper introspection by the privileged, appreciation that our professional skills represent social capital that generates social obligations for us, and locating our activities within the global context described above could promote new ways of thinking about local and international activities with the potential to improve well being and health globally.[33] The 21st challenge to human society is to avert the potential for setting back the clock of progress by ensuring better quality of life for all in a complex, interdependent world.[20] As politicians and bureaucrats are unlikely to pursue such moral challenges, it is up to professionals as the conscience of society to take the lead.

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S2640-08.qxd 4/4/02 8:58 AM Page 85

Chapter 8
Ethics and Tropical Diseases
Some global considerations

S. R. Benatar

Introduction

A proper understanding of the distribution and impact of infectious diseases on humankind in the broadest temporal and spatial context requires some knowledge of the trajectory of history over thousands of years.[1] A less ambitious perspective on the forces promoting and sustaining tropical diseases would acknowledge the influence of imperialistic and colonial forces over the past 500 years.[2-4] However, such historical considerations tend to be eclipsed by spectacular advances in science and technology during the twentieth century. The extent to which infectious diseases have been controlled in industrialized countries favours a selective and somewhat narrower focus on the prospects offered by modern vaccines and drugs to rid the world of infectious diseases.[5] Indeed a few decades ago the World Health Organization's success in eradicating smallpox provided hope that many other major infectious diseases that plagued humankind could be largely eliminated.

The persistence of many diseases, for example malaria and tuberculosis, the emergence of multi-drug resistance to both of these and the appearance of HIV (and other new infections) illustrate the limitations of a strictly scientific approach to public health.[4,6-8] Infections have no respect for geographic boundaries, particularly in a globalizing world in which new ecological niches are being created and where speed of travel and transport allow enhanced transmission. Control of infectious diseases thus poses not merely a scientific challenge for individual nations but rather global political and economic challenges that carry moral implications. Developing solutions to tropical diseases requires transdisciplinary attention to the social conditions that determine the burden of tropical diseases that science and medicine alone cannot address.

The aim in this chapter are modest: to provide a synoptic overview of powerful global forces that play a dominant role in perpetuating inequities that impair human flourishing and frustrate the control of infectious diseases, to identify some challenging ethical imperatives and to offer some potential solutions. My thesis will be that gross inequalities in wealth, and how these have arisen and are perpetuated, lie at the heart of inequality and inequity in health between nations; and that the major ethical imperatives of our time are to narrow these gaps by striving towards structuring more just societies in which premature death and unnecessary suffering from tropical diseases could be diminished.

A starting point: the facts

Widening economic disparities, hunger and extreme poverty

The gap between the richest 20% and the poorest 20% of the world's population has widened from 9 × at the beginning of the century to over 80 × by 1997. The scale of absolute poverty has also increased.[9] The number of extremely poor people in the world has more than doubled between 1975 and 1990. Over 50% of the world's population live on less than $300 a year, and more than a quarter of the world's population live under conditions of 'absolute poverty' defined as 'a condition of life so limited by malnutrition, illiteracy, disease, squalid surroundings, high infant mortality, and low life expectancy as to be beneath any reasonable definition of human decency'.[10]

The burden of disease and widening disparities in health

Growing inequalities and inequities in the burden of disease and premature death are associated with the growing economic disparities described. The inappropriateness of health care delivery is revealed by the fact that 89% of annual global expenditure on health care is spent on 16% of the world's population who account for 7% of global disability adjusted life years (DALYs),[11] and 90% of expenditure on health research is on those diseases accounting for 10% of the global burden of disease.[12] As a result millions of people in the world lack access to even basic essential drugs—a tragedy that has long been ignored but is now achieving a well-deserved profile as multi-drug resistant tuberculosis becomes a growing threat and millions of patients cannot benefit from advances in the treatment of AIDS.[13]

The social construction of human rights abuses

The persistence and even growth of human rights abuses

S2640-08.qxd 4/4/02 8:58 AM Page 86

(even in countries with a long history of commitment to human rights), and the failure of human rights advocacy to sustain human dignity and decent living conditions, should encourage critical perspectives on the powerful economic and military forces that frustrate sincere human rights endeavours.[10,14–16]

Ecological degradation

Population growth and excessive consumption of the earth's limited resources are having adverse ecological effects that are among our major causes of concern at the beginning of the twenty-first century. During the past 100 years the world's population has increased from 1.6 billion to almost 6 billion, and the annual consumption of energy (natural resources) has increased 30-fold. While population growth in poor countries has been the main focus of concern for industrialized countries, consumption patterns in rich countries now pose risks of equal or greater magnitude. 'Environmental capital' is being consumed more rapidly than it can be regenerated by nature and new ecological niches are favouring the emergence of new infectious diseases. Future generations will pay the price in terms of disease, impaired quality of life and reduced longevity.[17,18]

Moral justification for change

These facts arouse moral indignation and must be addressed for several reasons. First, and foremost is the ethical imperative to respect equally the dignity of all people. Having recently celebrated the 50th anniversary of the Universal Declaration of Human Rights it is necessary to reflect on its content (and that of subsequent supportive covenants and declarations) and on the extent to which these aspirations have not been achieved. Moreover, concerns about human rights become magnified in an era in which there will be the potential to modify nature by applying genetic engineering techniques to all forms of life.[19–21]

Second is the need to promote the social stability necessary for human flourishing in a complex world. While the twentieth century was characterized by spectacular scientific and technological progress from which many have benefited greatly, it was also characterized by ongoing wars since 1945, especially in the developing world. While wars have complex causes, they were certainly fuelled by the economic and ideological interests of the great powers during the Cold War, and continue under the influence of powerful global economic forces driving the extraction of human and material resources from poor regions to promote economic growth of the rich. Consequent hunger, miserable living conditions, lack of education, illiteracy and lack of control over personal destiny have bred anger, violence, crime, drug dealing and abuse of vulnerable humans—all of which reflect injustice and erode the fabric of society.[8,22–27]

Third is the need to be aware of the adverse ecological effects of modern life and to develop processes necessary to protect the environment for the well-being of future generations.[17,18]

Causes of widening disparities

Disparities in wealth and health are symptoms of an unjust world—a well-known fact that is widely stated, but about which most privileged people have become complacent in pursuit of their own economic goals,[28] and in the deluded belief that we live in a just world.[29] Some believe that poverty is not the fault of wealthy countries, but rather the result of bad government elsewhere, and can be alleviated by market forces. Others believe either that the problems are of such great magnitude that there is little that can be done to ameliorate them, or that there is too much disagreement about values to focus on solutions. These views are all contestable. The extent of injustice, the underlying causes of such injustice (described synoptically below) and potential solutions suggested in this chapter should be constructively addressed by scholars, politicians and policy-makers. Progress towards reducing inequalities and the burden of preventable diseases will be limited if these causes of injustice are ignored and a merely biological approach adopted to addressing inequalities in health. The World Health Organization's renewal strategy[30] indirectly acknowledges these issues but its approach is inadequate and a bolder thrust is required.

Economic exploitation and the debt problem

During the second half of the twentieth century, the evolution towards a globalized economy has perpetuated and aggravated centuries of exploitative processes that facilitate the enrichment of some people at the expense of others—within and between nations. Such exploitation (made possible by the processes that devalue and dehumanize the 'other', relegating them to lower standards of life) overtly underpinned slavery, racism and industrial labour abuse. Over the past 50 years, covert erosion of the economies of many poor countries, under the impact of the neo-liberal economic policies driving globalization, has obstructed real development and prevented the introduction of effective forms of modern medicine into many poor countries and the achievement of widespread access to even basic health care for billions of people. Average national per capita GNP has risen to above US $25 000 in some countries and remained static or dropped to less than US $200 in others—and similar gaps can be observed within many societies.[22,27,30–33] The debt owed

S2640-08.qxd 4/4/02 8:58 AM Page 87

to rich countries by the poor amounted to $2.2 trillion in 1997—a debt developed and perpetuated through arms trading and ill-conceived 'development projects' that did more harm than good and usually benefited developed nations more than those they were allegedly 'developing'. Such debt can never be repaid and perpetuates economic slavery and human misery in more covert guises.[24,25]

The adverse effects of globalization on health and health policy are evident in the policies of the World Bank and IMF—institutions that have held the balance of power for over 20 years in formulating global health policy. Liberalization of economies, reduced subsidies from basic foods and shifts in agricultural policy that promote growing export crops to the detriment of home-grown food production have resulted in devastating malnutrition and starvation that have caused billions to suffer, especially in Africa. It is an indictment of the IMF's and World Bank's structural adjustment programmes that they impose reduced government expenditure on health care, education and other social services and encourage privatization, even within health care. Availability of condoms, STD treatments, antituberculosis therapy and treatments for co-infections of HIV are subject to user charges introduced and still encouraged by the World Bank in many African countries. The whole Public Health Agenda (information surveillance, epidemiology, research and behavioural surveillance) has been reduced to a skeleton by the privatization of health care. Structural adjustment programmes, debt repayments, cuts in aid budgets (especially by the USA), discrimination against African trade, increasing malnutrition and the Cold War activities of the great powers have all played a significant part in sustaining high rates of infectious disease and in fanning the AIDS pandemic.[34,35]

Further privatization of public health services through the recently described endeavours by the World Trade Organization to 'outlaw the use of cross subsidization, universal risk pooling, solidarity, and public accountability in the design, funding, and delivery of public services' will adversely affect health care in many countries.[36,37]

Military expenditure

A concept of security that relies on force has resulted in industrialized countries spending vast sums of money on the military. In the 1990s such expenditure averaged 5.3% of GNP (as contrasted with 0.3% on aid for developing countries). By deflecting resources away from true human development over many decades such militarization and the associated militarism have compromised the health of individuals and nations directly and indirectly—killing, maiming, torture, refugeeism, destruction of livelihoods, starvation, rape, impoverishment of physical, social and mental health, environmental damage and social destabilization, most especially within developing countries where children too have become hardened warriors. Even though military expenditure has been falling since 1990 it remains exorbitant.[10,38]

Social justice

Assuming that economic disparities and the causal processes behind these are a major global problem, the dilemma becomes one of addressing the question of economic or distributive justice. This involves consideration of such overlapping notions as: rights, fairness (equity), equality and desert. Each of these are complex notions and they may be in conflict with each other. No attempt will be made here to review the many theories of justice that have been formulated as potentially coherent, comprehensive and plausible unifying solutions to such complex issues,[39–41] except to say that none have provided workable solutions.

While it is unrealistic to imagine that economic equality can be achieved globally, it is increasingly agreed that extreme poverty should be alleviated and prevented, and that it is necessary to address social injustice within societies and across national boundaries. Some have suggested that the only way to achieve social justice is to abandon the capitalist system.[37] Others have argued that this is both implausible and impossible, yet agree that major changes are required in the way in which economic systems operate.[26,27]

The absence of definitive answers to such complex questions should not engender paralysis. Moral solutions can be identified at the level of institutions and nations. For example, in the context of the American health care system, which is manifestly unjust, inefficient and extraordinarily expensive, a philosophically coherent and practically applicable proposal has been made for progress towards greater justice in health care.[42] If a powerful and wealthy country were to set such an example the global impact could be profound. It is also necessary to move beyond considerations of justice within nations and attempt to reduce injustice at a global level by reconsidering the ethics of international relations.

Ethics at the level of international relations

Searching for solutions to the problems of poverty, inequality and inequity requires some understanding of how relationships between nations have fostered global disparities and of how such relationships could be further changed—hopefully for the better.[22,43–46]

Over many centuries there have been three basic forms of world politics: imperialism, feudal systems and anarchic state systems.[43] Each has taken several forms over the centuries. Prior to the Peace of Westphalia in 1648 (following the Thirty Years War in Germany) there was no respect for the sovereignty of states. After the treaty it gradually became accepted in Europe that states should be recognized as sovereign, territorial, political units. Interference by one state in the affairs of another was a violation of state sovereignty. With no overarching

S2640-08.qxd 4/4/02 8:58 AM Page 88

governing system above states, the system was essentially 'an-archic' (without a ruler) and states could treat their citizens as they wished. While Hobbes viewed this as a non-benign 'state of nature', John Locke, writing half a century later, saw the possibility of the development of ties and contracts that would make anarchy less threatening to individuals and to other states. These two views of the state of nature are the philosophical precursors of two current views of international politics—one more pessimistic (realism) and the other more optimistic (liberalism).[43] It is important to note that the idea of sovereignty of states only applied to so-called civilized countries and that the European powers at the time felt totally justified in structuring such relationships for themselves while scrambling for colonial territories in Africa.[47]

Realism, as the dominant tradition, views war and the use of force as the central problems of international politics. Liberalism conceives of the possibility of a global society in which states can function alongside each other—with economic and intellectual interdependence reducing the likelihood of war. The catastrophe of the Great War in 1914–18, following 40 years of relative peace in Europe, vindicated the realists. Interest in international politics was reactivated and led to new ideas about war and international relations. International Relations Theory, as a relatively new discipline, emerged in its modern form following the Versailles conference (1919) and the formation of the League of Nations at the end of the First World War.[46]

Liberal Internationalism, the first orthodoxy of this new discipline, was based on advocacy of national self-determination and the need to develop mechanisms and institutions to prevent war. Despite the many widely shared values it represented, liberal internationalism was an incoherent and flawed doctrine, and a Second World War could not be averted. Its failure gave rise to further conflict between realists who believed in the sovereignty of states with diplomatic strategic relations (predominantly concerned with military security) at the core of international relations. Realists viewed liberal internationalism as 'utopianism' and expressed concern about the capacities of collectivities, such as states, to behave in moral ways. At the same time the universal human rights doctrine being promulgated allowed criticism of the behaviour of states towards their citizens and even interference across state borders if necessary.[14]

By the 1960s, circumstances in the world led to the major European powers recognizing the damage they had done to their colonies and the need to give them independence. In the 1960s and 1970s changes in great power diplomacy and in global socio-economics were also leading to new theories of international relations that have become more dominant during the past 20 years. Not only were human rights being promoted more vigorously but other challenges to the state-centric system (which characterized both neo-liberal internationalism and neo-realism) were arising as a result of many globalizing forces that progressively reduced the influence of states on issues of national and international importance. Multinational corporations and non-governmental organizations emerged as powerful global actors, the Bretton Woods System weakened and transformed, and a global financial network created the potential for manipulating markets. Western states became increasingly pluralistic, and the possibility of the Cold War turning into a Hot War diminished and faded.[46] It should be noted that for developing countries the 'Cold War' was actually a 'Hot War' with loss of 23 million lives due to small-scale wars fuelled by the competing interests of the East and West in the Third World.[31]

In the 1990s following the end of the Cold War, as military security became a less dominant issue and new interactions developed between state and non-state actors, it became increasingly important to set agendas that go beyond military security. New agendas, of common interest to those who have been marginalized to the 'periphery' (a concept that also includes the marginalized and minorities within wealthy societies) focus on multiculturalism, gender issues, mass unemployment, the resurgence of infectious diseases, refugeeism, large-scale drug trafficking, widespread human rights abuses and ecological threats.

With these changes it is becoming clear that the anarchic state system that has prevailed since the peace of Westphalia cannot be sustained deep into the future. The gradual emergence of (albeit weak) aspects of global governance reflects this process of transition towards a state of complex interdependence between states. An emancipatory transdisciplinary discourse emphasizing complex interdependence of nations is emerging. Despite all the adverse effects of globalization hope is being generated that this discourse will offer new insights and methods of dealing with modern challenges.[46,48] Now, perhaps more than ever before, opportunities can be seen for developing inclusive cooperative alliances across the globe that could improve the ability of states to meet the human rights and needs of their citizens.[49] The mindset shift that allowed South Africa to move peacefully from pariah status to fledgling democracy is an example of what can be achieved if imaginative solutions are sought to intractable problems.[8]

International law and human rights

Cutting across these complex political, social and economic developments there has been growing support for the concept of universal human rights. Donnelly has suggested that Universal Human Rights is now becoming a new standard of civilization, superseding those standards of civilization that dominated over many centuries. These range from common culture and language in Ancient Greece, through religion in the medieval era to the concept of the 'white man's civilization' during the age of empire, and the sovereignty of states. Since 1945 an

S2640-08.qxd 4/4/02 8:58 AM Page 89

extensive body of international human rights law has been developed.[14]

This new inclusive standard, adherence to which is required for full membership of international society, is now advocated to prevent the violation of human rights within states, and to allow intervention where required to protect the rights of the vulnerable and abused. The UDHR and international human rights law are considered to be capable of playing this role. Human rights considerations have indeed become an everyday (allegedly) non-partisan part of foreign policy and are of greatest concern in cases of shocking barbarism—for example, in Rwanda and in Bosnia, but regrettably also in prisons in the highly industrialized and privileged world.[50,51]

Whether states can respond to moral issues remains contentious. Sceptics doubt that moral behaviour can be expected of states. Moralists insist on the highest standard of morality from states. Both extremes seem untenable and yet it seems reasonable to expect at least some degree of moral behaviour from states. Such expectations lie behind the UDHR, international law and the rules of war. NATO attacks on Serbia (without United Nations approval), in response to the crisis in Kosovo, illustrate the potential for the use and abuse of power and the implications of actions seemingly based on 'humanitarian concerns'.[46]

The impact of globalization on human rights

Globalization describes the development of a complex web of material, institutional and ideological forces that influence the balance of power, and effectively blur the boundaries between states. Globalization has been ostensibly spearheaded by a few hundred corporate giants, the development of earth-spanning technologies and products that can be produced anywhere and sold everywhere, and the spreading of credit through pervasively penetrating global channels of communication. However, globalization is both a more complex and an ambiguous concept than this, going beyond economics to include social, cultural and ecological dimensions. Nor is it, indeed, a new phenomenon, but rather the outcome of a long and interwoven economic and political history, involving a wide range of actors. Its effects are both beneficial and damaging—although it is arguable that, like population growth, adverse manifestations are now becoming starkly apparent.

Positive manifestations of progress associated with globalization include advances in science and technology; increased longevity; enhanced economic growth; greater freedom and prosperity for many; improvements in the speed and cost of communications and transport; and popularization of the concept of human rights.

Negative effects of globalization include widening economic disparities between rich and poor (within and between nations), and increases in both absolute and relative poverty. The power of massive multinational corporations in a globalizing world has profound implications for the accumulation of capital and for the way in which resources are controlled. In 1970, 70% of all money that changed hands on a daily basis was payment for work, while speculative financial transactions accounted for 30%. By 1997 these proportions had changed to 5% and 95% respectively. Such a striking shift in the distribution of money arguably reflects devaluation of the lives and work of most people in the world. The influence of the shift in the locus of economic power from the nation-state to global corporations thus alters the balance of power in the world, effectively blurring boundaries between states, and between foreign and domestic policies—in the process undermining small states' control over their own economies, and threatening their ability to provide for their citizens. Economic disparities have become so marked and their adverse effects so apparent that a very significant degree of incompatibility has arisen between neo-liberal economic policies and the goals of democracy.[16,52,53]

Because the concept of rights was developed in an era in which national sovereignty was respected it becomes clear that another level of complexity is introduced when there is a need to implement human rights under conditions in which the power of states to deliver the rights expected by its citizens is being diluted by the adverse effect of globalizing forces on national economies. Even the extent to which states can control warfare is being diminished and independent warlords and militant groups are capable of waging uncontrollable conflict.[54] As all gradually become citizens of the world, as well as of states, so the ability to deliver on human rights requires both capacity and responsibility that extend beyond the state.[55,56]

World views: understanding other cultures

Optimism for the role of a universal concept of human rights within a state-centric system is not only reduced by globalizing forces. Donnelly, a champion of the human rights approach, has suggested that it can also reasonably be doubted whether universal human rights can constitute an effective international morality, given the degrees of ideological and political diversity that remain in the world. He expresses concern that even if the UDHR appears to be widely accepted it is not clear that its values have genuine significance for all.[14] It is thus necessary to acknowledge that there are many world views and that the West has not worked hard enough to understand the implications of these for making real progress towards a more peaceful world. Attempts by theologians to find the common ground on which all world religions can meet,[57] approaches to understanding how world views are constructed[58] and attention to human needs[59] offer at least some hope that there may be some potential for

S2640-08.qxd 4/4/02 8:58 AM Page 90

facilitating processes of peaceful interaction between diverse peoples.

Reflections on some ethical imperatives in our modern world

The major ethical imperatives of our time—and we should have no difficulty recognizing these unless we are morally blind—are to relieve hunger, alleviate profound poverty, sustainably improve the lives of those living under abominable conditions and to foster global peace and ecological security. Several United Nations conferences—Rio 1992, Cairo 1994, Copenhagen and Beijing 1995—and others testify to the growing acknowledgement of these ethical imperatives and the need to enable the processes by educating and empowering women and children. However, insufficient attention has been devoted to the ways in which resources can be generated to achieve these ambitious goals. Scholarly attention and political action directed at ethical and effective use of resources are central to the imperatives to be faced. Some suggestions follow.

Demilitarization

Given the amount of money spent globally on military activities (US $750 billion per year in the 1990s) saving even a modest proportion could generate considerable resources for diversion to development. Associated reduction in conflict and the promotion of peace could further contribute to sustainable progress towards better lives for many, and encourage new visions of global security. Demilitarization and progressive diversion of resources from activities of war to making peace is one of the ethical imperatives that must be faced.[10,38]

Debt restructuring

Debts that can never be repaid must surely be abolished.[24,25] Maintenance of Third World debt in the knowledge that this was to a large extent created through inappropriate arms trading and defective development projects undermines both the humanity of the those who demand repayment, and the lives and dignity of the those who are effectively enslaved by debt. Expenditure of up to $15 per citizen each year in some developing countries on debt repayment, while spending only $2.5 per person per year on health care[60] is an indictment of the integrity of wealthy nations that claim to be concerned about universal human rights and the equality of all people. Debt relief will not remove the need for loans and financial assistance but will require that these be restructured on more accountable grounds to ensure their legitimacy in the future. Deposits of large sums of money by despots in Swiss banks, and other forms of fraud with the full knowledge and collusion of arms dealers and other powerful traders should also no longer be possible. The transparency and accountability that the rich require of the poor through structural adjustment programmes should also apply to their own financial transactions that have such profound effects on the lives of billions.

Implementation of appropriate international taxation

Given that less than 10% of the $1 trillion daily global financial transactions are for services rendered and that the remainder represents repackaging and reselling of money within what has been called a 'casino economy',[52,61] it is difficult to contest the legitimacy of taxing electronic monetary transactions for a global development fund. Similarly it is being acknowledged that there is a need to modify current concepts of free trade to include environmental costs in business activities—indicating acceptance that we cannot have free access to the 'natural commons' in our respective countries to the disadvantage of distant others or future generations.[18,27,62]

Developing imaginative new sustainable development programmes

The achievement of real development within poor countries is also an ethical imperative.[63,64] The risks for all are becoming apparent if this is not achieved—extreme poverty giving rise to 'violence from below', new and old infectious diseases spreading rapidly across the world, and the environment becoming irrevocably compromised. With 50% of the world's population lacking access to even the most basic essential drugs, millions of impoverished people are becoming desperate because of lack of concern for their lives and basic human dignity. In the face of this and increasingly evident ecological threats, rational self-interest alone provides sufficient reason for promoting sustainable development programmes, even if the need for altruism and reparations is denied.[65,66] Ordinary citizens, health care professionals and informal organizations, such as NGOs, can build a process of 'globalization from below' that could contribute to sustainable development.[27,49]

Restructuring international relations

The inability and failure of the great powers to shape successfully a fair, just and peaceful world is evident from the scale and magnitude of war, ethnic conflict, and the disparities and associated human misery that have characterized the twentieth century.[33] Lives of comfort and luxury seem to have dulled the moral sensitivity of

S2640-08.qxd 4/4/02 8:58 AM Page 91

many to the needs of fellow humans. In a world of rapid and comprehensive information transfer it is neither possible to plead ignorance of the plight of billions, nor to ignore the implications of this for all in the long term—even the most privileged. Highly egoistic notions of humanity, reflected in selfish individualism and long-standing concepts of state-centricity with considerations of security limited to military issues, have run their course.

New ways of looking at the world and at how states should interact are gradually being shaped. A deeper understanding of what it means to be a citizen in an increasingly interdependent world will need to embrace renewed concepts of civic citizenship, solidarity and concern for others, even those very distant from our own daily lives. New ways of thinking about ourselves, and our relationship to others are also necessary in order to link concepts of human rights to human needs and to the ethics of social justice within and between nations. New paradigms of thinking would embrace concern for population well-being as well as individual well-being; deeper insights into how complex systems function; and development of an ethic for institutions and international relations that recognizes the responsibility to balance individual goods and social goods, and not to harm weak and poor nations or groups of people through economic and other forms of exploitation that frustrate the achievement of human rights and well-being.[46,67–69]

An ecological approach to justice

In recent years it has been cogently argued that neither well-respected theories of justice nor the individualistic human rights approach have taken into consideration the adverse effects of population growth and of ecological degradation. As a result the environment has become a commons that has been abused and severely compromised. Loss of biodiversity, global warming, damage to the ozone layer, soil erosion, pollution of the air and the sea have all been allowed to escalate without sufficient attention to their implications for the future of life on our planet.[17,18] The persistence of tropical diseases must be seen against this background.

It is not only redistribution of resources that must be faced but also overpopulation and overconsumption. An ecological approach to justice requires a shift from a predominantly anthropocentric view of the world to an ecocentric world view that includes concern for nature and for all forms of life. A long-term perspective on life and a concern for rights that extends to include the well-being of future generations are essential to this viewpoint. The age-old concept of stewardship of nature here replaces the idea of the subjugation of nature. Consideration of all costs associated with consumerism—rigorous economics—is required to operationalize these concerns.

Setting a moral example

As powerful as human rights and other moral languages may be, the power of wealthy countries setting a moral example is potentially more influential. Amnesty International's report on the extent of human rights violations in the USA[50] and Cassese's description of such violations in the prisons of Europe[51] provide insight both into how such abuses can continue even in wealthy democratic countries, and into the great need for setting moral examples. Neglect of the poor within rich societies, perpetuation of unsustainable consumerist lifestyles, lack of universal access to health care within the USA and the continuing production of weapons of mass destruction are also poor examples for other nations. A shift from the idea that 'might is right' to the idea that 'right is might' is needed. South Africa's peaceful political transition illustrates the possibility of such change. The Jubilee 2000 programme to relieve poor nations of crippling debts exemplifies the need for moral leadership at a global level. Widespread support for this endeavour could provide evidence of the power of rational persuasion and illustrate sincere belief in the role of human rights in dealing with poverty and associated intense human misery.[14–16]

Conclusions

Reducing the burden of tropical diseases and fostering greater human well-being on a global scale will require acknowledgement that unbridled materialism and wasteful consumerism are associated with impoverishment of the human spirit and threaten the lives of billions. Perpetual economic growth for some cannot continue at the expense of others without sacrificing our humanity. The root causes of poverty should be studied more seriously and constructively addressed. The poor are not poor because they are lazy, incompetent or corrupt. While poor countries must also accept some blame for their condition, the causes of poverty are much more complex. Wealthy industrialized nations are deeply implicated in creating and sustaining poverty.*

Powerful nations need to resolve to deal with the root causes of intolerable economic disparities through such processes as described above. Their wealth, their sense of entitlement and their moral insensitivity are as problematic as the existence of poverty.

Crucial to a new approach will be the recognition that it is not merely altruism that is called for but more importantly a long-term perspective on rational

*The facts and interpretations offered above are not intended to imply that the wealthy, productive and fortunate in the world should bear the whole burden of the blame for the complex series of historical developments that polarize the world. Political realities within developing countries, including corruption, ruthless dictatorships, ostentatious expenditure by elites and underinvestment in education and health, have contributed greatly to the suffering of billions. However, it is vital for privileged people to have insight into the extent to which these deficiencies in many developing countries have been facilitated by the policies of wealthy nations in pursuit of their own interests. Insight into how favoured lives are sustained by overt and covert exploitation of unseen others could allow those of us who live comfortable lives anywhere in the world to appreciate that we do not have a monopoly of entitlement to the benefits of progress.[70]

S2640-08.qxd 4/4/02 8:58 AM Page 92

self-interest in an increasingly interdependent world. To achieve this will require a broader approach to morality that firmly embraces but also goes beyond the concept of human rights, and includes concern for human needs worldwide and for the environment on which all life is crucially dependent. Sustainable development and respect for human rights and human dignity are in the interest of all worldwide. These can only be achieved through a combination of analytically incisive and honest thinking about global problems; and the active promotion of solidarity devoid of economic, cultural and ethical imperialism. Is should also be acknowledged that all people and cultures have something to contribute to the development of a more just world and a true form of universalism. The goal of achieving a global mindset to which all can contribute is the challenge for the twenty-first century.[71] If this can be achieved the prospects of reducing suffering from tropical diseases will be greatly enhanced.

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S2640-08.qxd 4/4/02 8:58 AM Page 93

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13

Global Poverty and Tuberculosis: Implications for Ethics and Human Rights

Solomon R. Benatar

The magnitude of the problem of tuberculosis in the world presents a paradox that provides insights into the gap between scientific knowledge and its effective application for the promotion of health and human well being. This paradox also serves to remind us that while scientific progress is necessary in the quest for improving health, such knowledge is not sufficient in itself. Deficiencies in our ability to apply knowledge effectively make it clear that new ways of thinking about health and disease are required to promote the use of scientific knowledge to achieve improved global health in the future.[1]

Since Robert Koch discovered the causative organism *Mycobacterium tuberculosis* in 1882, spectacular scientific advances have been made in our understanding of TB and in our ability to treat effectively and cure any individual patient. These advances include major insights into the basic pathobiological processes associated with TB infection and progression to disease, the development of new diagnostic tests and many effective drugs, the evaluation of different drug combinations in a series of well-designed trials, and the implementation of highly cost-effective treatment regimes. These advances gave rise to optimism in the 1970s that it might be possible to eradicate TB from the world.

Sadly this noble aspiration has not been achieved. Indeed quite the opposite has come about. TB is on the increase globally and, as a result of inadequate treatment programmes, multi-drug-resistant TB, for which few new drugs are being developed, is emerging. The cost of treating a single patient with MDR-TB can be up to one hundred times as much as is required to treat a patient with a drug-sensitive organism,

and treatment is thus becoming unaffordable in many parts of the world. In the United States, Europe and Latin America, highly resistant strains of *Mycobacterium tuberculosis* have caused numerous explosive institutional outbreaks (in hospitals, prisons and shelters), with high case-fatality rates in immunosuppressed patients and high rates of transmission to immunocompetent caregivers.[2] The World Health Organisation/International Union Against Tuberculosis and Lung Diseases (WHO/IUATLD) global survey of resistance to anti-TB drugs reveals that MDR TB has become established in almost all participating countries.[3] Prisons in Russia have been described as the 'epicentre of a world-wide epidemic of multidrug resistance'.[4]

This paradox between the extent of our scientific knowledge and the spectre of TB becoming untreatable in the future is frightening – not only in relation to the treatment of TB but also with regard to treatment of other infectious diseases such as HIV/AIDS. The customary explanation given for the failure to achieve global control of TB is the existence of poverty. It is also conventional to express poverty in terms of insufficient economic resources in developing countries to implement effective TB treatment programmes. This is indeed true in part, but the real explanation is much more complex, extending to considerations of the less obvious causes of economic poverty in many developing countries and to other, even more serious, forms of 'non-economic poverty' that afflict privileged societies.

Poverty and health

Poverty means being deficient and deprived materially, socially and emotionally. It includes lack of economic resources, lack of education, lack of access to basic life resources such as food, water and sanitation, and lack of control over one's life and reproductive company. Absolute poverty is defined as a condition of life severely limited by malnutrition, illiteracy, disease, squalid surroundings, high infant mortality and low life expectancy. Poverty brings not only material disadvantage but also social exclusion, which in turn is associated with discrimination across a wide range of social activities that adversely affect health and well-being.[5]

Relative and absolute poverty have been constant characteristics of the human condition. With rapid increases in the wealth of the elite in

{Page:224}

the past fifty years, relative poverty has become more pronounced. At the beginning of the twentieth century the wealthiest 20 per cent of the world's population were nine times richer than the poorest 20 per cent. This ratio has grown progressively – to thirty times by 1960, sixty times by 1990 and to over eighty times by 1995. One billion people live well, some in great luxury, and three billion live in poverty.

Absolute poverty remains a problem and its extent has increased. The number of extremely poor people in the world more than doubled between 1975 and 1995. Over half of the world's population live on less than $900 a year, and more than a quarter of the world's population live (on less than $1 a day) under conditions of absolute poverty. Of the 4.4 billion people in developing countries, over half lack access to sanitation, over 30 per cent lack access to clean water and essential drugs, and almost a quarter are inadequately nourished.[6]

World debt grew from $0.5 million million in 1980 to $1.9 million million in 1994 and to over $2.2 million million by 1997. The 'debt trade' has been a major factor in perpetuating and intensifying poverty and ill health. Most countries that were forced by the World Bank to pursue structural adjustment programmes during the second half of the twentieth century are in greater debt than ever before. Cuts and underfinancing of public health spending associated with such structural adjustment programmes have led to severe deterioration in health-care delivery systems, especially in Africa. The whole public health agenda (information surveillance, epidemiology, research and behavioural surveillance) has been reduced to a skeleton while the World Bank has continuously promoted cost-recovery for health care. As a result HIV testing, condoms, treatment for sexually transmitted diseases, antituberculosis therapy, and treatments for co-infections of HIV are subject to user charges and therefore unaffordable to many. In Zambia, with an HIV prevalence of over 19 per cent, half the children are now malnourished, a state which reduces resistance to all diseases. Structural adjustment programmes, debt repayments, cuts in aid budgets (especially by the USA), discrimination against African trade, increasing malnutrition and the legacy of the Cold War have all played a significant part in fanning the AIDS pandemic.[7]

Third World debt, although accounting for a small proportion of total world debt, has reached obscene levels in relation to income levels in the Third World and is unpayable. The ways in which such debt has been created and its relationship to the arms trade are indictments

against so-called developed nations.[8] It is now abundantly clear that debt relief is an essential first step in the process of achieving improvements in health at a global level. In making a case for debt relief for poor countries, it is reasonable to point out that the extraordinarily high consumption patterns of industrialized nations make these rich nations deeply indebted to us all, and especially to those living in poverty.[9]

Globalization and poverty

The term 'globalization' refers to a process of global integration in which diverse peoples, economies and political processes are increasingly subject to international influences. It is both a complex and an ambiguous concept with social, cultural and economic dimensions. It is generally viewed as the development of an emerging world order characterized both by gradual acceptance and implementation of liberal democracy in many countries, and by the growing impact of a neoliberal economic system featuring the growing integration of markets in goods, capital and services on a global basis. The driving forces of globalization include advances in information and transport technology and the development of a dense network of international and transnational agreements that facilitate free trade and promote the concept of universal human rights.

Globalization is not a new phenomenon, and the globalization process reflects a long economic and political history, involving a wide range of actors, and resulting in both beneficial and adverse effects. While economic growth has been enhanced, and freedom and prosperity have increased for many, the economic disparities between rich and poor (both within and between nations) have widened in association with the development of a complex web of material, institutional and ideological forces and massive multinational corporations. The influence of the latter on the balance of power in the world effectively blurs boundaries between states, undermines state control (especially that of small states) over their own economies and threatens the ability of states to provide for their citizens.

In addition to the progressive widening of the economic divide between nations and the growing external control over the economies of small countries through the 'debt trade' and markets that are

{Page:226}

increasingly global, other powerful forces are at work. Evidence is accumulating that, associated with globalization, there has developed a large (but little-discussed) illicit global economy comprising an illicit drugs trade (now an industry worth over $500 billion annually), massive migration and smuggling of people, trafficking in endangered species, toxic waste dumping, prostitution, unprecedented levels of sexual exploitation and child labour, an uncontrolled illicit arms trade, and money laundering. Some scholars claim that globalization aggravates ethnic and cultural violence.[10]

Wealth and disease

It is now well established that there is a definite relationship between wealth/poverty and health/disease, although this relationship is complex and only linear up to annual per capita incomes of $5,000.[11] Anomalies are evident at the poles of wealth and poverty. One of the wealthiest nations in the world, the USA, with per capita annual healthcare expenditure of over $4,000 (amounting to 50 per cent of annual global expenditure on 5 per cent of the world's population) has worse health statistics than some other highly industrialized countries with lower incomes.[12] Some poor provinces (Kerala in India, for example) and poor countries (such as Cuba and Costa Rica) have achieved lower infant mortality rates and greater longevity than many wealthier nations.[13]

Both absolute and relative wealth affect health. Among the developed countries it is not the richest societies that have the best health but rather those with the smallest income differentials between rich and poor.[14] Despite the non-linearity of the relationship between wealth and health above annual per capita gross national products (GNPs) of $5,000, the existence of this relationship and the effect of wide income differentials underscores the need to see health and disease as intimately linked to social and economic conditions.

Poverty directly accounts for almost one third of the global burden of disease. Poverty leads to poor health, which in turn aggravates poverty and reduces human productivity. Of the forty poorest countries in the world, eleven have annual per capita GNPs ranging from US$80 (Mozambique) to US$210 (Sierra Leone), ten from US$220 (Bangladesh) to US$340 (Nigeria), nine from US$370 (China) to US$450

Table 13.1 Health statistics in the forty poorest countries in the world[13]

Annual per capita GNP (US$)*	168	282	404	570
Life expectancy at birth (years)*	47	51	56	60
Infant mortality rate per 1,000 live births	126	112	90	70
Under 5 years mortality rate	158	169	132	109
Population access to safe water (%)*	37%	53%	53%	63%
Population access to sanitation (%)*	29%	26%	39%	48%
Population per physician (1970)	33,925	39,381	23,009	15,956
Adult literacy rate (1992– %)	42%	44%	46%	63%
Average annual population growth (%)*	2.7%	2.8%	2.6%	2.3%

* 1991 data

Source: G. Gunatilleke, *Poverty and Health in Developing Countries*. WHO/CO/MESD.16. Geneva: World Health Organization, 1995.

(Nicaragua), and ten from US$500 (Sri Lanka) to US$600 (Zimbabwe).[15] Despite the difficulty in making accurate comparisons it is clear (see Table 13.1) that increments in economic status are associated with better health statistics, and that economic growth is necessary to improve the living conditions conducive to good health, independent of benefits that may arise directly from health care.[16] Ninety-five per cent of TB cases and 98 per cent of TB deaths are in developing countries.[17] TB has a direct bearing on the economies of poor countries as 17 per cent of those who die from this disease are in the economically productive age group of 15–49 years.[18]

'Human rights' and alternative ways of thinking about poverty

It is not only economic or material poverty that prevents the effective treatment of TB. We should consider how we are impoverished by the inadequacy of our ability to feel empathy and to express it in practice. With regard to TB it can be claimed that if those in resource-rich countries find it so impossible to empathize with those suffering from

{Page:228}

a potentially fatal disease that they cannot sacrifice/donate the US$1 required for each year of life that could be saved by treating TB, there must surely be a deficiency in the ability to reflect on their own potential to suffer and on the misery of being neglected. Of relevance here is the USA's failure to pay its dues to the World Health Organization (WHO): the $35 million that the USA owes to the WHO could do much to promote a global agenda against TB.[19] Minimal respect for the lives of TB victims can be interpreted as an impoverished sense of sincerity regarding the widely acclaimed aspirations expressed in the Universal Declaration of Human Rights (UDHR).

The recent thrust to bring the work of bioethicists and human rights activists closer together in the quest for better global health provides an opportunity to reflect both on the content of the Universal Declaration of Human Rights (and of subsequent supportive covenants and declarations) and on the extent to which these aspirations have not yet been met. Both pessimism and optimism have been expressed regarding the fulfilment of these declarations to date, and what may be achieved in the future. The despair of some at the extent of continuing and even escalating human rights abuses and violations throughout the world – even in highly privileged societies – is countered by the hope of others that with the development of international law and other human rights instruments coupled to intensified educational efforts, the impact of the UDHR will spread more widely. The recent General Comment on the Right to Health by the United Nations Committee on Economic, Social and Cultural Rights is viewed as a significant milestone.[20]

Explanations for the relative lack of success of the UDHR in achieving its noble goals may include: (i) the utopianism expressed in a multiplicity of laws and conventions, (ii) widespread differences in their interpretation and acceptance by various countries, (iii) unrealistic expectations, and (iv) lack of enforcement mechanisms. For example, the USA does not accept, and has not ratified, either the widely accepted Covenant on Social, Economic and Cultural Rights or the more recently agreed to Rights of the Child. The appeal to laws that are not uniformly accepted and cannot be enforced weakens the use of a human rights approach to global ideals. The recent description of how the UDHR was crafted is illuminating. Its insight into the discussions central to achieving the promulgation of the UDHR, revealing that signatory countries agreed to differ on the fundamental issues underpinning the declaration, helps to explain its limitations.[21] Another

example of lack of integrity is the setting by bodies in rich countries of utopian human rights standards for healthcare professionals in other countries, while expecting less in their own country. For example human rights activists in the USA, in making recommendations for the protection of human rights by healthcare professionals in South Africa, have set standards that go well beyond those expected of healthcare professionals in their own country.[22]

The human rights approach to human well-being has potential strengths and weaknesses. In general there is a tendency to celebrate its strengths – and many describe how human rights are more widely acknowledged and honoured around the world today than ever before. However, it is also important to ask why the world at the beginning of the twenty-first century is characterized by widening disparities between rich and poor, by growing injustice within and between nations, by power struggles reflected in wars, torture, human rights violations, and refugeeism on a massive scale, and by escalating ecological deterioration.[23] The spectre of human rights abuses worldwide is a terrible one, and the world now has an estimated 18 million refugees and 25 million displaced persons. Wars, torture and repression continue, and medical personnel are involved. We need to ask why these crises continue to proliferate fifty years after the acceptance of the UDHR and why, despite the efforts of many organizations, abuses are merely being documented instead of being prevented.

It would seem that there is a need to look beyond the obvious violations of human rights to perceive the root causes of such behaviour: to see human rights abuses on a wide scale as a means to restrict access to the basic subsistence rights required for survival. In apartheid South Africa, for example, 20 per cent of the population owned 80 per cent of the wealth – a discrepancy that arose through oppression and domination. The world was correctly critical of the indignities and disparities imposed by legally enforced racial discrimination and exploitation, and justifiably fought to displace the apartheid regime. Now we need to ask why we are not equally critical that in the world as a whole, 20 per cent of the world's people own more than 80 per cent of wealth – and the economic divide continues to widen between and within many countries. While this is not the result of apartheid-like laws that overtly promote racial discrimination and exploitation, it does reflect other forms of covert exploitation and discrimination that have equally offensive results. It is clear, against this background,

{Page:230}

that human rights abuses are propagated under adverse social and economic circumstances that create divisions and conflict between people. This can be viewed as a form of global apartheid based on the abuse of power, which, given its effects, should surely be contested as vigorously as racial apartheid.[24]

With regard to poverty and racism in the USA, the public health physician Jack Geiger has argued thus:

> . . . my country is now embarked on a massive attack on the poor and on people of color. In the US Congress, there are serious attempts to destroy the social welfare system . . . to end affirmative action for minorities and women, to deny women's rights to reproductive choice, to slash the funding for health care and public education, to increase taxes for the poor and reduce them for the rich, to reduce food subsidies and heating assistance for the poor and elderly, and even to end the program of free school lunches for low income children. This campaign is driven by a thinly disguised racism.[25]

But this lack of respect within a wealthy nation for the dignity of its own citizens is also only part of the problem. In the USA, prominent economists have also casually dismissed two thirds of the world's population as: 'superfluous from the standpoint of the market. By and large, we do not need what they have; they can't buy what we sell.'[26] 'In the perspective of world capitalism as we know it these people just don't count. . . . Unless that part of the world develops the capacity for terrorist blackmail they will be in the charity ward for a long time.'[27]

The ugly roots of human rights abuses thus seem to lie in the distorted human relationships that arise from exploitation, domination and discrimination. The issues that need to be addressed lie at the core of our humanity. Regrettably, as noted by the Canadian sociologist Rhoda Howard, 'The Western human rights discourse of the late twentieth century has become a discourse of the privileged – of relatively well-off members of social categories who claim the right to equal treatment in law and society, while the poor have little chance of using that discourse to claim their fundamental rights in the economic sphere.'[28] Howard identifies the social minimalism and reactionary conservative ideologies of the USA as permitting social closure against the poor, including blacks and single mothers, and she advocates social democracy as the best means for promoting the whole range of human rights with both respect for individuals and concern for community.[29]

Finally, we need to consider the lack of political will to embark on a global TB programme that has such profound implications for sustainable human well-being.[30] This reflects yet another form of poverty, moral insensitivity and corrosion of character afflicting those who increasingly live self-centred lives, and the extent to which such lives are pervasively diminished by a lack of concern for their fellow human beings.[31] It is not unreasonable to suggest that these various expressions of the 'non-economic poverty' of the wealthy and privileged, who feel entitled to ever-increasing economic resources with little regard for the impact of their way of life on the environment and on the lives of others, diminish our ability to control TB and threaten future peaceful life on our planet.

TB and the ethics of health care

Ethical considerations have long been central concerns in medicine. To a remarkable degree medical ethics was continuous, consistent and largely confined within the profession until the middle of the twentieth century. Medical ethics was centred on the Hippocratic oath, and various declarations (Geneva, Helsinki, Tokyo and others) to which individual practitioners and medical organizations claimed allegiance. Exhortation, apprenticeship and role modelling were the instructional processes. In the latter half of the twentieth century a major change took place. Traditional medical ethics was challenged and the discourse on ethics became multidisciplinary. The rich history of the rebirth and growth of medical ethics has been partially documented and remains the subject of considerable study.[32]

In brief, ethics at the *micro* level of interpersonal relationships is seen today as inclusive of respect for human dignity, for individual self-determination and for access to the resources required to sustain the very basic physical and mental health of individuals conceived of as rational and autonomous. In this context the physician is viewed as committed to the care of each individual patient within a relationship that embraces the concepts of an unwritten but binding contract, respect for patient autonomy, and trust in the physician's concern for the best interest of patients. Such a relationship, in which a physician of good character treats patients as ends in their own right, is rooted in ethical theories concerned primarily either with the inherent 'right-

{Page:232}

ness or goodness' of actions or with theories of virtue. The ethics of the relationship between the doctor and the patient has been extensively debated and written about and will not be further discussed here. Appropriate application of such ethics has the potential to care for and cure any individual patient suffering from TB.

There is also increasing interest in extending the debate on ethics to the *meso* level where such considerations as order and justice within the communities in which individuals are socially embedded come into focus. Here a broader view of the responsibility of health professionals includes concern for public health, and requires participation in the healthcare system of their country for the common good. Considerations of justice require the development of explicit rationing processes, based on well-reasoned notions of distributive justice, and promoted through publicly made policies for equitable access to health care. Such ethics, embracing the idea of a social contract and of utility value at institutional and national levels, are less extensively articulated but are exemplified by the public health policies of countries with a political philosophy of welfare liberalism. Here, interpersonal relationships are broadened to encompass the concept of civic citizenship. The application of good meso-level ethics to TB would result in the creation of an effective public health programme for dealing with this disease at the national level.

In an interdependent global world it is increasingly being appreciated that ethical considerations must extend to the *macro* level to include consideration of ecological security, international relations and the interdependence of all forms of life.[33] The desired conception of the individual here becomes that of an autonomous individual sharing equal rights with all other citizens in the world, in a relationship of interdependence in which the rights of some should not be acquired at the expense of the rights of even distant others. The level of complexity here is much greater because of the way in which the foreign policies of some countries may covertly enhance the lives of their own citizens through the exploitation of unseen persons elsewhere. The role of the physician at this level of ethics includes a commitment to global professional ideals, to the continuing advancement of knowledge, and to concern for health at a global level for present and future generations. Promoting ethics at this level would enable the WHO to implement a global TB control programme.

Some consider the meso and macro levels as widening concentric

circles with the degree of moral obligation to others being determined by the closeness to oneself of the people to whom one owes moral obligations. The question that can be asked, with at least some plausibility, is, Why should we bother to go beyond the micro level of ethics? Why should we have moral responsibilities to those who are live far from us and whose lives seem to be independent from ours? It can be answered that modern communications, transport, methods of money exchange and the creation of nuclear and other weapons of mass destruction have shrunk distances and differences in many senses, and created common risks and a degree of interdependence between all people worldwide that must be addressed.

The ethical and human rights challenges that must be faced at a global level are the promotion of respect for the dignity of all people, and the reduction of inequity. These goals are required for several reasons. First, there is the ethical imperative to achieve visible respect for individual dignity. Second, there is a need to promote the social stability necessary for human flourishing in a complex world. Hunger, miserable living conditions, lack of education, illiteracy and lack of control over one's own destiny breed anger, violence and crime, and promote the narcotic drug trade and abuse of vulnerable humans – all of which destroy the fabric of society.[34] Third, and not least, is the need to be aware of the adverse ecological effects of modern life and to develop the processes necessary for protecting the environment for the well-being of future generations.[35]

It is clear that too much should not be expected of a single-minded, rights-based approach to improving human life. Whatever might be the present or future anticipated achievements of the human rights approach, the desired goal could hopefully be assisted and even amplified by widespread acceptance and promotion of complementary moral approaches, of which the recently proposed Trieste Declaration of Human Duties is one (Table 13.2). The achievement of a global civil society will require acknowledging and promoting the idea of human duties as an essential component of human rights. The International Council of Human Duties (ICHD), a non-governmental and non-profitmaking organization, has among its objectives to promote international understanding of the concepts of human duties, and to encourage the adoption by the United Nations of a 'Universal Declaration of Human Duties' with comparable stature to the UDHR. Stimulated by the success of the Helsinki Declaration, first issued in

[Page:234]

Table 13.2 Trieste Declaration of Human Duties

Whereas the Declaration of Human Rights represents one of the great advances of the twentieth century, it fails to address Human Duties and Responsibilities as necessary counterparts of these Rights. . . . Recognition of and respect for human rights demand the acceptance of specific duties, in order to assure an adequate quality of life for all people and the persistence of a favourable environment for future generations.

It is the duty of every human being to:

- Respect human dignity as well as ethnic, cultural and religious diversity.
- Work against racial injustice and all discrimination of women and the abuse and exploitation of children.
- Work for the improvement in the quality of life of aged and disabled persons.
- Respect human life and condemn sale of human beings or parts of the living body.
- Support efforts to improve the life of people suffering from hunger, misery, disease or unemployment.
- Promote effective voluntary family planning in order to regulate world population growth.
- Support actions for an equitable distribution of world resources.
- Avoid energy waste and work for reduction of the use of fossil fuels. Promote the use of inexhaustible energy sources, representing a minimum of environmental and health risks.
- Protect nature from pollution and abuse, promote conservation of natural resources and the restoration of degraded environments.
- Respect and preserve the genetic diversity of living organisms and promote constant scrutiny of the application of genetic technologies.
- Promote improvement of urban and rural regions and support endeavours to eliminate the causes of environmental destruction and impoverishment which can lead to massive migrations of people and overpopulation in urban areas.
- Work for maintenance of world peace, condemn war, terrorism and all other hostile activities by calling for decreased military spending in all countries and restriction of the proliferation and dissemination of arms, in particular, weapons of mass destruction.

Source: *Trieste Declaration of Human Duties: a Code of Ethics of Shared Responsibilities*, Trieste University Press, 1997.

1963, the World Medical Association has encouraged several other ambitious ethics statements in recent decades. However, the challenge to the World Medical Association to promote the provocative statement reproduced in Table 13.3 has not been followed up.

The failure to control TB at a global level, and its resurgence with increasing multi-drug resistance in recent decades represent a failure of public health at national and global levels. In the face of such failure despite the clarity of the issues at stake, it is appropriate to ask whether the negotiated political transformation in South Africa in the 1990s will impart a message that can be heard by those interested in the global control of TB. A decade ago a text on TB in South Africa noted that:

> South Africa is embarking on a political journey that offers hope for progress out of the wilderness created by its apartheid policies into a relationship with the world which could make it a catalyst for sub-Saharan development. South Africa reflects the cross-roads in human progress in relation to many conflicts in the modern world – between capitalism and socialism, between individualism and collectivism, between Eurocentric and Afrocentric ideologies, between wealth and poverty, between progress and retrogression, between intercultural belligerence and mutual understanding, and between destruction and conservation of a precious ecology.[36]

It also suggested that the extent to which the conquest of TB in South Africa became a reality would be one of the indicators of progress towards social justice in the new order. It is arguable that these considerations apply to the global control of TB today. The HIV/AIDS epidemic has added to the complexity of the task, but the implications are unchanged. The prospects for dealing with TB (and HIV/AIDS) at a global level will reflect our ability to move beyond global economic apartheid. If ridding South Africa of legalized racial apartheid, and its consequent dehumanizing disparities was a global priority, and I know of no one who disputes this, it would require a powerful argument to refute the similar need to narrow the equally grotesque disparities created by global economic apartheid. The peaceful political transition in South Africa, when most expected that only a civil war could result in change, is an example of the power of the idea that 'might is right' can be replaced by the idea that 'right is might'. The burden of TB at a global level will be a marker of whether the widely acclaimed political shift made by South Africa is being emulated at a global level.

{Page:236}

Table 13.3 Proposed World Medical Association Code

Whereas the World Medical Association:

A. Recognizes that:

- We live in a divided world, a world in which 23 per cent of the world's population lives in affluence on 85 per cent of the annual global economic output, while 77 per cent live poorly, often in misery, on 15 per cent;
- These disparities have deep roots in centuries of complex human development and progress that has regrettably been associated with military and economic conflict and exploitation;
- The gap continues to widen as human and material resources flow from poor countries into the rich;
- These disparities and their causes aggravate population growth, human misery and ecological degradation in all countries;
- Vast resources are wastefully expended year after year on militarization worldwide;

B. Notes that health care professionals have:

- Traditionally seen themselves as part of a global moral community with shared goals for the promotion of life and health;
- Formulated codes of ethics that reflect the universal nature of these professional obligations;
- Committed themselves through their nations to support universal human rights, including health for all;
- Responsibility towards the common good as well as individual patients;

C. Acknowledges that:

- The principle of justice requires access to health care in all countries as a basic human right without which people will suffer individually and communities collectively;
- We live in an interdependent world in which modern communication and transport systems inform us about and expose us all to individual and collective threats to human health and survival;

The World Medical Association urges all health care professionals and their professional associations to:

- Acknowledge that their responsibility for individual and population health should not be subverted by political and other ideologies either in wealthy or in poor countries;
- Expose and contest actions taken by their respective governments that may adversely affect the health of individuals or populations, at home or abroad;
- Assist professional organizations to work toward creating national and international concepts of the practice of medicine that will contribute to the health of populations as well as to the health of individuals.

[Page:298]

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[Page:300]

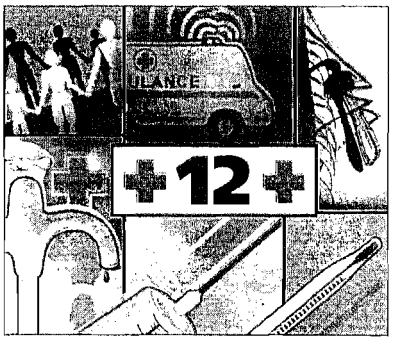
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ETHICAL CHALLENGES FOR HEALTH CARE IN SOUTH AFRICA

SR BENATAR[1]



Thematic structure of chapter

1 Introduction

2 Health in South Africa – within a world of which it is a microcosm

3 History of medical ethics in South Africa
- 3.1 Early markers of medical ethics in South Africa
- 3.2 Growth and transformation of medical ethics

4 Medical ethics and human rights

5 Ethical dilemmas at the level of the health-care-professional–patient relationship
- 5.1 Confidentiality and trust
- 5.2 Informed consent
- 5.3 Dual loyalty, conflicts of interest and advertising

6 Ethical dilemmas at the level of institutions
- 6.1 In search of equity
- 6.2 Resource allocation, priority setting and rationing
- 6.3 Withholding and withdrawing treatment – the concept of futility
- 6.4 Institutional governance
- 6.5 Balancing clinical services, teaching and research
- 6.6 Maintaining professionalism

7 Ethical dilemmas at the national level
- 7.1 Dealing with the HIV/AIDS pandemic – a major challenge
- 7.2 HIV transmission prevention and treatment programmes – the controversy
- 7.3 The health budget – ethical implications of decisions
- 7.4 Expanding the health budget in the face of the HIV/AIDS national emergency
- 7.5 Universal access to health care – the public–private divide
- 7.6 Public health ethics

8 Ethical issues at the level of international collaboration
- 8.1 International collaborative research
- 8.2 Development

9 Building national capacity to deal with social and ethical dilemmas
- 9.1 Transdisciplinarity in health care
- 9.2 Promoting global health ethics
- 9.3 Teaching health care ethics

10 Conclusion

1. INTRODUCTION

The purpose of this chapter is to review some of the ethical challenges for health care in South Africa. As context has crucial impacts on health, well-being and the structure of health care services, it is necessary to view South Africa within the context of its recent history (40 years of apartheid followed by a peaceful transition) (Benatar 1992b; Van Rensburg &

1 Professor of Medicine and Director: Bioethics Centre, University of Cape Town, Cape Town, South Africa.

I acknowledge, with gratitude, the critical encouragement and loving support of my wife, Evelyn.

Benatar 1993), its geographic location (in an increasingly impoverished subcontinent, long ravaged by natural and human disasters) (Benatar & Van Rensburg 2001; Schwab 2001; Van Rensburg & Benatar 2001) and within a broader global context that has been shaped by neo-liberal economic policies (Benatar 2001b), all of which profoundly influence the health of its peoples.

South Africa's transition from apartheid to a fledgling democracy a decade ago is a remarkable example of how negotiation, compromise and cooperation can lead to peaceful progress, thus bypassing the civil war that could have resulted from centuries of oppression and many decades of brutal apartheid policies. This transition reflects a crossroads in human progress and in human relationships: between capital accumulation and equitable distribution; between selfish individualism and oppressive collectivism; between Eurocentric and Afrocentric ideologies; between wealth and poverty; between progress and retrogression; between intercultural belligerence and mutual understanding; and between destruction and conservation of a precious ecology. As moral values lie at the heart of relationships, this transition has ethical implications at all these levels. Peaceful transition through a 'negotiated revolution' exemplifies a paradigm shift that has been widely recognised and admired. However, this political transition is only the first step on a long road towards achieving a new society in which all citizens will be equally respected and the disparities in health fostered by colonialism and apartheid will be significantly narrowed.

We live in a divided world, in South Africa as much as elsewhere, an amoral world in which the humanity of some has been sustained at the expense of others, a world of exploitation in which ambitious nations have not yet had the courage to acknowledge their own weaknesses and begun to move towards a concept of global citizenship that must surely be as inevitable as the eradication of apartheid. Herein lies the excitement of recent developments in South Africa, as this country reflects the world's problems and the potential for their solution. Recognising and acknowledging this will add to hope for global progress by restoring faith in the ability of humans to see themselves at the edge of an abyss and to step back, rethink and choose a path to peace and progress. Extension of the discourses on ethics and human rights to the level of institutions and international relations offers a wedge towards such progress (Benatar *et al.* 2003).

2. HEALTH IN SOUTH AFRICA – WITHIN A WORLD OF WHICH IT IS A MICROCOSM

Human health and well-being worldwide are profoundly affected by complex interactions between economic, social and political forces, as well as by behavioural patterns, medical care and the application of technology (Kawachi & Kennedy 2002; Wilkinson 1996). During the 20th century, despite massive growth of the global economy, disparities in wealth and consequently in health have widened inexorably; billions of people lack access to even basic health care and the extent of absolute poverty has also increased. Today over a third of the world's population lives on less than US$2 per person per day and more than a billion people live on less than US$1 per day. Tens of millions of people, including many children, die every year of starvation – in a world with enough food to feed all (UNDP 2002).

Patterns of life expectancy and disease also differ markedly across the world. Life expectancy at birth ranges from well over 70 years in highly industrialised countries to below 50 years in many poor countries. Wide disparities in life expectancy are also observed between rich and poor within rich countries. In sub-Saharan Africa gains in longevity achieved during the first half of the 20th century are rapidly being reversed by the HIV/AIDS pandemic (Secure the Future/Bristol-Myers Squibb Company 2003). Of approximately 52 million deaths in the world each year, 17,5 million are due to infectious and parasitic diseases (16 million of these – many among the youth – in the developing world). Ten million deaths are from diseases of the circulatory system (4,5 million in the developing world) and 6 million from malignant diseases (3,5 million in the developing world). Among the poorest quintile of people in the world, 55% die of communicable diseases, as compared with 5% of the richest. The World Health Organization estimated that in 1998, 11 million children and adults of working age died of six infectious diseases that could have been prevented at the cost of US$20 per life saved (WHO 1997). Poor

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countries bear over 80% of the global burden of disease in disability adjusted life years (DALYs). This burden is likely to increase as the epidemiological transition progresses, with added disability and suffering from non-communicable causes of disability such as vascular disease, malignant neoplasms (especially of the lung and associated with smoking), neuropsychiatric disease, accidents and trauma.

Moreover, improvements in physical health over the past 50 years have not been matched by improvements in mental health – even in developed countries. Mental illness accounts for 8% of the global burden of disease (measured in DALYs). A further 34% of the global burden of disease is accounted for by behaviour-related problems (such as violence), diarrhoeal diseases, AIDS and other sexually transmitted diseases, motor vehicle accidents and other non-intentional injuries (Desjarlais *et al.* 1995). The inadequacy of the knowledge base about mental disease (compiled almost exclusively in North America and Europe) to explain psychiatric diseases in other parts of the world, poses formidable challenges for progress.

While the 20th century is considered by many to be the most successful in world history with spectacular achievements in science, technology and health care, the above statistics make it necessary to focus on the downside of progress – as eloquently described by Hobsbawm (1994). Improvements in human health globally in the 21st century and achieving real development of all people throughout the world, including South Africa, will be dependent on acknowledging such adverse features of modern life and on developing new paradigms of thinking that could promote widespread human flourishing (Benatar 2001b). At the beginning of the genetic biotechnology era when the genetic determinants of diseases are being unduly emphasised, it is appropriate to recall that health is profoundly affected by socio-economic status, environmental factors, personal lifestyle and access to health care.

It is also necessary to recall that health care professionals are part of a global community that shares the moral goals of promoting health, alleviating suffering, treating disease, and enhancing health-related knowledge. These goals, stated in various national and international medical codes, guidelines and covenants over many centuries, are now supplemented by the *Universal Declaration of Human Rights* of 1948 (UNESCO 1997), the *Universal Declaration on the Human Genome and Human Rights* (UNESCO 1997) and by the *Trieste Declaration of Human Duties* (International Council for Human Duties 1997). The first declaration aims to protect against abuse by the state or other agencies through affirmation of the dignity of individuals; the second promotes human dignity in the use of genetic research and its application; and the last emphasises the responsibilities shared by all in the quest for sustainable human well-being.

Patients' expectations for health care are fuelled by dominant Western ideas. These, in turn, are fuelled by the aspirations of health care practitioners, trained in the scientific tradition, to provide for their patients the best globally available treatments. The expectations of those who fall ill are thus generally geared towards the best available medical care worldwide. Such expectations are unrealistic unless major changes take place in the way in which resources, and in particular health care resources, are distributed globally. This is made clear by the current wide disparities in expenditure on health care across the world – ranging from less than US$20 per capita annually in many poor countries to about US$2 000 in Europe and over US$5 000 per year in the USA. Expenditure of about US$150 per capita in South Africa's public sector illustrates the extent to which it is unrealistic to imagine providing all aspects of modern health care to all in our country. Health care services are social constructs – the size, shape and nature of which reflect the social, economic, cultural and political patterns of life in different societies. This is evident from the differences in structure, costs and outcomes of health care even within relatively similar industrialised countries (Williams 1995).

When considering improvements in health, it is necessary to recall that health and life expectancy improved significantly in an era characterised by socio-economic advancement long before modern effective medical care became available (Sagan 1987). Much can be achieved to improve health in the modern era by introducing sophisticated medical care into deprived settings (e.g. with improved maternity care and treatment of infectious diseases). However, the notion that such care can 'develop' and

transform impoverished societies is a myth based on the arrogance of 'civilising nations'. In the same way as 'taking the Internet' to impoverished societies will not in itself promote better housing, sanitation and nutrition, so building sophisticated modern health facilities in severely deprived regions will not improve the health of whole populations. A more comprehensive approach to development is needed to improve population health – with the focus on improving access to essential human needs conducive to surviving beyond childhood and having the freedom to develop one's capabilities (Doyal & Gough 1991; Rist 1997; Sen 1999).

Given the reality of wide differences in economic status within many societies, including South Africa, and the need to raise the floor rather than to lower the ceiling, it is also unrealistic to imagine that health care can be reduced to the lowest common denominator of primary health care. Regrettably, this seems to be the attitude in the new South Africa where the government is so intent on developing an improved public PHC service that it seems willing to sacrifice the fragile and very excellent tertiary services within the public sector that have served as focal points for medical education and medical progress over many generations. It has been argued previously that despite the shortcomings of the excessive focus on hospital-based medical care and education during the apartheid era, much could be lost to a country aspiring to participate in the best aspects of economic, scientific and social progress in a globalising world, if the ability to practice and teach with excellence at all levels of health care is not sustained (Benatar 1997a). Regrettably this is now becoming evident in the face of radical cuts to flagship institutions that have produced many generations of skilled and dedicated health care professionals and provided high quality care for wealthy and poor people alike (Huddle 2001; Ranto 2001; Schoofs 2001).

The diversity of social, economic, cultural and medical perspectives on life in South Africa, the legacy of apartheid and the ongoing dominance of a Western, scientific approach to health care, while many still cling to traditional medicine, make for great complexity in dealing 'rationally' and ethically with the restructuring of health care in a country now struggling against the ravages of the worst pandemic humankind has ever had to face, while simultaneously having to conform with globally imposed neo-liberal economic policies (Benatar 2001b).

3. HISTORY OF MEDICAL ETHICS IN SOUTH AFRICA

3.1 Early markers of medical ethics in South Africa

The South African Medical and Dental Council (SAMDC), a statutory body, was established in 1928 with the primary purpose of protecting the public through maintenance of high professional (including ethical) standards of practice, and with a view to serving the interests of the medical and dental professions – insofar as these interests are compatible with high standards. The wide range of powers vested in the SAMDC included the power to institute inquiries into any complaint, charge or allegation of improper or disgraceful conduct of its members and to exercise disciplinary power over them.

As in most other Western countries in the first 60 years of the 20th century, discussions on medical ethics in South Africa largely took place within the framework of the authoritarian, paternalistic behaviour expected of professionals supposedly adhering to the Hippocratic Oath and similar codes. The first South African text on medical ethics (Elliot 1954) was limited to discussion of ethical codes, professional secrecy, advertising, the conduct of consultations, fees and financial matters, and upholding the 'traditions' of medicine, with only brief reference to abortion and sterilisation, and to the ethics of investigative medicine. This text, based on Guy Elliot's experience of deliberations on ethical matters by the Medical Association of South Africa (MASA) and the SAMDC, provides a succinct outline of accepted medical ethics in South Africa (and in many Western countries) in the first half of the 20th century (Elliot 1954).

In South Africa, as in the USA, theologians have played a pioneering role in the reawakening interest in bioethics; several conferences were held in South Africa in the 1960s and 1970s under church or theological auspices. The first, stimulated by the historic heart transplant in Cape Town in December 1967, was on the ethics of tissue transplantation (Oosthuizen 1972). Others followed on abortion (Oosthuizen *et al.* 1974), euthanasia (Oosthuizen *et al.* 1978), professional secrecy (Oosthuizen 1983) and clinical

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experimentation (Oosthuizen 1985). Regrettably these led to very little ongoing immediate public or professional debate.

A milestone event that did evoke public interest in medical ethics in South Africa was the Steve Biko case. Failure of the SAMDC to exercise its duty to protect the public by acknowledging the unethical behaviour of state-employed medical practitioners towards Biko prior to his death during detention without trial in 1977, and taking appropriate disciplinary action against them, met with resounding criticism nationally and internationally (Benatar 1990c; Nightingale *et al.* 1990). The sequence of events through which the efforts of a small group of rank-and-file members of the profession led to a Supreme Court injunction against the SAMDC that resulted in a reversal of its previous decisions and the imposition of disciplinary action, is well documented. Such shortcomings reflected a society in which public and even professional debates on ethical issues in medicine were somewhat limited in a repressive, authoritarian society lacking a patients' rights movement and unaccustomed to public discourse on civil and political liberties (Benatar 1988b).

The National Medical and Dental Association (NAMDA), formed in 1982 as a result of discontent with MASA's actions following the death of Steve Biko, received international acclaim for its outspoken advocacy against discriminatory practices. MASA, which came under considerable criticism for its inadequate reactions to the Biko affair, subsequently, to its credit, took some sincere steps in an attempt to rectify its previous shortcomings (MASA and NAMDA have subsequently amalgamated into what is now the South African Medical Association (SAMA)). The statements made by MASA are part of public record, and the ongoing challenge is to ensure their implementation in practice. Greater attention to ethical responsibilities toward prisoners, detainees and hunger strikers was another gratifying response to the Biko case (Benatar 1990b; Jenkins 1987; 1988; Kalk & Veriava 1991). The public confession of guilt by the district surgeon who bore major responsibility for Biko's medical care, emphasises the need to maintain professional independence in the face of state security and other coercive pressures.

3.2 Growth and transformation of medical ethics

The traditional concept of medical ethics is centred on standards of professional competence and conduct broadly outlined by formal codes of practice to which individual medical practitioners and medical organisations claim allegiance (Amnesty International 2000).[2] Until recent decades, training in medical ethics has relied almost exclusively on apprenticeship. Its practice was dependent on the conscience of individual practitioners and on exhortation through professional associations and various codes. Role-modelling served to pass professional norms from one generation to the next. Although the emphasis was on medical etiquette, two major principles of medical morality were also propagated: *'to do good and no harm to others'* and *'to respect human life and the dignity of the individual'*. These, combined with compassion and confidentiality, have formed the basis for the desired relationship of trust between patient and doctor, and the investiture of authority in medical doctors by society. Ethics was considered largely from the perspective of the duties of physicians.

The 1960s and 1970s

With the radical changes that began in the discourse on medical ethics in the 1960s and 1970s – initially in North America, but gradually spreading widely throughout the world, including South Africa – a more critical perspective developed. The debate became multidisciplinary and public, and greater emphasis was placed on patients' rights than on physicians' duties. Medical ethics in the modern era has become a more comprehensive field, including consideration of ethical theories (although there is no overarching single theory), several principles (that are generally but not unanimously regarded as being universal), and a much greater focus on individual rights to participate in medical decision making. The transformation of medical ethics from an intraprofessional activity to a more public and interprofessional activity has ensured a central role for philosophers and the philosophical method. Broader multidisciplinary endeavours involving

2 It is of interest to compare the ancient Hippocratic Oath with the Geneva Declaration (1948) and a recently written declaration (2002) for all health care graduates at the University of Cape Town, South Africa (cf Close-up 12.1).

Close-up 12.1 *Hippocratic Oath, Declaration of Geneva* and *Declaration by Health Care Professionals*

The Hippocratic Oath – classical version

I swear by Apollo Physician and Asclepius and Hygieia and Panaceia and all the gods and goddesses, making them my witnesses, that I will fulfil according to my ability and judgement this oath and this covenant:

- To hold him who has taught me this art as equal to my parents and to live my life in partnership with him, and if he is in need of money to give him a share of mine, and to regard his offspring as equal to my brothers in male lineage and to teach them this art – if they desire to learn it – without fee and covenant; to give a share of precepts and oral instruction and all the other learning to my sons and to the sons of him who has instructed me and to pupils who have signed the covenant and have taken an oath according to the medical law, but no one else.
- I will apply dietetic measures for the benefit of the sick according to my ability and judgement; I will keep them from harm and injustice.
- I will neither give a deadly drug to anybody who asked for it, nor will I make a suggestion to this effect. Similarly I will not give to a woman an abortive remedy. In purity and holiness I will guard my life and my art.
- I will not use the knife, not even on sufferers from stone, but will withdraw in favour of such men as are engaged in this work.
- Whatever houses I may visit, I will come for the benefit of the sick, remaining free of all intentional injustice, of all mischief and in particular of sexual relations with both female and male persons, be they free or slaves.
- What I may see or hear in the course of the treatment or even outside of the treatment in regard to the life of men, which on no account one must spread abroad, I will keep to myself, holding such things shameful to be spoken about.
- If I fulfil this oath and do not violate it, may it be granted to me to enjoy life and art, being honoured with fame among all men for all time to come; if I transgress it and swear falsely, may the opposite of all this be my lot.

The Declaration of Geneva 1948

At the time of being admitted as a member of the medical profession:

- I solemnly pledge myself to consecrate my life to the service of humanity;
- I will give to my teachers the respect and gratitude which is their due;
- I will practise my profession with conscience and dignity; the health of my patient will be my first consideration;
- I will maintain by all the means in my power, the honour and the noble traditions of the medical profession; my colleagues will be my brothers;
- I will not permit considerations of religion, nationality, race, party politics or social standing to intervene between my duty and my patient;
- I will maintain the utmost respect for human life from the time of conception, even under threat, I will not use my medical knowledge contrary to the laws of humanity;
- I make these promises solemnly, freely and upon my honour.

Source: Amnesty International (2000: 13, 57).

The Declaration by Health Care Professionals (University of Cape Town) 2002

With this Declaration:

- I commit myself to the highest level of professional and clinical competence in my chosen field.
- I shall strive to develop the necessary professional skills to improve the well-being of individuals, groups and communities in my care within available resources and sustainable facilities.

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- I shall respect the right to participate in all decisions relating to treatment and rehabilitation; and I shall promote both the human rights of individuals and public health needs to achieve improved population health and social cohesion.
- I shall respect the dignity of all in my care and act without discriminating directly or indirectly against anyone, as laid out in our nation's Bill of Rights.
- In the area of research, I shall be guided by the highest ethical standards and will advance knowledge only to benefit study participants and society at large.
- I shall contribute, to the best of my ability, to upholding high ethical standards in the institutions and communities in which I work. I shall maintain confidentiality and work conscientiously, with integrity, sensitivity, empathy and compassion – beyond merely my own self-interest – in cooperative relationships with all other health care professionals and co-workers.
- I shall resist institutional and other pressures to work against the tenets of this Declaration and I shall support professional activities to protect colleagues who are threatened with victimisation when acting in accordance with the highest moral standards.

I make this declaration solemnly, freely and upon my honour.

lawyers and professionals from the humanities have further facilitated both teaching and practical aspects of an expanded conception of medical ethics – now commonly called bioethics. In North America debate centred on four major ethical principles: *non-maleficence*, *beneficence*, *autonomy* and *justice*. This 'principle-based' approach, dominant in North American bioethics over the past two decades, is spreading to other countries, under the influence of a classic ethical text (Beauchamp & Childress 1994).

Non-maleficence (to do no harm), a dominant ethical principle in an era when effective medical interventions were few and poorly understood, has been supplemented by the principle of *beneficence* (the requirement to do good) in an era when effective therapies have become widely implementable. Mistrust of authority, the depersonalisation of medicine consequent upon subspecialisation and institutionalisation of practice, and concern that 'paternalistic' attitudes by doctors focusing on their conception of the 'biomedical good' may not necessarily be in the patient's best interests, have gradually led to dominance of the principle of *autonomy* (self-determination) over that of beneficence. This has served as a means of redressing the imbalance of power between physicians and patients, and of preserving respect for the dignity of the individual in the face of the enhanced professional power characteristic of the modern technological age. The right to informed consent, the concept of informed refusal, the liberalisation of abortion laws, the acceptance of Living Wills and Advance Directives, and the regulation of medical research all reflect a growing emphasis on both human rights and the principle of respect for patient autonomy. Acknowledgement of the importance of the patient's perspective has thus served to enhance individual rights of patients, and to encourage the communication between patient and physician that is necessary for shared decision making and for enhancing trust in their relationship.

The principle of *justice*, in particular in relation to the allocation of resources, has until recently achieved less prominence in ethics debates, probably because issues of central importance to individuals – informed consent and refusal, abortion, euthanasia, participation in research and the application of new reproductive techniques – have been more directly relevant to individual-oriented medical practice. However, issues of social justice relevant to the restructuring of health services, and the extent to which some medical disciplines and therapies dominate over others, are receiving more attention. The debate between the physician's responsibility for the individual good versus medicine's social responsibility for improving health more broadly at a community level is of increasing relevance. Outcome studies, cost-benefit studies and other economic evaluations

of health services are being advocated as means to provide a more rational basis for structuring health services and allocating resources, both for the benefit of individuals and communities. Concern for individual dignity (autonomy), for not doing harm (non-maleficence), and for doing good (beneficence) cannot be divorced from concern about inequities at the social level (justice), as these principles are inextricably linked, most especially in relation to longer-term perspectives in any society.

The focus of much of the bioethics discourse over recent decades, driven by the dominant value placed on individualism and autonomy in the USA, has been on reshaping the nature of the health professional–patient relationship. Narrowing the power gap in decision making has empowered patients to override dominating medical decisions made from what has been called a paternalistic model of practice. Such an approach allows for a wide range of patient perspectives, and has been widely adopted, especially in the Western world.

The 1980s, 1990s and beyond

In the 1980s and 1990s, challenges were posed by those who perceived modern bioethics as being excessively focused on analysis, theory, the above principles and individualism. Critics were concerned that inadequate attention was being paid to virtuous aspects of practice important in caring for others and the sense of duty that, when combined with judgement, skills and rapport with patients as persons, make vital contributions to healing. Criticism from feminist, multicultural and other perspectives also called for supplementation of the philosophical approach with an expanded emphasis on patient narratives of illness, the development of empathy and understanding of other cultures. Bioethics is a young field of professional activity that arose through scepticism and critical attitudes, particularly by philosophers, to traditional, professionally oriented medical ethics. It is therefore not surprising that the new philosophical model of medical ethics should also be facing similar challenges from law, anthropology, sociology and other disciplines that will further shape its evolution and progress to more broadly encompass other valid perspectives (American Academy of Arts & Sciences 1999; Weisz 1999).

In the 1980s some medical schools in South Africa began developing modern bioethics education programmes, but progress has been slow and somewhat erratic. Generally such programmes remain in a fledging state, dependent on enthusiastic physicians who have heavy professional responsibilities and minimal training in philosophical ethics, and with minimal financial and institutional support to develop formal programmes with committed support from other disciplines (e.g. philosophy, law). The University of Cape Town Medical Faculty has published the proceedings of five symposia on bioethics (Benatar 1985; 1986a; 1988c; 1992a; 1996b). These have encompassed theological, philosophical and sociological debates on death and dying; resource allocation; the doctor/patient relationship; abortion and *in vitro* fertilisation; research on humans; principles of biomedical ethics; moral reasoning; withholding and withdrawing treatment; health care of detainees; hospital ethics; the right to health care and the structure of health services; ethical considerations in relation to acquired immunodeficiency syndrome (AIDS); teaching medical ethics; and human rights, human needs, gender and medical ethics. These proceedings reflect progressive movement toward the views being popularised in bioethics debates in the UK and the US. By retaining a degree of 'cultural sensitivity' they endeavour to avoid the pitfalls both of 'ethical imperialism' and of 'ethical double standards'.

Other universities have also been active. The University of Stellenbosch has a successful postgraduate programme in applied ethics (including medical ethics), while several books on ethical issues have been published within the framework of the programme (Hattingh 1992; Van Niekerk 1991a; 1991b; 1993). The University of the Witwatersrand, whose medical school was the first to begin teaching the new medical ethics to undergraduates, has created a full-time post for a bioethicist in its Faculty of Health Sciences to enhance its teaching programme (Wits University Bioethics Unit 2003). The inauguration of the Ethics Institute of South Africa, an institution independent of all universities, other public organisations and the private sector, is another important milestone in promoting applied ethics in South Africa. In the short time it has been in existence, the Ethics Institute has undertaken several empirical projects on ethics

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in major hospitals and has achieved a high public profile (Ethics Institute of South Africa 2003).

The recently formed Interim National Health Research Ethics Committee in the Ministry of Health will also play an important role in coordinating and accrediting research ethics committees in the country.[3] Professional institution-

Close-up 12.2 The Nuremberg Code

1. The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, overreaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonable to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment. The duty and responsibility for ascertaining the quality of the consent rests upon each individual, who initiates, directs or engages in the experiment. It is a personal duty and responsibility, which may not be delegated to another with impunity.
2. The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature.
3. The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment.
4. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury.
5. No experiment should be conducted where there is an *a priori* reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects.
6. The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment.
7. Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death.
8. The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment.
9. During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible.
10. During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill and careful judgement required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

Source: Nuremberg Code (1947).

3 Major awards to the universities of Cape Town and Pretoria from the US National Institutes of Health through their Fogarty International Grants will enable capacity building in International Research Ethics in southern Africa during an era in which international collaborative research is rapidly expanding (IRENSA (International Research Ethics Network for Southern Africa) 2003; SARETI (Southern Africa Research Ethics Training Initiative 2003)).

al responses intended to stimulate higher standards of ethical practice include the Health Professions Council's guidelines on ethics (Medical and Dental Professions Board 2002), the Medical Research Council's guidelines on the ethics of medical research (1993 and updated in 2002 – MRC 2002a; 2002b), and a forthcoming set of guidelines from the Interim National Health Research Ethics Committee within the Ministry of Health.

4. MEDICAL ETHICS AND HUMAN RIGHTS

Concerns about human rights in health care date back to the gross abuses perpetrated by Nazi physicians during World War II. The Nuremberg Code (1947) promulgated after the Nuremberg trials of Nazi war criminals, set the scene for respecting human rights in medical research, while the *Universal Declaration of Human Rights* (UDHR) in 1948 provided the guideline for protecting human rights in everyday life. Regrettably human rights abuses continued, both in medical research in many countries and in everyday life worldwide.

While the scope of human rights remains hotly debated, with some advocating a narrow definition restricted to protection of basic freedoms – civil and political rights (Articles 2–21, UDHR) – others advocate a wider definition that includes social, cultural and economic rights (Articles 22–27, UDHR) and global solidarity rights (Article 28, UDHR). Disagreement continues about the legitimacy and the hierarchy of claimed rights, especially when it comes to implementation. Human rights are broadly understood to limit state power, and to represent universal individual (and group) demands for the respect for all people that could shape the sharing of power and access to resources that promote human well-being. In the era of genetic biotechnology, a narrow definition of human rights has shortcomings that are likely to have special relevance for the African continent (Benatar 1999; 2000c).

Medical ethics and human rights are linked indirectly and directly. Indirect links are evident from the concerns of health care professionals to improve the health and lives of individuals and of society, and to treat all patients with equal respect. Direct links include recent declarations to respect human rights and an increasing discourse about rights within bioethics. Human rights proponents and bioethicists share values regarding human dignity. However, these two sets of activities use different discourses and methods and have different implications. The scope of medical ethics or bioethics is more comprehensive than the human rights discourse, embracing concepts of duties and virtue, empathy, compassion, and communication skills that cannot be dealt with through a rights approach. However, rights are powerful and have a specific role in medicine. For example, the special role of health care professions in witnessing and responding to abuses of human rights provides the opportunity, and the responsibility to act on these (British Medical Association 2001).

The *UN principles of medical ethics* is the main UN instrument dealing with the ethical obligations of physicians (UN General Assembly 1982). It outlines the responsibilities *"relevant to the role of health personnel, particularly physicians, in the protection of prisoners and detainees against torture and other cruel, inhuman or degrading treatment or punishment"* (cf also Commonwealth Medical Association 1999 – Close-up 12.3). There are several ways in which health care professionals can protect and promote human rights:

- By commitment to high ideals in medicine – *aspirations/exhortation*
- Through greater understanding of the content of ethics and human rights – *education/knowledge*
- By knowing about and using international statutes/international law – *due process*
- By enlisting assistance from national/international medical associations – *strategy*
- Through human rights commissions and other NGOs such as Amnesty International – *action.*

It is against this background that it is necessary to consider ethical challenges to health care in South Africa from more than one perspective and at several levels. First, with regard to perspective, and without being judgemental about the effects on health, it should be noted that medical practice in South Africa has long been formally dominated by the Western, scientific

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Close-up 12.3 Medical ethics and human rights

Respect for the patient

1. Physicians must pay full respect at all times and in all circumstances to persons they are attending.

Patient's right to information

2. Patients have a right to receive relevant information about their own medical condition and its management.

Consent to medical procedures

3. Treatment and other forms of medical intervention to patients who have the capacity to consent should not be undertaken without their full, free and informed consent.

Confidentiality

4. Information obtained in the physician/patient relationship must be regarded as strictly confidential.

Competence to practise

5. Physicians in active practice must maintain competence to practise at all times and must ensure that they never expose patients to unnecessary risks.

Medical emergencies

6. Physicians must do all they can to assist at medical emergencies.

Medical care of disadvantaged and vulnerable groups

7. The obligations of a physician to provide medical care for disadvantaged and vulnerable groups must be upheld. Physicians should endeavour to identify the causes of ill health in such groups and should draw attention to the need to alleviate them.

Medical attendance upon persons held in detention

8. Attendance by physicians to persons held in detention must always be conducted in the best interests of their health.

Medical examinations, reports, and procedures requested by third parties

9. Care must be taken not to compromise the interests of patients when carrying out examinations or supplying reports at the request of third parties.

Responsibility to the community

10. Physicians by reason of their training, expertise and status should actively promote the provision of effective health services and should notify health and other relevant authorities whenever they become aware of hazards to the health of the community.

Health promotion and preventive medicine

11. The role of physicians in active practice should include the promotion of healthy lifestyles and education of the community in disease prevention.

Relationships with medical colleagues

12. Physicians have a responsibility to cooperate fully with their medical colleagues in the interests of providing the best possible health care for the community.

Relationships with other health care workers

13. Physicians should recognise and respect the expertise of other health workers, and collaborate with them in the interests of providing the best possible holistic health care.

Relationships with traditional practitioners

14. Physicians should endeavour to influence traditional healers and birth attendants to adopt safe practices.

Transplantation

15. Physicians must safeguard the rights and interests of potential donors and recipients by observing the internationally accepted rules for transplantation.

Medical research

16. Physicians should not participate in medical research that does not conform with internationally accepted guidelines.

Source: Commonwealth Medical Association (1999).

conception of medicine, with neglect of traditional and indigenous forms of healing. Similarly the shift in recent decades from traditional 'universal' codes of medical ethics (e.g. the Hippocratic Oath) towards a 'rational', explicative, philosophically based bioethics has been closely linked to advances in science, technology and medicine. This shift is also deeply linked to the Western conception of the 'self' as a rational autonomous person capable of making self-determining decisions in isolation from community influences, and with the notion of pluralism of choice within a tolerant liberal society. Concern has been expressed that the currently dominant discourse on ethics is not necessarily appropriate for societies in which the conception of the self is traditionally more communally defined, and decisions about one's own life and health are not considered to be merely personal choices (Berger 1998; Moazam 2000; Tangwa 2000). So, in addition to considering ethical challenges as perceived from a Western perspective, it is also necessary to address cross-cultural considerations. However, caution is necessary in depicting some cultures as permanently different with regard to the conception of the self. The Constitution of South Africa, designed to protect individual rights and choices through the Western conception of human rights and individuality, sets a powerful and somewhat universal legal standard for application within an African country.

It is therefore necessary to begin by reviewing in more detail some of the well-debated essential ethical features of the generally accepted health-care-professional–patient relationship, most especially in the HIV/AIDS era when the rights of individual are being emphasised. However, it should be noted that the habit of limiting the ethics discourse to issues at the interpersonal level is inadequate if public health issues and international relations that profoundly affect health are to be taken into consideration. In this chapter a broader approach to ethics and health is adopted.

5. ETHICAL DILEMMAS AT THE LEVEL OF THE HEALTH-CARE-PROFESSIONAL–PATIENT RELATIONSHIP

5.1 Confidentiality and trust

The concept of *confidentiality* in medical practice dates back to ancient times. Its importance relates to the value it offers both to society and to individuals (Bok 1983). Its specific value to society is in sustaining trust within health-care-professional/patient relationships. Individuals would be less likely to divulge sensitive information about their thoughts or their physical being if they knew confidentiality would not be preserved. *Trust*, as an essential aspect of the professionalism required for societies to flourish, does not, however, exclude or diminish professional accountability, and indeed the concepts of trust and professionalism are more complex today than in the past (Freidson 2001). The concept of confidentiality can also be justified on the grounds of individual benefits that derive from respect for individual autonomy, the right to have secrets about oneself, and the need to protect essential intimate relationships – all of which (both in the private and public realms) are essential to leading lives of good quality (Benatar 2003b).

Support for the notion of confidentiality is provided by professional codes, the law and through philosophical argumentation. However, there has been a shift over several decades in the recommendations on confidentiality in a

range of medical codes (Veatch 1977). The change has been from absolute confidentiality in the Hippocratic era (as in the Roman Catholic confessional) to a relative status that also takes into consideration public health requirements, for example in relation to notification of tuberculosis and some other infectious diseases. It is now broadly agreed that confidentiality is not absolute and that there are limits; for example when maintaining confidentiality conflicts with the rights of others, or would result in harm to the patient. Such issues have been very contentious in relation to HIV infection, because notification and breaking confidentiality have such potentially adverse effects for individuals and, at the same time, do not offer the desired opportunities for the introduction of effective public health measures. The relative status of confidentiality is also becoming very important in the era of genetic testing and therapy. Furthermore, the role of confidentiality in relationships between health care workers and adolescents requires careful consideration (Henley 2003).

Maintaining confidentiality is thus becoming an increasingly difficult undertaking. On the one hand, the desire and need of individuals to preserve confidentiality are becoming increasingly important – for example regarding HIV status. On the other hand, the social demands for breaking confidentiality are growing, for such legitimate reasons as public health needs and other less legitimate social reasons. In addition, the growth of medical teams, with much medical care taking place in complex institutions utilising computers and information networks, has resulted in increased access to information about patients.

Some examples of specific questions that arise daily in the care of patients with HIV/AIDS in South Africa include:

- Should confidentiality be protected after death? If so, what implications does this have for close relatives who wish to know the cause of death of a family member, and who did not know that the relative was HIV positive? To whom are health care professionals accountable – the dead patient or the living family members for whom such information may be vital?
- Should health care professionals disclose the HIV status of a deceased patient to undertakers? Do those who deal with corpses have a right to know if they are to be exposed to infection in an individual case, or should all corpses be treated as though they were HIV positive, thus facilitating protection of undertakers without breaking confidentiality?
- Should health care professionals disclose the HIV status of a deceased patient to insurance companies and, if so, under what conditions?[4]

When considering such questions it must be appreciated that, while confidentiality is an extremely important ethical consideration in health care, it is not absolute. There are circumstances in which confidentiality can (and even must) be broken. However, when breaking confidentiality is contemplated, the values involved need to be carefully weighed and balanced, and an appropriate process pursued prior to breaking the rule. This process should include doing all one can to resolve the dilemma without having to break confidentiality, for example discussing potential disclosure with the patient and consulting with other more experienced colleagues – preferably those with substantive knowledge of and experience in making difficult ethical decisions. Skills in communication are essential to the process. Health care professionals who decide to disclose confidential information must be prepared to explain and justify their decisions – if necessary even in a court of law.

5.2 Informed consent

Informed consent: the concept

The modern concept of (informed) consent has its foundations in Enlightenment thought and the principles of liberalism and individualism clearly enunciated by John Locke (1632–1734). Respect for the dignity of the individual, however, has a much longer and deeper history (Faden

4 Clearly, insurance companies have the right to such information if patients have attempted to defraud companies by taking out policies without having declared their health status honestly. But similarly, patients have the right to be protected from insurance companies that wish to find excuses not to make justified payments to families.

et al. 1986). Informed consent has been a central and undisputed requirement in medical research on humans since the Nuremberg Code was promulgated in 1947. The notion of informed consent replaced the idea of mere consent in clinical practice in the mid-1950s. The ongoing record of abuse of human rights in medical research, along with pressure from the human rights movement, have been powerful forces enhancing the imperative for informed consent in research and practice.

There are, however, different understandings of what informed consent means. Lawyers tend to view it as a minimalist concept located within the context of tort law or malpractice with which they are familiar. They tend to be concerned more about procedural than moral aspects of its implementation. This legal sense is thus policy oriented and presumes patient understanding and autonomy at a minimalist level. Philosophers view the notion of informed consent in the context of a rich ethical framework of respect for human dignity based on the idea of humans as rational and self-determining. This moral sense is more comprehensive than the legal sense and emphasises greater equality in the health professional/patient relationship to facilitate shared decision making. Health care professionals tend both to dislike and be suspicious of informed consent. Their concern tends to be focused on immediate legal implications and practical aspects. In this respect patients range from those who expect or demand fully informed consent to those who have such fear of illness and death that they abandon themselves to total trust in doctors.

The emergence of autonomy as a socio-political, legal and moral concept has profoundly influenced medical ethics and medical practice. It has on the whole been beneficial in protecting patients against violations of autonomy and integrity. However, it is also necessary to pay attention to more than mere rules and ideas of autonomy. The integrity of the people involved in the process (patients and health professionals) has be taken into consideration, although this is more difficult to define and achieve, especially in countries characterised by multicultur-

Close-up 12.4 Requirements for informed consent

Disclosure of information by professionals: disclosure of factually correct information in language comprehensible to the patient is crucial. In the *research setting* full explanations are required. The purposes of the research should be explained; the risks, discomforts and potential benefits (for subjects and others) described and quantified; and information provided regarding compensation for any injury sustained during the research. There should be no deception, and the freedom to exit from the trial without prejudice should be stressed. In *clinical practice,* debate about the standard of disclosure has ranged from the professional standard (the amount of information must conform with professionally approved practice); through the reasonable person standard (what the average citizen would wish to know); to the subjective standard (determined by the patient's wishes and needs).

Patient competence and cognitive ability: cognitive ability refers to the patient's (1) ability to understand the nature and purpose of the procedure, its risks, benefits, side effects and the alternatives; (2) reasoning capacity; (3) ability to understand that there is a choice; and (4) willingness to choose. The patient's competence required to achieve these goals needs to be considered in relation to the nature of the issue under consideration and its implications.

Voluntariness (freedom from coercion): voluntariness to participate in research should be stressed. There should be freedom from external coercive forces, and freedom to withdraw from the study without prejudice to continuing care.

Legitimate policies and procedures – including appropriate documentation: Procedural aspects include such considerations as whether verbal or written consent is necessary; the nature of patient information and informed consent documentation; and the assistance of third parties in obtaining and witnessing the procedure.

Source: Beauchamp & Childress (1994: 142–170).

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al beliefs (Pellegrino 1994). Informed decision making may be a better description (than informed consent) of a process (presenting information, answering questions, discussing) that should allow for dissent as well as assent. Cross & Churchill (1982: 112) comment: *"The requirement of informed consent reflects a recognition of the asymmetries of power and risk in a physician/patient relationship. Patients seek doctors when they are sick and vulnerable and entrust them with carefully guarded secrets and fears, as well as access to their bodies. Consent is an effort to lessen the asymmetries of power and risk by emphasising the mutuality of the relationship. Consent reminds the doctor of the individuality of the patient, respects the patient's self-determination, and ultimately affirms for both parties that the physician's authority to heal is given by the patient."*

Respect for and adherence to the ideals of informed consent serve several functions: promotion of individual autonomy; encouragement of rational decision-making processes; protection of patients, subjects and doctors; encouragement of professional self-scrutiny; and involvement of the public in debate and education about medical practice, medical research and human rights. The requirements for informed consent are more complex than usually appreciated. Both skill and integrity are required in their application.

Informed consent: clinical care and research

Informed consent in clinical practice

The gap between the theory of informed consent and how it is actually obtained in practice is problematic. Those involved with the procedure, even in highly industrialised countries, are often the most junior staff who view obtaining informed consent as a mere formality to be completed as rapidly as possible with little attention to the need for patient reflection and family consultation. Documentation is usually written, and witnessed by minimally involved third parties, such as junior nurses. Such practice reflects the legal sense rather than the moral sense. A study of informed consent practices in South Africa showed that doctors meet many but not all the *legal* requirements for informed consent. However, only 25% of respondents appreciated the potential for language to pose barriers to obtaining informed consent (Henley *et al.* 1995).

Informed consent for research[5]

In the research context, especially when Western researchers are working in developing countries and dealing with subjects from different cultures, inadequate attention is generally paid to the complexities of obtaining informed consent. When comprehension of the research project by the subject is not easily achieved, additional effort must be made to communicate across language, educational and cultural barriers by using appropriately trained assistants. Information sheets must be provided in the subject's language, in understandable terms and with access to assistance for any explanations required. Requirements for informed consent for competent adults, as well as for consent for research on children, mentally handicapped people, mentally ill patients, prisoners, severely ill or unconscious patients or other especially vulnerable groups, have been outlined in the South African Medical Research Council's ethics guidelines (MRC 2002a).

Differences between informed consent for research and for patient care

The many differences between informed consent for research and for patient care respectively have been described by Levine (1983). In clinical practice, obtaining informed consent is a somewhat informal, friendly and unhurried procedure in a context characterised by patients seeking out medical advice from medical professionals whom they perceive to be concerned

5 Apart from informed consent for research – one of the cornerstones of research ethics – other important aspects of research ethics, such as balancing risks and benefits, the welfare of research subjects, and institutional governance of research, will not be considered in this chapter, as these have been covered in recent publications within South Africa (Department of Health 2003; MRC 2002a). Ethical considerations in relation to research into reproductive biology and genetic research – topics of great current interest – are also well dealt with in a recent publication from the Medical Research Council (MRC 2002b). A considerable amount of medical research is undertaken on animals in South Africa. The ethics of such research, recently discussed by a South African philosopher (Benatar 2000a), will be the topic of a forthcoming set of guidelines from the Medical Research Council.

primarily with the best interests of patients. The process is flexible, encompasses consideration of the fact that autonomy may be impaired, and makes some allowance for tailoring of treatment according to the patient's wishes. Such a process, if conducted appropriately, can enhance patient confidence and the health professional/patient relationship.

In contrast, informed consent procedures in the research context are less flexible as they are formal and regulated. Characteristically, the encounter is between an investigator seeking patients to include in his or her study, within a relationship that differs from the clinical care setting and resembles a brief encounter between strangers in a quest for the pursuit of knowledge with scientific rigour. The information disclosed and the methods of doing so are more impersonal, detailed and harsher than in the clinical context. Professional ignorance is exposed to enable patients to understand why randomisation to different forms of treatment is justified. While patient autonomy may be preserved, the rigidity of the protocol does not allow for patient choices once the research has been embarked on (other than withdrawal from the research). Such a relationship has potentially adverse effects on both researchers and patients.

Conflict of obligations in research

A conflict of obligation arises when the doctor is both the investigator and the provider of patient care. The pursuit of knowledge in the best interests of science and society may not be compatible with protecting the best interests of the patient. This conflict may be very difficult to resolve without separating the roles of investigator and carer to ensure both good science and non-exploitative patient care. The Helsinki Declaration makes it clear that the needs of society (e.g. for new knowledge) must never be used to supersede the best interests of individual patients.

Informed consent: cross-cultural considerations

In the present era, with ever-widening disparities in health, wealth and power, and increasing risks to all in an interdependent world, the time is now riper than ever before for deeper understanding of ourselves and of others. Westerners whose ideas about health dominate in health care, need to strive to understand their own world-view, and to learn what it means to be human outside their privileged environments. Appreciation of the fragility of their own dignity in a world in which so many suffer through being deprived of the basic needs for human flourishing could allow them to participate in broader visions of sustainable progress in health care practices (Benatar 2002a).

Despite the power of the theoretical background for informed consent within the Western liberal mindset, and indeed its widespread application on a 'universal' basis, questions have been raised about the validity of considering *all* sick patients (especially those from other cultures) as rational autonomous selves who wish to and are able to make the complex decisions often required in the health care context. Doubt has also been expressed about the application of rational choice theory to health care as if the latter were a market commodity. Moreover, it has been questioned whether there is something different about a person who is ill and in need of medical care, or who is not used to being autonomous. Some argue that the rationale for informed consent is defective because it decontextualises people by promoting a cult of moral atomism and individualism that is insensitive to the fact that humans are members of moral communities and cannot be viewed in isolation. Despite these concerns, the power of the argument for respecting self-determination favours respecting autonomous choices, even if it is very difficult to conceive of all patients as always being fully autonomous persons in the strictest sense (Beauchamp & Childress 1994).

Within those cultures in which individualism is not a central feature, it may be that all patients do not necessarily want to be informed, or if they do, that this applies within a more community-oriented conception of the self. For strong individualists, the conception of the 'self' emphasises unconstrained personal freedom and a society structured on the basis of free association of such individuals. This version of liberty, with responsibility exclusively to the 'self', contrasts with a perspective that views individuals as arising from and shaped by their societies, whose freedom to choose is embedded in social attachments, and who show a greater degree of solidarity with one another within communities (Berger 1998; Taylor 1989).

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But even solidarity is not a monolithic concept. Within the value systems of Africans (and indigenous peoples of other countries), solidarity takes on a perspective that contrasts significantly with the Western notion. Such world-views are characterised by several features: a sense of 'self' that is collective, i.e. an attitude wherein one accepts the sameness in oneself and others; a clear sense of one's spiritual connection to the universe; a sense of mutual responsibility; and a conscious understanding that human abnormality is any act that is in opposition to oneself and one's fellow humans, or in opposition to God. An African philosophy and unifying world-view is enshrined in the maxim *'umuntu ngumuntu ngabantu'* – *"a person is a person through other persons"* or *"to be human is to affirm one's humanity by recognising the humanity of others"* or *"I am because we are"* (Louw 1999). While respecting this view, it is also clearly important to be aware of the dangers of group or institutional coercion, for example within religious or other hierarchical social groups. Acceptance of cultural norms thus needs to be linked to efforts to empower individuals to express their own choices.

In the research context, even in cross-cultural settings, it can be cogently argued that research is unethical if informed consent has not been obtained. Language, educational and cultural barriers should not be used as excuses to undermine informed consent in research on patients who are both vulnerable and the victims of adverse living circumstances to which exploitation has already contributed so much. The correct approach is to devote more time, effort and resources to studying ways in which obtaining informed consent can be improved and legitimised (Marshall 2001).

The practice of caring for patients and obtaining informed consent requires empathy. Although alternative world-views may be a less significant consideration in research than in clinical practice, health care professionals should understand that the scientific framework within which they conduct research and practice health care is not necessarily consonant with the existential perspective of the patient, especially when foreign researchers are interacting with indigenous people. Informed consent of a genuinely moral nature will be realised only if a comprehensive approach to patient care (that is sensitive to cultural values) supplants the idea of a simplistic universal approach of a legal nature. It is also vital that exploitation be avoided and that the research undertaken has benefits both for the research subject and for the community in which the subject lives (Benatar 2002b).

Telling the truth

The notion of informed consent assumes that patients should be told the truth about their illness. This is a relatively new idea in medical practice and one with a strong Western bias. Prior to the 1970s it was not common practice to inform patients about fatal illnesses or about the potential risks of medical and surgical treatments. This has changed through acknowledgement of the importance and value of patient self-determination.

Empirical work has shown that patients are capable of handling bad news and that empowering them with knowledge provides them with opportunities to deal constructively with their illness. However, such experience is not uniform across all cultures, or even within any particular culture. Empirical studies of informed consent in Western or other cultures (none with the rigour of randomised control studies) surprisingly reveal diversity of practices and of attitudes. Table 12.1 illustrates the point: in

Table 12.1 Empirical data regarding telling the truth

Ethical question	Korean-Americans	Mexican-Americans	European-Americans	African-Americans
Should the patient be told?	47%	65 %	87%	88%
Should the terminal nature of an illness be revealed?	35%	48%	69%	63%
Should patients be involved in life-support decisions?	28%	41%	65%	60%

Source: Murphy *et al.* (1996)

response to the questions to several groups of Americans regarding informing patients about fatal illnesses, a range of affirmative answers was obtained (Murphy *et al.* 1996).

In a study of Navajo Indians, Carrese & Rhodes (1995) found that the belief system in traditional Navajo culture emphasises the importance of positive thinking; 86% of those questioned considered advance planning[6] to be a dangerous violation of traditional Navajo values. In this culture *'language shapes reality rather than reflecting reality'*, and therefore negative considerations regarding illness can adversely affect outcome. Here the moral action may be to allow Navajos to think as they wish, rather than to insist on teaching them to be autonomous. There is a great need for such studies to be undertaken in South Africa, given the disparities between cultures and worldviews

Informed consent: some conclusions

It has been argued by some that informed consent is a myth and that it is extraordinarily difficult to obtain truly informed consent. There are indeed many potential impediments to obtaining informed consent. These include: difficulty in getting the patient to understand and accept the facts and their implications (because of language, educational and cultural barriers) fully; overcoming patient fear of reproach if they do not conform to the desires of the doctor; reluctance of doctors and patients to acknowledge and confront the uncertainties and fallibility that still pervade modern medicine; the difficulty of transcending both patients' faith in medicine and their (sometimes unwarranted) trust in doctors; overemphasis on legal aspects of consent; and not least, the problem of doctors dealing insensitively and in an authoritarian way with vulnerable people. However, from experience it is also apparent that with appropriate effort and good communication skills, many of these difficulties can be minimised.

Affirmation of universal principles should be coupled with attempts to reconcile the desire to put universal theories into practice with respect for the (apparent) wishes of people who live within mindsets that seem to embrace different ideas of the self and its relationship to family, social life and the cosmos. This calls for work towards empowering individuals to make choices for themselves and to recognise that it is inappropriate to insist on an absolutist application of universal rules in the context of cultural differences in attitudes to life and death. It is also cogently argued that autonomous decisions by patients can never stand isolated from the entire narrative of the patient's life, the way he or she lives, and the way he or she perceives self, the family and the community in relation to the decision in question. A physician of integrity will endeavour not only to respect a patient's autonomy, but also to preserve his or her integrity. This is achieved not merely through assent or dissent by the patient, but rather through an interaction between patient and doctor that preserves the integrity of both in an informed, sensitive, empathic, joint decision-making process, that must include a significant element of trust. The physician must therefore be a person of integrity and cultivate the virtue of trust (Pellegrino 1994).

In addition to telling the truth, attention needs to be paid to how the truth is told and by whom. Considerable skills in communication and interpersonal relations are required to break bad news, to share complex information, and to help patients deal constructively with existentially threatening information. While much attention has been focused on the need to be truthful and to obtain informed consent, much less attention has been devoted to the complexity of achieving these goals in actual practice.

5.3 Dual loyalty, conflicts of interest and advertising

Dual loyalty

In the apartheid era, South African physicians were internationally perceived to be part of an oppressive racist system and guilty of perpetuating many human rights abuses by showing greater allegiance to the state and the police than to individual patients, by complacently or complicitly allowing apartheid to affect medical practice. The medical profession as a whole and many individuals were certainly derelict in their

6 *Advanced planning* refers to the use of such means as Living Wills to indicate how one wishes to be treated under circumstances when death seems very close or when suffering becomes too intense to bear.

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duty to face up to the abuses that led to the death of Steve Biko, to the torture that was occurring in South African prisons and security services, and to many discriminatory medical practices. These shortcomings have been well documented (Chapman & Rubinstein 1998) and continue to be an appropriate source of attention (International Dual Loyalty Working Group 2003).

However, attempts by South Africans during the apartheid era to highlight ethical requirements in the care or prisoners and detainees are also part of the record (Benatar 1988a; Jenkins 1987; 1988). Moreover, the deficiencies of the medical profession in South Africa should neither be seen in isolation from the considerable excellent work done by generations of exemplary health care professionals in this country, nor from the fact that health care professionals in many countries are also co-opted into national ideologies that adversely affect others (Benatar 1997b). Consider the behaviour of American physicians (as a group) who willingly participate in a health system driven by an ideology that discriminates on economic (and even racial) grounds against many American citizens, and that goes against international medical ethical requirements not to participate in the death penalty. They, and physicians from other so-called developed countries, also passively acquiesce to the economic, arms trade and other foreign policies pursued by their nations' narrow self-interest that undermines the lives and health of millions of others on the globe. With reference to the latter, it is relevant to ask what reaction the medical profession in industrialised nations offered to the US government's attempt to prevent access to cheap antiretroviral drugs in South Africa (Bond 1999). This point is made not to diminish the challenges posed by dual loyalty (to state policies and to individual patients) – especially in oppressive countries – but to point to the pervasiveness of some form of dual loyalty (including loyalty to national ideologies), even within privileged societies. A more comprehensive view of dual loyalty that includes the tension between loyalty to individual health and loyalty to public health (Buchanan 2001) needs to be considered in South Africa, where a growing proportion of medical practitioners work exclusively in the private sector, with little sense of responsibility for health problems in the public sector.

Conflicts of interest

In the modern world, there has been growing potential for conflicts to arise between the self-interest of health care professionals and the interests of their patients. This has been called a *'moral hazard'* of medical practice. Financial conflicts of interest are the most prevalent in clinical practice, particularly in the setting of private work where unnecessary procedures may be undertaken in response to pressures to maintain turnover for institutional profit motives or for personal gain. Such conflicts are particularly problematic in the context of the vulnerability of patients, and have been a focus of interest in the USA with its heavily private and market-oriented health care system (Morreim 1995). Conflicts of interest are also becoming increasingly apparent (although less adequately studied or documented) in South Africa with its dominantly private-oriented health care system.

Conflicts of interest can also manifest in the research setting, not least in academic or pubic institutions, where the interests of health professionals in advancing knowledge or earning money from the research may jeopardise patients (Spece *et al.* 1996). Given the considerable increase in volume of international collaborative research involving patients from developing countries – much of this under the influence of the pharmaceutical industry with its eye on profits to be made mainly in the developed world – great care needs to be devoted to avoiding exploitation of vulnerable impoverished people in the research context, and to ensuring a more appropriate balance between the burdens and benefits of research in developing countries (Benatar 2001a; 2002a).

Managing conflicts of interest includes at a minimum declaring all such conflicts so that they are evident and do not remain covert. Institutional policies, national regulations and litigation can all serve to protect the vulnerable, but the personal integrity of clinicians and researchers remains an indispensable requirement. Being an ethical professional requires a focus that goes beyond rules about what should be done to include the fostering of professional values that determine what sort of a person a professional should be. This emphasis on virtues and personal integrity is hard to teach, and even harder to sustain in environments in

which provision of health care is increasingly driven by market forces.

Advertising

Until the 1980s, it was generally agreed in most countries that only limited advertising should be permitted – with the size, frequency and content of advertising controlled by professional bodies. It was considered unethical to go beyond the limits imposed by the profession. Such attitudes were based on the concept of a profession as a monopoly in the practice of a body of knowledge by practitioners who claimed to put their patients' interests above their own, and who functioned within a peer review system, i.e. under the influence of the Hippocratic Oath, and the codes of behaviour of such institutions as the British Medical Association (BMA), the American Medical Association (AMA), and the Medical Association of South Africa (MASA), etc.

Challenges to professionalism arose in the USA in 1891 when monopolies were banned. Although the learned professions were exempted at that time, the US Federal Trade Commission subsequently challenged the AMA in 1975 on the grounds that preventing advertising constituted an impediment to trade (AMA Judicial Council 1976). Arguing that its decision would reduce medical costs, the US Supreme Court banned the AMA in 1982 from discouraging advertising or solicitation of patients. Thus, in that society, the value placed on freedom of expression and of trade came to override professional concerns. In 1989 in the UK, the Monopolies and Mergers Commission also decided that certain restrictions on medical advertising were anti-competitive and against the public interest (Dyer 1996).

Close-up 12.5 Advertising in the medical profession – pros and cons

Pros

- The rising cost of medical treatment is seen to be due to lack of competition (ignores rising costs of technology and general inflation).
- According to classic capitalist theory, advertising will reduce the cost of medical services.
- The public needs to be informed – to help them make informed decisions.
- There is agreement on such issues as name, address, professional training, speciality, office hours, services offered, factors determining fees, standard of medical education and certification .

Cons

- It goes against a tradition of thousands of years of practice in which the ethics of practice centred on welfare of patients.
- The competent professional does not need to advertise – his or her skills are self-evident.
- The compassionate professional does not advertise compassion – he or she practises it.
- Quality medical care cannot be marketed at discount prices.
- The ethical professional will give needed care irrespective of the fee to be received.
- Pecuniary gain must not interfere with the application of medical judgement and skill.
- While competition is healthy in business where profit is the main motive, in professional practice it can only serve to the detriment of the patient. Unlike in business, the patient, especially when vulnerable, cannot view the advertised product and decide on the basis of his or her own assessment which to purchase.
- Extravagant claims are made – self-laudatory 'puffery', claims of superiority, disclosure of favourable features without disclosure of unfavourable information (injurious to the public).
- Advertising conflates expectations, creates demands, manipulates desire and transforms wants into perceived needs.
- The line between advertising and soliciting is a fine one.
- Physicians, unlike businesses, should not pay commissions or rebates or give kickbacks for the referral of patients.
- The tradition has been to protect the public from selecting doctors on the basis of potentially misleading information rather than on professional reputation.

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On the one hand, acceptable advertising is considered to include announcement of: election of health personnel to government or important posts, receipt of awards, the opening of practices, and scientific advances, as well as for the purposes of public education, and for participation in lectures of academic/health care nature. On the other hand, advertisement for product or service differentiation is problematic. The major ethical issue in advertising is truthfulness, and the standards by which truthfulness is assessed are not well defined. Misleading advertising in medical journals also poses a problem (Kessler 1992). Wilkes *et al.* (1992) described 109 prescription drugs advertised in ten leading US medical journals. A large proportion contained misleading information and appeared to violate the Federal Drug Administration regulations governing the accuracy and balance of prescription-drug advertisements. As the South African medical care system has become increasingly privatised, so advertising has proliferated in this country. Some attention to this by the Health Professions Council does not seem to have had any impact.

6. ETHICAL DILEMMAS AT THE LEVEL OF INSTITUTIONS

Regrettably, the focus of bioethics on individual choices within a political ideology that emphasises personal freedom above all other values, particularly in the USA, has not been conducive – in that society – to significant emphasis on health care as a right to be provided for all its citizens. This contrasts with universal access to health care within countries practising a social-democratic model of coexistence – for example, most western European countries and Canada. The recent report from the influential US Institute of Medicine offers insights into the shortcomings of health care in the USA and makes recommendations that could facilitate more universal access in that country (Anonymous 2002).

The American notion of medicine as just another product to be traded in the market – in keeping with the neo-liberal economic paradigm – is, however, becoming increasingly pervasive globally (Sarmiento 2000). As a result, national health care systems in many countries are being eroded by an increasing emphasis on privatisation of health care. Even more striking is the extent to which the erosion of public health facilities in South Africa, noted many years ago, has escalated under the influence of the neo-liberal economic paradigm on health care. South Africa does not need to persist in making the mistakes made in the US. Renewed attention is required to how the country's health care services should be restructured to provide more equitable access to sustainable levels of health care. The ethical challenge at the national level is to grapple with the role of the state in ensuring universal and equitable access to basic health care services, while retaining the right of individuals to acquire health care through a small private sector whose functions augment rather than detract from the public service (Benatar 1990a). Ethical considerations also need to extend to the level of institutions where ethical policies need to be formulated with a view to assisting with difficult institutional dilemmas, for example resource allocation and priority setting.

6.1 *In search of equity*

Equity can be defined as the provision of equal shares for equal needs or the allocation of unequal shares for unequal needs as long as proportionality is maintained. However, proportionality is difficult to assess because of incommensurability.[7] Some inequalities in wealth, health and disease are inevitable aspects of life; eliminating all inequalities is thus not possible. In addition, not all inequality is inequitable. *Inequity* refers to those inequalities that are considered to arise from unfairness. In recent years, inequitable disparities in health have become a major focus of attention worldwide. In this, the HIV era, one of the challenges faced by the South African government is how to institute a programme of treatment with antiretroviral drugs in an equitable manner that will meet the requirements of the South African Constitution. Many inequities in health care in South African arise because of the vast differences in

7 *Incommensurability* is the inability to weigh and balance values that cannot be measured against each other on any common scale – for example additional years of normal life against years of disabled life.

accessible health care in the private and public sectors (cf paragraph 7.3).[8]

The achievement of good health requires more than the provision of health care services. Attention therefore needs to be directed towards the forces that propel and perpetuate economic inequity, i.e. to those forces that in recent years have shifted much of the discourse in international health policy debates away from considerations of equity to an efficiency-driven perspective. While this market influence adds value by promoting efficiency, it also reflects a narrow, direct approach to health that has considerable potential to damage the equity valued by more egalitarian approaches (Gilson 1998).

Instead of taking a direct approach that focuses on equity in health (a difficult concept to define) as an end in itself, an indirect approach has been suggested. This views the pursuit of health as being embedded in the broader pursuit of social justice (as an important determinant of health) in general (Peter & Evans 2001). The indirect approach emphasises the concept of agency and well-being (defined as *having the capabilities that a person can achieve*) and the freedom to pursue one's own life goals (Sen 1999) within a pluralistic world. An indirect approach also provides space to address the *"politics of need (need for food, shelter, education and protection from harm) in the context of the modern welfare state in general and in relation to public health in particular"* (Robertson 1998: 1428).

6.2 Resource allocation, priority setting and rationing

Resource allocation and priority setting in health care expenditure are inevitable in all societies, even the most affluent. The reasons for this universal need comprise growth of expensive but effective medical care that can add quality and quantity to life, greater emphasis on advanced technology, efforts to prolong life at all costs, and concerns about the appropriateness, access, equity and standards of medical practice. Resource allocation and priority setting need to be considered at several levels: firstly, at the national level, where the budget for public health services is determined – largely by the fiscal policy of the government (see below); secondly, within regional geographical areas, influenced both by the national and provincial governments (see below); thirdly, for particular diseases or forms of treatment – for example tuberculosis and HIV/AIDS – which may involve decisions by central, regional and local health authorities; fourthly, at the level of eligible patients, where decisions are usually made at the institutional level by committees; finally, at the level of the individual patient, where such decisions are characteristically made by practitioners at the bedside.

There is no simple or technical solution to priority setting in health care. The process is an exercise in policy learning and a struggle for power. The responsibility for resource allocation has different implications at each of the levels described above. Some have argued for retention of the traditional method of *implicit* or *covert rationing* – as is currently the policy in the UK and South Africa. Advantages claimed for this method are that it is (1) based on trust, (2) more sensitive to the complexity of medical decisions and personal and cultural preferences of patients, and (3) best applied at the micro-level of individual patient care. Advocates for implicit rationing also see several disadvantages to explicit (open, reasoned and accountable) rationing. These include: (1) the assumption that explicit rationing is practical and possible; (2) that distress may be caused to patients and providers; (3) administrative complexity; (4) the potential for an explicit process to destabilise the health care system; and (5) lack of responsiveness to rapid changes in knowledge (Coast 1997; Mechanic 1995).

Advocates of *explicit rationing* claim several advantages. These include: (1) the fact that criteria for rationing, such as equal need and equal access, are National Heath Service principles in the UK; (2) the ability to link triage to waiting lists; (3) reduction of deception (and ignorance); (4) reduction in paternalism; and (5) the need for transparency in a democracy and the role this plays in encouraging reflectiveness in politicians and administrators, as well as contributing to the development of citizens' moral character (Doyal 1997).

8 The question of how to achieve greater justice in health care will not be dealt with in any detail here (cf paragraph 6.2), but has been the subject of substantial attention and controversy (Benatar 1996c; Daniels *et al.* 2000).

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The requirements for explicit rationing include the use of techniques (cost-effectiveness studies, systematic reviews of outcomes, scoring systems such as Quality Adjusted Life Years (QALYs), clarity of objectives and information about costs and outcome, and the ability to measure performance. However, the application of judgement is also required as techniques alone cannot produce the desired result. An emphasis on judgement reveals the role of ethics and values, for example whether preference is given to improving the quality of life (e.g. palliative care for many) or to extending the duration of life for a few (e.g. through provision of more ICU beds). Decisions need to be made regarding whose judgement will be used. There is growing acceptance that the public should be involved, although this is a complex task. Other requirements are to define a basket of essential services and treatments; to provide guidelines using the best available data in order to reduce variation in practices; and to consider whether to favour the individual good or the common good.

Central to resource allocation and priority setting is the question of justice and fairness. Ideas of justice vary greatly and range from a focus on individual freedom through a wide range of ways in which the ideal of a harmonious public life could be achieved. Perspectives on justice also differ across disciplines: philosophers focus on theories of distributive justice; lawyers concentrate on the right to health care, non-discrimination and the obligations of health care practitioners; political scientists reflect on the fairness of decision-making processes; medical staff tend to be caught up with the evidence base for medical practice and considerations of best clinical judgement; and economists stress efficiency. Daniels & Sabin (1997) have proposed a process for priority setting that they have called *'Accountability for Reasonableness'*. This requires transparency about the factual grounds for decisions; clear justification of the relevancy of the decisions to meeting health care needs fairly; allowance for appeals against decisions; and a process that facilitates the implementation of decisions and revisions. Resource allocation sheds light on the process of policy making and is an example of bargaining between different interests. It is not carried out in a uniform way in all countries, and is usually a power struggle within the health sector (Martin *et al.* 2000).

Little is known about how resource allocation decisions are made at various levels within health care in South Africa. It is doubtful whether more than a few people know how resources are allocated at the national or provincial levels. Even at the level of major hospitals, such decisions seem to be made covertly, and within a vacuum and a historical context of previous budget allocations. There is not yet a culture of trying to make such decisions in a rational and accountable manner – even within increasingly resource-constrained academic centres. Recent experience in formulating and operationalising a policy to deal with head injuries at the Groote Schuur Hospital (Benatar *et al.* 2000; Groote Schuur Hospital 2002) has provided several lessons in this sphere. The first is that such an exercise can be undertaken as a cooperative endeavour between physicians, surgeons, bioethicists, lawyers and administrators. The second is that, having fashioned a rational policy, many difficulties have to be faced in implementing the policy. Last but not least is that caution is needed to ensure that the exercise is not used perversely by fiscally oriented politicians and bureaucrats to make further cuts in the budget for the care being rationed.

6. 3 *Withholding and withdrawing treatment – the concept of futility*

Under circumstances of severe resource constraints, the question of how ethical it is to either withhold or withdraw potentially life-saving treatment poses a major dilemma – both for individual clinicians and for the institutions within which they work and to which they are accountable. However, there is need for sound argumentation and consistent policies to ensure that such decisions are made on defensible grounds and with accountability. A previously published statement outlined the rationale for withholding and withdrawing treatment and will not be reiterated here (Benatar *et al.* 1994). It should, however, be noted that although life-saving treatments are often withdrawn in South African hospitals, on such widely accepted grounds as those outlined in the statement mentioned above, South African law does not expressly permit such action. This gap between the law and ethically accepted medical actions has recently been reviewed (Fleischer 2003).

The concept of futility needs to be distinguished from resource allocation decisions to ensure that futility is not used as an excuse to make decisions that are predominantly economic (Benatar 1996a). The term *futility* is appropriately used in specific situations where there is either a very low statistical probability of achieving life prolongation (e.g. CPR in terminally ill patients), or where the quality of life that can be achieved is outweighed by the burdens of treatments (e.g. providing chronic renal dialysis for severely demented patients) (Truog *et al.*1992). Rationing refers to a more general approach to: (1) limiting some of the very high expectations of health care and denying some costly treatments that may be effective; (2) sharing resources on equitable grounds; and (3) allocating health care resources by means of pricing and queuing when supply and demand are out of balance (Jecker 1992).

6.4 Institutional governance

In recent decades there has been a tendency to run universities and academic hospitals like corporations. Budgetary considerations have become the bottom line, with political decisions (usually taken covertly) underpinning the direction and future of such institutions. Despite such *'corporatisation'* of institutions, the accountability to stakeholders is less clearly defined or assured than in the business sector that is being emulated. The role of academics and of senior clinicians has become increasingly subordinated to procedures and controls managed by full-time executives and (for patients at least) a faceless bureaucracy. The extent to which collegial debates influence policy has been lessened; and increasingly, those with the clinical skills on whom the institution's main functions are dependent are becoming alienated from the administrative echelon. Alternatively, they become co-opted into the processes at the cost of distancing themselves from the work in which they are most skilled. Executive salaries in universities have far outstripped those paid to even the most distinguished academics, while the pathway to promotion and greater salary is seen within the administrative arena. While acknowledging the greater need today than in the past for managerial skills and more complex bureaucratic procedures, the ethics of such institutional governance are not beyond question, most especially in relation to their adverse effects on academic freedom and the overall academic enterprise. Urgent attention is required to the ethics of how best to manage complex health care and academic facilities to ensure that all the required skills are used optimally (Edwards *et al.* 2003; Smith 2003).

6.5 Balancing clinical services, teaching and research

Within academic health care institutions there needs to be an appropriate balance between taking care of patients, teaching undergraduate and postgraduate students, and undertaking the research that will keep enquiring minds alive and advance knowledge and understanding to improve practice in the future. This is a delicate balance that cannot easily be achieved at the level of each individual's work within the system. Heads of major departments in South African teaching hospitals from the 1970s to the 1990s could achieve this balance across large departments by allocating a mix of duties to individual members of staff in accordance with their best skills. Some would do a lot of research and care for fewer patients, while others would care for many patients and undertake little if any research. In this way the diverse strengths of large departments could be used optimally.

Today it is not possible for heads of departments to organise staff in such a manner, as the 'administration' requires each member of staff to be accountable on paper for a more centrally determined spectrum of activities. The ethics of such administrative control over each individual, with excessive dilution of the discretionary power of heads of departments that facilitates optimal use of skills, is questionable and should become a topic of scholarly investigation. Clearly, accountability is required of heads of departments but more may be lost than is gained by inappropriately shifting accountability away from the overall level of departmental productivity towards the micro-management of each staff member's time. Such shifts contribute to a complex constellation of processes that promote deprofessionalisation at an institutional level.

6.6 Maintaining professionalism

To 'profess' was, in its earliest use, the public declaration of one's religion, and it signified a

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Close-up 12.6 Defining elements of the ideal-typical profession

- A body of knowledge and skills officially recognised as one based on abstract concepts and theories requiring the exercise of considerable discretion
- An occupationally controlled division of labour
- An occupationally controlled labour market requiring credentials for entry/career mobility
- An occupationally controlled training programme associated with 'highest learning', segregated from the ordinary labour market and providing the opportunity for development of new knowledge
- An ideology serving some transcendent value and asserting greater devotion to doing good work than to economic reward.

Source: Freidson (2001).

commitment to a particular way of life. Later the term 'professionalism' came to mean earning one's living from a set of skills in which one had expertise. Sociologists and professionals have offered contrasting perspectives of what it means to be a professional, with sociologists being somewhat cynical about, and critical of, the self-aggrandising view that professionals have of themselves (Benatar 1997c). Eliot Freidson, an American sociologist, once a harsh critic of the professions, has retracted some of his criticisms in recent years. In his book concerned with work *"as the practice of knowledge and skill, and the social, economic and cultural circumstances surrounding its practice"*, he describes three logically distinct methods of organising and controlling the circumstances of work. These are ideal-typical models that do not mirror the empirical world, yet are intended to provide a stable, logically articulated framework that can organise the way we look at the world and compare its wide variety of cases. In his view the 'logics' and languages of the market and of bureaucracy are eclipsing the logic of professionalism and eroding the trust underpinning professionalism that he sees as essential for any society to flourish (Freidson 2001).

Others have expressed concerns that normative aspects of traditional virtue and compassion are being eclipsed, while self-interest is being fostered (Pellegrino 1994). The medical profession seems to have lost its soul, with greed being turned into a virtue under the influence of powerful medical corporations that are not democratically accountable, and that have been transformed from institutions serving the means of providing expanding health care services, to an end in themselves – the accumulation of wealth through the exploitation of human vulnerability in illness (Crawshaw 1993). Regrettably the medical profession seems unwilling or unable to use its institutional strength to reverse these trends. The dangers to health care in South Africa are that such an emphasis, by devaluing the professional role, risks damaging the drive and dedication of professionals, with high costs to society.

Close-up 12.7 Three logics

Market logic – based on the ideas of Adam Smith

This describes a world in which we are all free to buy anything we choose at the lowest possible price and sell it for the highest possible price. Nothing is regulated and there are no large companies or unions to limit that competition. Such free and unregulated competition encourages innovation that increases the variety and quality of goods and services, and keeps prices down. Consumers are fully informed about the quality and cost of available goods and services and choose them rationally, according to their own interests. This world is organised around consumption, with consumer preference and choice determining whose services will succeed. Value is measured primarily by cost.

Management logic of rational-legal bureaucracy – based on the ideas of Max Weber

A world in which the production and distribution of goods are planned and controlled by the administration of large organisations. Each organisation, whether a private firm or a public agency, is governed by an elaborate set of rules that establish the qualifications of those who can be employed to perform different jobs and that define their duties. The effective planning and supervision of a variety of specialised jobs standardise production so as to assure customers of reliable products at a reasonable cost. In this world, the executive officers or managers of organisations control those who produce goods and services, aiming primarily at predictability and efficiency.

Logic of professionalism – based on the ideas of Eliot Freidson

A world in which all those workers who have specialised knowledge that allows them to provide especially important services have the power to organise and control their own work. Legally, only they can offer their particular services to consumers or hold jobs performing them in organisations: neither consumers nor managers are free to employ anyone else. Furthermore, only members of the occupation have the right to supervise and correct the work of colleagues. They do not abuse those exclusive rights, however, because they are more dedicated to doing good than to maximising their income. Thus consumers and managers can count on work of high quality at reasonable cost.

Source: Freidson (2001: 1–2).

7. ETHICAL DILEMMAS AT THE NATIONAL LEVEL

South Africa faces many challenges in the choice of health care delivery. It needs to decide what kind of health service it wants. One option is a service that resembles any other health service in developed countries with an appropriate balance of, and equitable access to, all elements of primary, secondary and tertiary care – even though within constricted levels of service due to financial constraints. Examples of systems aspiring to these goals are found in the UK, Canada and many countries in western Europe. The alternative is a two-tier system with widely different access dependent on employment or privately financed insurance coverage. This is the model promoted within the USA and increasingly in other countries under the influence of US-promoted neo-liberal economic policies. Yet another option for South Africa is to move away from the Western medical model and to focus predominantly on primary care with an increasingly prominent role for nurses, paramedics and traditional healers. None of these issues have been addressed explicitly in South Africa. However, it is clear that even if decisions about our health care system are not taken consciously or by design, they are, in fact, reflected in the health budget, in major financial cutbacks at tertiary health care institutions in the public sector, and in how health care institutions are organised and governed.

7.1 Dealing with the HIV/AIDS pandemic – a major challenge

The HIV pandemic poses a major challenge. The social and economic implications of HIV/AIDS were foreseen many years ago, but are only now becoming widely appreciated. Recently, it has been estimated that the number of employees lost to AIDS over the next ten years in South Africa could be the equivalent of about 40–50% of the current workforce, and that by 2005 there will be about 800 000 orphans under the age of 15 years (loveLife 2000). The loss of human labour power and the increased work required to care for AIDS sufferers will profoundly affect the lives and well-being of all in South Africa. Adverse effects on the economy will affect all aspects of development – income; access to food and basic living requirements; interpersonal, class and gender relationships; government credibility in caring for its citizens; and in upholding human rights. In brief, HIV/AIDS is resulting in medical and social disasters in Africa (Barnett & Blaikie 1992), and how to deal with these raises many complex ethical considerations.

It surprises many that, despite considerable

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attention to HIV/AIDS, so little has been achieved in slowing the pace of the pandemic. Such surprise reflects failure to consider the nature of the disease, how it arose, the factors associated with its propagation, and the limited role of medicine in controlling a pandemic with such deep roots in social structures and human behaviour. Clearly, scientific progress and the delivery of modern medical care make major contributions to dealing with disease, as illustrated by the development of effective antiretroviral drugs for the treatment of AIDS and their impact in wealthy countries.[9] However, the role of extreme poverty, subhuman living conditions, lack of access to basic education, poor sanitary and living conditions, dysfunctional families, lack of recreational facilities, sexual freedom and high crime rates should not be underestimated. All are endemic in Africa and are fuelled by the powerful forces that have been promoting global disparities for many generations (Benatar 2002c). While acknowledging such considerations, it is also necessary to be critical of inadequate attention from governments to the pandemic, most especially in South Africa, and to be supportive of the courageous efforts of activists (Power 2003).

Some blame can also be laid at the doorstep of major international institutions. For the past two decades, the World Bank and the IMF have held the balance of power in formulating global health policy. In so doing they have encouraged liberalisation of economies, cut subsidies from basic foods, and shifted agricultural policy to promote export crops to the detriment of home-grown food production – all resulting in devastating malnutrition and starvation that have caused billions to suffer, especially in Africa. It is an indictment of the IMF and World Bank's structural adjustment programmes that they reduce government expenditure on health care, education and other social services and encourage privatisation, even within health care. Availability of condoms, STD treatments, anti-tuberculosis therapy, and treatments for co-infections of HIV are subject to user charges introduced and still encouraged by the World Bank in many African countries. Structural adjustment programmes, debt repayments, cuts in aid budgets (especially by the US), discrimination against African trade, and the cold-war activities of the great powers have all played a significant part in fanning the AIDS pandemic. Illness and death from AIDS in a family results in loss of breadwinners, substantial funeral and mourning costs, and the removal of children from school to increase household income and to take up the role of dead parents in caring for younger children (Nandy *et al.* 2000).

It is a sad reflection on organisations that promote public health that these adverse forces are not adequately acknowledged or discussed. HIV/AIDS cannot be dealt with unless these underlying conditions are gradually reversed. Recognition of the adverse effects of overt racial apartheid in South Africa, while failing to recognise the adverse effects of covert economic apartheid at the global level, regrettably reflects a form of *'selective moral blindness'*. Moreover, it is not necessary to go beyond considerations of the rational long-term interest of the world's privileged people to appreciate this (Hosle 1992). It is predictable that, unless the conditions that promote such ecological niches are addressed, other new diseases will in all probability emerge in the future with potentially devastating effects worldwide. An appreciation of this prospect has led former US President Clinton to declare HIV/AIDS a security threat to the industrialised world. In 1999 the Commonwealth Heads of Government Meeting declared HIV/AIDS a global emergency. The importance of this insight lies in understanding that more is needed than the mere development of *'drugs as weapons'* to combat the pandemic. Acknowledgement of and attention to both the proximate and ultimate causes of plagues are essential (John 1999; Karlen 1995; Lee & Zwi 1996; McNeil 1998).

Education about safe sex and about the use of condoms are important aspects of the thrust against HIV/AIDS, but these are not remotely sufficient to overcome deeply entrenched suspicion of such advice that interferes with procreation and that goes against centuries of socially accepted and psychologically driven sexual practices in other cultures. Failure to recognise the pervasive social, economic, behavioural and

9 However, the cost of medical treatment needs always to be considered in relation to availability of resources. On the one hand, what is reasonably priced in some countries may be too expensive in others and, therefore, unimplementable despite being very cost-effective. On the other hand, drug prices can fall and new services be made available.

political aspects of HIV/AIDS – both in terms of its origins and its control – is self-defeating. The complexity of the scientific endeavour required to understand the pathobiology of the disease and to develop appropriate treatment is more than matched by the complexity of understanding and dealing with the social underpinnings of HIV/AIDS and other plagues, locally and globally (Benatar 2002c).

The example of anti-smoking campaigns illustrates the difficulty in achieving behavioural change even for acquired habits with only mild addictive effects. The greater challenge of achieving change in relation to such basic drives and needs as sexual relations should not be underestimated – and especially when interacting with people whose social and sexual mores differ and who may be suspicious of the underlying motives of 'educators'. The programme of action against HIV/AIDS in South Africa includes culturally sensitive education, information and behaviour change strategies and vaccine development, but the impact of these will take many years to become manifest. A comprehensive programme will also need amplification by definitive and convincing political and cultural action to dispel the regrettable denial that surrounds HIV/AIDS, and by significant social and economic progress.

7.2 HIV transmission prevention and treatment programmes – the controversy

Over and above the development of drugs for treating HIV/AIDS, the ability to reduce transmission of HIV infection from mother to child has been one of the most important advances in the medical management of the HIV/AIDS pandemic (Benatar 2000d). Given the outlook for infants infected during childbirth or infancy – 91% mortality by the age of 8 years – there is good reason to promote the widespread introduction of effective preventive measures (Söderlund *et al.* 1999).

The expense of the first successful method (ACTG076) for preventing vertical transmission has led to the search for cheaper regimens that could be applied cost-effectively in middle and low-income countries. It has been estimated from mathematical simulation models of various preventive methods (drugs or formula feeding alone or in combination) that in the late 1990s it would have cost R100 million annually (US$13,3 million – 0,5% of South Africa's annual public health budget) to set up and run a programme to provide the DCC-Thai regime for HIV transmission prevention in South Africa (Söderlund *et al.* 1999).

Valid, though potentially surmountable, obstacles to the immediate introduction of a comprehensive HIV transmission prevention programme include: (1) constraints on resources and their maldistribution; (2) an inadequate health care infrastructure in the country to ensure widespread success of a programme to reduce vertical transmission; (3) inability to stop breastfeeding as part of the prevention agenda; (4) concern about potential adverse effects of retroviral drug therapy in a poor and nutritionally vulnerable population; (5) paucity of knowledge of the long-term implications of such a strategy; and (6) concern about the possibility of promoting drug resistance. Such constraints also apply to the introduction of equitable national delivery of antiretroviral therapy.

In addition to valid obstacles to dealing with the HIV/AIDS pandemic, there are other less obvious pressures that we can presume are affecting those in the South African government who may be sceptical of an approach to HIV/AIDS in which an intense focus is placed on drug treatments. Firstly, there is concern about the motives of the drug industry in poor countries, especially against the backdrop of vehement interference by powerful nations and multinational drug companies in attempts by poor countries to import generic drugs to lower excessively high drug costs. Even the recent decision by drug companies to radically reduce the price of AIDS drugs in developing countries does not necessarily solve the problem. The conditions linked to this decision include provision of a guaranteed counselling and monitoring delivery infrastructure that will be difficult to meet (Gillman 2000a; 2000b; 2000c). Some insight into the sociology of the drug industry is helpful in understanding why many are sceptical of the motives of the pharmaceutical industry (Angell & Relman 2002; Relman & Angell 2002). Drugs account for a significant and growing proportion of health expenditure in all countries – ranging from between 6,9% in the UK, 8,2% in the public sector in South Africa, 10,5% in Germany, and up to 14% in the USA (Iglehart

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1999). Expenditure on drugs is the fastest-growing component of health expenditure in the US market-dominated practice of medicine. The US drug market accounts for 40% of the industry's sales and 60% of its profits. The size and distribution of the major pharmaceutical houses illustrate the power structure of the drug industry. Nine US pharmaceutical houses dominate in the first division by market capitalisation. They have market values ranging from US$198 billion to US$59,3 billion. Three companies based in Europe feature in the first division and have market values of between US$123 and US$115 billion. Companies in Europe dominate the second division with market values of just over US$30 billion each. It was estimated that by 2002 only three of the world's 25 top-selling drugs would be made in Europe, while US companies would account for 20 (Pilling 1999). In 1992 approximately 44% of global expenditure on health research and development was provided by the pharmaceutical industry (Ad Hoc Committee 1996).

Without detracting from the major benefits that have flowed from intensive drug development activities, or from some of the recent, renewed attention to tropical diseases, it is necessary to draw attention to the observation from a WHO (Ad Hoc Committee 1996) study that *"the multinational pharmaceutical industry operates like any other industry. It makes investment decisions to maximise the present value of future returns from the money invested. As such, it responds to economic demands rather than to statements on social or human needs."* It is also necessary to reflect on criticisms of the role of the pharmaceutical industry in global health and, in particular, its business in the Third World, (Chetley 1990) where up to 50% of people do not have access to even the most basic drugs. The lack of pharmaceutical interest in diseases such as malaria, tuberculosis and other diseases that cause considerable mortality and morbidity is a reflection of the attitudes expressed in the regrettable statement that two-thirds of the world's population are *"superfluous from the perspective of the market. By and large we do not need what they have; they can't buy what we sell"* (Gardels 1993: 3).

Secondly, many in developing countries are concerned about the extent to which the purely biomedical approach deflects attention from broader considerations affecting health. For example, it is asked whether spending the resources on improving the literacy rate of women and empowering them through education may be a potentially more powerful approach to reducing the HIV/AIDS pandemic. The question of what is indeed the most effective way of using limited resources to retard the progression of the epidemic in South Africa is thus not obvious. It is, however, unrealistic to have expectations for health care in South Africa (annual per capita health care expenditure of less than US$150) at levels remotely similar to those in industrialised countries (annual per capita health care expenditures ranging from US$1 500–5 000). Even with reasonable economic growth rates, South Africa's economic status will remain well below that of developed nations for many decades. However, it should be noted that poorer countries in Africa have had a more constructive approach to HIV/AIDS and devoted more of their resources to its control than South Africa. A narrow biomedical response to a disease such as HIV/AIDS, focusing on drug treatment, has much to offer in the short term, but is likely to have a very limited long-term impact if not combined with a much broader social, cultural and economic support approach.

Thirdly, and of most widespread and valid concern, is the South African government's vacillating attitude to the HIV/AIDS pandemic. After wasting millions of rand on a theatrical performance about AIDS, and supporting an untested drug (Virodene) claimed to be the cure for AIDS (Folb *et al.* 1997), the government provided support for an ambitious vaccine development initiative (Galloway 1999) and has since then persistently expressed outmoded ideas about the lack of a causal link between HIV infection and AIDS (Makgoba 2000; Mankdana 2000; Powell 2000). Despite the fact that science may not have all the answers to the diseases that afflict humankind, the failure to appreciate sufficiently both scientific knowledge and the value of the scientific method is a serious and disabling disadvantage for a country concerned about the welfare of its citizens and trying to maximise the benefits it can accrue for them in the modern world.

Against this background of irrational (some would say 'criminal') government behaviour, three other considerations also need mention-

ing. First, failure to implement public health policies based on solid epidemiological data is not unique to South Africa. Second, commitment to the modern biomedical approach to disease should not eclipse recognition of the fact that the adverse forces contributing to the initiation and perpetuation of the HIV/AIDS pandemic are well beyond the reach of medical solutions, and that excessive confidence should not be placed in the role of drugs alone in reducing the impact of the epidemic. It is appropriate to reflect here on the fact that, despite the availability of curative drug therapy for tuberculosis for over 50 years, and at affordable prices (US$1 per year of life saved), this disease not only remains prevalent but is also a growing problem in South Africa and worldwide. With 30 million deaths from tuberculosis in the 1990s, this organism retains its position as the most serious pathogen for humankind. The predicted rise in the number of patients who will suffer from tuberculosis as a result of the HIV-induced reduction in immunity, as well as the emergence of multi-drug-resistant strains, threatens to make the disease potentially untreatable (Benatar 1995). This provides insight into the complexity of effectively treating infectious diseases and highlights the powerful influence of social, economic and behavioural forces on the emergence and propagation of new and old infectious diseases (Lee & Zwi 1996). Third, South Africa, like many other countries, continues to spend considerable resources on new military equipment. While military expenditure in South Africa decreased from 13,1% of government expenditure in 1989 to 8% in 1994 and to 6,8% in 1995 (this expenditure being 4,1%, 2,6% and 2,2% of GDP respectively in these years), the recent allocation of R43 billion (US$5,73 million) for military equipment has justifiably come under severe criticism. Because cuts in military expenditure do not automatically result in reallocation to civilian purposes, a *'relationship between disarmament and development needs to be politically constructed,'* incorporating new ways of thinking about non-military aspects of security and peaceful development (Batchelor & Willet 1998; Willet 1998). While military expenditure is also falling globally, further reductions are needed with a planned shift in expenditure from security against war towards expenditure that could reduce threats from social disintegration.

Open debate towards constructive global solutions to the HIV/AIDS pandemic will thus require objective evaluation of all data, acknowledgement of the fundamental causes for the emergence of such plagues as HIV/AIDS, and the meeting of minds to work on finding solutions to complex issues that can be perceived differently. The ethical challenges posed at many levels by HIV research illustrate the complexity of the national and international agendas that need to be addressed over and above the scientific complexities of producing effective vaccines (Benatar 2000b). It is hoped that in South Africa, as a society aspiring to be a participatory democracy, such debate and imaginative collaboration with colleagues nationally and internationally can take place to achieve progress in dealing with a pandemic with profoundly adverse effects on individuals and entire populations.

7.3 The health budget – ethical implications of decisions

Health care expenditure in the public sector in South Africa accounts for 12% of the government's budget – a proportion resembling that allocated in countries with similar resources to ours – and reflects considerable confidence in the Western medical model of health care. Questions that face governments, and by implication the citizens of any democratic country, go beyond how much of the national budget should be allocated to health care and include how this should be distributed across the primary, secondary and tertiary levels of care; to what extent equity in access to health care should be achieved across regions; and, where wide disparities do exist (as in South Africa), at what pace can change be optimally achieved towards desired new goals with the gains of change outweighing the losses. Underpinning such decisions are the underlying political view of what the health system should be able to offer, the availability of resources, respect for human rights and constitutional considerations, as well as logistical problems and opportunity costs.

Health budget decisions are of considerable importance in South Africa, a society undergoing a profound social transformation, in particular with a view to creating a more equitable health care dispensation in the country. Nar-

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rowing the health and health care disparities resulting from many decades of apartheid is, however, very difficult in the context of South Africa's compliance (through its macro-economic policies) with the globally powerful neoliberal economic paradigm. The changes currently being implemented within the public sector, with resources being shifted away from tertiary care towards primary health care, and away from fully functional tertiary services serving several provinces towards neophyte tertiary institutions in previously disadvantaged regions, have resulted in progressive reduction in the availability of tertiary care for the poor, while the latter continues to be available to those who can pay in the private sector. Thus, the two-tier health care system continues to be promoted with economic apartheid replacing racial apartheid in health care. While it is unlikely that health disparities could be eliminated in a society in which other social and economic differences are so wide, it should at least be possible to work towards significantly narrowing the wide and widening health care disparities that currently threaten peaceful coexistence within a fragile and fledgling democratic nation.

The extent to which health budget decisions are taken centrally and how much decisional discretion is allowed to subnational authorities will, *inter alia*, be influenced by considerations of political accountability, and of how best to create and sustain the national 'social capital' inherent in a sophisticated public health system. It would seem that in South Africa most decisions about the health budget take place behind closed doors, with little if any direct consultation with or accountability to the electorate or those involved in health care delivery. In a country aspiring to democratic governance this is a serious moral deficiency.

7.4 Expanding the health budget in the face of the HIV/AIDS national emergency

In the face of the devastating HIV/AIDS pandemic where massive increases in resources are needed to implement new, effective preventive and therapeutic programmes, several choices are available, however, all with different ethical implications and justifications. Firstly, there is the choice of reordering priorities and shifting resources within the existing budget for health. This will result in withdrawal of some existing services and facilities to make place for new ones. Which existing services will be cut, and the implications of such cuts for the health of individuals, for society as a whole, and for the sustainability of the medical educational endeavour are all opportunity costs within the health sector that need to be considered. Secondly, resources could be shifted within the government budget towards the health sector. Here the major consideration will be the opportunity costs – beyond the health care system – to the country, for example reducing expenditure on education to increase expenditure on health may have such adverse effects as slowing economic growth and adversely affecting both living conditions and health. It seems to many, including the author, that the dangers to the country from the HIV/AIDS pandemic far exceed the risks of being attacked by other countries. So, resources could be diverted from the purchase of expensive military equipment towards this national emergency, with little or no opportunity costs. However, and with regret, the current government seems to be implacably opposed to this argument. A third option is to borrow money from the IMF or World Bank. This will avoid the adverse effects of the above options (comfortably for today's politicians), but will incur a debt burden for citizens in the years ahead that could have major adverse social effects. Which of these decisions are taken, how they are made, and with whose participation, are all ethical challenges that have not been addressed in South Africa.

7.5 Universal access to health care – the public–private divide

The debate about predominantly private versus predominantly public funding of health care has raged intermittently in South Africa over many decades. Support for the case made against privatisation generally (Naylor 1987), and in South Africa specifically more than a decade ago (Benatar 1987; 1990a), comes from developments in this country since then. Such arguments are further buttressed by the increasingly apparent shortcomings of a heavily privatised system in the USA where a growing proportion of citizens have limited and inadequate access to increasingly expensive health care (Anonymous 2002). Even in that

society where the individualistic approach to health has contributed so much to improved health of privileged people, there is growing urgency to consider the health of the whole population. Such a focus is even more important in developing countries, especially in the face of the HIV pandemic, where more individuals need access to effective treatments and where preventive measures have to be taken in order to ensure longer-term improvements in the health of populations.

During the apartheid era intense criticism, locally and internationally, was focused on the wide disparities in health and access to health care in South Africa (Benatar 1986b). Determination to change this situation was a significant feature of the ambitious health and welfare policies outlined in the RDP of the new government. The limited extent of economic growth in the past decade, accompanied by maldistribution of new wealth has, however, generally thwarted plans to improve health care in the public sector. More specifically, it has been difficult to develop effective ways of dealing with an HIV/AIDS epidemic that is powerfully influenced by the complex interaction of individual, cultural, social and economic forces in a region (southern Africa) adversely affected by decades of both 'low-intensity democracy' and low-intensity war/conflict in the post-1960 independence, and an even longer history of development disruption, knowledge of which is essential for understanding the complex social epidemiology of HIV/AIDS (Barnett & Blaikie 1992; Webb 1992; 1998).

Despite the lack of new resources, redistribution of public health expenditure is being undertaken with striking effects on the structure and function of the public health system. Of the government budget of R334 billion for the 2003/2004 financial year ($48 billion at an exchange rate of R7 to $1) 11% was for health care, with education receiving 22%, social security and welfare 14%, protection services 15% (police, prisons, military, judicial system) and interest on debt 15%.[10] The annual public health budget is used to provide primary, secondary and tertiary level health care for 32 million people (82% of the population) who do not have private health insurance and who are served by 34% of the nation's doctors. The public health budget also provides the major resource for all medical, nursing, dental and allied health professional education in the country. Even excluding the 18% of the population who have private insurance and are cared for by 66% of the country's doctors who work full-time in the private sector (private patients also benefit from medical education and tertiary services in public hospitals), this implies an annual per capita expenditure on health care of no more than R1 050 (less than US$150) per person – as compared with US$5 000 in the USA and between US$2 000 and US$3 000 in Canada and western Europe.[11]

At this level of health expenditure it is understandable why treatment of HIV infection for the many infected people in the country (even at a cost as low as US$50 per patient per month) is unaffordable, and why there is hesitation to embark on a national programme that focuses excessively on drug treatments. However, the example set by Brazil indicates that it is possible to make treatment progressively available to more in middle-income countries (Galvao 2002). Clearly, if the debt burden could be reduced, this could release considerable resources for expenditure on health and social services.

Yet another ethical debate focuses on whether resources should be spent on treating patients with HIV/AIDS today, or whether resources should be diverted towards more cost-effective preventive methods that could save many more lives in the long term. However, this debate is inappropriately polarised. Treatment and preventive programmes bolster each other and need to be seen as part of a continuum (Harvard University Faculty Members 2001; Clinton 2003).

As noted above, restructuring of the health care system with the goal of developing long-

10 South Africa's total debt burden (1999) is in the region of R300 billion (US $50 billion) (57% of GDP) of which R100 billion is foreign debt for which the Reserve Bank is responsible. R4 billion could provide housing for 200 000 families and R0,4 billion could provide textbooks for all our schools.

11 Although South Africa is a middle-income country with a per capita GNP of less about one-tenth that of high income countries, comparison is made with the USA (rather than with other countries in southern African with per capita GNPs of less than one-tenth that of South Africa) because this is the model most closely followed by South Africa's highly privatised health service. The wide disparities seen in South Africa are also evident in South America.

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neglected PHC services is being achieved by radically downsizing the modern, tertiary medical services provided largely to the poor in South African academic institutions. While such changes are necessary under conditions of severe resource constraints to improve access to basic PHC, many of the newly built PHC clinics are not yet functioning optimally. Indeed, as a result of the pace and manner in which cutbacks and changes are being made, existing public health services are becoming increasingly dysfunctional. Arguably, little has been achieved, while much has been lost in the short term. Hopefully this is a temporary phenomenon, and perhaps the price that has to be paid during the transition period for moving the focus from modern high-tech and hospital-based medicine to basic primary care in rural areas in order to secure a more balanced public health care system in the future.

However, other forces are at work entrenching intolerable long-term disparities. For example, the abovementioned changes to the public health system, combined with continued growth of private health care (under the influence of the US example) actively promoted during the apartheid era (instead of the European and Canadian models of universal access within social democracies), are resulting in the conversion of racial apartheid into economic apartheid in health care (Benatar 1997a; Van Rensburg 1999). Private medical care (enjoyed by less than 20% of the population) consumes two-thirds of the 8,5% of the gross national product (GNP) spent on health in the country. Those with health insurance retain access to most of what modern medicine can offer, although their contributions to health insurance are escalating rapidly, and more restrictions and exclusions are being built in than ever before. Reform of the public health system and the problems currently facing a bloated private sector thus have both immediate and long-term implications for such public health issues as HIV/AIDS, tertiary health care for the poor, and for survival of the academic institutions necessary for educating the next generation of health care professionals, especially postgraduates.

7.6 Public health ethics

The understandable focus on ethical issues at the interpersonal level has undoubtedly eclipsed ethical issues that need to be addressed in dealing with public health issues. The HIV pandemic, and possibilities for improving health that are opening through new genetic biotechnology, in particular, remind us of the need to extend our perspective beyond individual health to include health of whole populations. In a globalising world, perhaps best described as a de-territorialising world, in which boundaries are becoming blurred and the lives of geographically disparate people are more intimately interconnected than ever before, it is necessary re-evaluate traditional ideas of what it means to be an ethical professional.

Achieving improvements in human life and health globally will require a broader moral agenda that includes, but goes beyond, interpersonal ethics, and civil and political rights. Extension of the ethics discourse beyond the doctor–patient relationship should include considerations of order and fairness within institutions that serve the communities in which individuals are socially embedded and in which medical practice is *'constructed'* (Benatar 1998b; Benatar *et al.* 2003). The responsibility of physicians here must be viewed more broadly to include concern for equitable access to health care, for improved public health and for the allocation of scarce resources in ways that promote the common good. The previously quoted work of Daniels & Sabin (2002) on priority setting in health care illustrates how power-sharing in resource allocation can be achieved through appropriate representation on decision-making bodies and through transparency, accountability and the provision of a mechanism for appeals and for implementing decisions. Development of a policy for patients with head injuries at Groote Schuur Hospital is a local example of an attempt to apply these principles (Benatar *et al.* 2000).

It is clear that achieving an improved balance between the needs and rights of individuals on the one hand, and the requirements for advancing public health on the other, will require a shift in mindset away from strong individualism towards respect for individuality that is combined with a sense of duty, community and civic citizenship. Essential steps will include, firstly, acknowledging the need for a new balance; secondly, developing the political will to undertake ambitious projects (e.g. seeking ways of reducing poverty and dependency); and, finally, plac-

ing high value on the longer term economic and social justice required for meaningful and sustainable progress.

In a world in which individual health is increasingly linked to population health, both within countries and between countries, there is a need to develop a scholarly and coherent ethics of 'public health ethics' (Buchanan 2001). A start has been made and eloquent arguments have been offered in favour of a language of public health that *"speaks to the reciprocity and interdependence that characterise community"* (Robertson 1998: 1419). Considerations of justice, the 'social contract' and conflicts of interest will clearly impact on the physician/patient relationship as the ethics discourse is broadened to encompass the ethics of public health and of professional responsibilities to society. This raises the perennial problem of how to strike a balance between the rights (and needs) of individuals and the common good of societies. While the focus on individual rights is vital and necessary for the well-being of individual persons, such a focus is not sufficient for the achievement of improved public health (Buchanan 2001). The dilemmas regarding public health ethics will be greatest for those societies that are intolerant of any infringement of individual liberties in the name of the common good. The challenge for societies more oriented towards the common good will be to avoid excessive infringements of individual rights in the pursuit of public health goals. Realistically, a middle ground will have to be forged, because the choice is not between polar extremes but rather about achieving an optimal balance between competing goods.

8. ETHICAL ISSUES AT THE LEVEL OF INTERNATIONAL COLLABORATION

8.1 *International collaborative research*

Debates on the ethical requirements for conducting medical research in developing countries have achieved considerable prominence in recent years (Benatar 2002a; National Bioethics Advisory Commission 2001; Nuffield Council on Bioethics 2002). To some extent this is the result of growing interest in research in developing countries since the HIV/AIDS pandemic. It also reflects renewed and encouraging interest in, and concern about, the nature of the relationship between researchers and their subjects. While researchers are generally privileged people, many research subjects are among the most vulnerable in our world, living under the worst conditions of deprivation and exploitation. Appreciation of concerns regarding research in developing countries requires some knowledge of the growing global disparities in wealth and health, and of the lifestyle and world-view of potential research subjects. Against such a background it is apparent that the ethical dilemmas faced in conducting collaborative international research can only be addressed satisfactorily if research ethics are seen as being intimately linked to health care, to human health globally, and to the promotion of social and economic processes that could begin reversing widening global disparities in health (Benatar 2001a).

Problems of such magnitude, starkly illustrated by the AIDS pandemic, also require that ethical considerations extend to include the best interests of whole populations, the ethics of how institutions (including multinational drug companies) should function, and the ethics of international relations, especially those between rich/strong and poor/weak countries. When those in privileged positions and in wealthier countries consider undertaking collaborative research with colleagues in developing countries, it is necessary for them to understand both their own framework of thinking, and the implications of very different mindsets and environments in which research projects may be carried out in developing countries. The mindset of researchers from industrialised countries, and in which the debates on research ethics are taking place, is characterised by a biomedical approach to disease, and a neo-liberal approach to economics and trade (Lee & Zwi 1996). These powerful forces shape the world through a dominant world-view. There is a need to be sensitive to the fact that not all, and especially not those who are disadvantaged or who have been exploited, see the world through the same prism (Benatar 2002a).

In 'developing' countries, where cultural, linguistic, economic and other barriers may prevail between researchers and subjects, it is especially important to ensure effective communication. Anthropologists and others have documented

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the many pitfalls and difficulties that need to be faced in obtaining meaningful informed consent under these circumstances (Marshall 2001; Slack *et al.* 2000). Work in Uganda has suggested that (1) socio-economic inequalities between researchers and subjects result in subjects feeling that they have no choice when asked to participate in research; (2) the legacy of colonialism evokes covert ethnic divisiveness between researchers and subjects; and (3) the tyranny of the Amin regime that eroded a previously admired health care system has left a lingering suspicion that HIV was brought to Africa by foreigners. For these and other reasons, Ugandan researchers have had difficulty in applying the widely recommended principles of bioethics (Loue *et al.* 1996). Other problems identified with research in developing countries include (1) failure to involve local health care professionals in protocol design; (2) difficulties with the language in which protocols are written; (3) errors in translation; (4) problems associated with the co-option of prominent local principal investigators untrained in research; (5) the allocation by such investigators of duties to subservient juniors who cannot speak out; and (6) pressure to meet recruitment sample sizes (Hardy 1996).

Despite these problems, it should not be assumed that disadvantaged people cannot grasp the concepts involved in research. It is important to recognise that most of the goals of ethical research can be achieved when dealing with impoverished and illiterate people if sufficient time, skill, interest and resources are devoted to communication and consultation.

Local versus universal paradigms – achieving universal standards

While the source of, and justification for, universal ethical standards remain the subject of complex debates (Macklin 1999; Thomas 1989; Wilson 1993) it is generally accepted that there is a need for universal ethical standards for research on humans. Considerable progress has been made towards achieving this goal (CIOMS 2002; National Bioethics Advisory Commission 2001; Nuffield Council on Bioethics 2002.). Achieving universality in ethical standards requires reflection on such issues as: (1) what constitutes the best interests of subjects – with insightful recognition that individual and cultural preferences, and what can be achieved in any particular context, may differ significantly; (2) what distinguishes the truly universal from imperialistic notions; and (3) the relevance of contextual issues that can be taken into consideration on moral grounds without resorting to ethical relativism. As the facts of the case have an influence on the nature of any ethical dilemma, and on how it is to be solved, there is a need to recognise and deal with contextual differences on rational grounds. Contextual differences constitute the starting point for rational discourse, and it should be possible to reasonably justify any differences required in the conduct of research in different contexts. Clearly the challenges here are to avoid both ethical imperialism and ethical relativism (London 2001). The Interim National Health Research Ethics Committee recently established by the Ministry of Health in South Africa – with the mandate to develop a framework for a National Research Ethics Council – will hopefully provide a suitable framework for respecting both universal and local requirements for ethical research in South Africa.

Exploitation or compensation and partnership?

World history is filled with examples illustrating the pervasiveness of exploitation. Although exploitation today may be less crude and less overt than in the past, the extent of covert exploitation under sophisticated guises continues to blight the lives of billions of people (Benatar 1998a; Falk 1999; Hobsbawm 1994; Lee & Zwi 1996). Against this background, with the widening disparities described, and with acknowledgement of the potential for research to be exploitative, it can be argued that research should bring significant benefits to research subjects (Benatar 2001a; De Jesus *et al.* 1997).

Information gained from clinical trials conducted efficiently and expeditiously in developing countries may allow early registration of drugs in developed countries, thus considerably enhancing profits. It does not seem unreasonable to expect that such profits should also benefit the citizens of developing countries in which the research was undertaken. The colonial model of exchange of 'trinkets for ivory' must be avoided. The notion that it is accept-

able to give a gift of minimal intrinsic value in exchange for extracting valuable goods, should be transformed into a commitment to giving fair recompense for sharing in the development of knowledge that may translate into great profits for pharmaceutical companies. For example, in addition to the direct benefits of the treatment regimens being studied for individuals within the study, it is being claimed (with justification in the view of many) that such benefits should include the provision of proven treatments following completion of trials, and use of the research project to empower the community (Benatar 2001a; De Jesus *et al.* 1997).

While it may be difficult to undertake harm/benefit calculations in advance of knowing what research will reveal, and how valuable the information may be, the debate that is beginning on how safeguards can be built into the contract to promote justice in the distribution of benefits at a later time, must be encouraged in the quest to achieve greater fairness in the international research endeavour. Such considerations in the ethics of research have not yet evolved to the same level as some of the other ethical requirements that have been the focus of more attention.

8.2 Development

Deeper understanding is now being achieved about the meaning of, and the forces behind, the idea of 'development'. Some, by analysing the definition of the term, reviewing its history, and seeing its use as a 'Western myth' to change the course of history by promoting a 'world system', have gone so far as to criticise 'development' as a 'collective delusion' that claimed to eliminate discrimination and exclusion, while taking maximum advantage to maintain and reinforce it by extracting human and material resources from vulnerable regions (Lele 1991; Rist 1997). This may be a radical perspective, but its value lies in how much it reveals that refutes the popular view that the poor are solely responsible for their own misery. Others, through impeccable empirical studies that identify successes as well as errors in the quest for development, have provided insights into how deeper understanding of other societies can reveal ways of achieving widespread human development (Lancaster 1999; Sandbrook 2000).

A long-term and broader perspective on economic growth and sustainable human development is now needed. Investments with an eye to rapid short-term gains are potentially exploitative and have little true development capacity. Investments with a long-range view would reflect acknowledgement of the need to stimulate economic growth and social infrastructure through empowerment of people in ways that could foster energetic, enthusiastic, productive and law-abiding citizenship. Such considerations about the nature of development are essential to dealing with diseases like HIV/AIDS, where the idea of development in health care cannot be limited to mimicking a high-tech, expensive, drug-based approach.

Cross-cultural considerations in development programmes should include a framework that is emancipatory, coupled to an evaluation process in which participation is characterised more by listening to people in developing countries than by focusing on suspect data. Capacity building under such circumstances is a broad transdisciplinary endeavour requiring diverse methodologies, and a systems approach rather than linear processes (Kushner & Baker 1998).

Partnerships and agreements with all concerned parties have the potential to strengthen health research and its application in practice. For example, the US Agency for International Development (USAID) provides resources to implement AIDS prevention, care and support programmes in developing countries. In addition, the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and private foundations sponsor research on the prevention and treatment of HIV/AIDS. Forging of links between HIV prevention research and treatment programmes could improve heath care as well as advance knowledge. Collaboration with bilateral and multilateral funders and implementers such as the WHO, the World Bank, private and philanthropic foundations and NGOs should also be explored. The pharmaceutical industry has played a major role in developing drugs for STIs and AIDS treatment, and continues to do so in prevention research. Partnerships with pharmaceutical companies to provide drugs for some period of time at affordable prices to governments should be pursued (Shapiro & Benatar 2004). The Drugs for Neglected Diseases Initiative of *Médecins sans Frontières* is

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an example with exciting potential (Trouiller *et al.* 2002).

9. BUILDING NATIONAL CAPACITY TO DEAL WITH SOCIAL AND ETHICAL DILEMMAS

9.1 *Transdisciplinarity in health care*

Health care is neither a pure science nor a social service. It is a unique activity that draws on many sources of knowledge and understanding for its success. Major advances in science and technology in the past half-century have led to a domination of science and technology in health care activities. Health care, *par excellence*, is an area of human endeavour in which transdisciplinary work is essential. It is therefore gratifying that in recent decades much effort has been devoted to trying to bring the humanities and the social sciences into the domains of medical education and practice. Transdisciplinary study and the operationalisation of revealing new insights would seem to be a promising key to unlock solutions for averting human health tragedies on a vast scale, and for restructuring social relations within and between nations in ways which could allow sustained development and peaceful coexistence.

The rebirth, growth and evolution of bioethics in the latter half of the 20th century is a successful example of transdisciplinarity in health care (Benatar 2000e). This is a process in transition, and while much has been achieved, many challenges remain. The successes are seen as embracing the creation of an academic and practically oriented forum for bioethics within health sciences faculties that has given members of various disciplines opportunities to be part of health science faculties; mix with a wide range of health care staff and students; hear about and discuss ethical dilemmas that must be dealt with at a practical level; and work in an accountable public forum to craft documents and policies that can be widely debated and applied.

Sensitising health care staff to the ethical issues that pervade health care and human life, as well as to the role of non-medical colleagues in addressing health-related issues – including the study of ethics and the humanities in health care education – stimulates students to broaden their education. Public education about ethical issues in medicine could empower citizens in health decision making and contribute to development of a culture of democracy. Although in their infancy in South Africa, these changes in health care will hopefully be associated in time with changes in practice that will enhance the care of suffering people – both as individuals and collectively.

However, failures in applying transdisciplinarity are also evident. In environments where specialisation and subspecialisation have become dominant, it has been difficult to promote broad general attitudes to subjects requiring a transdisciplinary and comprehensive approach. An example: within medical practice, family practitioners accuse specialists in internal medicine, surgery, oncology and other disciplines of having lost sight of the overall health of the patient and of focusing on particular aspects of health and disease. Similarly, even within a discipline such as internal medicine, it is claimed that subspecialisation into organ-based disciplines has narrowed the perspective on illness and suffering. More broadly, anthropologists and sociologists consider all medical practitioners to be excessively focused on biomedical aspects of disease and as failing to consider suffering in a broad social context. Despite the intellectual advances made in transdisciplinarity in medicine and in medical education, some of which have been mentioned, these have not been even remotely translated into effective practices. This is in part due to the fact that in medicine, and especially in the most highly industrialised countries, those interested in ethics, sociology, economics, law, anthropology, and other disciplines that impinge on and affect health have become isolated into academic enclaves unexposed to each other's thoughts.

In attempting to deal with these complex issues, it is necessary to affirm that imaginative research seeking new knowledge, perceptive integration of existing knowledge, inspirational teaching and skill in transforming knowledge into practice, are different aspects of scholarship that all need to be recognised and rewarded – as recommended by the Carnegie Foundation Report on *'Scholarship reconsidered'* (Boyer 1990). The hope is that a broader conception of scholarship, both within disciplines and in transdisciplinary work, holds much promise for the future.

9.2 Promoting global health ethics[12]

It has recently been proposed that an impetus for improvements in global health, well-being and meaningful development could be provided through an enhanced transdisciplinary approach – global health ethics – that broadens the ethics discourse beyond the micro level of interpersonal relationships to the level of institutions, international relations and the global environment. Several shared foundational values will need to be widely promoted and transformational approaches implemented (Close-up 12.8). Although no value can stand alone, the most important value is solidarity arising from empathy, without which it is easy to ignore distant indignities, violations of human rights, inequities, deprivation of freedom, undemocratic regimes, and disrespect for the environment. If those who are privileged could develop empathy for those whose lives are so severely deprived and a spirit of solidarity with fellow-humans worldwide, constructive change would be possible. Humility involves accepting that all people everywhere are subject to the same constraints of morality. A central role for educational systems in developing the character and values of children for the 21st century is to promote *'global consciousness'*.

Close-up 12.8 Global health ethics

Foundational values to be shared and promoted

- Respect for all human life
- Equity and social justice
- Freedom from want of basic needs and freedom to pursue one's own life goals within a pluralistic world
- Democracy
- Environmental ethics
- Solidarity and humility

Transformational approaches

- Developing a global state of mind and elements of global governance
- Promoting long-term self-interest
- Striking a balance between optimism and pessimism about globalisation and solidarity, and developing strategic alliances that involve the public, non-governmental organisations and philanthropies, as well as governments and corporations
- Strengthening capacity by shifting the focus from ethical codes and declarations to people – the key ingredient needed to advance the cause of ethics around the world. People develop, adapt and implement codified recommendations
- Enhancing production of global public goods for health as a step towards implementing a far-reaching vision for a better world in which good governance and strengthening of appropriate international institutions would enable more equitable distribution of the public goods required for decent human living

Source: Benatar *et al.* (2003: 117–138).

12 Our vision for promoting global health ethics begins with the development of a much greater capacity and commitment in bioethics centres regionally and globally networked within growing, supportive and accountable 'North–South' partnerships. The programme recently funded by the Fogarty International Center of the US National Institutes of Health is an example of such a partnership. The impact of strengthened human capital in health ethics could be enormous in promoting equity, freedom, democracy and solidarity within research ethics, priority setting, biotechnology, end-of-life care, and other important policy areas that are the concern of global health ethics. To achieve such ambitious goals will require allocation of more resources to ethics and the development of a global alliance for health ethics in which major global institutions will play a major role (Benatar *et al.* 2003). Developing a global mindset for health could act as a catalyst for achieving a wider concept of global solidarity.

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Achieving improved health and human development in South Africa, and globally, will require more than economic growth. It also requires confronting the current challenging context of global health, basing a response on shared values, particularly solidarity, and adopting transformational approaches in governance, global political economy and capacity strengthening. These directions need an interdisciplinary space to thrive. Global health ethics offers such a space, and the promise that it can help to catalyse crucial improvements in global health. Failure to grasp this vision, and to take effective action, will increase the potential for *'revolt from below'* and destruction of so much that has been gained in recent decades (Benatar *et al.* 2003).

9.3 Teaching health care ethics

How health care ethics should be taught, who should teach, what skills are required, and what should be included in the curriculum are some of many questions with which thoughtful protagonists of this re-invigorated field of activity have grappled (Benatar 1994; Tong 2002; Wear 2002). Experience suggests that effective teaching requires a combination of substantive knowledge of moral philosophy and an understanding of the health care environment. Social scientists, lawyers and anthropologists also play a useful ancillary role in elucidating social, legal and cultural factors that must be taken into consideration. There is some consensus on several issues (Close-up 12.9), a core curriculum has been proposed (consensus statement by teachers of Medical Ethics and Law in UK Medical Schools 1998), and a teaching text based on this recently published (Hope *et al.* 2003). There is no uniformity in teaching ethics to under- and postgraduate health care professionals in South Africa. Some faculties have opted to teach medical students a mixture of theoretical approaches and their application to clinical practice in the classroom, together with practical approaches at the bedside. The inclusion of lectures and seminars on ethics in continuing postgraduate medical education has proliferated in recent years. A recent issue of the *South African Journal of Continuing Medical Education* provides an example of such ongoing educational endeavours (Benatar 2003a). The extension of ethics education to include all health care professionals is a challenge that has not yet been adequately addressed. An important and pervasive problem is the lack of teachers with both substantive knowledge of moral philosophy and skill in teaching applied ethics with credibility in the practical setting of health care delivery.

10. CONCLUSION

The many and varied paradoxes and contrasts that characterise health and human life around the world manifest in South Africa in a unique combination that has focused international attention on this country, both because of its infamous past but, more especially, because of the implications of its success for the rest of the world. However, there is a formidable complexity in striving to achieve the ambitious goals

Close-up 12.9 Teaching medical ethics

- There is a need to teach both theoretical concepts and how to deal practically with everyday issues.
- Exhortation and codes of ethics are insufficient.
- Teaching is best conducted by a multidisciplinary team – with classroom and bedside components.
- An approach to understanding the process of moral reasoning is necessary.
- Learning about ethics does not necessarily produce ethical practitioners.
- However, it is hoped that fostering greater sensitivity to ethical issues and some knowledge of how to think about these in an analytic manner will provide some impetus to improved moral behaviour.
- The content of the curriculum is of less importance than the skill with which teachers interact with students.
- Students learn as much from the example set by their teachers and mentors in the clinic and at the bedside as they do from didactic teaching.

aspired to in the face of the profound legacy of apartheid and in the context of powerful globalising forces.

The evolution of health care is both a crucially important aspect of the transition process and an indicator of whether the political transition can be followed by a successful social revolution. Regrettably the signs currently point in the wrong direction as a result of many adverse forces – the HIV/AIDS pandemic, the enthusiastic application of neo-liberal economic policies, shortcomings in the democratic process, and foolishness of politicians in making pronouncements in a realm of science that is beyond their level of competence.

Using the HIV/AIDS pandemic as a window on South Africa, and as a mirror to reflect our modern world, could promote shifts in thinking that offer insights into the influence of globalising forces on ourselves as individuals and as members of a global society. Prospects of such shifts in thinking generate hope that the release of African people from centuries of subjugation to subhuman status will unleash their suppressed creative spirit and energy to foster an 'African Renaissance' that could contribute to greater harmony between people in Africa.[13] Clearly, in speaking of this concept, loose rhetoric and scepticism must be replaced by the articulation of new, imaginative and credible approaches that allow building with confidence on diverse strengths – a 'conversation' in its infancy that needs nurturing and guidance towards meaningful maturity. Responsible behaviour is also required of those in powerful positions. While the New Partnerships for Africa's Development (NEPAD) offers potentially exciting prospects, its deficiencies, for example inadequate attention both to HIV/AIDS and the devastating effects of policies imposed by the IMF and the World Bank, are already apparent.

It is abundantly clear that prospects for improving human health, globally, will be dependent on our ability to move beyond global economic apartheid (Alexander 1996). If ridding South Africa of racial apartheid and the dehumanising disparities this gave rise to were a global priority, it would require a powerful argument to refute the similar need to narrow grotesque disparities created by global economic apartheid. This is the prerequisite for dealing with HIV/AIDS and for diminishing the potential for the emergence of new and perhaps even more devastating plagues in the future that may blight the lives of all globally.

In addressing the question of how we might live and what global ethics we can develop for the 21st century, many scholars have emphasised the value of thinking holistically about interconnected human lives within a complex global system. This will require promotion of a greater degree of global consciousness among leaders and ordinary citizens (Kane 2001; Singer 2002). Making greater progress towards sustainable improvements in the lives of currently marginalised people calls for rejection of determinism and the opening up of new possibilities by focusing on choice and responsibility. Moral reasoning is essential for this process. The mutuality of politics and ethics will have to be acknowledged in a world in which globalisation has resulted in changing material realities, new referents for justice are appearing, and false oppositions in world politics such as cosmopolitanism versus communitarianism and universalism versus particularism must be rejected (Booth *et al.* 2001).

As difficult as it may be to make paradigm shifts in thinking and action, we should be encouraged by the fact that much has been achieved through the bioethics discourse in reshaping the power balance between doctors and patients. It is rational to believe that even more could be achieved as we begin to consider health and bioethics in a much broader context than in the past. The author suggests that achieving improved health at the population level will be less dependent on new discoveries or on technological advances than on achieving greater social justice through moral progress.

13 Until a few decades ago, Africa as 'the heart of darkness' was popularly considered to be a continent without a history until discovered by Europeans. However, and fortunately, a modern revolution in European understanding of African history has been under way since World War II. It is now becoming apparent that *"medieval Africa supported civilisations and societies, different from but as colourful as those of medieval Europe"*. The adverse imperialistic role of those who, with good intentions, applied many inappropriate development practices has now been unmasked (ME Chamberlain (1999) *The scramble for Africa*). The inhumane role played by those involved in the 'scramble for Africa', who committed horrifying atrocities on vulnerable people in the pursuit of wealth and power, has also been exposed (Hochschild (1998) *King Leopold's ghost*).

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We have the freedom to make choices that could dramatically improve the lives of billions of people – and in the process, all of our lives. Acknowledging interdependence and the need to respect cultural diversity, as well as our stewardship role, add further levels of complexity. This calls for political leadership, the creation and use of moral and social capital, and the development of international strategic alliances utilising varied expertise and multiple spheres of influence.

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Chapter 5

The HIV/AIDS pandemic: a sign of instability in a complex global system

The first world has a great deal to answer for. In this chapter **Solomon Benatar**[1] *argues that for the sake of world stability and common decency, more affluent countries should realign their development aid priorities and help Africans create a better quality of life by responding to poverty, hunger and disease on the continent.*

In the previous chapter, Anton A van Niekerk justifiably focuses on those issues that can and should be addressed in resource-poor countries faced with the devastation of the HIV/AIDS pandemic. He argues that diverting attention away from what can be done in the short-term by addressing longer-term solutions to complex system effects is potentially disempowering. His approach, appropriately, encourages severely afflicted communities to do whatever they can to ameliorate the effects of this plague, and overcome the paralysis that may follow a sense of hopelessness associated with a victim image.

I wish to offer a perspective that complements and extends this approach by acknowledging the need to begin to reverse the disempowering effects of the exploitation, discrimination and imperialism that characterise the current world system (Gilbert 1992, Hosle 1992, Lee & Zwi 1996, Alexander 1996, Katz 2003). Drawing the attention of scholars to the complex deeper issues that must be faced when considering the implications of HIV/AIDS in an unstable world could also be coupled to discrediting, through shaming, those nations that believe that their military and economic strength imbues them with incontestable power. While their confidence may be justified in terms of destructive and coercive military and economic power, they cannot justifiably claim to be morally superior when their interests in continuous economic growth and wasteful lifestyles take precedence over the basic living needs of billions of 'others' (Dower 1991, O'Neill 1992, Aitken & La Follette 1996, Unger 1996, Pogge 2002).

In an era in which the emergence of severe infectious diseases, the development of biological weapons and the potential for subversive use of genetic and information technology may render military might less influential, new concepts of power and security are required to ensure secure lives for all (Falk 1999, 2000, Benatar 2003). The suggestion that HIV/AIDS is one of several signs of instability in a complex world system at a crucial time in history should not be dismissed lightly (Garrett 1995, Benatar 2001). Working for greater global

solidarity holds the key to the future health and security of the majority of the world's people.

Globalisation and the legacy of the 20th century

Globalisation is a popular term used to refer to a complex and ambiguous concept with social and ecological manifestations that reflect a long, interwoven economic and political history in which peoples, economies, cultures and political processes have been subject to international influences. The pace of globalisation has escalated during the past 40 years under the influence of advances in information and transport technology, decreasing barriers and homogenisation of activities, and through the imposition of a set of neo-liberal ideas seemingly closely associated with the propagation of democracy and human rights. However, in reality over-emphasis on the market has somewhat eclipsed considerations of democracy and social justice (Barnet & Cavanagh 1994, Amin 1997, Teeple 2000, Gray 1998, Gill 1990, Falk 1999 & 2000, Ralph 2001, Ellwood 2003).

Negative effects of globalisation include widening economic disparities between rich and poor . . . and increases in both absolute and relative poverty.

Exploitation, a long-standing feature of human life, is thus covert because globalisation is only superficially linked to democracy and human rights. Much has been achieved to promote human rights since the promulgation of the Universal Declaration of Human Rights in 1948, and many agree that there is no plausible alternative to democracy (Dunne 1992). However, it is becoming clear that neither the flourishing of modern democracy – even in developed nations (Ralph 2001) – nor sincere propagation of a coherent human rights agenda are features of a world in which economic globalisation is pervasively imposing a set of ideas and beliefs that favour market transactions above all other values (Falk 2000, Royal Danish Foreign Ministry 2000, Heywood and Altman 2001).

Positive and widely appreciated manifestations of progress associated with globalisation include advances in science and technology; increased life expectancy; enhanced economic growth; greater freedom and prosperity for many; improvements in the speed and cost of communications and transport; and popularisation of the concept of human rights. About 20 percent of the world's population has benefited maximally from such progress. The positive impact of globalising forces in South Africa has been to promote the demise of apartheid.

Negative effects of globalisation include widening economic disparities between rich and poor (within and between nations) and increases in both absolute and relative poverty. At the beginning of the 20th century, the wealthiest 20 percent of the world's population were nine times richer than the poorest 20 percent. This ratio grew slowly to 30 times by 1960, and more rapidly to

60 times by 1990 and to over 74 times by 1997. World debt grew from $0.5 trillion in 1980 to $1.9 trillion in 1994 and $2.2 trillion in 1997.

The 'debt trade' (and the way in which this has been created and its relationship to the arms trade), a major factor in perpetuating and intensifying poverty and ill health (Sivard 1996), has been described as the modern equivalent of slavery (Pettifor 1996). Most countries that were required by the World Bank to pursue structural adjustment programmes are in greater debt than ever before. Third world debt, although accounting for a small proportion of total world debt, has reached obscene levels in relation to income levels in the third world, and is indeed unpayable (Pettifor 1996, Pettifor 2003). These adverse effects are felt most severely by 80 percent of the world's population.

The development of a complex web of material, institutional and ideological forces and powerful massive multinational corporations in a globalising world has profound implications for the accumulation of capital and for the way in which resources are controlled. In 1970, 70 percent of all money that exchanged hands on a daily basis was payment for work, while speculative financial transactions accounted for 30 percent. By 1998, massive growth in speculative exchanges to $1,500 billion daily (Ellwood 2003) had changed these proportions to five percent and 95 percent respectively. Such striking shifts in the distribution of money arguably reflects devaluation of the lives and labour of most people in the world, and have particularly serious implications in Africa where unemployment rates are extraordinarily high.

The influence of a shift in the locus of economic power from the nation state to global corporations alters the balance of power in the world. Boundaries between states, and between foreign and domestic policies become blurred, in the process undermining small states' control over their own economies, and threatening their ability to provide for their citizens. Economic disparities have become so marked and their adverse effects so apparent that a very significant degree of incompatibility has arisen between neo-liberal economic policies and the goals of democracy (Gill 1990, Brecher 2000, Ralph 2001).[2]

In addition to progressive widening of the economic divide between nations, and growing external control over the economies of small countries through the 'debt trade' and markets that are increasingly global, other powerful forces are generating new patterns of inclusion and exclusion. Evidence is accumulating that, associated with globalisation, there has developed a large (but little discussed) illicit global economy comprising an uncontrolled arms trade, money laundering, an illicit drugs trade (now an industry worth over $500 billion annually), massive migration and smuggling of people, trafficking in endangered species, toxic waste dumping, prostitution, sexual exploitation and child labour (Friman & Andreas 1999, Bales 1999).

The latter half of the 20th century has been characterised by more striking changes than ever before (Hobsbawm 1994). The world's population has doubled from three billion to six billion. Economic disparities have widened dramatically with billions of people now living under dehumanising conditions

of poverty and squalor. New patterns of war and ethnic conflict have resulted in displacement and migration of millions of people. Changing spatial dimensions of human relations resulting from war, migration, travel and new forms of communication have radically disrupted the social lives of many. Widespread ecological damage is resulting from escalating consumption of the earth's resources far out of proportion to population growth (McMichael 1993).

It is against this background of rapid and profound change, contributing to the creation of new ecological niches and to the adaptive evolution of microbes with resistance to many antimicrobial drugs, that dozens of new infectious diseases have emerged since 1973 to afflict humankind. These include Legionnaires' disease, Lyme disease, various forms of encephalitis, bovine spongiform encephalopathy, Hantaan virus disease, Ebola fever and other haemorrhagic diseases, new forms of E. coli and Vibrio cholerae, HIV/AIDS and most recently SARS. In addition, many other infectious diseases that had become localised, limited or controlled have broken out again with serious adverse implications for all. Examples are tuberculosis, malaria and measles (Garrett 1995, World Health Organisation 1996).

Contemplating the third world

Rather than taking the 'third world' for granted and ignoring its plight, Vitorio Hosle, a German philosopher, has examined the concept of the 'third world' through its historical origins, and its presumed hierarchical relation to, and aim towards, approximating the 'first world'. He criticises the failure to examine the increasing gaps between it and the first world, and argues that unless we address elementary ideas of justice in relation to the third world, the ecological crisis and the accumulation of weapons of mass destruction, all other questions regarding our moral behaviour will become obsolete. In writing eloquently about 'the third world as a philosophical problem', he has explicated how appalling conditions of life in many countries are intimately linked to powerful historical forces and to ongoing discriminatory attitudes, and he has made a cogent case for efforts to ameliorate third world problems (Hosle 1992).

Hosle's ideas are enhanced by Anthony Richmond's description of the pervasive effects of racism (Richmond 1994); Titus Alexander's analysis of how similar forces to those that have marginalised and oppressed blacks under apartheid South Africa are operative at a global level, revealing the pervasive discrimination against vast numbers of people, most especially those of colour (Alexander 1996); and Thomas Pogge's moral analysis of world poverty and human rights (Pogge 2002).

Sub-Saharan Africa (home to about ten percent of the world's population) has been most severely affected by the temporal relationship of the above-mentioned powerful social forces to its economic and political development (Davidson 1992, Ungar 1992, Michaels 1992/3, Logie & Benatar 1997, Sandbrook

2000, Lancaster 1999, Schwab 2001). It is also the poorest area (consuming less than one percent of the world's economy), and the most severely affected by the HIV/AIDS pandemic (bearing over 70 percent of the global burden of HIV/AIDS). The desperate condition of Africa, a continent desired, exploited and eventually discarded, has been reviewed (in the medical literature) from differing but complementary perspectives (Elmore-Meegan & O'Riordan 1993, Benatar 1994). HIV/AIDS has refocused attention on Africa but action has been limited (Stillwagon 2001).

The tragedy of Africa has been aggravated in recent decades by its elimination from the foreign policy agendas of powerful countries.

Africa has long been central to the aspirations of industrialised nations. Initially presenting a challenge to circumnavigation, it became a sub-continent inviting exploration and adventure resulting in a clash of civilisations, colonisation, brutal enslavement of its people and relentless extraction of its rich resources. After initiation of the process of independence in Africa in the 1960s, powerful nations pursuing their ongoing interests colluded with selfish African leaders who were co-opted into neo-liberal economic policies and corrupt practices. Economic slavery propagated through covert and sophisticated guises replaced physical slavery and colonial oppression, and will in due course be recognised as such (Pettifor 1996).

The tragedy of Africa has been aggravated in recent decades by its elimination from the foreign policy agendas of powerful countries, passivity towards genocide, and tardy and inadequate responses to HIV and AIDS. The withdrawal of industrialised nations from even attempting to deal with the dire condition of the African continent is reflected in the writings of political scientists. 'The crisis is so diffuse and of such magnitude that the United States and the world at large shrink from engaging with it ... In fact, history mocks the very idea of an international coalition to save Africa' (Michaels 1992/3). Economic analysts noted that after the Cold War ended, Africa lost whatever political lustre it might once have had. The Association of Concerned Africa Scholars continues to work towards restoring Africa to an appropriate status within US foreign affairs (ACAS 2000).

The recently announced World Health Organisation's programme to provide antiretroviral treatment for three million people by 2005 (WHO 2004), together with President Bush's emergency plan for AIDS relief (PEPFAR) and other philanthropic endeavours, offer a glimmer of hope that required action will be taken.

Africans must clearly take some responsibility for the state of their continent since post-colonial independence. Poor governance, corruption, internal exploitation, nepotism, tribalism, authoritarianism, military rule and overpopulation through patriarchal attitudes and disempowerment of women have all contributed to its sad state. However, to be fair, these shortcomings must be seen in the context of powerful external disruptive forces acting over several centuries to impede progress in Africa (Davidson 1992, Unger 1992, Lancaster 1999,

Sandbrook 2000, Schwab 2001). The call for more responsible government and other activities embraced within the New Economic Plan for African Development (NEPAD 2001) offers additional hope that the depredations of African government to date could be reversed.

The role of the World Bank, the IMF and the G8 countries in global health

Over the last 20 years, the World Bank and the IMF have held the balance of power in formulating global health policy (Pauly 1997). They have encouraged liberalisation of economies, cut subsidies from basic foods and shifted agricultural policy to promote exporting crops to the detriment of home-grown food production, all of which has resulted in devastating malnutrition and starvation that have caused billions to suffer, especially in Africa (Lurie, Hintzen and Lowe 1995, Amin 1997, UNDP 1999, Lancaster 1999, Wade 2001).

It is an indictment of the IMF and World Bank's structural adjustment programmes that they required governments to reduce expenditure on health care, education and other social services and encouraged privatisation, even within health care (Ellwood 2003). Availability of condoms, STD treatments, anti-tuberculosis therapy and treatments for co-infections of HIV are subject to user-charges introduced and still encouraged by the World Bank in many African countries. The whole Public Health Agenda (information surveillance, epidemiology, research and behavioural surveillance) has thus been radically curtailed. Structural adjustment programmes, debt repayments, cuts in foreign aid budgets (especially by the US), discrimination against African trade, increasing malnutrition and the cold-war activities of the great powers have all played a significant part in fanning the AIDS pandemic. Illness and death from AIDS in families result in loss of breadwinners, substantial funeral and mourning costs and the removal of children from school to increase household income (Abbasi 1999, Nandy, Scott, Logie & Benatar 2000). In recent years, hope has diminished that an enlightened approach by the G8 countries (that dominate decision-making at the IMF and World Bank) would facilitate recovery from debt and poverty (Labonte et al. 2004).

Regrettably even the World Health Organisation, which promotes public health, has not adequately acknowledged or discussed these adverse forces (Navarro 2004). The somewhat naïve surprise that, despite considerable global attention to HIV/AIDS, so little has been achieved in slowing the pace of the pandemic in sub-Saharan Africa, reflects denial and neglect of the effects of profound social forces and human behaviour on the environment and how these have contributed to the emergence and spread of new plagues. Failure to recognise the pervasive social, economic, behavioural and political aspects of HIV/AIDS, both in terms of its origins and its control, is self-defeating. The complexity of the scientific endeavour required to understand the pathobiology

of the disease, and to develop appropriate treatment and vaccines, is more than matched by the complexity of understanding and dealing with the social underpinnings of HIV/AIDS and other plagues locally and globally (Garrett 1995, Lee & Zwi 1996, McNeill 1998, Benatar 2001).

HIV/AIDS cannot be dealt with adequately unless efforts are made to ameliorate these underlying conditions progressively. Recognition of the adverse effects of overt racial apartheid in South Africa, while failing to recognise the adverse effects of covert economic apartheid at a global level, regrettably reflects a form of 'selective moral blindness'. Moreover, it is not necessary to go beyond considerations of the rational long-term interest of the world's privileged people to appreciate this (Hosle 1992).

It is also predictable that unless the conditions that promote the emergence of new infectious diseases are addressed, other new diseases will in all probability emerge in the future with potentially devastating effects worldwide (Garrett 1995, Benatar 2001). Appreciation of this prospect has led former US President Bill Clinton to declare HIV/AIDS a security threat to the industrialised world. In 1999, the Commonwealth Heads of Government Meeting declared HIV/AIDS a global emergency. The importance of this insight lies in understanding that more is needed than the mere development of 'drugs as weapons' to combat the pandemic. Acknowledgement of and attention to both the immediate and ultimate causes of plagues are essential (Garrett 1995, McNeil 1998, Katz 2002).

An expanded concept of bioethics and its relevance to HIV/AIDS

Most of the debate about medical ethics generally, and about HIV/AIDS specifically, has focused on ethical issues at the *micro level* of the doctor/patient relationship – most especially confidentiality, informed decision-making, individual human rights and the harm/benefit balances for individuals involved in clinical research. At this level, basic human needs can be identified as respect for human dignity, and self-determination of individuals conceived of as rational and autonomous. In this context, the physician is viewed as committed to the care of each individual patient within various models of the doctor/patient relationship embracing the concepts of contract, respect for autonomy, covenant and trust in beneficence.

At the *meso level* of ethical considerations, human needs extend towards such considerations as order and justice within the communities in which individuals are socially embedded and 'constructed' (Doyal & Gough 1991, Taylor 1992). The responsibility of physicians here is viewed more broadly and includes concern for equitable access to health care, public health and the common good. Considerations of justice, the 'social contract' and utilitarian considerations necessarily impact on the physician/patient relationship. Morality here requires an institutional component embracing attention to public health and the management of resources. Interpersonal relationships are broadened to encompass

the concept of civic citizenship with primary responsibilities complementing the primary rights of individuals and the correlative duties of others in order to achieve rights in practice.

Lack of attention to civic responsibilities allows individuals and powerful groups to place their own needs above those of all others.

The justified focus on ethical issues at the micro level that have profound implications for individuals, and especially those at risk of stigmatisation, has somewhat eclipsed ethical issues that need to be addressed in dealing with threats to public health. However, the era of genetic medicine and lessons learnt from the HIV pandemic are prompting recognition that some information about individuals cannot belong exclusively to individuals. The web of relationships and responsibility extends to family members for whom knowledge of familial genetics or transmissible disease may be crucial to their future well-being. It is also becoming apparent that research on HIV/AIDS requires consideration of the ethics of relationships between communities, trial sponsors, industry, ministries of health and between the private and public sectors in the process of protecting and promoting public and population health.

Such considerations raise the perennial problem of how to strike a balance between the rights and needs of individuals and the common good of societies. While the focus on individual rights is vital and necessary for the well-being of individual persons and has a high social utility value, such focus is not sufficient for the achievement of improved public health. Scholarly debates on public health ethics are inadequately developed and require greater attention (Beauchamp 1999, Buchanan 2001). Eloquent arguments have been offered in favour of a language of public health that 'speaks to the reciprocity and interdependence which characterise community' (Robertson 1998).

There is also a need to go beyond advocacy for rights to include consideration of the duties necessary for rights to be widely satisfied. Lack of attention to civic responsibilities allows individuals and powerful groups to place their own needs above those of all others – and thwarts the achievement of such goals as universal access to health care (Benatar 1996), and curbing the spread of infectious diseases.

Achieving an improved balance between the needs and rights of individuals and the requirements for advancing public health will require a shift in mindset away from exclusive and often selfish individualism towards respect for individuality that is combined with a strong sense of community and civic citizenship. Essential steps will include:

acknowledging the need for a new balance (Jennings 1987, Margalit 1998);
involvement of the community to be researched in the design and acceptance of such public health endeavours as vaccine trials (reducing stigmatisation and promoting admiration of those who are willing to participate);

dealing with conflicts of interest between communities and trial sponsors; and

seeking longer-term economic and social justice when balancing the harms and benefits of vaccine research.

Clearly public debate and education needs to proceed simultaneously with processes that ensure accountability and protection of individuals (Benatar 2000). Recent articles on public health ethics (Thompson 2003), new approaches to public health (Beaglehole et al. 2004) and responses to the crisis of global human resources for health (Narasimhan 2004), illustrate imaginative ways of thinking required to deal with public and population health issues.

In the same way that embarking on vaccine research in developing countries will require going beyond micro-ethical considerations to include the meso level of ethics mentioned above, so dealing with global pandemics requires ethical considerations at the *macro level* – that is, at the level of the global economy and of the relationships between nations that have profound effects on human health and well-being (O'Neill 1992, Benatar 2003).

The importance of physical and moral interdependence is so great that self-interest alone should be sufficient to drive policies toward sustainable development.

At the macro level, human need extends to encompass security and a safe environment. The desired conception of the individual becomes that of an autonomous person sharing equal rights with all other citizens in the world, in a relationship of interdependence in which the rights of some should not be acquired at the expense of the rights of even distant others. The level of complexity here is much greater because of the ways in which the foreign policies of some countries may covertly enhance the lives of their own citizens through exploitation of unseen persons elsewhere. The role of physicians, scientists and all health care professionals needs to be broadened further to include commitment to global professional ideals, to the continuing advancement of knowledge and to concern for the health of populations globally, as well as the health of future generations (Rotblat 1997, Alberts 2000). The moral perspective is thus extended from 'interpersonal morality to civic morality and to an ethics of international relations that has dimensions intimately linked to political, military, cultural and economic issues (O'Neill 1992, Elfstrom 1997, 1998, Benatar 1998, Paul & Hall 1999, Dunne and Wheeler 1999, Pogge 2002).

Why should we bother to go beyond the micro level of ethics? Modern communication, transport, methods of money exchange, the creation of nuclear and other weapons of mass destruction and the emergence of new infectious diseases have shrunk distances and differences in many senses, and created common global risks. In this context, and with a deeper understanding of the impact of historical forces on shaping the wealth and health of nations, we need to appreciate how we are all implicated in the lives of others, and that it is increasingly impossible to hide with credibility behind the barrier of physical distance

while billions of people live impoverished lives. Altruism and reparations aside, the importance of physical and moral interdependence is so great that self-interest alone should be sufficient to drive policies toward sustainable development (Hosle 1992). Unless such progress is made, the prospects for dealing adequately with the HIV/AIDS pandemic and indeed for our humanity seem bleak. Recent progress towards provision of antiretroviral treatment to millions of people offers much hope for improving global health (Institute of Medicine 2004).

Conclusions

New infectious diseases such as HIV/AIDS, the recurrence of tuberculosis and malaria in multi-resistant forms, ecological degradation, escalating ethnic conflict and persistent poverty and hunger in the midst of plenty are all signs of an increasingly unstable world at the end of a period of major progress (Hobsbawm 1994, Amin 1997, Falk 1999, 2000, Wallerstein 2000). At this time in history when the dark side of progress is becoming so obvious, old ways of linear thinking about progress, in particular when this is defined only in economic terms, are becoming obsolete. It is unlikely that relying solely on advances in scientific knowledge, free-market forces, simplistic notions of human rights and interpersonal ethics will provide sufficient solutions to problems within an unstable complex system (Homer-Dixon 2000).

Imaginative and creative new practical approaches, associated with the wise application of scientific and social knowledge using systems theory and supported by a broader ethics framework, are required to ameliorate the adverse effects of rampant market forces (Elfstrom 1997, Rist 1997, Paul & Hall 1999, Dunne and Wheeler 1999, Falk 2000). In a complex interdependent world, averting the potential for setting back the clock of progress by ensuring better quality of life for all is the 21st century's challenge to human society (Wallerstein 1999).

Endnotes

[1] Benatar S R. (2002). The HIV/AIDS pandemic: A sign of instability in a complex global system. *Journal of Medicine and Philosophy*. 27: 163–177.

[2] Several mechanisms are operative: the influence of transnational corporations on the power of governments of small/weak nations to pursue development, full employment or other national goals; lack of corporate accountability at the national level; trade agreements such as North America Free Trade Agreement and the World Trade Organisation; and the restrictive power of international financial institutions such as the World Bank and International Monetary Fund over national, state and local governments' control over their economies; and the complicity of these organisations in the denial of human rights.

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University of Cape Town

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Guest editorial

Imperialism, research ethics and global health

Solomon R Benatar *University of Cape Town and Groote Schuur Hospital, Observatory, South Africa*

The ongoing debate on the ethics of studies involving rich and poor countries[1–4] is to be welcomed, for several overlapping reasons: first, to develop a deeper understanding of the complexity of the issues under consideration; second to examine more broadly the concept of imperialism in this context, and third, to seek to improve global health through processes that go beyond simplistic band-aid or self-serving approaches.

It is widely recognised (although perhaps less openly acknowledged than is desirable) that research, even under the best of circumstances, is potentially exploitative.[5] Because "powerful researchers" (individuals and corporations) usually have more to gain than any single research participant, much effort over recent decades has gone into designing protection for research subjects. That most of this protection lies at the level of requirements for the design and review of research protocols and very little at the level of what actually happens in the conduct of research reflects some or all of the following: (i) acceptance that researchers will do what they say they will do; (ii) a willingness to believe that informed consent in practice meets up to its moral rather than its legal requirements, or to ignore that it does not; (iii) confidence that conflicts of interest can be eliminated, and (iv) that the desire to achieve protection may have a lower priority than the pursuit of knowledge. These shortcomings of the protection process allow potentially exploitative research to continue even within perfectly designed and ethically approved studies. Seen against this background Angell's powerfully expressed concern for preventing exploitation is admirable.[2]

However, her critique of the HIV transmission studies under question is diminished in at least two ways, first by stating that the Declaration of Helsinki "*requires* [my italics] control groups to receive the 'best' current treatment...". The precise wording of the declaration is: "The potential benefits, hazards and discomfort of a new method should be *weighed* against the advantages of the best proven diagnostic and therapeutic method," and: "In any medical study, every patient - including those of a control group, if any - should be assured of the *best proven* diagnostic and therapeutic method" [my italics]. For the studies referred to, the requirement to weigh benefits and hazards demands that attention be given to whether the AZT regimen was necessarily the *best proven method* for a population of women and infants differing from those studied in France and the US, and living in a context where, for economic and logistic reasons the goals of treatment may have to be less ambitious. In particular it is necessary to question whether preventing breast feeding as part of the research protocol is justifiable in Africa, given the direct risks for infants in such an environment and the indirect risks from the possibility of an early next pregnancy. It seems somewhat imperialistic to presume that a *drug regimen* shown to be of value in some of the wealthiest countries in the world is necessarily the *best proven regimen* for some of the poorest. While it may be, it may also not be. Reasons provided for designing studies to produce most efficiently results more directly relevant to the local situation[4] indicate that a greater degree of complexity in planning and executing such research is required than is acknowledged by Angell.

Second, by drawing an analogy with the Tuskegee experiments, Angell minimises the deception, maleficence, paternalism, lack of accountability, racism, and crass exploitation demonstrated by the researchers and those colleagues who knew, but remained silent, about the study. Lurie and Wolfe also draw some implausible analogies.[1] The syphilis experiment in the US, following in the wake of the Nuremberg trials and promulgation of the Nuremberg Code, surely cannot be trivialised by comparing it with a study that had been discussed, reviewed and accepted by national and international groups (which included thoughtful bioethicists) or with attempts to diminish exploitation by involving in-country health workers in the design of studies. While these procedures may not totally eliminate exploitation, they are nevertheless

aspects that have been underplayed by Angell. Ethical dilemmas, by their very nature, are often not amenable to solutions which can be shown to be unequivocally substantively correct, hence the importance of appropriate and accountable procedural mechanisms for making ethical decisions. The Tuskegee study did not remotely approach the level of ethical awareness or procedural probity associated with the HIV transmission studies.

It is also necessary to be critical of simple assertions about what is ethical, especially when these are inconsistent with the actions of the protagonist. For example a recent *Lancet* editorial took a strong and somewhat dogmatic stand against the placebo-controlled HIV transmission studies,[6] having two weeks previously published a randomised placebo control trial on elderly patients with isolated systolic hypertension[7] - despite the fact that by 1991 it had been established that the standard treatment for such patients was diuretics.[8] Such inconsistency undermines credibility.

However, much more important issues are at stake. A recent publication from the Institute of Medicine stated that: "America has a *vital* and *direct* stake in the health of people *around the globe*, and this interest derives from both America's long and enduring tradition of humanitarian concern and compelling reasons of enlightened self-interest" [my italics].[9] The balance of these concerns is reflected in the priorities given to expenditure in the US: 15% of Gross National Product (GNP) on health care in the US ($3,500 per American per year), 4% of GNP on the military (more than any other nation) and 0.1% of GNP on foreign assistance (less than all OECD countries - of which Denmark is the largest donor at 0.97% of GNP and Italy the second smallest at 0.14% of GNP). In a poll conducted in January 1995 by the Program on International Policy Attitudes at Maryland University, the median level of proposed foreign aid by those polled was 15 times greater than the amount actually spent.[9] This reveals the gap between concern expressed for the wellbeing of distant others and its translation into practice. The clear need for new approaches to foreign aid and global health is emphasised by the fact that 50% of the world's population live on less than $350 per person per year, for reasons not insignificantly related to the exploitative economic and political policies of powerful nations.[10,11]

Seen in this context Angell's concern about exploitation is thus of great importance. It draws attention to the need for concern about exploitation in medical research to be seen in the context of the exploitative milieu in which modern medicine is practised.[5] Careful examination of the powerful economic and political forces which increasingly polarise people into poor and rich, within and between nations, reveals (i) the extent to which privileged people worldwide take their standard of life and their desire for continuous economic growth for granted (regardless of the cost to others) and (ii) how they are unwittingly co-opted into exploitative and often imperialistic processes.[12,13] While such imperialism differs markedly from imperialism in the age of empire it retains a supremacist component.[11] In a globalising world understanding these issues is crucial to addressing the concept of national and global health - regardless of location or wealth. Because much of the record of aid to poor countries is tainted by exploitation, as powerfully illustrated by Hancock and others,[14] Angell is lauded for expressing great concern for patients in distant and poor countries, and for striving to prevent even benevolent aid efforts in medical research from becoming thinly disguised forms of exploitation. Her concern, if redirected into broader efforts to reshape public opinion and political will in rich nations, could have profoundly beneficial effects on global health.

Solomon R Benatar MB, ChB, FFA (SA), FRCP is Professor of Medicine and Head of The Department of Medicine and The Centre for Bioethics, University of Cape Town and Groote Schuur Hospital, Observatory, Cape, South Africa.

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Perspectives

Avoiding Exploitation in Clinical Research

SOLOMON R. BENATAR

Clinical research has become a burgeoning activity in recent years, largely stimulated by the pharmaceutical industry's interest in new drugs with high marketing profiles. Several other forces fuel this thrust: the increasing dependence of academic medical institutions on research funding from industry; the need for large, efficient multicenter trials to obtain reliable and statistically significant results in the shortest possible time for drug registration purposes; and access to research subjects in "developing" countries. The intense interest in HIV/AIDS research and recent controversies about revisions to the Helsinki Declaration, which have been seen by some to be motivated by the desire to facilitate exploitative research in "developing" countries, have stimulated renewed interest in the ethics of clinical research.[1]

It is against this background that avoidance of conflicts of interest and avoidance of exploitation in clinical research have become critically important issues. Although much attention has been directed at conflicts of interest,[2] the problem of exploitation needs more specific attention. It is my contention that understanding and avoiding exploitation will be contingent on: (i) greater awareness of, and knowledge about, the economics and sociology of drug development and the clinical research endeavor; (ii) more open acknowledgment that research may be, and often is, associated with exploitation at many levels; (iii) the will to act on this knowledge; and (iv) the development of policies and practices that could promote healthy lives globally through the achievement of greater social justice.

Although the diseases popularly researched afflict people all over the world, and multicenter trials are thus the vogue, drug research is predominantly directed at the needs of the most affluent quintile of the world's population. Over 90% of annual global expenditure on health research and development ($56 billion) is directed toward disorders responsible for only 10% of the global burden of disease.[3]

Drugs account for a significant and growing proportion of health expenditure in all countries, ranging from 6.9% in the United Kingdom to 10.5% in Germany, and up to 14% in the United States.[4] Expenditure on drugs is the fastest growing component of health expenditure in the U.S. market-dominated practice of medicine.[5] The U.S. drug market accounts for 40% of the industry's sales and 60% of its profits.[6] The size and distribution of the major pharmaceutical houses provide insights into the power structure of the drug industry. Nine U.S. pharmaceutical houses dominate in the top division by market capitalization, with market values ranging from $198 to $539.3 billion. Three companies based in Europe feature in the first division

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and have market values of between $123 and $115 billion. Companies in Europe dominate the second division with market values of just over $30 billion each. It has been estimated that by 2002 only three of the world's 25 top-selling drugs will be made in Europe, whereas U.S. companies will account for 20.[7] In 1992 approximately 44% of global expenditure on health research and development was provided by the pharmaceutical industry.[8]

Without detracting from the major benefits that have flowed from intensive drug development activities, or from some of the recent renewed attention to tropical diseases, it is necessary to point out that

> the multinational pharmaceutical industry operates like any other industry. It makes investment decisions to maximize the present value of future returns from the money invested. As such, it responds to economic demands rather than to statements on social or human needs.[9]

It is also necessary to reflect on criticisms of the role of the pharmaceutical industry in world health and in particular its business in the "third world,"[10] where up to 50% of people do not have access to even the most basic drugs. The lack of pharmaceutical interest in diseases such as malaria and tuberculosis as well as other diseases that cause considerable mortality and morbidity is a reflection of the attitudes expressed in the regrettable statement that two-thirds of the world's population are "superfluous from the perspective of the market. By and large we do not need what they have; they can't buy what we sell."[11]

In industrialized countries, where the "medical industrial complex" is increasingly a reality, the major interest in large profitable markets for drugs has led to the proliferation of research on "me too" drugs (with only marginal potential advantages) that may allow market niches to be captured. There is also a drive to develop "lifestyle drugs" for improving the quality of life and alleviating the symptoms of old age. The desire to make vast sums of money from medicinal drugs can be viewed as a modern version of the gold rush. Why make drugs for sick people who cannot afford them when one can make drugs for people with resources who seek marginal improvements or those who are well and will pay for the possibility of a healthier old age? Proliferation of clinical research, much of it promotional and of dubious scientific value, follows.

Most large clinical studies are multicenter endeavors involving thousands of research subjects. Recruitment of subjects into clinical research studies has become a competitive and lucrative business for investigators and there is considerable potential for exploitation—of both investigators and research subjects. As all protocols require ethical evaluation, the spurt of drug development has resulted in rapid expansion in the number of research ethics committees, many in the private sector. The growing volume of work and pressure to provide rapid reviews, by committees whose members may have had little or no training in research ethics, results in the relatively easy passage of protocols through ethics committees. Remuneration for research subjects and for ethics committee members is also becoming more widespread, indicating the extent to which clinical research is becoming commodified.[12] A recently identified and troubling problem is that some committees may not be aware of the need for data monitoring and safety committees, as illustrated by the British Biotech affair.[13] The fact that there is minimal subsequent audit to evaluate the ethics of conduct of research (as distinct from evaluating the ethical intentions expressed in the protocols)

aggravates the potential for exploitation even in well-resourced countries

The Virodene affair in South Africa (in which researchers proceeded with their project despite denial of approval by an ethics committee)[14] and the recent exposure of unethical oncology research at the Witswatersrand University in South Africa (the protocol not having even been submitted to an ethics committee)[15] reveal the even greater potential for exploitative research in less well resourced societies. As has been pointed out in several reports, research partnerships and practices in "North/South" collaborative research can have many insidious, subversive ill effects, particularly for the developing country partner.[16]

The need to protect particular communities on whom research is undertaken poses yet more complex problems.[17] Although workable guidelines have been developed for protecting aboriginal communities, greater difficulties are encountered in extending these guidelines to less clearly definable groups.[18] Such considerations are becoming increasingly important in collaborative international research.

It is patently clear that the drive for clinical research is deeply linked to market forces. In a globalizing world, the sweatshops of developing countries are not only used to manufacture commodities such as shoes and clothes but also to test new drugs. In 1990 it was suggested that there were almost 600 HIV/AIDS-related studies being conducted in Africa.[19] There must be many more today. It should also be clear from the range of drugs being tested that it is the potential market for drugs rather than the extent to which they could be used to reduce human suffering that is the main goal.

These research problems are compounded at the level of practice where the interaction between the medical profession and the pharmaceutical industry has long been a contentious issue. In the United States, more than $11 billion is spent each year by pharmaceutical companies in promoting and marketing drugs (between $8,000 and $13,000 on each physician)—a process that has been shown to affect prescribing and professional behavior.[20] Furthermore, 89% of annual global expenditure on health is on the 16% of the world's population that bears 7% of the global burden of disease.[21]

Avoidance of exploitation in clinical research is a major challenge in a globalizing world in which disparities in wealth, health, and disease have reached grotesque proportions. The challenges for healthcare professionals concerned about health at a global level are greater than ever before. The recent Fogarty International Global Forum on Bioethics in Research reflects an understanding of the depth of the problem and the need to address this as a global collaborative endeavor. The complexity of the problem requires the development of international strategic alliances between people from diverse groups, a wide range of varied expertise and multiple spheres of influence, in public and private sectors across the globe.

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A new look at international research ethics

Solomon R Benatar, Peter A Singer

Editorial by Lansang

Department of Medicine and Bioethics Centre, University of Cape Town, Observatory 7925, Cape, South Africa
Solomon R Benatar
visiting professor

Joint Centre for Bioethics, University of Toronto, Ontario, Canada M5G L4
Peter A Singer
Sun Life chair and director

Correspondence to: solly.benatar@utoronto.ca

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The normal "standard of care" against which new interventions are tested in medical research has not been formally defined. It is usually taken to mean the "best proved treatment" for any condition under investigation in a trial. We reject the arbitrariness of this notion of the standard of care and offer a more comprehensive alternative. Use of this new standard invokes a new approach to international research ethics that focuses on reducing inequalities in global health.

The debate on what constitutes a fair and reasonable standard of care for subjects in developing countries who participate in clinical trials has been rekindled by critics of studies on the transmission of HIV.[1–3] They argued that placebo controlled trials of new regimens to prevent the vertical transmission of HIV were unethical because they included a placebo arm rather than "the best proven treatment" available in developed countries. Some commentators considered the criticisms to be unfounded[1–6] and associated with imperialistic attitudes.[7]

The debate made it clear that the high standards of research aspired to have not been adequately defined. It was also marred by simplistic notions of ethics. Although there was justified concern that pressure from the US Food and Drug Administration could "dilute" the Declaration of Helsinki, critics also presumed that whether a trial was ethical could simply be deduced from the text of a declaration. But declarations—such as the Declaration of Helsinki, governing international research ethics—are like constitutions, needing interpretation. Determining what is ethical goes beyond merely following prescriptions and requires moral reasoning: consideration of all relevant aspects of the case in its context, weighing and balancing competing moral requirements, and developing justifiable conclusions.

Although more mature insight is gradually emerging into the complexity associated with the ethics of research in developing countries, the debate remains incomplete for several reasons.[8–12] Firstly, there has been a failure to define adequately the "standard of care." Secondly, it has been incorrectly assumed that the standard set by developed countries can be considered the norm. Thirdly, few commentators on research ethics have taken into consideration the injustice of 90% of all medical research being undertaken on those diseases that cause 10% of the global burden of disease.[13]

Box 1: Expanded concept for standard of care

- Provision of the same access to research, expenditure on the total care of each subject, and therapeutic drugs shown to be most effective in other locations
- Provision of the same "hotel" facilities, access to technology, general medical care, and other external influencing factors during the trial that were associated with and contributed to the "best proven" use of the drugs elsewhere
- Provision of the same follow up facilities for subjects after completion of the study and the same access to ongoing care
- Research undertaken by a team of the same culture and language group as the subjects, so that the same degree of effective communication, trust, and genuine informed consent is achieved through a legitimate informed decision making process
- Care provided by a research team with equivalent qualifications, training, and expertise

Summary points

- The standard of care for subjects participating in clinical trials is not well defined
- Excessive reliance has been placed on international declarations to define what is ethical, but declarations, like constitutions, need to be interpreted
- International researchers must develop a deeper understanding of the context within which their research is being conducted
- An expanded concept for standard of care is offered that takes account of the context of the trial and is sensitive to the social, economic, and political milieu
- National and international bodies concerned with research ethics need to confront the greatest ethical challenge—the enormous inequities in global health

How do we define "standard of care" for research subjects?

Equal standards of medical care during research, reflecting equal respect for the dignity of subjects, could be taken to mean any one or a combination of several requirements (box 1). It is arbitrary and not justifiable to select only one of these - for example, which drugs are used - to compare the standard of care in developed and developing countries.

In the context of the disputed studies on HIV transmission, the vehement emphasis on the "best proven drugs" eclipsed considerations of whether the drug regimen could be safely applied in different settings. Little attention was paid to the fact that there were many differences between pregnant women in developing countries and those in countries where the "best proven" treatment had been established. Pregnant women in developing countries present to antenatal clinics much later in pregnancy than the women in the original studies; they are often anaemic and malnourished, and they live within a context in which breast feeding has different implications for newborn infants. Moreover, advice not to breast feed would contradict years of intensive education by the World Health Organization.

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Concerning the use of placebos, the approach has also been simplistic. Whether a placebo arm is justified in a trial requires careful consideration of potential harms and benefits in specific contexts and cannot be simply deduced from a general declaration.[7] Of course it is necessary to acknowledge that many placebo trials are unethical because they are undertaken largely for marketing purposes—to show that "me too" drugs have actions greater than placebo, rather than to study whether they are better than existing similar, and often cheaper, drugs. Not only should nothing be done to make it easier to do such trials, but also every effort should be made to reduce wasting time and money on "promotional studies." In those situations where there are good reasons for placebo controlled trials, these should be considered on their merits rather than be precluded by a bluntly designed exclusive clause in a declaration.

Considerations of context are required aspects of moral reasoning in the application of universal principles in specific situations and do not entail moral relativism. Failure to distinguish moral relativism from the morally relevant considerations of context that are necessary for the specification of universal principles shows a lack of knowledge of the ethical decision making process.[1]

Is the blanket application of a universal standard of care achievable?

The standard of care may not be achieved in practice, even in developed countries.[15-20] In recent months medical research in several US universities has been closed down when several ethical shortcomings associated with a trial were uncovered after the death of a young man with a rare metabolic disorder who agreed to participate in a trial of gene therapy.[21]

It may be even more difficult to achieve the standard of care in practice in developing countries. It would not be possible to meet all the elements shown in box 1 in any developing country. Moreover, the whole "package" may be either irrelevant to the needs of research subjects in their context or not necessarily the best way to spend the resources in the interests of their society.

The United States's standard of care should not be emulated throughout the world. The United States spends 50% of annual global expenditure on health care on 5% of the world's population.[22] This level of expenditure is not sustainable as a universal model. Another aspect of the United States's standard of care that should not be emulated is "defensive medicine" to protect against litigation.

An alternative concept of standard of care

A standard of care that could be achieved globally despite economic inequalities and that may assist in reducing such inequalities requires a redefinition of the standard of care (elements of which are shown in box 2) and recognition of some of the special problems associated with clinical trials in developing countries.[23-25]


PANOS PICTURES


THE STOCK MARKET

Narrowing global inequity is the greatest ethical challenge in health research and health care

Making moral progress in international health research

It will not be possible to achieve the proposed new standard merely by tampering with research declarations or by advancing the simplistic notion that ethical behaviour can be deduced from or promoted by such declarations. A broader moral agenda is required. To achieve this it is important to recognise the potentially exploitative nature of research in developed and developing countries and to have insight into the economic policies that are currently widening the disparities in human wellbeing through their impact on development, the health of populations, and the provision of health care for individual patients.[13 26 27]

Both to diminish the exploitation of subjects living under inhumane conditions and to respect the dignity of subjects, greater emphasis will need to be placed on certain processes (box 3). The highest achievable standard of care (see box 2) should be the goal. Reasonable limits can be negotiated in specific contexts. The objective should be to ratchet the standard upward rather than to set utopian ideas that cannot be met.

Towards a new research ethics

Traditional research ethics is rooted in responses to abuses of research, such as the Nazi atrocities that

Box 2: Elements for consideration in redefining "standard of care"

- Respect for the dignity of all subjects
- Doing what is in the best interests of the subjects—that is, researching those diseases that commonly afflict them
- Aiming for a distribution of risks and benefits that takes into consideration the potential magnitude of benefit to sponsors (to ensure that "research sweat shops" do not become the norm in a globalising world)
- Obtaining meaningful informed consent in the subjects' home tongue and with an understanding of their world view or value system
- Only undertaking research that will be of benefit to the community being researched
- Translating research findings into components of accessible care in the community being researched
- Avoiding conflicts of interest and exploitation

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Box 3: Requirements for making moral progress in international health research

- Educating researchers and members of research ethics committees about research ethics
- Ensuring that international researchers understand and are sensitive to the social, economic, and political milieu that frames the context in which their research is taking place
- Involving members of the host country in the design and conduct of the trial
- Ensuring that trials are of direct relevance to the health needs of the host country and that the balance of benefits and burdens of the project are fairly distributed
- Conducting prior evaluation by a local committee or governing body of whether the study findings can, and will, be incorporated into the local healthcare system
- Providing subjects with care or treatment they would not ordinarily get in the country where the trial is carried out
- Ensuring existing disparities are not more deeply entrenched by inappropriate deflection of local human or material resources away from the healthcare system in the host country towards the research project
- Ensuring that research produces benefits for the practice setting and builds the capacity of healthcare professionals in the host country

resulted in the Nuremberg code and the Tuskegee experiment (where African Americans were deliberately denied effective treatment for syphilis) that led to regulations concerning research ethics in the United States. The protections need to be extended to address systemic deprivation of research subjects through poverty and other threats to freedom.

Those who are involved in international research should be required to have some understanding of, and be sensitive to, the social, economic, and political milieu that frames the context in which their research is taking place and that greatly influences the health of their research subjects.[20–28] This should include knowledge of (*a*) the sociology of pharmaceutical research; (*b*) the political relation between the sponsoring and host countries—for example, how the host country fits into the sponsoring country's foreign policy, what economic aid is provided, the nature of any debt relations, and the extent of arms trading between the two countries; and (*c*) the human rights' achievements of the sponsoring and host countries. Lessons learnt from a genuinely collaborative research endeavour could be used by international investigators. For example, they might influence political leaders in their countries to promote more equitable relations with the host country in which the research was conducted.

There is thus a need to go beyond the reactive research ethics of the past. A new, proactive research ethics must be concerned with the greatest ethical challenge—the huge inequities in global health.[29] Research ethics must be more deeply rooted in the context of global health. It must more forthrightly address the social, political, and economic forces that widen global inequities in health, and it must ultimately be concerned with reducing inequities in global health and achieving justice in health research and health care.

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Corrections and clarifications

Effect of 1995 pill scare on rates of venous thromboembolism among women taking combined oral contraceptives: analysis of General Practice Research Database

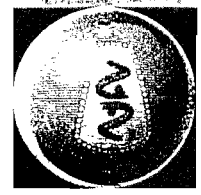
A small error persisted to final publication of this paper by R D T Farmer and colleagues (19-26 August, pp 477-9). In table 2 the upper limit of the confidence interval for the age adjusted ratio for the 25-34 age group should be 1.46 (not 1.96).

Birth characteristics of women who develop gestational diabetes: population based study

A glitch in electronic processing led to a problem with reference numbers in this paper by Grace M Egeland and colleagues (2 September, pp 546-7). No reference numbers appear in the text of the printed article, but they can be seen on the *BMJ* website (http://bmj.com/cgi/content/full/321/7260/546).

Systematic review of studies of patient satisfaction with telemedicine

An antipodean mix-up occurred in this article by Frances Mair and Pamela Whitten (3 June, pp 1517-20). In the table (p 1528) the study by Oakley et al (reference 9) was ascribed in the far right hand column to Australia, whereas in fact it was conducted in New Zealand.



LEADING ARTICLE

Global issues in HIV research

SOLOMON R BENATAR

INTRODUCTION

The HIV/AIDS pandemic is one of the most devastating of all plagues that have ever afflicted humankind. The threat of HIV/AIDS to global public health [1] is recognised by many nations, and is reflected in President Clinton's declaration that HIV/AIDS is an impediment to the national security of the US. While the transmission of HIV requires intimate contact between individuals, the underlying reasons for the emergence and spread of HIV/AIDS, and other plagues, are related to powerful social forces.

Vaccines may play an important role in preventing, reducing or modifying infection, but solutions to the pandemic must go beyond medical interventions at the level of individuals to include co-ordinated global activity on many fronts. In the 19th century, it was well recognised that travel and trade required international public health measures to control infectious diseases. Today, we recognise that with the massive increase in global trade and movement of people, controlling infectious diseases requires attention to the global forces underlying their emergence.

Testing and using vaccines also has ethical implications for whole communities [2]. For example, several candidate vaccines at various stages of development will need to be studied simultaneously in different populations around the world; and there may not always be concordance between the vaccine on trial and the prevalent viral clade in a particular country. Local research ethics committees may not be fully conversant with the ethical requirements for vaccine trials, and developing countries may be vulnerable to pressure to use vaccines that are not approved for trials in wealthy countries. Those communities that are exposed to some early vaccines (and may, indeed, be the first to benefit from them) may not be eligible for other later vaccines, a potential long-term disadvantage. Such studies will therefore require a large international collaborative effort involving a wide range of sectors, non-governmental organisations, government and research institutions, and affected populations, to ensure an appropriate balance of benefits and harms.

SOME BACKGROUND TO THE HIV/AIDS PANDEMIC

Evolutionary changes, profound social forces and the impact of human behaviour on the environment have contributed to changes in the symbiotic and parasitic relationships between microbes and humans over many millennia. Imbalances in such relationships favour sporadic plagues [3,4]. The latter half of the 20th century has been characterised by more striking changes than ever before. The world's population has doubled from 3 billion to 6 billion. Economic disparities have widened dramatically, with billions of people now living under dehumanising conditions of poverty and squalor. New patterns of war and ethnic conflict have resulted in displacement and migration of millions of people. Changing spatial dimensions of human relations resulting from war, migration, travel and new forms of communication have radically disrupted the social lives of many [5]. Widespread ecological damage is arising from escalating consumption of the earth's resources far out of proportion to population growth [6].

It is against this background of developments contributing to the creation of new ecological niches, and the adaptive evolution of microbes with resistance to many antimicrobial drugs, that 29 new infectious diseases have emerged since 1973 to afflict humankind. These include Legionnaires' disease, Lyme disease, various forms of encephalitis, bovine spongiform encephalopathy, Hantaan virus disease, Ebola fever and other haemorrhagic diseases, new forms of *Escherichia coli* and *Vibrio cholerae* and the most extensive and frightening of all: HIV/AIDS. In addition, many other infectious diseases that had become localised, limited or controlled have recrudesced with serious adverse implications for all, for example tuberculosis, malaria, measles and others [7].

ETHICAL CONSIDERATIONS IN VACCINE RESEARCH

Acknowledgement of the powerful forces that promote the emergence and spread of infectious diseases allows a recognition that dealing with such problems raises global public health considerations and ethical concerns beyond the micro-level of the doctor–patient relationship. Ethical considerations at the meso-level relate to the structure and function of national health systems and to striking a balance between individual rights and public health. At the macro-level, the ethics of international relations need to be considered, as such relationships have profound effects on health and well-being globally.

MICRO-LEVEL ETHICS

Most of the debate about medical ethics generally, and about HIV/AIDS specifically, has focused on ethical issues at the level of the doctor–patient relationship, most particularly

confidentiality, informed decision-making, individual human rights and the harm/benefit balances for individuals involved in clinical research.

In developing countries, maintaining confidentiality and obtaining truly informed, uncoerced consent across language and cultural barriers are complicated first, by the fact that the Western concept of confidentiality and the individualistic approach are less well established in societies in which decisions about individuals are often made within a consultative mode in families or larger groups, and second, by distortions in transmission of information through interpreters [8,9]. Some terms, for example 'randomisation' and 'placebo' may not be readily translated into local languages [2]. Additional problems are posed by the legacy of long-standing oppression and severe economic deprivation [9,10]. Lack of respect for the dignity of research subjects in developing countries stems from the legacy of colonialism and tyrannical leadership (e.g. the Amin regime in Uganda), the neo-colonial leadership style of many privileged investigators within developing countries and the imperialistic attitudes of international researchers who wish to do their research as quickly and efficiently as possible. Overcoming such difficulties in the research setting requires anthropological and sociological skills as well as allocation of appropriate resources to build the capacity to deal with problems of communication and dialogue.

Other ethical issues at the micro level that have received some attention are the risks and benefits of vaccine research and how these can be balanced (Table 1) [11,12]. These issues and the way they should be approached have been discussed by others and will not be further discussed here.

It is vital to note that participants in vaccine trials will need to be informed that the vaccine under trial may not be effective. Therefore, they should be encouraged to use other preventive methods. If the latter are effective, transmission rates will be reduced and the number of subjects in the trial will have to be increased to show an effect from the vaccine. As researchers have a vested interest in smaller trials that can be concluded more rapidly, the appropriate authorities must be ensured that research subjects have a clear understanding of the trial's implications and that all other preventive measures are promoted and supported within the trial.

Table 1: Potential risks and benefits of vaccine research [12]

For individual participants
Physiological risks
• More rapidly progressive disease in those who become HIV infected subsequent to being vaccinated
• Precipitation of severe adverse effects while harbouring undetected HIV infection
• Adverse reactions to the vaccine
• Immune tolerance that may influence the ability of an individual to receive a future better vaccine
• Injuries associated with research related activities
Psychosocial risks
• Inconvenience and participation fatigue associated with lengthy research
• Anxiety from repeated HIV testing
• Stress related to culturally unusual medical and research concepts
• Discrimination by being identified as being at high risk
• Induction of seropositivity with implications for employment, insurance and healthcare
• Raised expectations of becoming immune
• A false sense of security, leading to less attention to other risk taking behaviour
• Stress between partners as a result of one partner participating in a trial
Benefits
• A package of care for research subjects
For communities from which subjects are drawn
Risks
• Stigma from publicity
• Exploitation due to impoverishment and lack of familiarity with research methods
• Ineligibility for subsequent vaccines
Benefits
• Improvements to the healthcare system flowing from the research

Meso-level ethics

The justifiable focus on ethical issues at the micro-level that have profound implications for individuals, especially those at risk of stigmatisation, has somewhat eclipsed ethical issues that need to be addressed in dealing with threats to public health. However, the introduction of gene therapy and the lessons learnt from the HIV pandemic have prompted recognition that some information about individuals cannot belong exclusively to those individuals. The web of relationships and responsibility extends to other members of families for whom knowledge of familial genetics or transmissible disease may be crucial to their future well-being. It is also becoming apparent that dealing with the HIV/AIDS pandemic requires consideration of the ethics of relationships between communities, trial sponsors, industry, ministries of health and between the private and public sectors in the process of protecting and promoting public and population health.

Such considerations raise the perennial problem of how to strike a balance between the rights (and needs) of individuals and the common good of societies. While a focus on individual rights is necessary for the well-being of individual persons and has a high social utility value, this is not sufficient for the achievement of improved public health. It is also necessary to go beyond advocacy for rights to include consideration of the duties and responsibilities that are necessary for rights to be widely satisfied [13]. Lack of attention to civic responsibilities allows individuals to place their own needs above those of all others, and thwarts the achievement of such goals as universal access to healthcare and curbing the spread of infectious diseases [13,14].

Achieving an improved balance between the needs and rights of individuals and the requirements for advancing public health will require a shift in mind-set away from exclusive individualism towards a respect for individuality combined with a strong sense of civic citizenship. First, the need for such a shift must be acknowledged. Second, conflicts of interest between communities in whom research is being undertaken and the sponsors of trials must be addressed and dealt with. Third, longer-term economic and social justice must be sought in balancing the harms and benefits of vaccine research. Eloquent arguments have been offered in favour of a language of public health that 'speaks to the reciprocity and interdependence which characterise community'. Such language can be found in a 'moral economy of interdependence' (defined as the collectively shared basic moral assumptions constituting a system of reciprocal relations) rather than one of 'moral nihilism and radical individualism' [15].

The ability to undertake vaccine trials ethically will thus require extensive public debate, education and reorientation regarding the balance between individual rights and the common good. Involvement of the community to be researched in the design and acceptance of vaccine trials is an essential step towards achieving theses goals, reducing stigmatisation and promoting admiration of those who are willing to participate in vaccine trials. Clearly, such public education and accountability needs to proceed simultaneously with processes that ensure protection of individuals. Balancing individual good against the common good cannot be confined to developing countries, especially when the common good of those in developed countries may be achieved at no cost or risk to individuals in developed countries. Public health ethics, like the ethics of interpersonal relationships, must be universally applicable. The importance of such public health ethics, even in the developed world, is emphasised by the erosion of public health and growing health inequalities in the US [16] and in a country like Canada that has long espoused social democratic principles [17].

Macro-level ethics

In the same way that dealing with the HIV/AIDS pandemic and embarking on vaccine research will require going beyond micro-ethical considerations to include the meso-level of ethics mentioned above, so dealing with a global pandemic will require ethical considerations at the macro-level, that is, at the level of the global economy and of the relationships between nations that have profound effects on human health and well-being [18]. In the 19th century, it was well recognised that international public health required co-operation between nations and the development of international public health law. Now such measures will need to include, at the very least, mechanisms to ensure widespread access to effective vaccines as these become available. The following facts should make this clear:

- Africa is the home of 10% of the world's population, its people live on 1% of the global economy, and the continent carries 70% of the world's HIV/AIDS burden.
- Annual *per capita* expenditure on healthcare is less than $US10 in many African countries, compared with between $US2000–4200 in industrialised nations.
- Many African countries spend up to twice as much paying interest on debt as on health and education combined. How the debt was acquired and is maintained is an indictment of industrialised nations. Third-world debt has been described as a modern version of the exploitation characteristic of the slave trade era [19].

There are no successful solutions to the HIV/AIDS pandemic, or even to the widespread use of vaccines, if these facts are ignored. Action must be taken to generate change towards improving global social justice, alleviating poverty and improving the capacity of healthcare systems globally. New ways of looking at international research ethics have been proposed to facilitate this process [20,21].

Restructuring international relations

The clear inability and failure of humankind to shape a fair, just and peaceful world is evident from the scale and magnitude of war, ethnic conflict and the disparities and associated human misery that have characterised the 20th century [5]. Lives of comfort and luxury seem to have dulled the moral sensitivity of the privileged to the needs of so many fellow humans living under conditions of severe deprivation. However, in a world of rapid and comprehensive communication, it is neither possible to plead ignorance of the plight of billions nor to ignore the implications of this for everyone in the long term, even the most privileged. Highly egoistic notions of humanity, reflected in selfish individualism and long-standing concepts of state-centricity with considerations of security limited to military issues, have run their course. New ways of looking at the world and at how states should interact to ensure secure and satisfying lives more extensively are gradually being shaped [22–25].

An approach to morality that extends beyond the concept of human rights

A deeper understanding of what it means to be a citizen in an increasingly interdependent world in which diseases know no boundaries will need to embrace renewed concepts of civic citizenship, solidarity and concern for others, even those very distant from our own daily lives. New ways of thinking about ourselves, our relationship to others, including future generations and our ecological system, are necessary in order to link concepts of human rights to a broader moral agenda that embraces the duty to meet essential human needs, and to achieve greater social justice within and between nations. New paradigms of thinking would embrace:

- a conception of human rights that extends beyond civil and political rights to include social, economic and cultural rights and their close integration with the reciprocal responsibilities required to ensure that rights are honoured and basic needs are met;
- a concept of individuality within a context of interdependence that includes concern for the well-being of the population as well as individual well-being;

- a deeper understanding of how complex systems function and can be influenced; and
- an ethic for institutions and international relations that recognises the responsibility to balance individual goods and social goods, and not to harm weak/poor nations through economic and other forms of exploitation that frustrate the achievement of human rights and well-being.

Conclusions

The ethics of HIV/AIDS vaccine trials cannot be considered merely at the level of micro-ethics, as important as these are. The ethics of HIV vaccine trials must also be seen as intimately linked to the ethics of fostering greater human well-being on a global scale. Perpetual economic growth for some cannot continue at the expense of others without sacrificing our humanity. The root causes of poverty should be openly acknowledged and studied more seriously, and powerful nations should be required to address these. Crucial to a new approach will be the recognition that it is not merely altruism that is called for, but rather a long-term perspective on rational self-interest in an increasingly interdependent world. Sustainable development and respect for human rights and human dignity that are in the interest of all world-wide can only be achieved through incisive and honest thinking about the problems we face, active promotion of solidarity, and avoidance of economic, cultural and ethical imperialism. The Jubilee 2000 programme to relieve poor nations of crippling debts exemplifies the need for moral leadership. Widespread support for this endeavour could provide concrete evidence of the power of rational persuasion in dealing with the intractable problem of poverty and its associated intense human misery [19].

Such macro-ethical considerations will have to be addressed if the production and testing of HIV vaccines is to take place in a globally ethical environment that will facilitate the necessary widespread access to, and use of, such vaccines in the future.

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Professor Solomon R Benatar, Bioethics Centre, University of Cape Town Faculty of Health Sciences Observatory, 7925 Western Cape, South Africa.

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COMMENTARY: JUSTICE AND MEDICAL RESEARCH: A GLOBAL PERSPECTIVE[1]

SOLOMON R BENATAR

ABSTRACT

Economic globalization has profound implications for health. The scale of injustice at a global level, reflected in inexorably widening disparities in wealth and health, also has critical implications for health related research – in particular when the opportunities for exploiting research subjects are carefully considered. The challenge of developing universal guidelines for international clinical research is addressed against the background of a polarizing, yet interdependent, world in which all are ultimately threatened by lack of social justice. It is proposed that in such a world there is a need for new ways of thinking about research and its relevance to health at a global level. Responsibility to use knowledge and power wisely requires more radical changes to guidelines for research ethics than are currently under consideration.

INTRODUCTION

When Harold Macmillan (then Prime Minister of Britain) visited Africa in 1960, he referred to the 'wind of change' that he perceived blowing through Africa – in the wake of decades of colonialism and oppression.[2] The history of sub-Saharan Africa since then has been stormy. Initial encouraging advances made by many countries in the early years of their independence have

[1] Based on the opening address given by the author at the Fogarty International Global Research Ethics Forum Bethesda, Maryland. USA, November 1999.

[2] H. Macmillan. 'The wind of change is blowing through the continent. Whether we like it or not, this growth of national consciousness is a fact.' Speech in the South African Parliament, Cape Town, February 3, 1960.

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been followed by subsequent retrogression due to both external and internal influences. External factors include the adverse effects of neo-liberal economics on trade and the incurring of debts, the subsequent structural adjustment programs imposed by the IMF and World Bank, and the impact of arms trading and 'Cold War' interference in Africa. Internal factors include corruption, political patronage, power struggles and poor governance. Adverse environmental conditions and the HIV/AIDS pandemic have posed additional massive burdens to progress.[3] The 'wind of change' associated with emancipation from oppression in apartheid South Africa has culminated in a much admired peaceful transition in that country.[4] How this transition will play out in the face of the HIV/AIDS pandemic and in the context of a globalising world is of great importance.[5]

THE WORLD AT THE BEGINNING OF THE 21ST CENTURY

It is necessary to appreciate that the 'wind of change' is now being felt throughout the world, as globalising forces create ever widening disparities in wealth, with important implications for health and well being.[6] Despite great progress in science, technology and communication during the 20th century, the world at the beginning of the new millennium is characterized by chaos and despair at many levels.[7] Escalating economic disparities, especially during the past 30 years, illustrate the impact of the 'visible hand' of the market place and the 'squeezed up' effect that is, the funneling of resources upwards resulting in wider disparities in wealth and health between rich and poor than ever before – rather than the so much spoken about and praised 'invisible hand' and 'trickle down effect.' Indeed more than half the world's population lives in poverty – 25% in abject poverty.

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The shift in the accumulation of capital from the nation state to multinational corporations, and the creation of unpayable third world debt, have impoverished third world countries and reduced annual per capita health care expenditures to less than $10 in most poor countries – where less than 50% of the population have access to even essential drugs. Health care services are rudimentary for many in a world in which 87% of annual global expenditure on health is directed to 16% of the world's population, who only bear 7% of the global burden of disease, and in which increasingly unethical, market driven research neglects many diseases.[8] Of all US $56 billion spent annually on medical research 90% is spent on those diseases causing only 10% of the global burden of disease.[9]

Meanwhile vast expenditure continues on the military. Many small wars, fuelled by trade in weapons, have resulted in unprecedented numbers of civilian deaths and displacement of millions of people from their social roots, with profound disruption of their lives. In addition there is a world-wide movement of people, within and across national borders through urbanization, migration, tourism and illicit trading in drugs and people[10] – all favoring the rapid spread of infectious diseases. Growth of the world's population and massive increases in energy consumption (five and 30 fold increases respectively over the past 150 years) further threaten our ecology.[11]

New ecological niches created by these destructive social and environmental changes favor the emergence of many new infectious diseases, the worst being HIV/AIDS, and the recrudescence of old diseases such as tuberculosis and malaria that cause immense suffering and millions of premature deaths.[12] These and other infectious diseases that may emerge in the future challenge thinkers to better understand the world and how it could be improved.

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HOW CAN THE WORLD BE EXPLAINED?

On the one hand the world can be considered as an unfortunate place in which most suffer disproportionately and unavoidably. On this account it is presumed that the manner and direction in which money flows, power is expressed, and social values develop are shaped by forces beyond the control of individuals or nations.

On the other hand an unjust world can be considered as one created by human activities, and one which can, and should be, changed. On this account the flow of money can be explained on the basis of national/international political forces and economic trends, and on such other aspects of globalization as advances in science and technology that have profoundly altered the nature of the global economy, as well as by exploitation at many levels (both overt – trade practices protecting the rich, and covert – debt trade and the arms trade as forms of enslavement). Some have used the term 'global apartheid' for the processes that have promoted (and continue to aggravate) vast disparities between rich and poor across the world.[13] Others have described third world debt, an integral component of globalization, as analogous to slavery in its impact,[14] and have called for reflection on the magnificent achievements of the 20th century, and on how the human condition and health could be improved globally.[15]

CHALLENGES FOR INTERNATIONAL RESEARCH ETHICS

This brief review of the adverse effects of progress serves to locate the context in which the controversy about research ethics has arisen and the backdrop against which the goals of change need to be considered: how to construct universally valid guidelines for collaborative international medical research with the view to enhancing sensitivity to issues of justice and our common humanity. In brief, the rationale for embarking on this endeavor now more than ever before includes:

- The scale of injustice at a global level.

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[15] The Jubilee 2000 campaign. www.jubilee2000.org

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- Knowledge of the history of abuse of humans in medical research and the need to protect (vulnerable) research subjects.
- The need for research on diseases that know no boundaries and potentially threaten all – e.g. HIV/AIDS, and the diseases to which antimicrobial drug resistance is developing.
- Significant growth of research to promote the use of therapeutic drugs in a lucrative market.
- The attractiveness of doing research in developing countries: easy access to patients, reduced costs, and less stringent regulations – the 'research sweat shop' equivalent.
- Understanding that researchers do not go to developing countries mainly for altruistic reasons.
- A perception by the vulnerable that they are being exploited.
- The need to balance the notion that solutions to disease and illness lie entirely in the realm of biomedicine with recognition that global forces promote emergence and resurgence of infectious diseases, and have many adverse effects on health.
- The goal of fostering empowerment through co-operation that may enhance human flourishing by making subjects essential partners in the research process.

The challenge to be faced in international research ethics is the development of universal rules for research world wide, at a time when health care is being delivered within very different health care systems (even within any single country) and in a multicultural world in which people live under radically different conditions – ranging from immense luxury to abject poverty. Variable trajectories of emancipation of individuals from communities have also given rise to a wide spectrum of how people view themselves, what it means to be ill and how health care systems should be structured.[16] With recognition of the role of social conditions in shaping the world, and how privileged people view the world and themselves, comes the realization that research cannot be considered in isolation. Medical research, health care, conditions of life around the world and how humans flourish may seem separate, but they are all interdependent. Taking such a comprehensive global perspective adds complexity to the task of crafting universal research ethics guidelines.

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SOME SOLUTIONS TO THE CONTROVERSY ON RESEARCH ETHICS

Against this background of the context in which the controversy regarding alterations to the Helsinki Declaration and other guidelines for research ethics has arisen[17] a choice which can be made from several options. First, the status quo could be upheld in the hope that the progress of science and of economic growth will continue uninterrupted with beneficial effects for all even if disparities persist or grow. This would be the easiest choice as it presupposes no responsibility for global injustice. However, it would also be immoral as current injustices will be perpetuated and aggravated.

The second choice would be to make piecemeal changes at the margins – for example in international research by tinkering with the Helsinki Declaration and making some minor modifications. This course is also appealing to those who wish to make research easier and less accountable, but there is powerful and justified resistance to diluting protection for vulnerable research subjects and any progress made would in all probability be insufficient and temporary.[18]

Third, there could be acknowledgment of the need for a paradigm shift in thinking and action – towards reciprocal relationships between individuals, society, and the notion of rational self-interest and long term interdependence.[19] This is a more difficult decision and one that may have higher costs in the short term. It would, however, reflect recognition of the adverse impact of globalization and allow use of such desirable universal values as human rights to build a more widely achievable universalism. Such a decision could advance human relationships to the high moral ground, with the consequent best hope for long-term results. South Africa's peaceful transition through a negotiated revolution is an example. It is suggested that privileged people need to hold up a mirror to their lives, and try to see themselves from the perspective of the

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marginalised and weak in the world today and as historians in the future may see them in retrospect – as decadent and selfish.

Given the responsibility to use power and knowledge wisely, it is suggested that the deliberations at this meeting should include the possibility of introducing several new components into the Declaration of Helsinki and other international research guidelines – to extend and honor the concepts of justice and of integrity in the research endeavor:

- Vulnerable groups should be provided with increasing accessibility to research, and this should apply to the vulnerable within all countries.
- Exploitation of subjects, or their use as mere means to the ends of others, should be explicitly excluded by ensuring that the research is of relevance to the individuals participating in the research as well as their communities.
- The potential benefits of research should considerably outweigh potential risks or harms to vulnerable individuals and communities.
- Research subjects should be encouraged to participate in planning and conducting studies.
- Research in developing countries should be linked with capacity building in health care, and with economic and educational empowerment that has beneficial effects on the delivery of health care and on progress generally in the host country.

The first Global Forum on International Research, which opened discussion of all the topics listed on this agenda, was an enlightened first step forward. The second step would be to promote the addition of the newly proposed clauses to the Helsinki and other declarations. Third, there should be consideration of an expanded role for Institutional Review Boards (Research Ethics Committees) – taking them beyond mere review bodies to include duties of audit and education. Fourth, there is the need to influence mind sets – for example through societal marketing processes, rewards for compliance, wider publicity for and marginalisation of those doing unethical research, and by bringing bioethics and human rights programs closer to each other. Such actions could act as bridges, levers, and moral examples for the process of narrowing disparities. Education, the acquisition of self-knowledge coupled to activism, and moral example are all necessary for the promotion of a 'global new deal.'[20]

[20] R.J. Barnett, J. Cavanagh. 1994. A global new deal. In: *Beyond Bretton Woods: alternatives to the new world order*. J. Cavanagh, D. Wysham, M. Arruda

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In summary support is provided here for the suggestion that to help the world's poorest, and indeed to foster the interests of all, the dialogue between rich and poor should be enhanced, the power of science and technology should be mobilized to address the problems of poor countries, new institutional alliances should be constructed, the concept of intellectual property rights should be re-evaluated to avoid 'ripping off the poor,' and long term financing should be planned for the international good necessary for human flourishing.[21] Herein lie the challenges to which the international research ethics endeavor could contribute.[22]

Solomon R. Benatar
Department of Medicine
University of Cape Town
Faculty of Health Sciences
Observatory 7925
Cape Town
South Africa
sbenatar@uctgsh1.uct.ac.za

(Eds). London. Pluto Press. R. Falk. 1999. *Predatory Globalization: a critique*. Cambridge. Polity Press. A.J. McMichael. 1997. *Planetary Overload*. J. Rotblat (Ed) *World citizenship: allegiance to humanity*. London. MacMillan. G. Teeple. 2000. *Globalization and the decline of social reform*. 2nd ed. Aurora, Ontario. Garamond Press.

[21] J. Sachs. Helping the world's poorest. *The Economist* 14 August, 1999: 17–20.

[22] J. Stephens et al. The body hunters. A series of six articles in the *Washington Post* 17–21 December 2000, describing some of the horrors associated with the growing commercialization of drug research in developing countries.

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Reflections and recommendations on research ethics in developing countries ☆

S.R. Benatar*,[1]

Faculty of Health Sciences and Groote Schuur Hospital, University of Cape Town, Observatory 7925 Western Cape, South Africa

Abstract

The debate on the ethics of international clinical research involving collaboration with developing countries has achieved a high profile in recent years. Informed consent and universal standards have been most intensively debated. Exploitation and lack of adequate attention to justice in the distribution of risks/harm and benefits to individuals and communities have to a lesser extent been addressed. The global context in which these debates are taking place, and some of the less obvious implications for research ethics and for health are discussed here to broaden understanding of the complexity of the debate. A wider role is proposed for research ethics committees, one that includes an educational component and some responsibility for audit. It is proposed that new ways of thinking are needed about the role of research ethics in promoting moral progress in the research endeavour and improving global health. © 2002 Elsevier Science Ltd. All rights reserved.

Keywords: Ethics research; Ethics committees; Developing countries; Global health; Informed consent; International collaboration; Justice; Standard of care

Introduction

Debates on the ethical requirements for conducting medical research in developing countries have achieved considerable prominence in recent years. To some extent this is the result of growth of interest in research in developing countries since the HIV/AIDS pandemic. It also reflects renewed and encouraging interest in, and concern about, the nature of the relationship between researchers and their subjects. While researchers are generally privileged people many research subjects are among the most vulnerable in our world, living under the worst conditions of deprivation and exploitation. Appreciation of concerns regarding research in developing countries requires some knowledge of the growing global disparities in wealth and health, and of the lifestyle and worldview of potential research subjects. Against such a background it is apparent that the ethical dilemmas faced in conducting collaborative international research can only be addressed satisfactorily if research ethics is seen as intimately linked to health care, to human health globally and to the promotion of social and economic processes that could begin reversing widening global disparities in health (Benatar, 2001a).

Disparities in wealth and health

At the beginning of the 20th century the wealthiest 20% of the world's population were 9 times richer than the poorest 20%. This ratio has grown progressively – to 30 times by 1960, 60 times by 1990 and to over 70 times by 1997. The extent of absolute poverty has also increased and today almost half the world's population lives on <US$2 per person per day. Tens of millions of people, many of them children, die each year of

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*Tel.: +27-21-406-6115; fax: +27-21-448-6815.

E-mail address: sbenatar@uctgsh1.uct.ac.za (S.R. Benatar).

[1] Department of Public Health Sciences and Medicine, Joint Bioethics Centre, University of Toronto, 88 College Street, Toronto, Ontario, Canada M5G 1L4.

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starvation and malnutrition—in a world with enough food to feed all (Hobsbawm, 1994; World Health Organisation, 1997; Benatar, 1998a; Falk, 1999).

At the beginning of the 21st century patterns of diseases and longevity also differ markedly across the world. Of the approximately 52 million people who die each year 18 million die of infectious and parasitic diseases (over 16 million of these—many in their youth—in the developing world), 10 million die of diseases of the circulatory system (4.5 million of these in the developing world) and 6 million die of malignant diseases (3.5 million in the developing world). Poor countries bear over 80 percent of the global burden of disease in disability adjusted life years (DALYs). The WHO estimated that in 1998, 11 million children and adults of working age died of six infectious diseases that could have been prevented at $20 per life saved (WHO, 1997). Life expectancy at birth ranges from well over 70 years in highly industrialised countries to below 50 years in many poor countries. Life expectancy is increasing worldwide. However, in 16 of the world's poorest countries it has fallen in recent years. In sub-Saharan Africa gains in longevity achieved during the first half of the 20th century are rapidly being reversed by the HIV/AIDS pandemic.

Poverty (defined as lack of economic resources, lack of education, lack of access to basic life resources such as food water and sanitation, and lack of control over the reproductive process) directly accounts for almost one-third of the global burden of disease. It is now well established that there is a definite relationship between wealth/poverty and health/disease, although this relationship is not linear (Wilkinson, 1996). For example, one of the wealthiest nations in the world—the USA—has worse health statistics (infant mortality and longevity) than some other industrialised countries; and a particularly poor state—Kerala in India—has achieved lower infant mortality rates and greater longevity than many wealthier nations. Despite having the largest per capita health expenditure in the world the US is ranked 24th in overall population health as judged by the disability-adjusted life expectancy, 37th in efficiency of its health care system, and 54th alongside Fiji in how fairly the financial burden of health care is distributed (WHO, 2000).

Since the 1960s major advances in medicine and technology have been associated with greatly increased expenditure on health care—most of this in highly industrialised countries. Annual per capita expenditure on health care ranges from $4000 in the US to less than $5 in the poorest countries in Africa. Half the world's population lives in countries, which cannot afford annual per capita health expenditures of more than $5–10, which is less than the World Health Organisation's recommended minimum $12 for a basic health care package.

Erosion of the economies of many poor countries, under the impact of globalisation and debt, has prevented the introduction of effective forms of modern medicine into deprived communities and thus prevented achievement of widespread access to even basic health care for billions of people. In the 1990s, 89% of annual world expenditure on health care was spent on 16% of the world's population who bear 7% of the global burden of disease in DALYs (Iglehart, 1999), and of the estimated US$56 billion spent annually on medical research much $<10\%$ is spent on health problems of the developing world (Commission on Health Research for Development, 1990). These are examples of global injustice that should surely be intolerable if there were genuine commitment to universal human rights and human dignity. Regrettably little attention is given to such issues in the voluminous literature on human rights.

The world at the beginning of the 21st century is thus characterised by widening economic and health disparities between rich and poor (within and between countries), and by suffering, conflict and alienation associated with pervasive social forces Hobsbawm, 1994; Benatar, 1998a; Falk, 1999). This scenario provides a strong case for viewing the emergence of new diseases such as AIDS that afflict predominantly those marginalised by poverty (80% of HIV positive persons live in the poorest countries in the world), as directly related to the ecological niches created and sustained by the nature of the global political economy and its ideology (Lee & Zwi, 1996).

Problems of such magnitude, starkly illustrated by the AIDS pandemic, require that ethical considerations extend beyond the interpersonal level. It is vital now for the ethics debate to include the best interests of whole populations, the ethics of how institutions (including multinational drug companies) should function, and the ethics of international relations—especially those between rich/strong and poor/weak countries. In the same way that racism, paternalism, gender discrimination and interpersonal abuse have become discredited, so too should autocratic/unaccountable institutions and exploitation be actively contested.

Contextual considerations—an illustrative narrative

When those in privileged positions and in wealthier countries consider undertaking collaborative research with colleagues in developing countries it is necessary to understand both their own framework of thinking, and the implications of very different mind-sets and environments in which research projects may be carried out in developing countries. The mind set of researchers from industrialised countries, and in which the debates on research ethics are taking place, is characterised by a

biomedical approach to disease, and by a neoliberal approach to economics and trade (Benatar 1998a; Lee & Zwi, 1996). These powerful forces shape the world and a dominant worldview. There is a need to be sensitive to the fact that not all, and especially not those who are disadvantaged or who have been exploited, will see the world through the same lenses—as illustrated by the following narrative.[2]

> Ntombi is in her middle twenties. She has received little if any formal education and spends a large part of her day collecting fuel and water, and preparing food for the daily survival of her family. Like many rural Africans she has no access to electricity or piped water. During her short life she has witnessed, and been the victim of, more suffering and misery than any of us could imagine or bear. She has lost many of her close family—parents, siblings and children—to violence, poverty, and disease. Despite her misfortunes and multiple deprivations she copes with her lot with courageous acceptance, and continues to make contributions to her family and her society.
>
> Ntombi lives on a continent that contains 33 of the 50 poorest countries in the world. Its 690 million people represent 10% of the world's population who live on <1% of annual global GNP, and who have access to less than the World Health Organisation recommended minimum annual health care expenditure of US$12 per capita. Two-thirds of Africans live in absolute poverty: more than 50% lack safe water and 70% are without proper sanitation. Of all people in the world who are HIV-positive almost 80% are in sub-Saharan Africa. This region bears the burden of 90% of the 2 million annual deaths from malaria in the world—and 90% of these are young children. Africa also accounts for 22% of global deaths, 34% of global DALYs from tuberculosis and 24% of global DALYs from malnutrition. The number of unnecessary deaths on the continent is equivalent to the loss of life, that would occur from dropping more than 10 Hiroshima and Nagasaki sized nuclear bombs annually. Much of this disease, suffering and premature death is preventable and at a cost that is not unaffordable in the global context.
>
> Ntombi lives on an annual sum of money approximately equivalent to the amount that a person from the modern western world lives on for less than a day. She is aware of the disparities in wealth between the people within her country. She may also possibly be aware from the television set in a local store of the life styles of people in other parts of the world. Those whom she sees as living comfortable lives are mostly white, while those who live like her are mostly black. The differences she sees in the other ways of life are awe inspiring, incomprehensible and unimaginable for her.
>
> Ntombi is pregnant with her third child and is receiving care from a local midwife. During her pregnancy a team of health care workers that includes people from her own country and others who are visiting from abroad approaches her. She is told that there is a significant possibility that she is infected with the human immunodefficiency virus and that her child may acquire this infection during childbirth or breast-feeding. She is asked if she would be willing to be tested for HIV infection and, if positive, to participate in a trial of a drug which may reduce the chances of transmission of infection to her child. She is also told that she should not breast feed her child if she tests positive in order to reduce the risk of transmission.
>
> She is both bewildered and afraid. She does not feel ill. Who are these people? What is their real intention? Why are health care facilities so inadequate in her village? Why is such a large team of people with access to seemingly vast resources coming to study her? Is it for her benefit or for theirs? How will her life change if she discovers she is HIV-positive? What will happen to her if she refuses to participate? If she accepts what will happen to her and her baby when the study is completed? Will she or her baby really be better off as a result of this study? What effect will failure to breast-feed have on her baby? What will her spouse say about her participation in the trial? Whom can she ask for answers to these questions? Can she rely on all the explanations given by the researchers? Should she consult the leaders she respects within her community? Should the community play a role in deciding whether its members should participate in the trial, or should she decide for herself? If she is encouraged by the research team to decide for herself how may this affect her relationship with the community?

Do any of these questions really matter to researchers? To what extent have researchers tried to understand the mind-set of potential research subjects? Does the way in which their subjects see researchers and the privileged world matter to them? Have resources been allocated to train local health care personnel to participate constructively in evaluating and dealing with the questions research subjects may ask, or do researchers merely want to get on with the study as quickly and as economically as possible? How does this square with respect for the autonomy of research subjects?

[2] The use of narratives to teach bioethics is increasingly being appreciated. See for example Narrative in bioethics. Hudson Jones A. Brit. Med. J. 1999; 318: 253–56.

How many privileged people can see the world through the eyes of someone like Ntombi? Have they questioned the extent to which their privileged lives have been constructed and maintained through modern and sophisticated methods of exploitation of people across the globe? Have they questioned the foreign policies pursued by their countries? Are they aware that Africa has been eliminated from the foreign policy agenda of many industrialised nations following decades of financial and arms trading practices that have impoverished and crippled the continent? Do they really care? If not, what psychological processes allow them to see themselves apart from fellow humans in misery?

What are the lives of privileged researchers all about? How will they be viewed by future generations? What would a Global Truth and Reconciliation Commission reveal about the unethical and exploitative practices of powerful nations? Do physicians, bioethicists and others have responsibilities for developing approaches to ethics that go beyond the micro level of interpersonal relations? Should they be considering the ethics of how institutions, including multinational drug companies operate, how nations relate to each other and what implications such relationships have for the lives and health of billions of people? If these issues about the lives of the "wretched of the earth" have not been sufficiently considered they are raised here to promote introspection and activism.

Excellence in research

Many moral lessons have been learnt from the history of medical research. Regrettably, 50 years after the Nuremberg trials and the Nuremberg code, unethical medical research on humans continues, even in highly privileged countries (Katz, Capron, & Glass, 1972; President's Advisory Commission, 1998; Brody, 1998). Similarly, the extent to which human rights abuses continue 50 years after the Universal Declaration of Human Rights, even in wealthy industrialised countries, illustrates how difficult it is to achieve such universal moral aspirations (Amnesty International 1990, 1998; Cassese, 1996). How research should be regulated to avoid the errors and indiscretions of the past, and how to avoid new forms of discrimination and victimisation in the increasingly complex era of biotechnology, thus remain important issues worldwide.

In undertaking research on humans the scientific merit of a project must be matched by the ethical merit of the work. Scientific merit requires study designs and methods that attempt to falsify hypotheses, or reliably and efficiently develop answers to the questions being posed. The methods used today have evolved from less adequate methods in the past and scientific methodology is continuously being improved.

Ethical merit embraces respect for the dignity of research subjects (their integrity, privacy, safety, and human rights—hence the need for informed consent), the imperative to minimise risk, to balance risks against benefits, to make appropriate recompense for time, to provide compensation for any injury which may occur during the research, to protect confidentiality (Council for the International Organisations of Medical Sciences—CIOMS, 1993; Royal College of Physicians, 1996; South African Medical Research Council, 1993, Anonymous, 1997b; Levine, 1988) and to avoid conflicts of interest (Emanuel & Steiner, 1995; Speece, Shimm, & Buchanan, 1997). Within many, but not all, industrialised countries the understanding and implementation of these requirements has also continued to evolve and improve over several decades.

Because there is the danger, even in societies with aware and vocal citizens, that the views of researchers who have control over large resources may dominate, ethical merit requires that research subjects: (i) understand the nature and purpose of the research; (ii) have the opportunity to have their questions answered; (iii) can give truly informed consent; and (iv) can make uncoerced decisions to participate. Coercion should not be equated with incentives. Incentives to participate in research, such as guaranteed access to otherwise unavailable health care, and modest financial recompense for time and travel, are appropriate and should not be viewed as constituting coercion. It is clear that in developing countries the major incentive to participating in research may be access to otherwise unavailable health care. This is acceptable if the potential benefits of the research to the subjects and their community outweigh the potential harms in the long term as well as in the short term.

In "developing" countries, where cultural, linguistic, economic and other barriers may prevail between researchers and subjects, it is especially important to ensure effective communication. Anthropologists and others have documented the many pitfalls and difficulties that need to be faced in obtaining meaningful informed consent under these circumstances (Marshall, 2001; Lindegger & Richter, 2000). Work in Uganda has suggested that (i) socio-economic inequalities between researchers and subjects result in subjects feeling that they have no choice when asked to participate in research; (ii) the legacy of colonialism evokes covert ethnic divisiveness between researchers and subjects, and (iii) the tyranny of the Amin regime that eroded a previously admired health care system has left a lingering suspicion that HIV was brought to Africa by foreigners. For these and other reasons Ugandan researchers have had difficulty in applying the widely recommended principles of bioethics (Loue, Okello, & Kawama, 1996). Problems identified with research in Latin America include (i) failure to involve local health

care professionals in protocol design; (ii) difficulties with the language in which protocols are written; (iii) errors in translation; (iv) problems associated with the co-option of prominent local principal investigators untrained in research; (v) the allocation by such investigators of duties to subservient juniors who cannot speak out, and (vi) pressure to meet recruitment sample sizes (Hardy, 1996).

Despite these problems it should not be assumed that disadvantaged people cannot grasp the concepts involved in research and it is important to recognise that most of the goals of ethical research can be achieved when dealing with impoverished and illiterate people if sufficient time, skill, interest and resources are devoted to communication and consultation.

Achieving universal standards

While the source of, and justification for, universal ethical standards remain the subject of complex debates (Wilson, 1993; Thomas, 1989; Nagel, 1991; Macklin, 1999) it is generally accepted that there is a need for universal ethical standards for research on humans, and considerable progress has been made towards achieving this goal (CIOMS, 1993; Royal College of Physicians, 1996; South African Medical Research Council, 1993; Levine, 1998). Achieving universality in ethical standards requires reflection on such issues as: (i) what constitutes the best interests of subjects—with insightful recognition that individual and cultural preferences, and what can be achieved in any particular context, may differ significantly; (ii) what distinguishes the truly universal from imperialistic notions; and (iii) the relevance of contextual issues that can be taken into consideration on moral grounds without resorting to ethical relativism. As the facts of the case have an influence on the nature of any ethical dilemma and on how it is to be solved, there is a need to recognise and deal with contextual differences on rational grounds. Contextual differences constitute the starting point for rational discourse, and it should be possible to reasonably justify any differences required in the conduct of research in different contexts. Clearly, the challenges here are to avoid both ethical imperialism and ethical relativism (London, 2000, 2001)

Informed consent and conflict of obligations

Informed consent has become established as the cornerstone of research ethics. In addition to the difficulties described in obtaining informed consent in cross-cultural settings, it is also important to recognise that there are differences between informed consent for participation in research and informed consent in the realm of patient care (Levine, 1983; Taylor, 1987). In clinical practice obtaining informed consent is a somewhat informal, friendly and unhurried procedure in a context characterised by patients seeking medical advice from medical professionals whom they perceive to be concerned primarily with the best interests of patients. The process lacks rigidity, encompasses consideration of the fact that autonomy may be impaired, and makes some allowance for tailoring of treatment according to patients' wishes. Such a process, if conducted appropriately, can enhance patient confidence and the doctor/patient relationship (Levine, 1983; Taylor, 1987).

In contrast, informed consent procedures in the research context are both formal and regulated. Characteristically, the encounter is between an investigator seeking patients to include in a study, within a relationship resembling a brief encounter between strangers in a quest for the pursuit of knowledge and the need to do so with scientific rigor. The information disclosed and the method of doing so are more impersonal, detailed and harsher than in the clinical context. Professional ignorance is exposed to enable patients to understand why randomisation to different forms of treatment is justified. While patient autonomy may be preserved, the rigidity of the protocol does not allow for patient choices (other than withdrawal) once the research has been embarked on. Such a relationship has potentially adverse effects on researchers and patients (Levine, 1983; Taylor, 1987).

A conflict of obligations may thus arise when the doctor is both the investigator and the provider of patient care. The pursuit of knowledge in the best interests of science and society may not be compatible with protecting the best interests of the patient (Levine, 1983; Taylor, 1987). This conflict may be particularly difficult to resolve in developing countries where it may be impossible to separate the roles of investigator and carer, and where grossly inadequate health care resources and the pressures to enrol research subjects may overshadow concern for patients' best interests (Loue et al., 1996; Hardy, 1996).

Protecting research subjects—beyond informed consent

The fact that influential researchers (individuals and corporations) may have much more to gain than any single research participant has correctly resulted in considerable attention to designing studies that protect research subjects. Unfortunately, most of this protection has focused on informed consent and on reviewing research protocols, with inadequate attention paid to monitoring studies, trying to improve the actual conduct of research, and to promoting justice in the distribution of the burdens and benefits of research.

This focus on informed consent and relative lack of attention both to how research is actually conducted and to the implications of the research for the community in which the study is being conducted, may reflect any or

all of the following: (i) acceptance that researchers will do what they say they will do; (ii) willingness to believe that obtaining informed consent in practice meets up to the high moral level implied by the concept, rather than merely meeting legal requirements; (iii) confidence that conflicts of interest between the provision of care and the desire to advance knowledge can be balanced; (iv) lack of concern for justice in balancing the benefits and burdens both for the participants and more broadly; and (v) that in reality the interest in making medical progress takes precedence over the desire to protect the interests of research subjects (Benatar, 1998a, b).

Lack of attention to how research is actually being conducted is a serious shortcoming, requiring critical attention. This applies especially in an era of expanding research, growing links with industry and commercial organisations, documented inadequacies in the protection of research subjects and with growing recognition of the need to avoid exploitation. Recent endeavours to seek justice in research beyond informed consent are to be welcomed (Kahn, Mastroianni, & Sugarman, 1998), although not uncritically as many pitfalls remain to be negotiated (Woodward, 1999; Ellis, 1999; Benatar & Singer, 2000a, b)

Debates on recent studies

In recent debates about HIV transmission studies in Thailand, South Africa and elsewhere the use of placebos and the implications of the Helsinki Declaration for the standard of care required for research subjects have been fiercely debated (Angell 1997; Lurie & Wolf, 1997; Anonymous, 1997a; Aaby et al., 1997; Bulletin of Medical Ethics, 1999; Varmus and Satcher, 1997; Fairchild & Bayer, 1999; Harvard University CD Rom). The recommendation from the Council for the Organisation of Medical Sciences (CIOMS) that studies should not be done in developing countries if they can be done in better-resourced nations has also been contested.

In response to these important questions some editors of medical journals have delivered dogmatic ethical prescriptions. Superficial and inaccurate analogies have also been drawn in support of their views, for example between the Tuskegee syphilis experiment in the US and HIV transmission studies in developing countries. Making these inadequate analogies trivialises the Tuskegee experience and disregards the meaningful differences between these examples (Benatar, 1998b; Fairchild & Bayer, 1999).

Contrasting views have been expressed regarding whether the standard of care for research subjects should be equivalent to that available in the host country, or merely meet the best local standards. This controversy has not been resolved, and heated debates will continue. If it is insisted that the best standard drug regimen must be used it can also legitimately be asked why ethical considerations are limited to the best available standard drug treatment. Why not include the best standard medical, nursing and hospital facilities, and follow up care? If expense is not a consideration for drugs why should it be for such other aspects of treatment? Such considerations reveal a complexity that cannot adequately be dealt with merely by reference to synoptic statements from guidelines in the belief that these can be precisely applied in any and all circumstances (Benatar, 1998b; Benatar & Singer, 2000; London, 2000).

However, it must be surely be agreed that standards of care during clinical trials should neither be set at levels that are impossible to achieve, nor should research subjects be denied higher levels of care than may be available within their country if much higher standards can be achieved during the research process. A balanced approach—as so often required when dealing with ethical dilemmas—is needed, based on the merits of the case in question, and the fullest possible expression of respect for human dignity in the context (Benatar & Singer, 2000).

Regarding the use of placebos it is also clear that it is simplistic to imagine that the legitimacy of using a placebo arm can be determined solely on the basis of an all encompassing rule, or to consider that all the ethics of research can be deduced for all contexts from such guidelines as the Helsinki Declaration. Guidelines are not intended to cover every possible circumstance and, like laws and constitutions, require thoughtful interpretation (Hurwitz, 1998). Whether or not a particular drug regimen can be considered the best standard or whether a placebo arm is ethical will be determined by such issues as: (i) the strength of evidence that any treatment has been shown to be superior; (ii) the ability to extrapolate the results of drug treatment in one context to another in which the drugs may have a different profile of side effects—for example in the presence of genetic disorders such as porphyria or G6PD deficiency that may have implications for drug metabolism and action; (iii) whether the drugs can be safely taken and monitored in a radically different environment; (iv) whether the study is being done primarily to benefit the local population; (v) what study design can best achieve this; and (vi) the implications of the outcome of the study for the subsequent implementation of a national policy to make the new treatment available to the community(Benatar, 1998a, b; Benatar & Singer, 2000; Tramer, Reynolds, Moore, & McQuay, 1998).

For example, in the HIV transmission studies the best proven drug regimen (076) would have had to be given for 14 weeks prior to delivery and intrapartum to the mother, and to the infant for 4 weeks, omitting breast feeding - a difficult regimen to satisfy in dealing with

women in developing countries who first present only few weeks before delivery and whose infants may be placed at considerable risk if not breast fed. The use of a placebo in such a situation can be justified, if the drugs used in wealthy countries could not be a feasible option because of expense, difficulties in their administration and monitoring, or dangers associated with their use. The reasons for new drugs not being available and whether or not such feasibility might change in the near future could of course become influencing factors. A recent study of directly observed treatment for tuberculosis (which has been widely recommended as the gold standard) has illustrated that the standard method may not be the best means of delivering treatment in some settings (Zwarenstein, Shoeman, Vundule, Lombard, & Tatley, 1998).

It would thus seem that good reasons could sometimes be provided for the different structure of studies in different contexts without having to accuse researchers of moral relativism. Indeed it is often ethical considerations that require that such studies be structured differently (Beauchamp, 1996). Those who dogmatically insist that what is ethical can be simply deduced from declarations, have failed to understand that just as constitutions may require complex legal interpretation, so declarations about ethics may require moral interpretation. Lack of insight into the way in which formal ethical principles have to be implemented with appropriate specification in different contexts, leads to 'cookbook' application of abstract principles and obstructs deeper understanding of what can be justified through ethical reasoning (Beauchamp, 1996).

Exploitation or compensation and partnership?

World history is filled with examples illustrating the pervasiveness of exploitation. Although exploitation today may be less crude and less overt than in the past, the extent of covert exploitation under sophisticated guises continues to devastate the lives of billions of people (Hobsbawm, 1994; Benatar, 1998a; Falk, 1999; Lee & Zwi, 1996). Against this background, with the widening disparities described, and with acknowledgement of the potential for research to be exploitative, it can be argued that research should bring significant benefits to research subjects (de Jesus Mari, Lozano, & Dudley, 1997; Benatar, 2000a, b).

Information gained from clinical trials conducted efficiently and expeditiously in developing countries may allow early registration of drugs in developed countries thus considerable enhancing profits. It does not seem unreasonable to expect that such profits should also benefit the citizens of developing countries in which the research was undertaken. The colonial model of exchange of 'trinkets for ivory' must be avoided. The notion that it is acceptable to give a gift of minimal intrinsic in exchange for extracting valuable goods should be transformed into a commitment to giving fair recompense for sharing in the development of knowledge that may translate into great profits for pharmaceutical companies. For example, in addition to the direct benefits of the treatment regimens being studied for individuals within the study, it is being claimed (with justification in the view of many) that such benefits should include the provision of proven treatments following completion of trials, and use of the research project to empower the community (de Jesus Mari et al., 1997; Benatar, 2000a). While it may be difficult to undertake harm/benefit calculations in advance of knowing what research will reveal and how valuable the information may be, the debate that is beginning on how safeguards can be built into the contract to promote justice in the distribution of benefits at a later time must be encouraged in the quest to achieve greater fairness in the international research endeavour. Such considerations in the ethics of research have not yet evolved to the same level as some of the other ethical requirements that have been the focus of more attention.

Research ethics committees

The role of research committees is briefly reviewed here to illustrate that for moral progress to be made, the functions of such committees need to be broadened. Their first, now well developed and implemented task, is to evaluate research proposals with special attention to risk/benefit ratios, equity in distribution of benefits and burdens, potential conflicts of interest, the adequacy of information provided for subjects, and the protection of freedom: (i) within the consent process; (ii) for subjects to withdraw without prejudice to care; and (iii) of investigators to publish.

Their second, equally important but less widely implemented role is to educate and assist faculty, researchers and the community in understanding and appreciating the ethics of research. This can be achieved by reflecting on and discussing the history of unethical research in many countries, by encouraging discussion of controversial projects with researchers and the community on whom research is being undertaken, by allowing as many faculty as possible to participate by rotation in the work of the committee, by the inclusion of lay members as full committee members, and by ensuring that all research students have experienced mentors and access to mechanisms of due process for resolving conflict. Formal courses in research ethics within postgraduate education could promote this ambitious goal.

A third, increasingly acknowledged but even less widely implemented, function is to monitor and audit

research, and to provide accountability to the public. Suspected unethical or fraudulent behaviour should be drawn to the attention of specific committees appointed to investigate allegations of abuse of scientific integrity, take appropriate action against unscrupulous researchers and publicise this.

Ethics has received only patchy attention in many "developing" countries. There is little uniformity in the structure and function of research ethics committees and minimal if any public accountability. Additional shortcomings in some countries include the existence of self-appointed private ethics committees lacking in expertise and accountability, the absence of open-minded dialogue and public deliberation, and possibilities of undeclared conflict of interest between the roles of physicians as carers for patients and as medical researchers. The depth and pervasiveness of this conflict are not sufficiently widely appreciated (Emanuel & Steiner, 1995; Spece et al., 1997). Resources thus need to be made available, in some countries more than others, to develop the expertise and infrastructure required to (i) evaluate ethical problems, (ii) educate practitioners and researchers, and (iii) facilitate development of policy. Understanding and promoting science requires scientific training and expertise. Understanding and dealing with ethical dilemmas similarly requires scholarship and skill.

Towards more comprehensive guidelines for research ethics in developing countries

The categories of issues thus requiring special consideration in formulating new Guidelines for Biomedical Research on Human Subjects in "developing" countries include:

Conditions in developing countries

- A disproportionately heavy burden of disease (particularly infectious diseases); the breadth and depth of poverty; and high levels of illiteracy.
- Wide disparities in health and in access to health care; and imbalance between the often-ample resources available for research and the meagre resources available for even basic health care.
- The meagre resources in the developing world to do such research-making international collaboration necessary.
- Inadequate scientific and ethics infrastructures for the required reviewing process.
- The extent of disempowerment of the poor in their personal and communal lives.
- Knowledge of the ways in which people of other cultures traditionally view themselves as individuals embedded in communities and with respect to the changing boundaries between perceptions of the self that differ from the classical western notion.
- The need to understand what it means to be ill in contexts very different from those known to researchers and what can be expected from those one consults for help under those circumstances.

The research agenda of the industrialised world

- The fact that 90% of health research expenditure is on diseases that cause 10% of the global burden of disease, and that diseases that afflict many very poor people are minimally researched reflects a research agenda driven largely by the profit motive.

Informed consent

- The relevance of the above considerations to the complexity of obtaining informed consent – with due regard for respect for persons as they see themselves, within their cultural, familial and social contexts while simultaneously seeking to empower them to become more autonomous, and to reduce the power gap between researchers and subjects. Given the greater difficulty in achieving informed consent, more resources, education and training need to be dedicated to this aspect of research programs in "developing countries."
- The gap between the motives of external funders/researcher, and those of local institutions/researchers.
- The even larger gap between the scientific worldview and expectations of both these research groups and the mind-sets of their research subjects.

Justice in the distribution of knowledge and resources flowing from research

- The need to improve the lives of the vulnerable and disadvantaged; and to ensure that research on them results in beneficial results being made available to individuals and their communities through influences on policy makers.
- The sensitivity to appreciate the extent to which exploitation has contributed to existing disparities and to how these may be perpetuated through selective promotion of the interests of researchers/professionals, and through insistence on exclusive ownership of data and intellectual property rights.
- The need to build capacity in research ethics as part of the research endeavour; and the great need for research into diseases of limited interest to the industrialised world.

The debate on these issues cannot be undertaken solely within industrialised countries. The inclusion of scholars and others from diverse societies will enable all to see themselves and what they value in a clearer light. Such a

collaborative process is required for moral progress and for the achievement of human well being across the globe. Collaborative research should also include the enhancement of local capacity for grappling with these ethical problems in ways that allow the quest for universalism to include all who have something to contribute to collective understanding and to the reasoning process (Tan Torres Edejer, 1999; Macaulay, Commanda, & Freeman, 1999).

Making scientific and moral progress in the quest for human flourishing

Scientific and moral progress are dependent on: (i) the ability to be critical of the status of current knowledge, method and dogma; (ii) the willingness to raise critical questions on any issue; (iii) acquiring an understanding of one's own base within a specific cultural context; (iv) the sensitivity to recognise the limitations of one's own world view—that one's own insights are not necessarily correct or better than those of others and (v) the willingness to debate differences with an open and scholarly attitude. While there may be uncertainty on substantive aspects of the ethics of a particular project, ensuring a scholarly, open and deliberative process about the project within the framework outlined above offers the greatest potential for making moral progress in understanding and dealing with the substantive issues at stake.

The tensions between the views of westerners and those with alternative world views are illustrated by consideration of some covert reasons for why the South African government may have taken the decision not to implement a national drug-based programme for the prevention of HIV transmission (Benatar, 2001b). Such potential tensions also need to be kept in mind when addressing complex ethical issues in relation to testing AIDS vaccines (Benatar, 2000b; Lindegger & Richter, 2000; Slack et al., 2000), and to appreciate the fears of some that the haste to test as yet very imperfect vaccines in developing countries may largely reflect the concerns of wealthy nations for themselves. It is also appropriate to acknowledge that there is justification for scepticism that vaccines will be the solution to the HIV/AIDS pandemic. While scientific advances, and the search for vaccines must continue with vigour and integrity, and science should receive maximal support, it must simultaneously be borne in mind that science alone will not solve the problem of infectious diseases.

For example, the proximate cause of tuberculosis has been known since 1882, and effective chemotherapy has been available since the late 1940s. With the introduction of rifampicin and short course chemotherapy in the 1960s it became possible to cure almost any patient with tuberculosis. Indeed the hope existed at that time that tuberculosis might be eradicated from the world. Today the spectre is faced of tuberculosis becoming an untreatable disease due to the emergence of multi-drug resistant organisms and lack of development of new drugs. This situation has arisen because inadequate attention has been given to the fundamental causes of poverty and human suffering and to the context within which lives are lived and diseases need to be treated (Benatar, 1995). Against this background it is evident that a vaccine against HIV will not eliminate AIDS if this were to be used as ineffectively as anti-tuberculosis treatment has been used.

Tuberculosis and malaria are rampant largely because those who suffer from these conditions are out of sight, their lives are not valued and there is an insufficient profit motive driving treatment regimens. If there is no humanistic drive to providing treatment for malaria and tuberculosis then why should there be faith that when a vaccine has been developed for HIV/AIDS this will be made widely available? Those who travel with missionary zeal to undertake research on subjects they have not bothered to understand or care about, beyond their immediate research value, need to be reminded of these issues. Science must be associated with making public policy and with an ethics of international relations that will help promote processes to ameliorate the miserable conditions in which the majority of the world's population live (Hobsbawm, 1994; Benatar, 1998a; Falk, 1999; Benatar & Singer, 2000).

Robertson has eloquently argued for a language of public health that "speaks to the reciprocity and interdependence which characterise community." She describes how such a language can be found in a "moral economy of interdependence" (defined as the collectively shared basic moral assumptions constituting a system of reciprocal relations) rather than one of "moral nihilism and radical individualism" (Robertson, 1998). The ability to undertake HIV vaccine trials and other international collaborative research ethically will thus require extensive public debate and education on the balance between individual rights and the common good. It will be essential to involve the community to be researched in the design of protocols and in the conduct of collaborative research. Public education must be coupled to methods of protecting individuals from stigmatisation or abuse.

Conclusions

Reflection on a century that has been characterised by both amazing scientific progress and intense human suffering on a vast scale makes it clear that new ways of thinking are now required about illness, human suffering, health care, international relations and other forces that shape the world and profoundly affect health. These

include a better understanding of why disparities in wealth and health are widening; a greater commitment to social justice within nations and between nations; a deeper understanding of the interdependence of all people and of the ecological threats to the planet from environmental overload – threats which should lead to a new concept of security that focuses on the benefits of widespread human flourishing rather than on military might. It should also be acknowledged that it is neither beneficence nor altruism that are required to address national and global problems, but rather rational self-interest and a longer-range view than we currently seem willing to take. Progress will require transdisciplinary approaches that embrace a wide range of knowledge, skills, insights and abilities provided by philosophers, anthropologists, sociologists, physicians, theologians and others; and the promotion of public debates that enable participation in decision making.

As indicated earlier, problems of the magnitude we face, so starkly illustrated by the AIDS pandemic, require that ethical considerations extend beyond the interpersonal level. It is vital now for the ethics debate to include the best interests of whole populations, the ethics of how institutions (including multinational drug companies) should function, and the ethics of international relations – especially those between rich/strong and poor/weak countries. Neglect of the health and well being of the poorest and most disadvantaged threaten the health of all. Failure to learn profound lessons about interdependence from the HIV/AIDS pandemic, and to develop new paradigms of thinking about health and human flourishing will almost certainly lead to other, and perhaps worse, pandemics in the future.

The central recommendation in this presentation is for the ethics debate to be extended to the macro level. Achieving a higher public profile for such considerations, as with the battle against slavery, oppression and apartheid, is the first step towards resolving complex global problems. Use of the concept and the language of a "moral economy of interdependence" offer hope for making such progress (Robertson, 1998).

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Towards Progress in Resolving Dilemmas in International Research Ethics

Solomon R. Benatar

Interest in the ethics of research on human subjects, stimulated by atrocious human experimentation during WWII and the resultant Nuremberg Code, has been sustained by examples of unethical research in many countries and by proliferation of codes and guidelines. Such interest has intensified in recent years in association with expanding international collaborative research endeavors. The ongoing controversy in international research ethics takes place at two levels. At the practical level it is about the competing concerns of those predominantly interested in doing research to advance knowledge and those who, while supporting the need for research, are more acutely aware of the potential to exploit vulnerable participants, especially in developing countries. At the level of theory the controversy pits ethical universalism against moral relativism.

In her recent review of agreements and controversies in international research ethics, Ruth Macklin has concluded that, despite seeming agreement on several issues, many different viewpoints persist.[1] In her view it is unlikely that these will be resolved easily.

I begin by listing the issues on which Macklin notes broad agreement, followed by a brief reference to the nature of remaining controversies (in italics).

- Research must be responsive to the needs of people in the community being studied.
  How are decisions taken about what research to undertake in developing countries and how are these prioritized?
- Research is needed on diseases that occur frequently in poor countries, especially when these cause high morbidity and mortality.
  What sorts of study designs are acceptable? Can placebos be used and what comparative arms should be included?
- It is unethical to exploit the vulnerable.
  What specifically does it mean not to exploit people?
- It is unacceptable to lower the ethical standards for research in developing countries.
  What is the standard of care that should apply in research in developing countries? How is this defined and justified?

My goal is to consider whether areas of disagreement may be explicable by differing perceptions of social relations, for example as these apply among various participants within the research context, and by failure to use moral reasoning to identify the rational middle ground between ethical universalism and moral relativism. Researchers largely share a common scientific

Solomon R. Benatar *is Professor of Medicine and Director of the Bioethics Centre, University of Cape Town, and Visiting Professor in Medicine and Public Health Sciences, University of Toronto.*

world-view[2] and have a primary, if not exclusive interest in advancing knowledge. Underprivileged and deprived research subjects within traditional cultures tend to share a non-scientific world-view and have a predominant, and often even exclusive interest in receiving care for their illnesses. Although these differences in how people view medical research and access to health care lie along a spectrum and there may be much that is shared, the extent of such differences is not trivial and they are of practical importance in developing ethical policies for research. I shall not attempt to revisit in any detail the debate about ethical universalism and moral relativism as many others have dealt with this in considerable depth,[3] but I do hope to show that the widespread agreements listed above support the notion of there being universal ethical ideas, and that the use of moral reasoning can identify and appropriately consider local factors that carry legitimate weight for incorporation into a rational middle ground.

Bioethics & Cultural Pluralism

Anthropologists and social scientists have been critical of modern bioethics on the grounds that it is based on Western moral philosophy and western biomedical perspectives. An additional criticism is that bioethics is applied within a theoretical framework that emphasizes the application of scientifically rigorous medical care to people who are sufficiently autonomous to make self-interested decisions about themselves in a context of minimal social connectedness. Such a highly reductionist and individualistic approach takes insufficient consideration of the social and cultural context of illness or associated ethical dilemmas, isolates bioethical issues from spiritual perspectives and neglects the dynamic nature of relationships between individuals, their families and their community.[4]

Some critics of modern bioethics favor a more embracing communitarian conception of the individual that acknowledges and values closer links with other people. As an example, the African notion of a person values links with the past (ancestors), the present (family and community), and with other animate beings within a "web of relations" that has been labeled as an "Eco-bio-communitarian perspective."[5] Within this more embracing context of many traditional cultures, illness represents more than mechanical dysfunction, and understanding and dealing with illness requires an explanatory model with greater attention to the influence of external social interactions, luck, fate and magico-religious considerations.

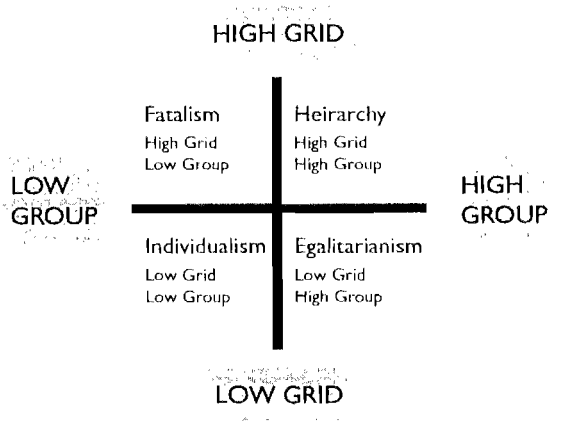
These two views of people, within social relationships defined in a polarized manner either as individualistic or communitarian along a single dimension, have generated much debate in relation to cross-cultural research ethics.[6] Some insist that the individualistic approach is the best universal model and that it must be rigorously applied in the research context. Others argue that this is a "particular rationality" about human life, one that is attractive in its abstract form but lacks resemblance to the real world in which people live. In addition it is argued that more attention should be paid to complex notions of social relationships, and in particular to potential exploitation of vulnerable subjects.

Forms of Social Solidarity

Mary Douglas and colleagues have recently presented a more complex framework for understanding social relations and interactions.[7] They begin by reminding us that there are two camps within the social sciences. One camp assumes that all humans are fundamentally the same in being rational and self-interested. The other, comprising most social scientists, considers that people differ greatly in what they consider to be rational and what is indeed in their own self-interest, and endeavors to document and explain these differences. The claim is made that the views of both camps rest on shaky foundations because cultures and societies vary across time such that social differences cannot be explained so simply. They also point out that if we are indeed all totally different it would be hard to understand history and to cooperate across cultures and that it is not necessary to have to choose between these extremes. They suggest that it is possible to discern a limited number of fundamental forms of social organization from which a large variety of ultimate forms of social and cultural life can be derived. They propose a cultural theory in which four basic ways of life can be derived from two dimensions (Figure 1).

Figure 1

Four Forms of Social Solidarity



The *grid dimension* describes the extent to which the behavior of individuals is determined and constrained by *role differentiation*. At the high-grid end of the spectrum people's lives are largely determined by the ascribed roles to which they are assigned (birth order, gender, race, caste, social position etc.) and from which it is difficult to escape. At the low-grid end people are free to make choices about how they will live and here there are opportunities to shift from one role to another.

The *group dimension* defines the spectrum along which *commitment to a social unit* constrains the thoughts and actions of individuals. At the high-group pole there is considerable commitment to, involvement, interaction and co-operation with others. At the low-group pole individuals negotiate their way through life with few allegiances and with maximum competitiveness.

Each of the four ways of life identified in this analysis, "consists of a specific way of structuring social relations and a supporting cast of particular beliefs, values, emotions, perception and interests."[8] A synoptic caricature of each way of life follows. In the *individualist* social setting, people see themselves as inherently self-seeking and independent, working within self-organizing ego-focused networks. In an *egalitarian* social setting, people are viewed as essentially caring and entitled at least to equal opportunities to good lives, and perhaps even equal outcomes. In *hierarchical* social settings, the world is viewed as controllable and people as capable of responding to wise authority within distribution systems determined by social position. In a *fatalistic* social setting, people tend to see little fairness in this life and possibilities of effecting change for the better are largely limited to magico-religious interventions.

This categorization into four basic ways of life is offered to illuminate paradoxical and, sometimes contradictory, ways in which individuals in different social settings perceive the natural world and in how they approach contemporary public policy issues. The point is also made that these categories are not entirely independent and that they rather represent the spectrum of a broad range of potential social relations. Emphasis is given (with reference to the work of Thompson et. al. reviewed by Schwartz[9]) that each way of life tends to be self-undermining, and that "to survive requires some overlap with the other ways." So while the Western way of life is caricatured as fitting best into the left lower quadrant (individualism) such rigid categorization blurs out the extent to which it overlaps with the other ways of life. For example some degree of hierarchy is required to enforce contracts and get work done, and egalitarianism also has moderate strength within the Western tradition. Similarly, while the African way of life seems to fit best into the right upper quadrant (hierarchy) it also shades across into the other quadrants. Hierarchies would become totally stagnant if there were no space for the creative energy of individualism, and there is indeed an element of egalitarianism within community oriented societies.

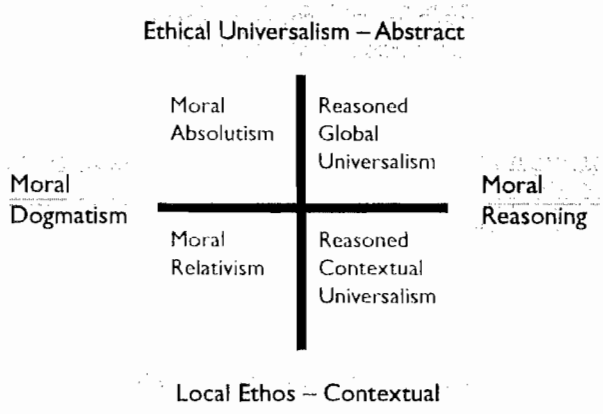
This analysis illustrates the wider spectrum of middle ground that lies between the usually described extremes of individualism and community, and the inadequacy of always focusing on the polar extremes of dichotomous options. Traditional hierarchical societies are moving towards greater democracy and placing more emphasis on individualism. One example is the new South Africa with its liberal constitution and Bill of Rights. In addition multicultural modern societies are acknowledging the need for more emphasis on community, and the need for solidarity is increasingly appreciated in a globalizing and interdependent world. However, it is important to note that in such pluralistic societies respect for democracy should take precedence over the preservation of cultural traditions that undermine democracy and human rights. Under all these circumstances egalitarianism is becoming an attractive and challenging common ground on which diverse cultures could hopefully meet.

There are two requirements for finding such middle ground. Firstly, it is necessary for scholars to acquire deeper insights into our own value system and the value systems of others (see section below on understanding others). Secondly, and of equal importance is the need to avoid either uncritically accepting the moral perspectives of all cultures as equally valid, or rejecting them all as invalid. Instead, and despite the shortcomings perceived by some of such an approach, moral reasoning should be used to evaluate when and how local considerations can be morally relevant in the application of universal principles in local contexts.

Universalism and Relativism: Interpreting and Resolving Ethical Dilemmas

I have borrowed from the analysis offered by Douglas and colleagues to construct a two dimensional framework for understanding disagreements about ethical dilemmas (Figure 2). One dimension stretches from a pole representing the abstract philosophical construction of universal ethical concepts and principles to a contrasting pole where the local ethos (defined as mores that are influenced by time, geographical location, culture and other social forces) defines worlds that have been studied and described by anthropologists and social scientists. A second dimension stretches from the ability to use moral reasoning to negotiate the application of universal principles within local contexts to po-

Figure 2
Four Perspectives on Ethical Dilemas



sitions of moral dogmatism and "instruction manual" approaches to ethics.

This is a more nuanced analysis than one that pits ethical universalism against moral relativism along a single dimension. It enables distinctions to be drawn between four broad positions: moral absolutism, moral relativism, reasoned global universalism and reasoned contextual universalism. *Moral absolutism* describes the position taken by those who believe in ethics as prescribed and immutable. *Moral relativism* contends that morality is entirely relative to time, place and culture. The position of *reasoned global universalism* utilizes a set of abstract ethical principles that have been developed and justified through a reasoned process. The position of *reasoned contextual universalism* is reached by taking morally relevant local factors into consideration in applying reasoned global universalism.

Seeking the position of reasoned contextual universalism acknowledges the relevance of history, geography, culture, economics and other factors to the interpretation of such principles so that they can play out effectively and progressively in differing contexts. The influence of such factors on shaping values, belief systems and the real world is evident in the evolution of bioethics and its methodology in the western world over the past 50 years.[10]

It is widely acknowledged that it is not possible to spell out precisely in any particular jurisdiction what is constitutional or unconstitutional in all situations and at all times without judicial interpretation. Similarly it is a fruitless exercise to attempt to write detailed "instruction manual" type directions spelling out precisely what is ethical or unethical in all situations at all times. The place of ethical universalism is at the abstract and conceptual levels, and then there is the need to seek reasoned ways of specifying how abstract principles are applied at the local level.[11]

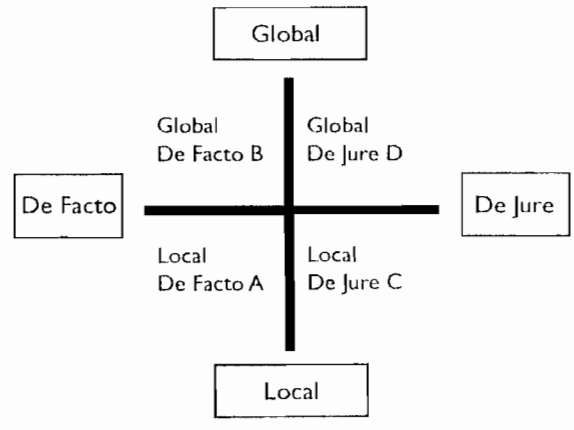
Thus, as with considerations of social solidarity, the position of reasoned contextual universalism allows for the rational application of universal approaches within local contexts. Achieving such middle ground avoids the abstraction that is blind to context while also avoiding the perils of moral relativism. An essential requirement here is to have deeper insights (a difficult task) into when and how it is morally appropriate to take local contexts (ethos/mores) into consideration in applying universal ethical principles. Considerations of major importance will be whether local cultural values inflict harms that could and should be avoided (or are harmless) and whether (or not) they infringe on human rights or abrogate respect for human dignity – in the full acknowledgement that these concepts too are not easily defined in acceptable ways to all.[12]

Standard of Care

It is against this background that a philosophical approach to the standard of care in international research can be reviewed.[13] Alex London shows that the controversy about whether or not to use a placebo, when some effective treatment may be available, is more complex than a comparison between local and global standards as reference points. He argues that the controversy also embraces interpretations of the standard of care from what he calls "de facto" and "de jure" perspectives. His morally reasoned analysis can also be depicted as a two dimensional framework (Figure 3).

In a sequence of lucid arguments London shows that the debate does not merely take place along the

Figure 3
Four Formulations of Standards



local/global axis at the de facto end of the intersecting axis where A (if no treatment is the local standard then placebo can be used - moral relativism) is posited against B (a placebo cannot be used if an effective treatment is in use anywhere in the world - moral absolutism). It also takes place along the local/global axis at the de jure end of the intersecting axis where weight is given to the judgment of medical experts regarding what is the most effective treatment. However, he goes on to argue that the debate does not posit A against D (a global de jure position based on the view of experts in the medical community as to which treatments are most effective against the illness in question - reasoned global universalism) as this only takes into consideration a narrow biological version of equipoise. He reminds us that the original notion of equipoise described by Freedman extends beyond the biological perspective of drug action to include broader considerations of the effective use of drugs within particular contexts, (the 'portmantean' perspective).[14] Using this broader conception of equipoise it can be justifiable to adopt a nuanced version of C (a local de jure position where the judgments of medical experts would determine how proven diagnostic and therapeutic interventions are relevantly applicable to the local context - reasoned contextual universalism).

His detailed argument cannot be summarized in detail here, but I have attempted to illustrate his elucidation of a rational position that would permit research to be undertaken ethically in developing countries under conditions of reasoned contextual universalism (C) when global reasoned universalism (D) cannot, or should not, apply because of particular local conditions.

Understanding Others

Understanding others is essential in a globalizing world and requires finding the reasoned middle ground between polarized views rather than focusing on simplistic extremes. Achieving such understanding of ourselves and of others requires what Ninian Smart has called "structured empathy" and "cross-disciplinary study of world views and belief systems." Belief systems provide ways of "seeing" the world that, through symbols, actions, and mobilization of feelings and wills to act, "serve as engines of social and moral continuity and change."[15] As world-views represent powerful and different starting points from which people think and argue (and generate conflict) it is necessary to understand how they are constructed, used and abused.

While Smart describes several dimensions of world-views with special emphasis on these dimensions within religions, his analysis is also relevant for secular world-views. In the religious context the *doctrinal or philosophical dimension* stresses the transcendent universal aspect of a world-view and serves the function of bringing order to what is given by revelation. As examples, consider the Trinity doctrine in Christianity and the doctrine of "the void" in Buddhism. In the secular scientific world, supreme faith in progress through scientific rationality and belief in theories of evolution (despite gaps in knowledge) are basic precepts - although it should be noted that a special characteristic of the scientific world-view is its openness to self-scrutiny and criticism. Indeed, within such an open system of thinking nothing is sacrosanct and any hypothesis or "fact" is open to question - and this is how scientific progress is made. The *mythic or narrative dimension* includes the myths and stories that serve to buttress the world-view doctrines; for example, the story of the fall of man in Christianity, the stories about the contract between God and man in Judaism. The narrative dimension in the secular world includes the big bang theory of the origin of the universe, the stories of history that provided sweeping meanings of the past and the light cast by literature on human nature. The *ethical or legal dimension* (in both religious and secular worlds) comprises the rules and precepts that bind "believers" within a common community. These three dimensions form a "web of belief" that are best understood in the context of experience and practice.

The other three dimensions - the *ritual or practical*, the *experiential or emotional* and the *social or institutional* all serve to involve followers in acts that express and intensify feelings for and attachment to the world view, and to perpetuate it, often in deliberately divisive ways. Both secular and religious fundamentalists capitalize on these dimensions to cause divisions within their world-view and to capture a significant following.

In the realm of religion, Hans Kung has shown how it is possible to obtain agreement from all the major world religions on several central values (see below) that reflect the universal aspect of all religions and focus on belief in some higher force.[16]

- A conviction of the fundamental unity of the human family, of the equality and dignity of all human beings
- A sense of the sacredness of the individual person and his conscience
- A sense of the value of the human community
- A belief that love, compassion, unselfishness and the force of inner truthfulness and of the spirit have ultimately greater power than hate, enmity and self-interest
- A sense of obligation to stand on the side of the poor and the oppressed as against the rich and the oppressors
- A profound hope that good will finally prevail.

These values are arguably the most important ones to

any religion and Kung's attempt to focus on them was an attempt to diminish inter-religious conflicts that reflect differences in the way the above universal ideas are expressed, institutionalized, used and abused socially. His idea was to find the "abstract" universal principles that could promote solidarity between people from all religions. There are of course many unshared local values among religions, some of which may be acceptable if harmless and do not infringe human rights. Others would be considered morally unacceptable as they infringe on human rights (for example, amputation of hands as punishment, or ritual mutilation of genitals). Kung's failure to achieve the goal of greater unity across religions reflects the vested interests of religious groups in focusing on much less important, but very powerful, social and institutional beliefs, rituals and practices that both advertently and inadvertently have divisive consequences.

Philosopher, Martha Nussbaum eloquently argues that three capacities are essential for intelligent dialogue and cooperation between people from different backgrounds in today's interdependent world. These comprise the capacity for critical examination of oneself and one's traditions, the capacity to see oneself as bound to all other human beings, and the capacity to imagine what it might be like to be in the shoes of a person very different from oneself.[17] Philosopher Jonathan Glover, in his descriptions of numerous genocides across the world during the 20th century and his quest for understanding why these are perpetrated, concludes that it is only our moral imagination – our ability to imagine ourselves in the shoes of others – that could enable us to significantly alter our outlook and actions.[18]

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Making Progress in International Research Ethics

In order to make progress in international research ethics it is important to recognize and appreciate the extent to which there is indeed widespread agreement on such important basic issues as identified by Macklin.[19] These agreements lie at the level of reasoned global universalism. Although there are similarities in the depiction of different ideas in figures 1, 2 and 3, it should be noted that there is only a loose link in the relationship between each quadrant. However, in all these analyses (Figs 1-3) the right lower quadrant represents respect for the equality of all people, within the diversity of ways in which they live in the real world. The right lower quadrant of figures 2 and 3 illustrates a domain where a middle ground could be found through scholarly discussions of how to rationally apply abstract universal ideas within local contexts. In this way universal ideals could be upheld and limitations that have a legitimate moral influence can be acknowledged and applied. It is unlikely that agreement will easily be reached on divisive issues. However, grappling with and understanding such diversity in scholarly ways could allow progress to be made in finding a rational common ground. In this way progress over time could be made from a range of positions of reasoned contextual universalism towards the more uniform position of reasoned global universalism.

Against the framework of the analyses above I now turn to consider some practical suggestions in response to the areas of disagreement outlined by Macklin in the hope that attention to these with new insights could improve the ethical conduct of international research and begin to narrow the gap between different perspectives.

How are decisions taken about what research to undertake in developing countries and how are these prioritized?

In keeping with an approach that acknowledges that there are different forms of social relations and that understanding these and working with them offers greater prospects for resolving conflicting views the following could be advised. First, clinical trials in developing countries should be relevant to the health needs of the host country. Second, the design and conduct of trials should involve members of the host country in participatory partnerships of an emancipating nature. Third, prior evaluation should be made of whether study findings can, and will, be incorporated into local health care systems. These processes, involving dialogue and collaboration from the earliest stages of research design, are in a sense analogous to the idea of democratic deliberation,[20] and could assist in explicating and justifying priorities in particular contexts.

What sorts of study designs are acceptable? Can placebos be used and what comparative arms should be included?

In my view it will not be possible to resolve the current debate about the use of placebos unless the different motives and world-views of those who argue for differing regulations regarding their use are considered. In addition, while general statements can be made about the use of placebos in research, their valid use in every conceivable setting cannot be deduced simply from a few sentences in research ethics guidelines. If we accept that abstract universal principles are valid; if we consider local factors to be relevant to the application of universal principles; and if we value the process of moral reasoning, then we must agree that in order to determine whether or not a placebo arm is justified, then careful consideration is required of potential harms and benefits in relation to studies designed to ask and answer specific questions in specific contexts. In those situations where morally valid reasons can be mounted for placebo-controlled trials, and where such studies are designed specifically for the benefit of local populations rather than as surrogates for acquiring information for wealthy countries (for example studies of "me too" drugs[21]), the use of a placebo may be justified on rational grounds. The proviso is that utilitarian calculations for the benefit of whole groups of people (and with their agreement) should be constrained by the need to prevent harm to individuals, and to avoid the use of placebo when this may result in unnecessary suffering, avoidable injuries or death. Each study in which a placebo arm is anticipated should thus be considered on its merits, rather than precluded or allowed entirely on the basis of a bluntly designed clause in a declaration. Considerations of context are required aspects of moral reasoning in the application of universal principles in specific situations, and taking relevant moral factors into consideration does not entail moral relativism.

What specifically does it mean not to exploit people?

A simple definition of exploitation in the research context would include the following:

- Taking advantage of power differentials to do what researchers want to do and in any way they wish without consideration of the harms that may be perceived by research participants.
- Using research subjects as a means to achieving the ends of researchers (advancing knowledge) when the benefits of the research will not be fairly available to research participants and their communities.
- Undertaking studies in which minimal benefits accrue to participants and large benefits, especially financial, may accrue in the long term to research sponsors, thus failing to ensure fair balance of benefits and burdens to sponsors/researchers and research participants in the longer term.
- Denying participants post-trial use of therapies identified as beneficial in the trial in environments where such treatments would not otherwise be available.

To avoid exploitation priority should be given to trials that will provide useful knowledge for the host country, the balance of benefits and burdens should be fairly distributed and the benefits of research should be seen to flow into health care settings. Efforts should also be made to ensure that existing disparities are not entrenched by deflecting local human or material resources away from healthcare systems in host countries towards research.[22]

What is the standard of care? How is this defined and how can it be justified?

The idea of a global universally applicable ethical framework for the standard of care in international research would be inclusive of at least the following features:

- Conducting research with the same respect for the dignity of all subjects wherever they are in the world – as reflected in treating them as ends in their own right and not using them merely to acquire knowledge that could be of benefit to others.
- Obtaining meaningful informed consent by structuring the process of obtaining consent within the linguistic and cultural framework of research subjects.[23]
- Providing care for other diseases concomitantly afflicting research subjects for which treatment would not otherwise be available in impoverished settings and in this way enhancing the potential for community benefit to flow from research.[24]
- The avoidance of exploitation as indicated above.

It has been further argued that such a globally reasoned universal standard of care can be translated into feasible local practices (reasoned contextual universalism). This would require the shaping an acceptable standard of care for a particular study through a deliberative scholarly process (not merely political haggling) among researchers and the community of research participants within respectful partnerships.[25] Making progress on a continuous basis through successive research projects in local contexts could in this way improve health care and move the standard of care in research towards the reasoned global universal level.[26]

Attempts to resolve the vexed question of the "standard of care" for research in developing countries by utilizing arguments totally within a single world-view are unlikely to convince those who have a different per-

spective on social relations and how these should influence social policy in research. Making progress towards narrowing the differences identified by Macklin requires giving due moral weight to morally significant contextual considerations, including the values of research participants, where these are not harmful and do not infringe on the physical and emotional integrity of others.

With regard to justification for a broader overall standard of care, several arguments have been offered. These include moral arguments that embrace concerns not to do harm, to do good and to be fair. There should be respect for harmless practices within other cultures, while rejecting those that infringe human rights. There should also be sensitivity to the adverse invasive social impact of itinerant researchers from developed countries. Strategically it can also be argued that an improved standard of care could enhance participation in research and the achievement of research goals. Not least, an operational argument can be mounted in support of the idea that research coupled to improved standards of care facilitates improvements in the delivery of health care. As the goal of medical research is to improve health care there should be greater support for encouraging closer links between research and its application at sites where the research is being undertaken. These justifications and examples of how they have been applied in practice have been described in detail elsewhere.[27]

While dual standards of care will ensue from implementing a broader standard of care in poor countries, this is an inevitable aspect of progress. Inability to achieve immediate equity should not be an impediment to making improvements that could spread more widely with time and effort. It could be argued that it is more unethical to be satisfied with existing low or non-existent standards than to create dual standards as part of a progressive means of improving care. Of course a higher standard of care will be an inducement. But inducements are only morally wrong if they result in participants taking risks with their health and lives. What is wrong with an inducement that enables access to otherwise unavailable care and continues after the trial is over? Inability to achieve immediate equity should not be an impediment to achieving progressive reductions in inequity.

Conclusions

International researchers should be educated about the social, economic and political milieu that frames the context in which research is being undertaken, and they should be sensitive to the differing perceptions of research and health care that prevail in such contexts. They should understand that their low-group, low-grid (individualistic) perception of themselves and of those they study, even if justifiable as an ideal, is not necessarily closely shared by people from other cultures. Those who view life and social relations from high-group, high-grid (hierarchical) or high-grid, low-group (fatalistic) perspectives require equal respect as people and much effort is required to ensure finding a mutually acceptable and egalitarian meeting ground for international cross-cultural collaborative research and research ethics.

> While general statements can be made about the use of placebos in research, their valid use in every conceivable setting cannot be deduced simply from a few sentences in research ethics guidelines.

Researchers should also understand that their scientific world-view, that allows them to see themselves as nobly advancing knowledge, is at least to some degree a reflection of their "local" values. Impoverished research subjects who have benefited little from previous research may have a different "local" value which views health care professionals primarily as providers of care. These differing local views can be overcome by finding a middle ground through education of researchers about perceptions of the research endeavor within specific local contexts while simultaneously providing care that would otherwise be unavailable in the research setting. By meeting the "local" needs of both researchers and of participants the most admirable universal goal could be achieved - advancing knowledge for the purpose of improving health locally and globally.[28]

Making such progress will require new paradigms of thinking. Firstly, it must be acknowledged that research does not take place in a vacuum but rather in a world with wide disparities in which much research on vulnerable people has never been applied for their benefit. Secondly, researchers should increasingly view continuation of current patterns of exploitative research as ethically unacceptable. Thirdly, the need to link moral progress to scientific progress should become a high priority. Progress could be made towards such goals by coupling research to improvements in health through a broader conception of the standard of care and by linking research to development through partnerships and strategic alliances that could promote sustainability.

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Figures

Figure 1. Four forms of social solidarity (Adapted from Douglas et al [7])

Figure 2. Four perspectives on ethical dilemmas.

Figure 3. Four formulations of standards (based on London[13])

RESEARCH ETHICS

HIV prevention research and global inequality: steps towards improved standards of care*

K Shapiro, S R Benatar

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Intensification of poverty and degradation of health infrastructure over recent decades in countries most affected by HIV/AIDS present formidable challenges to clinical research. This paper addresses the *overall* standard of health care (SOC) that should be provided to research participants in developing countries, rather than the narrow definition of SOC that has characterised the international debate on standards of health care. It argues that contributing to sustainable improvements in health by progressively ratcheting the standard of care upwards for research participants and their communities is an ethical obligation of those in resource-rich countries who sponsor and implement research in poorer ones.

Forty million people are now living with human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), an estimated five million of whom became infected in 2002.[1] Most live in resource-poor countries where access to basic health care, adequate nutrition, and water are severely limited, annual per capita income is typically less than US$200, and annual per capita health expenditure below US$10.[2]

HIV/AIDS RESEARCH IN A GLOBAL CONTEXT

Spectacular growth of the global economy and inspiring scientific advances in recent decades have led to great hopes that research and further economic growth will improve global health. However, scientific progress, even in association with massive economic growth has proved insufficient to prevent millions of premature deaths from childbirth, malaria, tuberculosis, and diarrhoeal disease—and disparities in health continue to widen.[3] The burden of HIV/AIDS, more complex in both health and social terms, has continued to grow relentlessly despite advances in prevention and treatment.

Recent ethics discussions have focused on the standard of health care (SOC) in relation to drugs in trials where a placebo arm is under consideration. Detailed reasoned responses to this issue have been provided elsewhere.[4–6] Here we are concerned with standards for the overall provision of health care to participants in research in developing countries *independent* of treatment or control arms, an issue that has received less attention but is important in the context of HIV prevention trials.

We first review challenges facing HIV researchers in developing countries. We then redefine SOC in broader terms and argue that contributing to sustainable improvements in health is an ethical obligation of those in resource-rich countries who sponsor and implement research in poorer ones. We describe clinical trials where this has been achieved, and propose steps for implementation of a broader SOC more widely, so that research participants and their communities could be left better off after a trial, and not merely "no worse off".[7]

CHALLENGES FOR RESEARCHERS AND HOST COUNTRIES

International collaborative multisite research on HIV prevention interventions such as vaccines, microbicides, sexually transmitted infection (STI) control, and behavioural and antiretroviral interventions comprise some of the ongoing efforts to prevent spread of new infections. In resource-poor countries such research may require costly inputs by sponsors into local health infrastructure, including building repair, installation of running water and toilets, sophisticated laboratory and computer equipment, staff training, and basic medical supplies. These improvements tend to benefit the research project but leave the public facility where research is housed to deal with its ongoing problems using often meagre resources. Innovative means of attracting additional funds, and even utilisation of a small portion of research funds for treating other diseases afflicting research subjects and improving local health services, in association with research in host countries is important for many reasons discussed later in this paper. However, specific challenges are generated that need to be addressed in the interests of justice and beneficence:

- Where services are improved in the research context, a dual SOC results within a community. Research participants may have easy access to free health care for problems unrelated to the research, in contrast with long waits and lack of essential supplies in the public system. Although some argue that participants deserve better care because of risks taken and time spent in research activities, providing this results in significant problems within families and health facilities.

See end of article for authors' affiliations

Correspondence to: S R Benatar, Department of Medicine & Bioethics Centre, University of Cape Town Observatory, 7925, Cape, South Africa; sbenatar@uctgsh1.uct.ac.za

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- Higher SOC than otherwise available may be seen as an undue inducement to participate in a trial. However, access to health care when this is otherwise unavailable is arguably valuable enough to outweigh what are understood to be risks of participation.
- Improved care tailored to research is often expensive and not sustainable at the conclusion of a trial, with the result that research participants lose access to a level of care they had previously enjoyed. Hence the need to consider issues of sustainability.
- Higher quality research-only services given by less burdened providers contribute to perceptions of a cadre of privileged research staff among non-study clinicians. Higher salaries paid to research clinicians are not sustainable and drain the most qualified health workers away from the public sector. The provision of health care for diseases unrelated to the research may contribute to the therapeutic misconception by promoting the erroneous belief that the purpose of the research is to provide beneficial care. Clear communication could minimise these problems.
- Sponsors often stipulate that research funds cannot be used to provide services. Conversely, aid programmes are often restricted from funding research. Cooperation between these activities could enhance the value of both.
- Research on preventive HIV interventions requires large cohorts of high risk, uninfected individuals from vulnerable populations, generating tension between advancing the scientific agenda (for the benefit of future patients) and protecting healthy subjects from research related harms. The question of whether those found to be positive at screening or those who convert during the trial should be treated with antiretrovirals is a further challenge.
- Entire communities may be stigmatised by the mere fact that AIDS research is being conducted because of publicity around large, noticeable trials.

Researchers have anguished over these questions, solutions to which must be sought from sponsors, their governments, and host country governments and not only from front line researchers.[8 9] Commonly, in developing countries researchers cope with inadequate care available to participants and families by extending themselves to assist with health problems unassociated with the research. The motivation of researchers to provide more complete and compassionate services deserves encouragement and support from sponsors. Improved care is often cited as a reason for participation in trials and also contributes to study accrual and retention. However, such services barely meet participant needs, much less the larger unmet need for care in the community. Improved access to antiretrovirals through the World Health Organization's (WHO's) initiative to treat three million with AIDS by 2005 could make moot the dilemma about antiretrovirals for seroconverters during trials. However, the failure of donors to provide funding for "3 by 5" means that the dilemma will persist until there is universal access to antiretroviral therapy (ART). Despite good intentions, well resourced, research sponsored care in an otherwise impoverished healthcare facility is a microcosm of global health inequities that challenges researchers and sponsors to promote the ideals of justice aimed for in international ethics declarations.

WHAT STANDARD OF CARE, WHOSE DEFINITION?

Debate about the standard of care in international research ethics has to date centred on what standard of drug treatment is acceptable in the control arm of a randomised controlled trial (RCT). This debate about SOC as the best proved drug treatment excludes consideration of context and essential "background" elements of health care to which participants and the surrounding community in developed countries normally have access, all of which are relevant to the standard of care related to the research project. The perspectives on the key issues relating to SOC in five international research ethics documents[7 11–13] (summarised in table 1) reveal that the phrase "standard of care" is often addressed obliquely and remains poorly defined. These international guidance documents thus do not sufficiently address the broader concept of SOC that constitutes the thrust of this paper.

The definition of SOC in research that we propose lies somewhere between the highest standard achievable with unlimited resources and the miserably low (sometimes non-existent) standards characteristic of very poor countries. Some may resist broadening the definition of SOC in this way, preferring to consider additional care as ancillary to research. Others, however, agree that even ancillary care (not directly related to research) should be provided when certain well defined circumstances exist, and have recently proposed a framework to better define when and how such obligation exists.[11] We contend that research cannot be considered in a vacuum, and that the role of the researcher in developing countries differs from that role in resource-rich countries where research participants generally have access to adequate health care. We argue that by implementing progressive improvements in the level of health care of research participants, the overall standard of health care could be ratcheted upwards—thus providing a link between research and health care.

ARGUMENTS FOR IMPROVING THE STANDARD OF HEALTH CARE

Arguments for improving the overall standard of care in association with research projects can be advanced from several different but interlinked perspectives.

Justice

The principle of distributive justice in the research context requires that the burdens and benefits of research be fairly distributed among all involved. The concept of justice is explained "as fair, equitable, and appropriate treatment in light of what is due or owed to persons". People are due or owed benefits or burdens because of "being productive or having been harmed by another person's acts".[14] Differences between SOC available in host and sponsor countries are often inherently unjust for the following reasons:

- Poor communities may bear the burden of research but not benefit from it because of the complexities of the poverty in which they exist.
- Although those in rich sponsoring countries may not benefit directly from HIV prevention research conducted in poor countries, they also bear little if any of the burden of that research and often benefit indirectly from academic and other recognition.
- Factors contributing to poverty, disease, and poor health in developing countries are in part attributable to previous or current actions of sponsoring countries—colonialism, exploitation of cheap labour and natural resources, support of corrupt regimes, sustaining levels of unpayable foreign debt, and unsound trade rules—that are beyond the control of local governments alone to address.
- Researchers are generally privileged people, while many research participants are among the most vulnerable in our world, living under the worst conditions of deprivation.[10]

Table 1 International guidance and standard of care—key issues

	National Bioethics Advisory Commission[10]	Council for International Organisations of Medical Sciences[7]	Declaration of Helsinki[11]	UNAIDS: Ethical Considerations in HIV preventive vaccine research[12]	Nuffield Council on Bioethics[13]
Adequate SOC v "undue inducement"	"Reasonable to conclude that providing medical care to participants is warranted, appropriate, and proper" (Chapter 3: 47) Researchers should indicate how they would minimise therapeutic misconception (Recommendation 3.10)	Warns against over-large payments that could be undue inducement to participate (Guideline 10)	Silent	"Care should be taken [not to] ... unduly influence freedom of choice in participation" (Guidance point 10)	Dividing line is fine between inducement and benefit (Paragraph 44)
Protecting vulnerable populations	The US Government should not sponsor or conduct trials that do not at a minimum provide ... a minimum of risk to participants ... and ... equal regard for all participants (Recommendation 1.1) ... a vulnerable population should not be the focus of research unless the potential benefits of the research will accrue to that group after the trial (Chapter 1: 7)	In populations with limited resources, researchers must make every effort to ensure interventions will be made available (Guideline 10) If [vulnerable persons] participate, means of protecting rights and welfare must be strictly applied (Guideline 13)	Particular needs of the economically and medically disadvantaged must be recognised (Paragraph 8)	Limited availability of care and treatment can increase risk and harm to participants (Guidance point 7: 23)	Developing country participants more vulnerable to exploitation because of limited access to basic health care, lack of knowledge about research, cultural differences (Paragraph 11)
Universal v best locally available care	An RCT must provide "established effective treatment" in control arm whether or not available in host country (Recommendation 2.2)	In RCTs, subjects should generally receive an "established, effective intervention" (Guideline 11)	In RCTs, must provide "best current SOC" (Paragraph 29)	Need to achieve equity in care and treatment globally; minimum is best proven locally (Guidance point 16: 42–3)	In RCTs there is a strong case for current standard local treatment (Paragraph 36)
Capacity building for SOC	Potential problems exist maintaining SOC established during a trial ... sponsors could undertake training of personnel, maintenance of equipment post-trial; ultimate goal is to improve welfare of those in host country (Section 5: 77)	Sponsors are ethically obliged to ensure availability of services to make intervention reasonably available (Guideline 21)	Every participant in trial should be assured access to the best proven methods identified by study (Paragraph 30). This implies building capacity though not explicitly mentioned	Sponsors should contribute to health care capacity-building integrated into community infrastructure (Guidance point 16: 42–3)	The ethical obligation to provide improved care when trial over and by whom is unclear (Paragraph 17)
Treatment of research related injury	Adequate care and compensation for injuries directly sustained during research must be provided (Recommendation 1.1)	"Sponsors obliged to ensure treatment for subjects who suffer injury as consequence of research interventions" (Guideline 21)	Silent	Sponsors need to ensure care and treatment for those who become HIV+ (Guidance point 16)	"Provision of care for seroconverters may be a function of what is locally available" (Paragraph 54)
Community participation	Researchers/sponsors should involve community throughout trial design and implementation (Recommendation 2.3)	Important to involve community members in decisions around benefit/risk, informed consent, responsiveness to health needs (Guidance 1, 10)	Silent	Comprehensive care and treatment package should be developed by community (Guidance point 5, 16)	Silent
Pre-trial agreements	Whenever possible, preceding start of research, agreements should be negotiated to make benefits/intervention available to host country after research is completed (Recommendation 4.3)	Sponsor obligations should be clarified before research begins (Guidance 21)	Silent	Plans to make vaccines, other knowledge and care available should be developed at initial stages (Guidance point 2, 16)	Researchers can demand pre-trial discussions with pharmaceutical companies (Paragraph 57, 64)

RCT, randomised controlled trial; SOC, standard of health care.

Table 2 The burdens and benefits of international research

	Burdens	Benefits
Participants	Risk to health—iatrogenic	Improved healthcare access
	Stigma and social harms	Improved health status
	Time lost to visits	Increased knowledge about health
	Risk of exploitation	Feeling of altruism
	Increase in risk behaviour if mistaken belief that study is protective	Benefits of positive results if available
Community	Poor overall access to care in the presence of increased resources for research	Improved access to care if resources shared
	Dual SOC with access only to the lesser standard by non-participants	Increased knowledge about health
	Stigma of identification with HIV infection	Benefits of positive results if available
Healthcare system	Diversion of scarce health resources to research:	New resources for health
	• health workers	Training for health workers
	• clinic and hospital space	New clinic and hospital space
	• materials	
	Dual standards of care	
	Increasing fragmentation of services	
	Research priorities may dominate services	
Researchers from sponsoring country	High costs	Career advancement
	Operational complexities	Good salaries
	Regulatory restrictions	Travel to interesting places
	Cultural and social gaps in understanding population	Right livelihood, altruism
Researchers from host country	Sponsoring country researcher may set research agenda	Career advancement
	Cultural and social gaps in understanding	Altruism
	Racism	Increased resources for research directed to local problems
	Divided loyalties between local and sponsoring institutions	Higher salary than if locally funded
Sponsors	Failure to recover costs	High profit potential in drug research
	Potential for external problems stalling project	Less stringent ethical oversight
	Operational complexities	Lower operating costs
	Regulatory complexities	Improved public profile of company or organisation

Faced personally with the dehumanising conditions under which their research participants live, many researchers feel motivated to ameliorate social injustice through contributing to an improved SOC, often at personal expense.

It would be undisputed that research initiatives themselves should not introduce new inequalities or further exacerbate existing inequalities in health in the community where research is being conducted. Moreover, in the absence of an adequate theory of international distributive justice it remains feasible to seek to reduce gross injustices through reasonable means. We agree with the cogent arguments advanced by Pogge that richer sponsoring countries (governments, aid agencies, academic institutions, and the pharmaceutical industry) have an ethical obligation to transfer resources to poorer nations on the grounds that they are intimately involved with sustaining such poverty.[17]

Beneficence

This principle requires that researchers take some responsibility for participants' physical, mental, and social wellbeing as related to the study.[18] Although ethicists argue about the limits of obligatory beneficence, we agree with Singer that "if it is in our power to prevent something bad from happening without thereby sacrificing anything of comparable moral importance, we ought morally to do it".[19]

Defining limits

Contrary to the views of some that distributive justice and beneficence require continued transfer of resources so long as disparities exist, we believe that reasonable lines can be drawn. For example transfer of merely 1% of the resources of the richest 20% of the world's population to the poorest 20% would almost double their annual per capita gross national product (GNP). With this in mind we recommend that a minimum of 1% of the cost of a research project be allocated towards improving the SOC in association with the project. If more can be generated through the partnerships we describe below so much the better. We do not unrealistically propose that research be shackled by excessive demands for associated medical care. We do suggest that conducting research as though in a vacuum, oblivious to the basic health needs of research participants in developing countries, does not meet the ethical requirements of justice and beneficence. Requiring greater sensitivity to the plight of the poor and some degree of solidarity with them is not an excessive moral requirement. Living in South Africa during the apartheid era sensitised one author of this paper to the moral burden of bearing witness to gross inequalities and prompted many to strive to narrow disparities under difficult conditions. The value placed on openly bearing witness and providing humane support to some of the most marginalised people on earth is reflected in the award of a Nobel Peace Prize to Médecins Sans Frontières in 1999. Upholding the ethical integrity of researchers, particularly the caring role of doctors in the role of researchers, requires that they be supported and encouraged by sponsors with adequate funding and staff to form enduring relationships with their host country and international partners. Facilitating beneficence in this way can also contribute towards more equitable distribution of burdens and benefits.

Strategic interest

Today's emerging infectious diseases have no respect for any national boundaries and are now widely recognised as global threats. The long term self interests of all would thus be better served by working collaboratively to provide a decent minimum SOC across the globe (including to the 20% of US citizens with inadequate access to health care).[20 21]

Capacity building

An adequate SOC presents an opportunity for continuity, a link between research, the promise of improved health care, and a firm foundation for future research. Table 2 illustrates

Box 1: Case study 1

HIVNET 012 was a pivotal trial in Kampala, Uganda that established the efficacy of oral nevirapine given to HIV infected mothers and their infants to Prevent Mother to Child Transmission (PMTCT) of HIV.[22] During this trial, which was conducted in 1997–99, participants were offered easy access to primary health services and free treatment. Researchers have gone on to coordinate funding through the Elizabeth Glaser Pediatric AIDS Foundation, helping to create the "Call to Action Project" which makes funds available for implementation of nevirapine projects and infrastructure building in resource-poor settings throughout the world.[23] Nevirapine is now background SOC for numerous other perinatal studies being implemented. Implementation of nevirapine for HIV infected pregnant women in the research setting requires trained counsellors to conduct voluntary counselling and test (VCT), providers to improve management of pregnancy, labour and delivery, provide better infection prevention intrapartum, counsel the mother immediately postpartum on infant feeding and provide long term support, counsel the partner, and make efforts to reduce the stigma of HIV infection among mothers and their families.

These elements of care require training of maternity staff and low technology inputs such as running water, electricity, soap, bleach, gloves, and private areas for counselling. As PMTCT research becomes national policy and moves to implementation of programmes, these relatively modest efforts can make an important contribution to improving maternal and child health outcomes and decreasing vertical transmission. The next step now being implemented is PMTCT Plus, the addition of care and support for infected mothers, including antiretrovirals.

Box 2: Case study 2

At Lilongwe Central Hospital in Lilongwe, Malawi, the HIV Prevention Trials Network (HPTN) a collaborative, multisite research network sponsored by the National Institutes for Health (NIH), is implementing multiple randomised controlled trials in the next one to two years. Considerable inputs of sponsor funds are being used to improve research capacity and infrastructure. University of North Carolina (UNC) researchers and Malawian coinvestigators have created a dynamic partnership to transform research into programmes and to integrate research and programme infrastructures. In 1997, a group of clinicians started a volunteer organisation called Lighthouse, in response to rapidly escalating rates of HIV/AIDS. They trained 150 community volunteers in home based care, VCT and clinical outpatient care. Lighthouse now has support from multiple sources, including the UNC, Lilongwe Central Hospital, local donors, the European Union, the Norwegian Aid Agency, the Centers for Disease Control in the USA, Macro, an US funded agency, the Global Fund (GFATM) and the Diana Princess of Wales Fund. The UNC provides one full time doctor and the services of three other doctors for one day each every week. Lighthouse clinicians also work for the UNC Project, and Lilongwe Central Hospital, the public teaching hospital where research occurs. Lighthouse has just moved into a new, large, fully equipped outpatient HIV/AIDS clinic adjacent to the hospital and is the centre of the government's subsidised ART programme in Lilongwe. The majority of Malawians who require care cannot afford ART, but those who have access to Lighthouse are given supportive counselling, treated with appropriate medications for opportunistic infections and pain, and supervised home based care, free of charge. Lighthouse recruits participants for HPTN trials, treats them and their families, and other Malawians infected or affected by HIV/AIDS. Lighthouse can serve only a fraction of those infected in Malawi but it provides a synergistic model to build upon to improve SOC throughout the country; the belief that providing health related services to clients enhances the productivity of related clinical research likewise provides a model on which other researchers can build to improve both the lives of their participants and the quality of their research.

factors that must be weighed to achieve a balance between burdens and benefits of research.

RATCHETING STANDARDS UPWARDS: THREE CASE STUDIES

Despite considerable challenges facing researchers, there are successful examples of clinical trials that have left sustainable, local improvements in the standard of care; we present three (boxes 1–3). With time and resources spent on creating partnerships, research activities strengthened the local prevention and care infrastructure in Mwanza and Lilongwe. In Kampala, strengthened services paved the way for a local and global programme for implementation of research results.

The challenges are, however, ongoing and resources inadequate. Follow-on programmes in Uganda have been managed by research staff alone, without either training or payment for added work. Highly committed staff feel that lacking additional personnel and resources, the research they are trained to conduct will suffer if local staff are not able to take over programme management. Tragically, while newly pregnant infected women in Kampala are eligible for antiretrovirals through the PMTCT Plus Project, of the 500 HIV infected women who participated in HIVNET 012 over 90% remain without them four years later because they do not fit into any project category which would have given them access, despite the untiring efforts of researchers to secure drugs.

In Lilongwe, building on the success of trials funded by the HPTN, the UNC has launched its Call to Action programme, offering VCT and single dose nevirapine to all pregnant women in the Lilongwe area, regardless of trial participation. In one year, the programme has offered PMTCT services to over 8000, but logistical problems continue to limit the numbers who have actually received VCT and nevirapine.

In Mwanza, insufficient government support for scaling up the intervention to the entire province resulted in lack of monitoring of newly trained health workers and low availability of drugs for treatment. Resulting decreases in the quality of care at primary health centres were found on a subsequent evaluation. These challenges make clear the need for sustained commitment to improving SOC to prepare for implementation of positive research results. Without this commitment, communities are often left to conclude that research in which they willingly participated gave them nothing in return.

Researchers themselves cannot shoulder the burden of coordinating high level partnerships and programmatic changes; what researchers do best is research. Sponsors and their governments must insist on allocation of funding and staff for these activities, with the political will and appropriate resources of host country governments and through suitable partnerships. By improving the SOC and extending it to the broader community, research can help bridge the unacceptable gap between the SOC in sponsoring countries

Box 3: Case study 3

In Mwanza, Tanzania, a large community randomised trial funded by the British Medical Research Council was conducted from 1991 to 1994 in six matched rural community pairs.[24] The intervention consisted of improved case management of sexually transmitted diseases (STDs) at district health centres and dispensaries in the experimental arm. The intervention was integrated into existing district primary health care using available staff and health units. This involved training of government health workers in syndrome management, improved management of essential drugs for STD treatment, community education and raising of awareness of symptoms, the need to seek care, and HIV prevention activities—basic, sustainable and low cost improvements to the existing public healthcare system. Rural health units were provided with essential equipment where this was not available—examination beds, sheets, screens, benches, stools, and wooden boxes to store drugs, all locally produced. A reference clinic for patients with STDs not responding to treatment was established at the hospital in Mwanza and integrated into the outpatient department. Control communities received existing "standard of care" but were assured of availability of drugs. At the end of the trial, intervention communities achieved a 38% reduction in HIV incidence compared with controls. The improved STD care approach was immediately extended to control communities and subsequently to the entire province as a result of combined efforts of the research team in partnership with district and national health leadership.

and that of the countries where the AIDS burden is highest and where the research is conducted.

STEPS TOWARDS IMPROVED STANDARD OF HEALTH CARE

We argue that SOC should be based on principles that promote fairer distribution of burdens and benefits, both short and long term for participants and communities. Firstly, research should be undertaken in the best interests of trial participants and should involve them in decisions around research design and implementation. Secondly, the dignity of research participants, rich or poor, educated or not, wherever they live in the world should be equally respected, in the sense that they should be treated as ends in their own right and not merely as the means to achieving the ends of others. Thirdly, consideration should be given to the broader community benefit that could be achieved by raising the SOC through partnerships created by the research endeavour. That the ideal of first world health care cannot be achieved immediately in developing countries should not be a deterrent to efforts to raise existing levels of care. By setting high ideals and working towards them, the standard of care could be progressively ratcheted upwards.[4 5 25] We present seven steps to guide improvements.

Involve the community

Community consultation is key to identification of elements of care most important to the population where research is conducted. This can be done by identifying community members and involving the community at the start for advice on their research priorities, feasibility of proposed research, raising community awareness of HIV prevention research and HIV itself, including destigmatising HIV/AIDS, through participation in research. The Community Working Group established by the HPTN to support the formation of local community advisory boards (CABs) at each of its research sites, is one example of the concrete steps that can be taken to encourage community participation in research.[26] The process of defining community and supporting more than token participation takes time, care, and resources.[27] Researchers and sponsors need to commit time and money to conduct formative research to identify community leaders and needs, and to have discussions with community members, involving them in real decisions, not simply informing them of what is to happen. Other mechanisms used to involve community are the bringing together of community representatives from multisite studies to discuss common issues; circulation of a global community newsletter to those participating in the same multisite studies to share new information; research and ethics training curricula that have been developed with communities and HPTN staff. Training sessions have been conducted which empower community members to participate more fully through greater understanding of scientific and ethical reasoning.[28] At the same time international research staff have gained much needed insight into the cultural perspectives of participant communities and the real problems they face on a daily basis.

Determine the elements of SOC

The specifics of the standards of care for a particular project should be determined through consultation among concerned parties (for example, participants, researchers and their collaborators, representatives of local and national health authorities). Elements of care will depend upon the specific nature of the research, local context, need, resources, and documented impact on the community.

The HPTN, in new ethics guidance drafted for its own research, requires systematic assessment of care and services needed to implement research, and accessibility to the outside community, before research begins.[29] The elements of care outlined in the UNAIDS guidance document should, at a minimum, be provided to study participants and ultimately to their communities. These include: counselling; prevention/treatment of other sexually transmitted infections; tuberculosis prevention/treatment; prevention/treatment of opportunistic infections; nutrition; palliative care including pain control and spiritual care; referral to social and community support, family planning, home based care, and ART.[12]

Form partnerships

Partnerships are central to integrated and coordinated country strategies to fight the epidemic and have the potential to strengthen AIDS research, prevention, and treatment so that all benefit.[27] Starting with the community and local and national health authorities, partners who can contribute shared resources for improving care should be consulted—for example, local AIDS care programmes, non-governmental organisations (NGOs), religious and grassroots organisations, cooperating agencies, workplace programmes, and industry. Early identification of partners could be required when sponsors review grant applications and funding provided in awards to pursue local and international partnerships. Linking prevention research to programmes is an obvious way to build on shared resources and expertise. Collaboration with bilateral and multilateral funders and implementers such as the WHO, the World Bank, the Global Fund for AIDS, Tuberculosis and Malaria, private foundations and international NGOs should be explored. Pharmaceutical industry partnerships for provision of drugs at affordable prices to governments should be pursued as should host country capacity building for manufacture or import of generic drugs according to the Intellectual Property and Trade (TRIPS) agreement provisions, including fixed dose combination antiretrovirals recommended by the WHO.

For more information on the baffling complexities of the TRIPS agreement and Doha negotiations, readers are referred to the Médecins Sans Frontières' Access to Medicines campaign.[30] With regret, no progress has been made because the bureaucratic hurdles are many and so complex that no-one has been able to negotiate them. Negotiating such partnerships requires knowledge of local and international HIV/AIDS research, programme and donor activities, and the process should be funded by sponsors and host countries to ensure collaboration.

The recently formed HIV Treatment Access Coalition (ITAC) is a broad coalition of partners with the goal of expanding access to HIV treatment for all who need it, recognising that the challenges ahead are "beyond the capacity of any one organisation to solve".[31] The declaration on 22 September 2003 by the Director General of WHO that the AIDS treatment gap is a global emergency and the launch of activities to treat three million in poor countries by 2005,[32] together with President Bush's emergency plan for AIDS relief (PEPFAR),[33] are expected to further expand resources for care in the countries in which research on AIDS prevention is conducted.

Provide proved prevention and care

Ethics guidance documents of the past decade recognise the principle that research conducted in developing countries should be responsive to local health needs. Provision of already proved interventions in communities where new research is conducted makes good on the promise that public health research will actually improve the health of the population. Therefore, interventions shown in clinical trials in resource-poor countries to have an effect on HIV transmission (such as provision of drugs for PMTCT, management of sexually transmitted infections, free condoms, risk reduction counselling, and treatment and prevention of common opportunistic infections with cost effective, essential medicines) should be made available in the context of new HIV prevention research. Unfortunately, this is often not the case—for example, trimethoprim-sulfamethoxazole prophylaxis in patients with AIDS prolongs life and costs a few cents per month but is still not in widespread use.[34] Directly observed treatment, short course programmes (DOTS) for management of tuberculosis covers only 36% of Africa[35] and currently only 1% of African women have access to nevirapine for PMTCT.[36] If trial communities rank clean water, food supplements, and housing above medical interventions, sponsors and other partners might contribute to these background improvements in addition to more medicalised interventions. Ensuring baseline standard of living and health care across study sites will also contribute to more generalisable study results.

Antiretroviral therapy

In the face of maturing AIDS epidemics, lower costs of antiretrovirals, and increased funding for AIDS treatment programmes, the rapidly changing treatment landscape demands consideration. HIV prevention research conducted in countries where millions are already infected cannot ignore those in its midst who are ill. Even while treatment for opportunistic infections remains out of the reach of most infected people in the world, antiretrovirals have come into use in resource-poor settings.

In most sites in developing countries where research on HIV prevention occurs, ART is offered for growing numbers of eligible patients at subsidised prices or through the private sector. Infrastructure to support CD4 testing and monitoring of viral load is already linked to research efforts. Only a fraction of the world's infected have access to ART but the simpler, proved options for AIDS prevention and care listed above should be fully exploited now while access to ART remains limited. This requires training health workers in all aspects of AIDS care, strengthening primary health care, assuring timely diagnosis and treatment of opportunistic infections, improving distribution of essential drugs, and ensuring referrals. Such improvements are the first step towards the addition of more complex, costly therapies. PMTCT programmes can and should be background SOC in any HIV prevention research setting where women are enrolled. In research contexts, focused efforts should be made to contribute towards primary AIDS care (not including ART) to all who require it, not only trial participants. Treatment of pregnant HIV infected women and their infants involved in perinatal trials should be given high priority within whatever services exist.

Should ART be provided to participants who seroconvert during a trial? To many researchers, provision of ART to seroconverters in a trial would open the floodgates to provision of an expensive "universal" standard, which must be provided for the participant's lifetime, thereby making the research prohibitively expensive. Others working in the field in direct contact with people with AIDS believe that they as researchers cannot stand by silently as their participants die of a treatable disease. If and when the broader conception of SOC advocated in this paper is adopted, the question will become moot.

Through research partnerships, decreasing drug prices, and increasing global commitment, ART is rapidly becoming available. Prices as of April 2004 for triple therapy have plummeted to less than US$150 annually and will go lower; in a trial of 8000 participants where 100 endpoints (HIV infection) are required to demonstrate significant results, the cost of triple therapy for 10 years is US$150 000. This amounts to a fraction (less than 0.4%) of the total cost of such a trial, which surely can be borne by sponsors and other partners from resource-rich countries. We know costs will decrease significantly by the time seroconverting participants require treatment. Such a sum set aside in trust at the beginning of a trial to ensure treatment for those who will need it could also be used to augment treatment in the larger community as prices decrease. Of course, ART requires more than drugs alone—but the strengthening of health infrastructure, already a part of research site capacity building, will be a strong foundation for the eventual provision of universal ART aimed at by WHO.[37] Piloting of ART within the better resourced research setting, with the objective of wider availability to non-participants as knowledge and resources increase, is one way to move forward with the "ratcheting up" process. Support is gathering for such ideas, and their implementation will represent moral progress.[38 39]

Ensure benefits to both participants and community

Improving SOC for both research participants and their surrounding community addresses the dilemmas of dual standards and undue inducement to participate; more importantly, it contributes to greater global health equity.[40 41] Equitable mechanisms of decision making between the community, researchers, sponsors and health authorities must evolve with the help of staff skilled in participatory planning. Improvements in basic primary care such as improved management of sexually transmitted infection or PMTCT and accompanying improvements in maternal and reproductive health care might gradually be made available for all who come to the facility where research is occurring. Making clear that the improvements are partly a result of the research–host-country–community partnership legitimises what might otherwise be seen as privileged care for a few.

Link research to enhancing justice

We acknowledge the serious concerns of researchers that the immense need for improved care in resource-poor settings

Table 3 Benefits of improved standard of care in research

Healthcare system	Researchers	Communities	Policy makers	Ethics/human rights
Increased resources for care	Enhanced accrual and retention	Improved health care	Evidence that new interventions can be implemented into healthcare system, and how Establishment of partnerships to implement policy change	Concordance with ethics and human rights documents
Better training for providers	Improved adherence to protocol/visit schedules	Increased trust in health system		Increased ability to deal with external challenges to ethics of a trial
Opportunities for integration of services	Increased trust of participants and families	Increased trust in researchers	Improved international relations through cooperative partnerships	Safeguard for participants from research related harms
Opportunities for partnership	Increased legitimacy of research	Increased HIV/AIDS health seeking behaviour		
Opportunities for enhanced coordination among donors	Possible improved reporting of sexual behaviour	Increased awareness of HIV prevention		
Better climate conducive to future research	Clearer trial results	Preparation for implementation of successful interventions		
	Willingness to enrol in future trials	Decreased stigma around HIV/STDs		

STD, sexually transmitted disease.

has the potential to engulf research priorities. But the moral imperative to do more is already deeply felt by many researchers, and there is merit in the idea that advancing scientific knowledge should not be given a higher priority than reversing gross injustices in global health that exist within the research setting.[42] A paradigm shift is called for: a transformation of our whole idea of how research is conducted when entering into a relationship with an impoverished people.[4 16] We believe the ethical value and legitimacy of research in developing countries can be greatly enhanced by fostering this linkage of research to enhancing justice[35 41] (table 3).

Increase funding

Current practice in the USA requires that government funds allocated for research be used for that purpose alone, and not for unrelated care. Researchers and their institutions can, and some do, use their status to pressure public sponsors such as the NIH (and similar organisations in other countries) for changes. Other mechanisms to increase funding should be sought: public–private partnerships; using electoral and legislative processes to push for more funds to link AIDS programmes and research; soliciting funding through private foundations; and coordination with other aid programmes at research sites.

US academic institutions receive up to 60% of awards for research as overhead costs, while collaborating resource-poor institutions receive only 8%. If this balance were changed to reflect need, more resources would be available to sites to improve care, especially if an agreed-upon percentage of the total award could be allocated to improve SOC. A requirement by sponsors for a line item in research proposal budgets specifically to contribute to SOC would ensure minimum resources. HIV vaccine researchers in South Africa have proposed creating a trust fund for future treatment of participants who seroconvert in the course of a trial and the HPTN is considering a similar scheme.[44] Local health authorities that approve of internationally funded studies should make financial commitments to improve public care to ensure programme coherence and sustainability. The World Bank's Multi-country AIDS Program gives grants directly to host countries, which can be used for any AIDS research or programme activities, including care.

Debt relief from the International Monetary Fund and the World Bank would loosen current restrictions on health spending by governments heavily burdened by the AIDS epidemic.[45] Complex administrative and bureaucratic processes for spending money need to be streamlined. Existing funds, already allocated to countries with high HIV prevalence by the Global Fund to fight AIDS, Tuberculosis and Malaria and the Global AIDS Program, funded through the US Centers for Disease Control, need to be spent and could begin to address the gap in available services between host and sponsor countries.

RECOMMENDATIONS FOR ACHIEVING NEW IDEALS

Moving away from a concept of SOC that focuses exclusively on drugs to one that progressively embraces considerations outlined above requires several steps. Firstly, sensitivity must be acquired to exploitation and how this is perceived within host countries. Secondly, the will must be summoned to achieve ethical standards that are as high as scientific standards. Thirdly, as it is unlikely that an overall universal SOC can be rapidly achieved in research projects in developing countries, the goal should be to implement reasonable standards that are significantly higher than available in the host country, and closer to standards in the sponsoring country. Fourthly, these ideas should be applied in a way that progressively ratchets SOC upwards, both for subsequent research projects and for the benefit of the local system through genuine partnerships and capacity building, leaving participants and their communities better off after the trial and not merely "no worse off".[3] The process of moral reasoning will also be sharpened by grappling with these difficult issues. Considerations of context, safety, logistics, harm, dignity, respect, and benefit within a particular setting are crucial to making moral progress.

CONCLUSIONS

We hope that this discussion illustrates that the notion of standard of care is more complex and should be more inclusive than has generally been conceded in recent debates. Honesty requires acknowledgement that high standards *could* be progressively attained. If the broader conception of SOC outlined above is coupled to improving public healthcare services, both the research endeavour and the communities in dire need will benefit. Finally, capacity building, empowerment, and a broader moral agenda for health are essential if the morality of research ethics is to be shifted towards a new

paradigm that inspires researchers and sponsors, and serves public and global health aspirations.

Authors' affiliations

K Shapiro, Family Health International, PO Box 13951, Research Triangle Park, NC, USA
S R Benatar, Department of Medicine and Bioethics Centre, University of Cape Town Observatory, 7925, Cape, South Africa

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Members of the HIV Prevention Trials Network Ethics Working Group: Q A Karim (Chair), R Bayer, S R Benatar, M Chigwanda, D Dixon, D Donnell, L Guoy, S Kirkendale, B Lo, K MacQueen, S M Monico, V Muthuswamy, K Shapiro, R Strauss, S Wakefield, and C Woodsong

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JUSTICE AND INTERNATIONAL RESEARCH: A Response to Reidar K. Lie

Solomon R Benatar *

I appreciate the opportunity to respond to Reidar Lie's paper and I express my thanks to the organizers for offering me this opportunity.

Reidar Lie's position seems to be that having acknowledged the injustice of the world and verbalized our oral responsibility we should adopt a pragmatic and somewhat narrow approach to justice and research ethics. I understand some of his views and the perspective from which he provides these. I also admire much of his work and greatly appreciate him as a friend and colleague. Indeed, I believe we share many ideals and aspirations for justice in international research. I must say, however, that I see his presentation today as being too much in accord with the proposed controversial alterations to the Declaration of Helsinki. My responsibility on behalf of those who contest these changes is to provide a convincing response to Reidar Lie's presentation. I shall also argue that the points he has made involve unavoidably taking a wider perspective than he has offered.

I begin by reminding ourselves that the ***ultimate purpose of medical research is to improve health and human life.*** While there are other more proximate reasons for research, and these may indeed be valid, the ultimate purpose of research should be kept clearly in mind. In keeping with this claim I want to add that research considerations cannot be divorced from considerations of health, and health cannot be divorced from the economic and political considerations that affect health.

We should recall at this point that 89% of annual global expenditure on health care is spent on 16% of the world's population, who bear 7% of the world's burden of disease expressed in DALYs.[1] Similarly, while diseases popularly researched afflict people all over the world and multicentre trials are the vogue, drug research is predominantly directed at the needs of the most affluent quintile of the world's population. Over 90% of annual global expenditure on health research and development in the early 1990s (US$56 billion) was directed towards disorders responsible for only 10% of the global burden of disease.[2]

As research on drugs is central to our deliberations at this meeting I should like to briefly reflect briefly on some demographic aspects of drug use and research. Drugs account for a significant and growing proportion of health expenditure in all countries — from 6.9% in the United Kingdom to 10.5 % in Germany and up to 14% in the United States. Expenditure on drugs is the fastest growing component of health expenditure in the United States market-dominated practice of

* Department of Medicine, Bioethics Centre, University of Cape Town, South Africa.

medicine. The United States drug market accounts for 40% of the industry's sales and 60% of its profits.[3]

The size and distribution of the major pharmaceutical houses provide insights into the power structure of the drug industry. Eight United-States-dominated pharmaceutical houses (Merck, Pfizer, Bristol-Myers Squib, Novartis, Roche, Glaxo Wellcome and Eli Lilly) have market values (in descending order) from US$ 198 to $ 105 billion. In Europe the largest companies are Zeneca and Astra, with market values of just over US$ 30 billion each. It has been estimated that by 2002 only three of the world's 25 top-selling drugs will be made in Europe, while United States companies will account for 20.[3] In 1992 approximately 44% of global expenditure on health research and development was provided by the pharmaceutical industry.[2]

To return to Reidar Lie's approach I shall summarize it as being characterized by:

- satisfaction with rehearsing arguments about injustice rather than promoting performances to reverse injustice — although acknowledging difficulty in so doing,
- a particular perspective on the legitimacy of reaching agreements about post-trial drug availability, and on whose interests should predominate, which may not be shared by many in deprived countries,
- an emphasis on so-called realistic considerations, rather than on ethical ideals,
- complacency with the reality of what 'is' and acceptance that this determines what we 'ought' to do,
- a pandering to the pervasive market forces and business ethics, which are eclipsing professional ethics,
- viewing daunting obstacles and logistic difficulties as barriers to expressing ideals,
- being more concerned about intellectual property rights than about distributive justice,
- a bias towards currently dominant ways of thinking and an apparent lack of concern for the shift in mind-set needed in a rapidly changing and interdependent world.

I shall express concern that we should not allow expediency, pragmatism or current market-driven ways of doing things to eclipse considerations of justice. In my view, providing reasons for why we act in particular ways under current circumstances is not the way to proceed when considering the question of justice in international research. I contest the view that justice in international research, like international relations between states, can be largely built on 'realism' — a concept that is heavily dependent on the balance of power and the metaphor that 'might is right.' I share the view of those who believe that moral progress can be made by adopting a more liberal or progressive view.

The Hippocratic Oath and many other codes of ethics could not have been written by pragmatists insensitive to the value of moral power. The view that the idea of 'right is might' is unrealistic can be refuted by the reflection of this metaphor in South Africa's peaceful transition. This example provides at least some support for the idea that progress can take place peacefully through processes that may not have been thought possible; and it highlights the challenge to achieve innovative social progress in the 21st century.

In responding to Reidar Lie I shall take up several issues he has raised and comment on, or endeavour to contest them, seriatim.

Rehearsals versus performance

'There are huge disparities in access to health services in the world: this is a well ***rehearsed*** *statement....' 'The world in which we live is unjust, and justice demands that we should do what we can to change that fact. We have a moral obligation to improve access to health services for all people.'*

I suggest that we do not need any more **rehearsals** but, rather, more **performances**. The problem with rehearsals is that they are mere utterances, heard reluctantly and transiently. They largely serve to appease delicate consciences. Few are willing to take the step of converting rehearsals into performances. What is the use of articulating a moral obligation if nothing is done to realize this? We cannot just accept injustice and go on to outline expedient solutions. The more we accept reality the more real it becomes and the less the potential for change. Rejection of current reality can lead to progress — recall the long battles against slavery globally, and against apartheid in South Africa. But now the thrust has changed — the global problems we face now are economic slavery[5] and global economic apartheid.[6] At the end of this presentation I shall make some recommendations that I hope will promote action.

The legitimacy of reaching agreements about availability

"The current CIOMS guidelines...suggesting that in advance of a study an agreement should be reached that would ensure reasonable availability of the product at the completion of its successful testing....I shall argue that it should not be a general requiremen, for there may be ***legitimate*** *reasons to carry out research in spite of the fact that no such guarantee of availability can be made before initiation of the research...."*

What are these legitimate reasons? To whom do they appear legitimate? Capital punishment is legally 'legitimate' in the United States. Does this mean that the universal ethical requirement that physicians should not be associated with executions can be ignored and that physician participation is morally legitimate? Some governments consider torture to be a legitimate means of extracting otherwise unavailable information from prisoners. Does this legitimate physician

participation in torture? Surely not! Ethics transcends such legitimacy, and consistency in ethics is necessary for credibility. I suggest that there should be a general agreement to ensure drug availability and that exceptions should only be made if truly legitimate reasons can be provided, and that these are agreed to after appropriate deliberation with involved parties

Justification

"My suggestion, therefore, is that, if availability is considered to be a condition for carrying out a trial, much more detailed justification needs to be provided before the trial begins than is common at present.'

I am not sure what is meant here. Who is being asked to provide more justification (those wishing to do the trial or those who expect the trial drug to be available when the trial has ended? I *agree* with Reidar Lie here if he is saying that, if a trial is to be undertaken in a place where availability is unlikely after the trial ends, more detailed justification needs to be provided for doing the trial and that the ***justification must satisfy the subjects to be included in the trial.*** Stated bluntly — 'If you enter my house you must account to me — it is not I who should be accountable to you.'

Ethical reasons versus business reasons

'There are good reasons to be sceptical of an approach that demands a contractual guarantee of access to investigational products after successful testing.'

What are these good reasons? Are they self-evident or do they merit examination? I suppose it is self-evident that those who want to make money are unwilling to spend more than absolutely necessary to achieve their goal. I suppose such a business reason may be classified as a good reason. However, as there is room for respecting contracts within business one should be sceptical about those who reject the idea of a contract, especially when this is between the weak and the strong.

In my view, the hepatitis A vaccine trial in Thailand in 1991 was clearly unethical. Refusal to guarantee making the vaccine available locally resulted in only marginal benefits to the study population and major benefits to the sponsors. Fighting for a guarantee might have generated several hundred thousand doses of vaccine for Thailand. Appropriate compensation is crucial. The principle determining availability is intended to ensure an appropriate balance of burdens and benefits. The general requirement for availability and the general prohibition against trials should be the starting point. Very strong reasons would need to be given to move from this position.

I should also like to question whether truly informed consent was obtained for the hepatitis vaccine study. Did the subjects know the vaccine would not be subsequently available in Thailand? Adequate

documentation of this is required to judge whether the trial was ethical — until that information is available the ethics if the trial must be questioned.

'In other words, it was recognized that this particular short-course treatment (for tuberculosis) would not be practically applicable in the country in which it was carried out, although the trial was necessary to establish that short-course treatment was effective, a necessary first step towards the development of applicable treatments.'

While such a first step may be necessary, this does not explain why these first-step studies were not done in those countries in which the treatments (including streptomycin) could have been applicable. This should have preceded the development of applicable studies in those countries where six months of streptomycin was not possible.

'According to Molyneux, the results from the Malawi study were used to apply for the approval in the United States for the use of mefloquine during pregnancy... Molyneux also argues that trials such as these are justified; although the treatment will not be immediately available after the trial is completed it is a necessary first step towards its eventual availability.'

Does Molyneux argue or does he merely assert? What justification did he provide? Was mefloquine ever made available in Malawi? More details of this case are required to evaluate the validity of this example.

Whose interests should predominate?

'The researchers believed there was a small window of opportunity to conduct their research....'

A window of opportunity for them or for the patients? Who stood to benefit the more?

'First, a guiding principle in the selection of a research setting is to select a population that is appropriate to the scientific question being asked. The needs of the community in which the products are being tested usually take second place.'

Does this apply to radiation experiments in the United States? Does it apply to research on military personnel? Does it apply to research on children? Surely the first challenge in research is to design a scientifically sound project — one capable of shedding light on the question being posed? The next step is to seek to conduct the study in an ethical manner. This involves both the selection of an appropriate community in which to undertake the study, a decision which includes an evaluation of the appropriateness of the study to that community, and a sensitivity to their needs

'Mostly, the participants in the projects receive ***some benefits*** *by taking part in the project, and one would probably even say that on balance the benefits to the subjects outweigh the risks to them.'*

This sounds like the justification for exploitation — a sophisticated modern version of 'trinkets for ivory, gold or land.' Why is the delivery

of ***some benefits*** enough if the outcome of the research may provide ***enormous benefits*** for others? I understand that universal research ethics guidelines require justice in the balancing of benefits and burdens. Do we wish to reverse this? It would seem not, from the vaccine development partnerships of the International AIDS Vaccine Initiative (IAVI), which reflect acknowledgement that more benefits should accrue to poor countries.

*'The **primary reason** for doing a phase III trial of a new drug or vaccine for diseases that occur in both the developed and the developing world is to obtain results which can be used to **gain regulatory approval in industrialized countries**. The primary motivation of the sponsor is, therefore, to design a trial that would conform to the requirements of the regulatory agencies in these countries, not a trial that would primarily benefit the country in which it was carried out. There is, of course, **nothing necessarily wrong with this,** but it would be naïve to deny that this is not the case.'*

I am not sure what is meant by the last sentence. It would seem to me that phase III trials might be legitimate if these were **ever** undertaken in developed and developing countries, because the information sought would be primarily of value to developing countries — but this is never done. It seems that people in developing countries can be used as means to the ends of people in developed countries — but not vice versa! I should like to make the counter-claim that from another perspective **'everything is necessarily wrong'** with doing trials in developing countries primarily for the purpose of satisfying regulatory agencies in developed countries.

Realism versus idealism in ethics

"The problem with these guidelines is that there are very few examples of research in developing countries where there is such an agreement. This, of course, does not invalidate the guidelines, but it might suggest a lack of realism concerning what can be achieved."

Are we to understand from this that ethics should be confined to what is realistic? My understanding of ethics is that it goes at least some way beyond realism towards the other end of the spectrum — idealism. Would it have been realistic to expect Nazi doctors not to participate in medical experiments on prisoners? If not, why do we consider them guilty of being unethical? Or are there double standards about what is ethical — that is, recommending something realistic for oneself while expecting achievement of ideals by others? Is the Universal Declaration of Human Rights about realism or idealism? If the reality is that ideals are impractical, then why do we not discard the Universal Declaration of Human Rights as a pretence? Surely what can be achieved is dependent, at least to some extent, on how much we want to achieve and how hard and persistently we try?

Moving from 'is' to 'ought'

'Examination of an illustrative case will show that there are reasons why this should not be a general requirement for research in developing countries'

First, it should be noted a single example of what 'is' cannot be sufficient to direct us to what 'ought' or 'ought not' to be. 'Ought' does not follow from 'is' so easily, as we are repeatedly reminded by those who appreciate that descriptive moral relativism does not justify normative moral relativism.[7]

Second, the example of oral chloramphenicol for meningitis in Nigeria is not a good one, because there is no need to obtain a guarantee to use a treatment for a fatal disease when the new treatment is going to be cheaper and more easily applicable. It is surely obvious that a country that has been using more expensive treatment ineffectively will want to use the cheaper, more effective treatment.

Formidable obstacles, logistic difficulties, and intellectual property rights

'One should note also that there are formidable obstacles to achieving such agreement before trials start. Not only are there issues of intellectual property rights, but there are also all kinds of logistic ***reasons that need to be addressed*** *before a drug or vaccine is made available in the country in which it is tested.'*

In research there are often formidable obstacles to achieving informed consent before trials start. Is the ethics of informed consent eclipsed by formidable obstacles? Surely we should be addressing and overcoming these obstacles to ensure high ethical standards? There are formidable obstacles and logistical barriers to being an ethical doctor in a prison and in times of war. Is the ethics of caring for prisoners or the war- wounded made any less valid by the formidable obstacles? I suggest that quite the opposite applies. High ethical standards must be pursued in order not to succumb to the formidable obstacles and logistical barriers. Consider another example: if there are formidable obstacles to overcoming a scientific problem we try to overcome these obstacles. We do not abandon the scientific method!

Surely justice for those living wretched lives is more important than intellectual property rights? What sort of hierarchy of ethics places intellectual property rights above the basic needs of, and humanitarian considerations for, the vulnerable? I suggest that this is where the clue to our whole problem lies. Regrettably, intellectual property rights seem to be more important to many in a world wedded to 'economic globalization' than are the lives of unseen, suffering others. If we are honest about this we will realize that we are not concerned about justice, only about illusions of justice. This is the impression conveyed to many people in developing countries. Credible ethics must avoid discussions

of international justice that resemble the emperor with new clothes — with nakedness abounding!

Current thinking versus new paradigms of thought

'While not impossible, this would at present require a radical rethinking of our approach to intellectual property rights of pharmaceutical products. It would be more in line with current thinking for...'

Current thinking is precisely the problem! We need new ways of thinking to resolve challenging problems. We should not try to force modern problems into old ways of thinking — imperialistic, colonialist, and discriminatory ways of thinking are *passé*. Such thinking will guarantee failure to find imaginative solutions. Relativity theory could not be forced into Newtonian physics. The challenge is to think creatively. I have previously expressed the view that slowly emerging, changing streams of thought are giving rise to new metaphors by which we may live.[8]

Conclusions

I agree with the first two requirements listed in Reidar Lie's second last paragraph:

- That the trial is the only way to gain useful knowledge for the host country
- The results of the trial will primarily benefit the host country and not the sponsoring country.

With his third recommendation I disagree:

- The research subjects are not denied care or treatment they would ordinarily get in the country where the trial is carried out.

In developing countries there must surely be a requirement during a research study to provide better care or treatment than may otherwise be available. To make this obvious, consider informed consent. Surely the standard of informed consent required should not be merely at the same level as required in the country in which the study is being done? Why not? Because there are universal standards. Patricia Marshall has spoken in this symposium about the efforts required to achieve informed consent in situations posing cultural and linguistic barriers. She does not suggest that an inferior standard of informed consent be aimed at. So why should we accept an inferior standard of care ?

Now I agree that it may not be feasible to provide New York Hospital standards of nursing and technological care in Malawi. This, however, is no excuse not to provide somewhat more than is available in a country with a health budget of less that $5 dollars per person per year. It is inhuman to deny this.

Without detracting from the major benefits that have flowed from intensive drug development activities, or from some of the recent renewed attention to tropical diseases, it is necessary to point out that "the multinational pharmaceutical industry operates like any other industry. It makes investment decisions to maximise the present value of future returns from the money invested. As such, it responds to economic demands rather than to statements on social or human needs."[2]

I suggest that we need to think much more deeply about 'Justice in international research,'[9] as well as about the concept of development.[10] Both are complex topics and require in-depth consideration.

Recommendations

- These guidelines should be viewed as a 'constitution' for research ethics rather than a 'cook-book' that can provide the exact recipe for every requirement. Constitutions require interpretation because circumstances differ and the application of universal principles in specific contexts requires a full understanding of the facts of the context. While as much detail as possible should be provided in the guidelines, these can never adequately cover every situation — hence the need for allowing consideration of the relevance of the context to the moral problem being faced.
- Those who participate in international research should not brazenly visit other countries without having developed some insight into the social, economic and political milieu that frames the context in which their research is taking place. They should be familiar with the information provided at the beginning of this presentation and have some knowledge of the political relationships between the sponsoring and host countries — for example, how the host country fits into the sponsoring country's foreign policy, what economic aid is provided, the nature of any debt relationships, and the extent to which they trade in weapons.
- The trial should be of direct relevance to the health needs of the host country.
- The trial is the only way to gain useful knowledge for the host country.
- The results of the trial will primarily benefit the host country while also benefiting the sponsors — but the balance of benefits and burdens should be optimized.
- There should be prior evaluation of whether the study findings can, and will, be incorporated into the local health care system.
- The research subjects should be provided with care or treatment better than they would ordinarily get in the country where the trial is carried out. The highest achievable standard of care should be aimed for. (Reasonable limits can be negotiated in specific contexts even if they cannot be easily defined in the abstract).

- The design and conduct of the trial should involve members of the host country.
- The study should not deflect local human or material resources away from the health care system in the host country towards the research project, and in this way more deeply entrench existing disparities.
- The opposite should be promoted. Benefits should flow from research into the practice setting — the study should assist in building the capacity of health care professionals and the health care system in the host country.
- The results of research should, wherever possible, be provided to the research subjects or the community.
- Lessons learnt from the research endeavour should be used to improve the relationships between the host and the sponsoring countries, as a contribution to improving heath globally and to facilitating both sustainable development and human flourishing.

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ONE

NEW PERSPECTIVES ON INTERNATIONAL RESEARCH ETHICS

Solomon R. Benatar

1. Themes and Background

In our modern world, we have great faith in scientific progress, economic growth, and human rights as the essential ingredients for improving life for all. Sadly, we live in a world in which despite great progress on all these fronts, life is deteriorating for most of the world's people. Widening disparities in wealth and health, and the emergence of new infectious diseases and environmental degradation pose threats to the lives of all, including those who have benefited most from progress. Many of our attitudes and actions will need to change radically in order to ameliorate this situation.

This paper addresses the conduct of international collaborative clinical research. I will review trends in how we conduct such research, and I will discuss reasons why investigators persist in their current emphasis that favors research on diseases that account for only 10 percent of the global burden of disease. I conclude by exploring new perspectives that could contribute to promoting much needed progress in health worldwide.

Issues of relevance to international research ethics include:

(1) the features of a globalizing world that influence and shape the research agenda;

(2) emergence of new infectious diseases, especially HIV/AIDS, as a signs of global instability and global threats;

(3) HIV/AIDS as influential in changing ethical attitudes towards research on vulnerable subjects;

(4) some persisting controversies in international clinical research;

(5) the standard of care for participants in international research ethics; and

(6) the potential for new perspectives on the ethics of international research to contribute to much needed progress in human health worldwide.

2. How International Collaborative Clinical Research Is Conducted: Trends

Clinical research has become a growth industry.[1] Between 1995 and 1998, there was a 27 percent increase in the number of drugs tested pre-clinically in animals. Enrollment of subjects in multi-center trials increased 221 percent from the 1980s to the 1990s. The number of overseas investigators (developing country partners) increased by 444 percent between 1992 and 1998. This growth in clinical research and in collaboration with colleagues in the developing world results from several factors. First, investigators have a greater dependence on the pharmaceutical industry for funding, and most universities in the developed and developing world receive inadequate funding to conduct research without the support of industry. Second, because industry has an agenda, and pharmaceuticals have high market value, research is increasingly driven by the search for drugs with high potential use. Third, to rapidly obtain definitive results, large trials must be conducted in order to register and market new drugs as quickly as possible. Diseases that interest the pharmaceutical industry, such as hypertension, diabetes, pneumonia, asthma, chronic obstructive lung disease, arthritis, osteoporosis, and depression all occur world wide, including the developing world. Fourth, access to developing-country subjects is often much easier and cheaper than in the developed world.

A few statistics about scientific research reveal that the research endeavor is not value free. Two thirds of the United States Government's expenditure on research and development is on military research.[2] Ninety percent of global funding for medical research, about $70 billion per year, is spent on diseases causing only 10 percent of the global burden of disease.[3] Of 1,393 new chemical entities marketed between 1975 and 1999, only sixteen were for tropical diseases and tuberculosis that account for enormous mortality and morbidity.[4] These data are not surprising given that the private sector and the pharmaceutical industry sponsor about 50 percent of medical research. Such observations suggest that the research agenda pursued by scientists is less determined by the need for knowledge and how to apply knowledge than by economic forces that drive and support research endeavors. Emphasis on military research, with significant neglect of diseases that afflict billions of people living in abject misery, reflects a value system that devalues the lives of more than half the world's population.

We have much unused knowledge, implementation of which could save many lives. This suggests that researchers' interests can outweigh the best interests of subjects. We appear to value acquiring new knowledge more highly than applying existing knowledge. In answer to those who urge more research because more lives will be saved, we note that saving lives in poor countries is not dependent predominantly on medical research— more than 27,000 children under five years (10.1 million children annually) old die daily from hunger and preventable diseases. Such deaths are not due to lack of either knowledge or re-

sources. Fifty billion dollars, which amounts to only 0.2 percent of the gross domestic product of affluent countries, could prevent up to 50 percent of premature deaths.[5] By comparison, the Iraq war cost over $100 billion, and the World Health Organization's annual budget is less that $2 billion.

3. Why Do We Persist with the Current Emphasis?

In order to understand the forces influencing prevailing research agendas, we must appreciate that modern clinical research does not take place in a vacuum, but pursued within the context of a world increasingly influenced by powerful forces. Globalization, a widely used term meaning different things to different people, has generally accepted essential features such as changing perceptions of time and physical space, and diffusion of ideas, culture, and values on a global scale. While economic globalization is the most commonly used context, globalization is a complex concept that goes beyond economics to include social, cultural, and ecological dimensions. Globalization is not a new phenomenon, but the outcome of a long interwoven economic and political history, involving a wide range of actors, with both beneficial and adverse effects on human well-being, although critics can argue that, like population growth, the adverse effects of globalization are now becoming starkly apparent. Gillian Walt has described globalization as being characterized by five, often conflicting, themes:

(1) economic transformation (financial volatility, marginalization, labor insecurity);

(2) new trade regimes (with winners and losers);

(3) a growing poverty gap (with rising health inequalities);

(4) an electronic revolution (that separates the "knows" and the "know-nots"); and

(5) new forms of governance (that include a proliferating spectrum of non-state actors).[6]

Economic globalization has been ostensibly spearheaded by a few hundred corporate giants, the development of earth-spanning technologies, products that can be produced anywhere and sold everywhere, and the spreading of credit through pervasively penetrating global channels of communication. Four interconnecting and integrated transnational commodity chains have been described:

(1) a global cultural bazaar (the entertainment industry and communication networks);

(2) a global shopping mall (through which tobacco, food, and clothes are promoted by aggressive advertising, distribution, and marketing);

(3) a global work place of factories, law offices, hospitals, restaurants (facilitated by population growth, mass production, automation, and cheap labor); and

(4) a set of global financial networks (that include speculative devices for repackaging and reselling money in what is increasingly labeled a "casino economy").[7]

Positive manifestations of progress associated with globalization include advances in science and technology, increased longevity, enhanced economic growth, greater freedom and prosperity for many, improvements in the speed and cost of communications and transport, and popularization of the concept of human rights.

Negative effects of globalization include widening economic disparities between rich and poor within and between nations, and increases in both absolute and relative poverty. At the beginning of the twentieth century, the wealthiest 20 percent of the world's population were nine times richer than the poorest 20 percent. This ratio has grown progressively to thirty times by 1960, sixty times by 1990, and to over seventy-four times by 1997. World debt grew from $0.5 trillion in 1980, to $1.9 trillion in 1994, and $ 2.2 trillion in 1997. The way in which debt is created and sustained, and its relationship to the arms trade has been a major factor in perpetuating and intensifying poverty and ill health.[8] Most countries that were required by the World Bank to pursue structural adjustment programs are in greater debt than ever before. Third-world debt, although accounting for only a small proportion of total world debt, has reached exorbitant levels relative to income in the third world. These countries cannot repay their debts.[9]

The evolving complex web of material, institutional, and ideological forces, and the power of massive multinational corporations in a globalizing world has profound implications for the accumulation of capital and for the way in which resources are controlled. In 1970, 70 percent of all money that changed hands on a daily basis was payment for work, while speculative financial transactions accounted for only 30 percent. By 1998, when daily speculative exchanges amounted to $1,500 billion daily, these proportions had changed to 5 percent and 95 percent respectively.[10] Such a striking shift in the distribution of money arguably reflects devaluation of the lives and work of most people in the world.

The shift in locus of economic power from the nation state to global corporations is altering the balance of power in the world. Boundaries between states and between foreign and domestic policies are being blurred, in the process, undermining small states' control over their economies and threatening their ability to provide for their citizens. Economic disparities have become so marked and adverse effects so apparent, that a significant degree of incompatibility has arisen between neo-liberal economic policies and the goals of

democracy.[11] In addition to progressive widening of the economic divide between nations, and growing external control by money lenders over the economies of small countries through debt, trade, and markets that are increasingly global, other powerful forces, for example, feminization of labor, more part-time employment, and exploitation of cheap labor in developing countries, are creating new patterns of inclusion and exclusion.

Sub-Saharan Africa has suffered serious adverse affects from globalization. This region now has three million displaced people, fourteen million AIDS orphans, 475 million Africans living on less than the equivalent of $2 per day, while hunger afflicts 40 million people. The devastation resulting from HIV/AIDS in Africa needs to be seen in the context of three hundred years of slavery (from 1441 until 1870), seventy-five years of colonialism (from 1885 until 1960), and the Cold War (from the 1960s until 1991), that successively debilitated the sub-continent. Excitement and pride that came with independence in the 1960s turned to despair under the rule of tyrants in the 1970s. By the 1990s, many viewed African countries as "political and economic infernos."[12] The United States retreat from Africa after the Cold war, in addition to the extraction of resources, including skilled labor, diamonds, and oil, perpetuates centuries of exploitation. Sub-Saharan Africa's debt of $275.6 billion that can never be repaid, results in annual interest charges that cancel out the $21.2 billion annual aid donation to Africa, cripples health services, and stultifies development.[13] We need to acknowledge the extent to which the so-called developed world has been instrumental is contributing to such deprivation as described by Thomas Pogge.[14] It must be conceded that corruption and bad government in developing countries contribute significantly to their misery and poor health. Much less openly discussed is the complicity of powerful nations in supporting leaders who are despots and kleptocrats, by legitimizing their right to sell their countries' natural resources, spend profligately on themselves, incurring debts that their impoverished citizens must repay.

4. HIV/AIDS and the Recrudescence of Infectious Diseases

Life is characterized by symbiotic and parasitic relationships between microbes and human and nonhuman animal hosts. Evolutionary changes and the impact of human behavior on the environment have contributed to changes in these relationships and to imbalances favoring sporadic plagues. We saw more striking changes in the second half of the twentieth century than ever before. The world's population has doubled from three to six billion people. Changes in the global economy have resulted in rapidly widening economic disparities with billions of people now living under dehumanizing conditions of poverty and squalor. New patterns of war and ethnic conflict have resulted in displacement and migration of millions of people, and widespread ecological damage has

occurred. All of these changes contribute to the development of new ecological niches that alter the balance between microbes and human beings. At the same time, rapid travel and new forms of communication enhance the ability for change anywhere to affect distant others.

Against this background, about thirty new infectious diseases have emerged in the past twenty-seven years. These include Legionnaires disease, Lyme disease, different forms of encephalitis, bovine spongiform encephalopathy, Hantaan virus disease, Ebola fever, and other haemorrhagic diseases, new forms of *E. Coli* and *Vibrio cholera*, SARS and HIV/AIDS, the most threatening of all. Many other infectious diseases such as measles, multi-drug resistant tuberculosis, and malaria, that had become localized, limited, or controlled in the past, have recrudesced with serious adverse implications for all.[15]

The recrudescence of infectious diseases and the HIV/AIDS epidemic have reminded us that people worldwide face common threats, and that infectious diseases may become the greatest security threat to the lives of all people globally. That HIV/AIDS stimulated intense debate on ethical issues – from the micro level of interpersonal relations to the ethics of national relations with transnational pharmaceutical companies, and the ethics of international relations that affect population health—is not surprising.

5. Persisting Controversies in International Clinical Research

Much of the recent controversy on research ethics has arisen from research on HIV/AIDS. For example, the use of placebos in trials of treatments to prevent mother-to-child transmission of HIV excited an intense, ongoing, and often acrimonious debate. In reviewing persisting controversies in international research ethics, Ruth Macklin has described general agreement on the following points:

(1) Research should be responsive to the needs of people in the community being studied.

(2) Research is needed on diseases that occur frequently in poor countries, especially when these cause high morbidity and mortality.

(3) To exploit vulnerable individuals is unethical.

(4) To lower the ethical standards for research in developing countries is unacceptable.[16]

She then lists still unresolved issues within each of these areas of broad agreement. For example:

(1) How do we make decisions about what research to undertake in developing countries, and how do we prioritize these?

(2) What sorts of study designs are acceptable? Can we use placebos, and what comparative arms should be included?

(3) What does it mean not to exploit people?

(4) What is the standard of care? How is this defined and how can it be justified?[17]

Given all these issues, I will limit my discussion to the standard of care that we should provide to research participants.

6. Standard of Care

One of the most hotly debated issues in international collaborative clinical research is the standard of care applied to research subjects in developing countries. The issue first arose in consideration of drugs administered to subjects assigned to control groups, with studies researching prevention of mother-to-child transmission of HIV infection being the most controversial. Critics issued vehement outcries against use of placebos in such studies, based on concern that research subjects in the developing world were not being treated with the same respect and dignity as subjects in wealthier countries. They contended that this represented a double standard in the ethics of research. Under critical scrutiny, the validity of this argument was found to be too simplistic.[18]

Critics have also argued that a real interest in applying the same standard of care in developing countries as in developed countries would extend beyond drugs to include other fundamental aspects of medical care associated with the research project. These would include availability of appropriate diagnostic technology and provision of adequate nutritional support and treatment for other diseases afflicting research subjects. Follow-up care, monitoring of progress, equivalent expertise of the health-care team, and obtaining informed consent with knowledge of local languages and cultures should be subject to the same standards as in the developed world. While applying all of these standards to all subjects in every country might not be possible, we can conceive the following standards to have universal applicability:

(1) We can conduct research with the same respect for the dignity of all subjects wherever they are in the world, as reflected in treating them as ends in their own right and not using them merely as means to acquire knowledge that could be of benefit to others.

(2) We can ensure that research undertaken in developing countries is in the best interests of subjects in those countries. This means that we place a high priority on diseases most prevalent in the communities from which subjects are recruited, and that we provide care for other diseases afflicting research subjects for which treatment would not otherwise be available.

(3) We can carefully evaluate the long- and short-term risks and benefits of the research, and ensure a fair distribution of risks and benefits.

(4) We can obtain valid informed consent by structuring the process of obtaining consent within the linguistic and cultural framework of research subjects.

(5) We can enhance the potential for community benefit to flow from research by raising the standard of care associated with research to include the components mentioned above.

(6) We can avoid exploitation.[19]

We could achieve a universal standard of care by incorporating these principles into feasible local practices and then ensuring progressive improvements with successive research projects.

The challenge of progressively linking health care to research will engender many complexities that we need to address. For example:

(1) Currently, funding sources often stipulate that the funds are restricted to research activities, limiting what researchers can do with their budget.

(2) Improving standards of care for subjects will result in dual standards of care within poor countries, with research subjects enjoying treatment to which others in the community lack access.

(3) The higher standard of care may become an inducement, but that level of improved care tailored to research may not be sustainable.

(4) Paying higher salaries to researchers privileges them over colleagues who provide regular health services. Such studies can add to the brain drain of qualified staff away from the public health sector.

(5) The availability of additional care contributes to subjects' misunderstanding that the trial is about treatment and not research.[20]

We can offer some rational solutions to ameliorate these dilemmas. For example, while limitations on how researchers can use research funds are a reality, researchers could include a small budget for associated expenses in their grant applications. Doing so could progressively sensitize granting agencies to recognize the validity of such components of the budget. In addition, researchers could seek out other aid agencies from their countries who are working in the same geographic region to develop partnerships that could be of value both to the research and to the aid endeavor. National research councils in wealthy nations could facilitate such coordination for their researcher through central databases of aid projects.

Dual standards of care ensuing from the above activities are arguably an inevitable aspect of progress. Inability to achieve immediate equity should not be an impediment to making improvements that could spread more widely with time and effort. We can argue that to be satisfied with existing low or nonexistent standards is less ethical than to create dual standards as part of a progres-

sive means of improving care. True, a higher standard of care will be an inducement. But inducements are only morally wrong if they result in participants taking risks with their lives. What is wrong with an inducement that enables access to otherwise unavailable care? Inability to sustain high salaries for researchers is a problem, but this, too, could be used as leverage towards better conditions for local health workers. Finally, we can overcome misconceptions about the role of research through good communication.

We can give many reasons why the overall standard of care for research subjects is critical. These include moral arguments that embrace the concern not to do harm, the desire to do good, and the aim to be fair. Other moral goals include having respect for other cultures and sensitivity to the invasive impact of itinerant researchers from developed countries. Strategically, we can argue that an improved standard of care could enhance participation in research and the achievement of research goals. In addition, we can mount an operational argument in support of the idea that research coupled with improved standards of care facilitates improvements in the delivery of health care in general. As the goal of medical research is to improve health care, there should be greater support for encouraging closer links between research and its application at sites where the research is being undertaken.[21]

Informed consent is one of the major underlying principles of research. If we believe all that we say and claim about informed consent, we would ensure that researchers of the same culture and language group as the research subjects obtain the consent. In reality, having highly trained people obtaining informed consent is rare. A multi-page translation of an informed consent document is not the solution. A legitimate informed consent decision-making process requires the ability to overcome cultural and linguistic barriers. We tend to focus on scientific skills, equipment, and methods in research, whereas communication skills and trust are equally essential and require allocation of adequate resources. Currently the standard for obtaining ethically legitimate informed consent is under-emphasized at the practical level.

7. Making Progress through New Perspectives

Instead of undertaking research autocratically on passive subjects in poor and developing countries, we should form partnerships with developing country co-investigators and communities who should be actively involved in the design and conduct of trials. In this way, privileged researchers can build the capacity of less privileged colleagues while they build their capacity through better understanding of the communities and participants with whom they are interacting.

We need to pay greater attention to the potential harms of research. These extend beyond the physiological dangers that have been the traditional focus of

concern. We also need to consider psychosocial risks for individuals and for communities.

Potential benefits go beyond benefits to individuals. They include benefits to communities and sponsors such as academic institutions and pharmaceutical companies. If we have a genuine interest in justice and fairness, then we must examine much more closely than is currently the case whether benefits to the sponsors balance benefits for participants and communities.

By linking research to improved health care, we can provide an impetus to operationalizing research. Such progress requires acknowledgement that finding a reasonable middle path between pragmatic unprincipled approaches and ideological unachievable utopias is possible. We should also develop partnerships with other aid organizations to facilitate the achievement of mutual development goals.[22]

All of this requires a new paradigm of thinking that includes greater concern about population health, careful balancing of individual and social goods, and attention to the widening economic disparities that threaten our humanity. Progress will depend on recognizing that the ethics of international research goes beyond micro-ethics. While the ethics of interpersonal relationships are critical, we also have to think ethically at a wider level. We need to expand the discourse on ethics and human rights beyond interpersonal ethics and civil and political rights that are based on the ideas of individual rights and freedom. We should pay greater attention to the ethics of how institutions operate and interact, to the ethics of public health, to social and economic rights based on concern for equity, and to the ethics of international relations that affect whole populations, based on solidarity.[23]

Finally, we should endeavor to link research to development by going beyond a paternalistic approach to development towards an emancipatory framework, one that uplifts people from dependence and facilitates independence. A form of participatory evaluation, one in which people participate in decision making through dialogue and debate instead of having decisions imposed on them, is also required to confirm that we are helping people from their perspective, and not merely from ours.[24] Capacity must be built through interdisciplinary work, with greater understanding of how complex systems function and with application of systems theory to improving health care.

8. Conclusion

The ethics of research is changing in response to a changing world, but I believe that change is not rapid enough. Neither the interests of pharmaceutical companies nor scientists should dominate research agendas. We should also respect the justifiable moral aspirations of individuals and their communities to

improve their health. If we can shift our mindset to these new directions, then we will be able to keep pace with a rapidly changing world that demands adaptation. Increased short-term costs will pay the dividend of increased long-term benefits.

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POLITICAL FORUM

Transition towards a new South Africa

S. R. BENATAR

Health care professionals in South Africa are by now well aware of the intense debate surrounding the deficiencies in our health care system and the need to make changes that will sustain health care services and academic medicine in a new South Africa.[1,2] A recent review of medicine and health care in South Africa[3] updates and complements a previous review[4] written at a time when there seemed less hope for progress towards a non-racial democratic society. Topics covered in these reviews included health statistics, economics of health, medical education, health care personnel, the structure of our health services, developments in health policy, South Africa in the context of the African continent and the future health of the nation.

Less adequately aired and debated in medical circles, however, is the complexity of the political, economic and social scenarios constituting the context within which changes to our health care system need to be viewed. The intensity of global interest in South Africa and its potential for facilitating development of sub-Saharan Africa justify an attempt at reviewing for the medical profession *some* of the ingredients of the matrix within which medical services and academic medicine will be restructured in a new South Africa.

No attempt will be made to cover the sociological interpretation of events influencing the structure of medicine and health services in South Africa, since this has been superbly analysed and described by Van Reusburg[5] and briefly summarised in a recent editorial.[6]

Background to change

In the first decade of this century, the scene was set for the development of an apartheid society when the British Parliamentary Act of Union gave to whites the right to self-determination and removed the right of blacks to sit in Parliament. With the growth of Afrikaner political and economic power, especially since the National Party came into power in 1948, apartheid policies flourished and relentless promulgation of legislation which oppressed and dehumanised the black people of South Africa cast a dark shadow over all people in this country.

Failure to recognise the devastating implications of apartheid policies[7] and the validity of the prediction in the 1950s that the choice for South Africa was not between integration or segregation but between integration or disintegration[8] tragically delayed, at great human cost, the progress which could have been made in a modern industrialising African state. Population growth, industrialisation, urbanisation, growing international recognition and support for individual human rights and abhorrence for any form of human discrimination on the grounds of race, gender, religion or other irrelevant criteria, however, ensured that apartheid policies would eventually be eliminated.

Black opposition — since the formation of the African National Congress (ANC) in 1912, its defiance campaign (1952), adoption of the Freedom Charter (1955), the Sharpville demonstrations (1960), banning and exile of the ANC and Pan-African Congress, the introduction of detention without trial (1963), conviction and imprisonment of Nelson Mandela (1964) and his release in 1990 — has evolved from powerless, peaceful protest into a politically powerful process of potentially peaceful change hampered by a growing culture of individual and group violence (much of it arguably fuelled by brutal elements within the state security forces).

Ramphele has described the dehumanising forces which, in this context, have led to social disintegration in the black community, and she has drawn analogies between under-classes in different societies.[9] She analyses the historical causes of this disintegrative process into three main categories: demographic, economic and human developmental. The elements of social disintegration to which these have led are outlined in Table I.

TABLE I.
Elements of social disintegration in the black community[9]

Family breakdowns
Rising divorce rate and separation
Single parenthood
High teenage pregnancy rates
Lower job participation
High unemployment
High unemployability
Low performance
At school
In skills training
In many other walks of life
High rates of alcohol and drug abuse
High crime rates and endemic violence
Within families
In neighbourhoods
In the wider community
Despair
Acceptance of victim image
Flight of skills and role models
From townships into high-income areas

Centuries of racism and oppression throughout the world aroused little international indignation until the full force of nazism impacted on world opinion in the 1940s. The League of Nations, the United Nations, the Universal Declaration of Human Rights and a proliferation of movements advocating and fighting for individual human rights have since then succeeded in instilling respect for these values in the people of many nations. Failure to respect human rights, however, remains a characteristic of many countries including members of the United Nations,[10] and there appears to be no simple correlation between respect for human rights and the extent of human suffering in different

Department of Medicine, University of Cape Town
S. R. BENATAR, M.B. Ch.B., F.F.A. (S.A.), F.R.C.P.

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countries.[11] South Africa, as a member of the Western family of nations, has, however, understandably been singled out for opprobrium for its poor record of human rights and its apartheid policies, and this has led to isolation and economic attrition.

Annual growth of the South African economy declined from 5,5% between 1960 and 1974 to 1 - 2% since 1974 — resulting in a 15% reduction in the annual per capita GNP since 1979. The effects of this economic attrition have been exacerbated by the uneven distribution of economic growth among population groups, and the disparities in wealth and health in our country are amongst the highest in the world. At the current rate of economic decline the per capita GNP in 2000 will be 70% of that in 1980 and the unemployment rate will have increased from 37% to 57%. To maintain the current per capita GNP will require an annual economic growth rate of 2,4%. Only growth rates in excess of this will lead to improvements in per capita GNP and create sufficient jobs to reduce unemployment.

Dramatic political developments in South Africa, events in Eastern Europe and the Middle East, the growing ecological world view and the AIDS pandemic are deeply rooted in profound social forces and cannot be simplistically attributed to single or sudden events. Their gathering momentum over many decades contributes, as in previous eras, to the fluctuating patterns of human development described by historians and philosophers as the 'challenge and response', 'ebb and flow' or the 'thesis, antithesis, synthesis' spiral of change.

Transforming South Africa

In analysing options for transforming South Africa from its pariah status to a legitimate African nation, Adam,[12] in 1987, offered an analysis based on two assumptions: (*i*) that the situation in South Africa constituted a violent stalemate; and (*ii*) that the nature of post-apartheid South Africa was not predetermined. He described the unconditional release of political prisoners, the re-establishment of freedom of political expression and the return of exiles as short-term preconditions for opening negotiations with the ANC and other organisations.

Negotiations, he emphasised, would be complicated by the fact that the South African Government had opted for building multiracial, political institutions while the excluded majority were primarily interested in non-racial rights of citizenship as a means to equalise wealth and privilege. He described how the structural limits of the South African economy, which include deflation of the rand (by 57% against the US dollar between September 1983 and 1990),[1] rapid population growth and unemployment, threatened the social fabric in South Africa by disrupting family life and creating a damaging perception of the self. Together with the misery of poverty, this has lead to forms of escapism which perpetuate the cycle of social deconstruction. These sentiments, which have also been eloquently described in the USA by Shelby Steele[13] and Mark Mathebane[14] and in South Africa by Mamphele Ramphele,[9] reveal the extent, depth and enduring effects of racialism.

In describing the options for transformation Adam urged recognition of an eroding South African state, too strong to be overthrown and too weak to transform itself. Against this background he explored eight potential pathways for transformation: (*i*) polarisation — as the worst-case scenario and hardly a solution: a war without victors; (*ii*) blockade — led by a United Nations ultimatum: an unlikely and politically doomed possibility which would have great human and economic costs (but has since been applied to the Gulf); quite apart from the unwillingness of Western governments to implement such measures against a former ally; (*iii*) military rule from within — a scenario feared by the democratic left, and also opposed by business and therefore only a last resort in the event of a total breakdown of law and order; (*iv*) sanctions — which have less than the desired immediate political effect, have marked adverse effects on the poor and may be counterproductive in the long term; (*v*) emigration — not a solution for most whites, but still an option for many 'liberal' whites as part of the ongoing 'brain drain' (the extent and impact of the 'brain drain' from other countries in sub-Saharan Africa, to Saudi Arabia and the West, further illustrate the export of resources impoverishing this subcontinent); (*vi*) partition — into separate South African states including an Afrikaner 'homeland' — an unlikely possibility, given that the South African population lives interspersed; partition would also threaten the existing economic interdependence; (*vii*) a variety of local options, e.g. the Natal/KwaZulu Indaba and regionally negotiated power sharing arrangements, these, however, do not address the problem of power at the centre; and (*viii*) industrial action — with consumer boycotts and widespread general strikes as the most effective pressure on apartheid.

Adam's concluding view that the essence of conflict in South Africa concerns power and privilege, not ideology and racism, implied that power-sharing was open to bargaining and compromise — unlike intractable religious definitions of truth.*

Adam's conclusion was offered as a basis for realistic optimism for a comparatively less violent, ongoing transformation into a society in which institutional racial discrimination would no longer exist, but within which informal segregation and gross inequalities would probably persist and in which the precise nature of the economic order could not be predicted. In considering whether South Africa was doomed to intractable communal conflict, comparable to endemic strife in plural societies elsewhere, or has enough of a common society to bind its citizens together, through provision of equal political rights and opportunities, he suggested that this depended in part on faith and optimism, as empirical, comparative historical evidence could be marshalled for either proposition.[16,17]

Van Zyl Slabbert (Director of Policy and Planning at the Institute for a Democratic Alternative for South Africa) provided a succinct description of the political climate inherited by F. W. de Klerk when he assumed office in August 1989, and has described his fundamental policy shift with its motives.[18] He outlined two phases of the process of opening up new political space: (*i*) a phase of liberalisation during which organisations are unbanned, political prisoners are released, oppressive structures are dismantled, exiles are permitted to return and rights are extended more broadly within the society; and (*ii*) a democratisation phase during which political decision-making increasingly involves previously excluded groups and organisations. He advocated the need for realistic expectations from an organisation (the ANC) which has had to shift precipitously from a liberation movement in exile, operating through sanctions, boycotts, violence and rhetoric to a political party facing the reality of peaceful domestic and international politics characterised by emergence of divergent views within its own structure as well as more broadly. The need for internal optimism and external support to channel energies in an appropriate constructive direction is empha

* Others suggest that 'tribalism and religious fundamentalism now appear to be replacing political ideology as the principle cause of political unrest in Africa. Many of the causes of corruption and human rights abuses are directly related to these two factors, as are the civil wars still raging through East Africa. As the fashionable ideologies of the 1950s and 1960s are being stripped away, ethnic solidarity and religious ideology are now increasingly forming the basis for political action.'[19]

sised. Democratising the constitution is viewed by him as perhaps the easiest task of all, while the tasks of democratising the State, the budget and the economy are more severe challenges. Intense debate on strategies for change is now becoming transformed into the reality of implementing change.

As Adam[19] pointed out, ironies of transition abound — increasing popularity of De Klerk among blacks, changing policies within the ANC regarding socialisation, minimal black aggression against whites despite the escalation of violence, tensions within the ANC, and the contradiction of calling for sanctions while simultaneously espousing economic growth.

In analysing whether South Arica can move progressively towards democratic forms which satisfy the great majority of her population, Paul Johnson has concluded with an optimistic 'yes' in the context of the importance of this answer, not only for South Africa but also for global progress.[20] He, however, emphasises the influence of the size of the country, the speed at which democracy is introduced and the need for this to be accompanied by economic growth.

Muller,[21] in an analysis of South Africa's economy, points out that South Africa is not a unique Third-World country irretrievably divided into First- and Third-World components but rather a middling Third-World country that, relative to other countries, is becoming steadily poorer. He points out the unreality of optimistic comparisons with rapidly developing countries such as South Korea and Singapore, but he also expresses the view that there are limited comparisons that can be made with other sub-Saharan countries. He identifies Brazil as a country with which comparisons can be drawn and from which lessons can be learnt. His choice is justified on grounds of a similar per capita GNP in the context of widely diverse communities and cultures, large income disparities, rapid urbanisation, debate over public/private balance in health care and transition from authoritarian-military dictatorship to a fragile and somewhat chaotic democracy.

In the 1970s Brazil's social security system, to which all the formally employed belonged, opted to use private medical practice on an extensive basis. This resulted in massive, uncontrolled cost increases for simple and profitable medical services and abdication of the private sector's responsibility for more complex and costly procedures. The poor were encouraged to take responsibility for their own health, mainly by buying their own medicines, and this led to grossly ineffective, wasteful and inappropriate drug use with little positive health effect. Brazil spent more than comparable countries on health, but its level and quality of services were unacceptable and the country was faced with the need to rebuild a more adequate health service within a unitary structure.

In a recent review and preview of the basis and challenges of transition in South Africa[22] Van Zyl Slabbert has expressed the view that the new strategies embarked on by F. W. de Klerk (since his milestone speech on 2 February 1990) are determined as much, if not more, by deliberate political choice as by the inevitable forces impinging on the South African regime.

The preceding P. W. Botha era had seen ideological collapse of the apartheid/separate development policies as evidenced by (*i*) sacrifice of partition with the move to tricameralism; (*ii*) sacrifice of the National Party civilian control over political decision making (by using executive Presidential authority to bypass Parliament, the National Party and its caucus); and (*iii*) the increasing investment of decision power in running the country in the State Security Council — all of which were justified by the total-onslaught ideology. De Klerk's choice was to break out of the ideology of white control and boldly to embark on a new course of action.

In his analysis of the pressures which led to this decision, Van Zyl Slabbert describes internal pressures (planned and unplanned) as the major forces affecting change and external pressures (also both planned and unplanned) (Table II). The complexity and variability of the interaction between these forces creates, in his view, an open-ended uncertainty regarding both the process and the outcome of transition. The internal response is seen as the key to success, particularly if common ground can be forged between those willing to participate in a peaceful transition, and if violent opposition can be marginalised.

TABLE II.
Internal and external measures influencing transition in South Africa[22]

- Internal pressures
  - Unplanned
    - Population growth
    - Urbanisation
    - Unintended consequences of separate development
    - Demands of the economy
  - Planned
    - Changes in the regime
    - Negotiation with the opposition
    - Co-operation with the opposition to neutralise the right wing
    - Re-alignment of other special interest lobbies, e.g Democratic Party, South African Council of Churches, Black Sash, South African Institute of Race Relations
- External pressures
  - Unplanned
    - Changing relationships between the USA and the USSR
    - Decline of South Africa as a gold producer
    - Decline of Africa as an area of geopolitical influence
    - Collapse of Eastern Europe
  - Planned
    - War in Angola
    - Cost of administering Namibia
    - Sanctions

The creation of a non-partisan security apparatus, the rejection of violence, the ability of unbanned organisations to evolve from illegal liberation politics towards effective, legal political activity in the 'normal' world of conventional politics and private sector support (economic growth) for transition politics are identified as imponderables on which the process and outcome of transition will be critically dependent.[22]

Further insights into the 'thick mix of political ingredients' associated with the 'turn in the road' in South Africa's history have been outlined by Schlemmer.[23]

Most recently Fukuyama[24] has outlined three scenarios for South Africa once a new government, with one person one vote, is in place. The first, an analogy with West Germany absorbing and advancing its Eastern neighbours, is discounted as too optimistic for our country, with less wealth, greater heterogeneity and a larger underprivileged sector. The polar opposite of degeneration into a 'Lebanon', a scenario predicted by township violence, will, it is hoped, not occur given the considerable degree of goodwill and mutual acknowledgement of common ground. He considers the 'Latin American' scenario as the most likely, with optimistic and pessimistic ends of the spectrum within this exemplified by Brazil and Peru respectively.

Some global considerations

With the Cold War now over, international affairs in the 1990s will be dominated by economic affairs. In his review of north-south relations in the 1980s, Ravenhill[25]

has concluded that southern countries are weaker, more differentiated, and less unified than 15 years ago. Economic developments in the last 15 years have weakened southern countries individually and collectively, and the debt crisis has reduced their control over their own economic destinies. Although southern countries face formidable problems in acting collectively and will have less leverage than in the immediate past, he has identified several potential sources of collective southern leverage which, if combined with a new approach to global relations, could increase linkage between north and south to mutual advantage.

Ravenhill concludes that as the Cold War recedes there is the danger that it will be replaced by trade wars between the three major northern economic blocks and that increased competition between southern countries may even extend to armed conflict. He predicts that the 1990s will be another decade of lost opportunities if serious instability in the south does not attract the attention of northern countries and press them towards measures which could realise mutual interests. He identifies the 1992 United Nations Conference on the Environment and Development as a key issue which, if it fails to deliver more than well-meaning platitudes, will frustrate and diminish the potential of north-south linkages that could offer some hope to southern and poor countries.[25]

Conclusions

South Africa has reached a critical point in its history. Long-entrenched National Party policies and attitudes are being reversed by the creation of a momentum towards transforming our society. The ANC has moved from its position in exile, operating through protest, sanctions and the armed struggle, to a status which gives it the potential to turn the hearts and minds of people in the direction which could enable our country to travel along a non-violent road into a united, integrated, and dynamic society. Other African political parties are also staking their claims and the political debate is being broadened and intensified. These developments, taking place in the context of a disintegrating Cold War between east and west, and in recognition of the failures of socialism under communist rule, but also with awareness of the failures of rampant free-market capitalism, underscore the need for developing in South Africa a peaceful middle ground in which blacks would regain their dignity and whites and other minorities would feel secure. Individual rights and freedoms in this context could be realised within a social order that nurtures the individuals who constitute the community and who, in turn, sustain it within a participatory democracy. Such a society will differ in many ways from the 'world' in which most South African professionals live and work.

We need to acknowledge that health, illness and medical care are collective matters and that national responsibility for the welfare and health of citizens is necessary to foster democracy and conditions for economic and cultural growth. If serious attempts are not made to meet very basic needs (food and water, clothing, shelter and sanitation) and fundamental social needs (education, health care and the franchise), despair, crime and violence will be perpetuated within a growing marginalised and disadvantaged class.[26] Economic recession has highlighted group and individual competition. Democracy and respect for human rights cannot be achieved in this context, and there must be economic growth for their achievement. History informs us of the consistent failure to move from an authoritarian government towards a democracy in the absence of economic growth. The privileged in our society, including health professionals, will need to re-align their economic aspirations within more reasonable limits if they expect the disadvantaged to accept that disparities cannot be rapidly reversed. Narrowing the economic gap under conditions of peace will require mutual tolerance and understanding. How the State 'tackles poverty and inequality' and responds to the 'overwhelming moral and political force' of the call for redistribution will greatly influence the 'legitimacy and stability of a future "new" South Africa'.[27] A recent publication by economists, which explores how the popular demand for redistribution can be translated into 'coherent sustainable policies' without destroying the economy and impoverishing the intended beneficiaries, makes a constructive contribution to this complex question.[27] The medical profession can make its contribution to peaceful redistribution by working towards an appropriate health care system for our country. In health care as in world economics, the 1990s could become another decade of lost opportunities if we fail to deliver more than well-meaning platitudes.

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POLITICAL FORUM

Africa and the world

At the close of the 20th century the world is facing unprecedented challenges to the peaceful progress required for the physical and moral survival of all humanity. Of all continents Africa is the most threatened. Health professionals, as privileged citizens of the world, need to see the challenges facing national and global health in this context.

A recent commentary entitled 'Africa on the precipice' eloquently describes the desperate plight of Africa and calls for responsive humanitarian action.[1] By focusing on recent and well-known aspects of the tragedy of Africa,[1] however, and failing to address in greater depth the less obvious, but more powerful processes that have shaped and are shaping the continent, the emphasis is biased towards victim blaming with relative neglect of powerful external forces.

Even more admirable is the growing acknowledgement (albeit slow) in medical journals that the complex problems of Africa and the developing world are intimately linked to the future of the developed world and that 'to survive we need to look at radical changes in our values and our lives'.[2] The complexity of the African continent can, indeed, only be understood through open-minded and critical examination of the profound effects of colonial and imperial intrusions on Africa's development during the past century.

As with most complex social problems, effective solutions can only be proposed on the basis of a deeper understanding of: *(i)* social, economic, political and scientific contributions to human development; *(ii)* their foundations and the forces sustaining them; *(iii)* impediments to sustainable progress, and *(iv)* future, long-term implications, if timely imaginative action is not taken.

The past (1880s - 1960s)*

A comprehensive review of the growing literature on the history of Africa since the Berlin conference on Africa's partition by colonial powers (1885), and how its development has been influenced by external forces, is beyond the scope of this article. However, it cannot be ignored in the search for solutions to the intense challenges Africa poses to our humanity as we approach the 21st century.

Conrad's *Heart of Darkness*,[3] a celebrated novel written at the beginning of this century, is an appropriate starting point. Long championed as a classic novel illustrating the journey of the civilised and reasonable into the darkness of barbarism and unreason, it is now also recognised as an arrogant and dehumanising description of a continent and its inhabitants. Achebe's[4] exposition of this alternative interpretation illustrates how our perceptions are influenced not only by 'reality' but also by our own perspective and world view.

Mazrui's classic, *The Africans: a Triple Heritage*[5] provides an even more challenging and provocative analytic description of Africa's incorporation into a Eurocentric world culture. Urbanisation without industrialisation, consumerism not coupled to the ability to produce, transfer of capitalist tastes and greed without the discipline required to make capitalism succeed, importation of political values in the absence of an adequately developed political infrastructure, militarisation alongside privatisation, reduction of death rates without a concomitant fall in birth rates, the clash between Islam and Christianity and other powerful forces that have dislocated African structures from African culture[5] (all within less than a century) together with many natural disasters have produced the African scenario of the latter 20th century.[1]

Davidson[6] also contests the image of pre-colonial Africa as a dark continent where blacks lived 'in a malevolent condition of chaos . . . with no history worth knowing'. Ungar[7] describes Davidson's example and statistics as 'devastating' and the book itself as 'probably the most concise indictment available in the English literature of how colonialism and neocolonialism, plus a lot of help from capitalism and communism, turned the continent upside down'.

But neither Davidson,[6] Ungar,[7] nor Achebe[4] lay all the blame on external factors; they also acknowledge the failures of post-colonial communities to find and propagate means of living together within less destructive rival kinship networks (a criticism which can also be directed at post-cold war Eastern Europe). The gap between those like Boahen,[9] who unrealistically blame the African tragedy entirely on failures external to Africa, and those who equally unrealistically blame Africa for ruining itself[10] reflects dogmatic views lacking the scholarly interpretation which must acknowledge valid components of both perspectives.

The present (1960s - 1990s)

The challenge is not only to understand the past. To build a future also requires a better understanding of the present.

Worlds apart

In the 1990s 77% of the world's population live in developing countries on 15% of the 'global GNP.' While the annual per capita GNP of the USA is approximately US $25 000, and that of all industrialised nations is about US $12 500, for developing nations the figure is US $710; in 1986 50% of the world's population lived in countries where the annual per capita GNP was less than US $270.[11]

The net transfer of resources from poor, developing countries to rich industrialised nations (which has facilitated their economic development) continues and between 1983 and 1989 totalled US $241 billion.[11] Total developing country world debt stood at US $1,3 trillion in 1990 (double that in 1980). Trade protectionism designed by industrialised countries to maintain their economic power cost developing countries a further US $150 billion annually in lost export earnings.[11] Not only the outflow of financial resources (to repay debts loaned to neo-colonial despots by developed nations pursuing their own self-interest, often to purchase cold war support, and in the knowledge that much would be used for despotic self-aggrandizement, without any accountability), but also the depletion of natural resources and manpower, continue to impoverish underdeveloped and weak nations. UNCTAD estimates that developing countries lost 300 000 of their best brains (engineers, scientists, physicians, technical and kindred workers) to the USA, Canada and the UK between 1960 and 1975/76.[12] The lack of acknowledgement of the debt incurred by developed nations through such recruitment is perhaps not surprising but surely requires rectification in an era of heightened moral concern for social justice.

The world spends about US $1 trillion a year on military goods and services.[13] Developed countries spend on average 5,4% of their GNP on military endeavours and 0,3% on aid to developing countries. The Nordic countries admirably contribute 0,9% of their GNP to developing countries, most for social development, whereas the USA spends most of its 0,15% on defence support for Egypt, Israel, Turkey, Pakistan and the Philippines.[11] The Bush administration raised its 1991 aid commitment to sub-Saharan Africa from US $600 million to US $800 million, an amount equivalent to only one-third of American aid to Egypt alone.[14] Approximately US $340 billion worth of arms were sold or given to developing countries between 1981 and 1988, most of them produced by the Soviet Union and the USA.[13] The value of arms produced in developing countries (under the influence of super powers' expansion of their military industrial complex) increased five hundred times between 1950 and 1980 (from US $2 million to US $1,1 billion).[13]

The 1 billion people living in developed countries use 10 times the natural resources and produce 10 times the waste per capita than do the 4 billion people living in the developing world.[15] Both worlds contribute in different ways to the rapid advancing of ecological decay.

Africa

In addition to suffering from many major natural disasters, the African continent has been affected most adversely by these powerful social forces. African exports fell by 55% between 1980 and 1989. Africa had to repay US $1 billion to the International Monetary Fund in 1986/87 alone,[16] and in sub-Saharan Africa debt as a percentage of the GNP...

*Failure to discuss the dehumanising impact of the slave trade on Africa and the African psyche in this article should not be construed as an attempt to ignore this vitally important aspect of African history. The subject has been covered in great detail elsewhere and its significance is acknowledged.

increased from 43% in 1985 to 97% in 1990.[17] Logie[17] has expressed the view that 'the debt burden is a scandal which in numerical terms makes the international slave trade of the 19th century look like a petty crime'. The World Bank has estimated that over 100 000 highly educated Africans have taken jobs in Europe and the USA many as a result of active recruitment. The loss is felt particularly in the sciences, and scholarly research at many African universities is dying.[18]

Economic analysts point out that post-cold war Africa has lost its tenuous political lustre and that poor, peripheral countries are weaker internationally and collectively than in the recent past. Debt crises have reduced their control over their own economic destinies,[19] and they will probably be increasingly marginalised in the future.[20] In describing the 'retreat from Africa' Michaels[21] makes many interesting points. 'The United States has been retreating from Job's continent since the implosion of the Soviet Union set free America to pursue its own interests in Africa — and it found it did not have any . . .. "Global economy" is the foreign policy king, and there has been no economic rationale for dealing with sub-Saharan Africa, especially since the continent began its free fall in the 1980s . . .. The root problem with the (world) bank has been a combination of arrogance, ignorance and absolute unchecked power . . .. The United States would perhaps do more, and better, in Africa if there were greater constituency pressures prodding Washington policy-matters . . . (but) constituency pressures are not something Africa can depend on . . .. As the burdens of addressing Africa's problems are rightfully shifted to Africans themselves, absolute neglect or haphazard retreat will only force other impulsive, if well-intentioned interventions, which will prove more costly and divert scarce resources, leaving the continent worse off in the long run . . .. It is becoming all too apparent that political freedom will not address Africa's appalling economic condition . . .. A nightmare scenario may be building: a two-tiered Africa where existing political and economic elites reintegrate with the global economy via western sponsored 'reform', while increasingly isolated rural populations are integrated internationally as perpetual recipients of humanitarian aid.'

The future (1990s -)

As Africa's future will inevitably be influenced by future developments in the developed world some insights into the future may be gained form analyses of the developed world's past and its potential future.

In his paper 'America and the World: Today, yesterday and tomorrow' Wallerstein[22] attempts to look into the future by describing three American blessings: prosperity (today 1945 - 1990), liberty (yesterday 1791 - 1945) and equality (tomorrow 1990 -). Each blessing has involved measuring the USA by the yardstick of the world, and each blessing has had its price — not always paid by those who receive the blessings. At least four central points are made in this illuminating analysis.

The first is that the triple liberty preached followed the adoption of the Bill of Rights in 1791 took almost two centuries to impact deeply on the USA. Recognition of this facilitates a more humble understanding of the pace and depth of change in Africa during the turbulent century following invasion by colonial powers.[5]

The second is that the price incurred in the acquisition of prosperity since the Second World War has been the development and coalescence of several challenges to American imperialism, culminating in conflict that will ensure America's continuing status as the dominant military power but with considerable reduction of its economic hegemony.

Thirdly, narrowing of the economic gap created between citizens within the USA during the era of prosperity, coupled with aspirations for the maintenance of extraordinarily high standards of living, will require both an increase in productivity and further exploitation of the Third World. The consequent further widening of the core/periphery (north/south) gap will perpetuate increasingly visible revolt against Western values, enhance the potential for nuclear threat from deprived countries and aggravate an already burgeoning refugee movement leading to growth of a 'periphery within the core' that could set back the clock of development 150 - 200 years.

Finally, Wallerstein proposes that the salvation of America lies in recognising the intimate links between America and the rest of mankind and in America's contribution to a global village concept of the world which could ensure human progress and the survival of our planet. Although written before the end of the cold war, Ungar's book *Estrangement: America and the World* offers a similar message in a concluding sentence that remains prophetic today, at least in relation to the developing world: 'If the United States seeks to end the estrangement between itself and much of the rest of the world, it must start by getting a clearer notion of the price it pays in lost opportunities by continuing with business as usual.'[23] The open question is how long it will take America (and other developed nations) to recognise the inevitability of this solution if retrogression in Africa is to be halted.

Kennedy's[20] recent more detailed analysis provides a rich description of events leading us into the 21st century and emphasises the need for long-term thinking. 'The greatest test for human society as it confronts the 21st century is how to use the "power of technology" to meet the demands thrown up by the 'power of population', that is, how to find effective global solutions in order to free the poorest three-quarters of mankind from the growing Malthusian trap.'[20] Recent evaluations of adjustment programmes,[24] the concept of sustainable development,[25,26] and the functional characteristics of a working international order in an interdependent world,[27] reflect some scholarly endeavours to find appropriate solutions.

In his analysis of the Third World as a philosophical problem Hosle[28] suggested three moral criteria for First/Third World relations: (*i*) rational self-interest; (*ii*) restitution for interference with natural development and for exploitation through the draining of resources and brain power; and (*iii*) the acquisition of true human freedom by expression of solidarity with the weak. This requires a deep sense of identity with universal ideals, recognised through our own history and a clearer vision of ourselves through confrontation with other cultures and identities.[28] The shift from domination by one culture over many others to an acknowledgement of and respect for others, the early phases of which are becoming apparent, represents a crucial step forward towards greater freedom and peace in a threatened world.[4,5,29-33] Those who reject this can be considered analogous to 'geocentrists' in Galileo's time.

Conclusions

The tragedy of Africa and the problems of the Third World are collective human problems with ramifications that deeply implicate many developed nations. Their response to the tragedy of Africa as a dying continent will both define and determine the nature of Western humanity. The path of progress into a new enlightment will become clear through the acquisition of a deeper and more humble understanding of ourselves and others, of our interdependence, and of threats to long-term survival of human life. The conclusion of the Human Development Report that it is lack of political commitment, not a lack of financial resources, that is the real cause of human neglect,[11] raises hope for meaningful progress in South Africa and for the possibility of an internationally based 'Marshall Plan' for Africa.

S. R. Benatar

Department of Medicine
University of Cape Town

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Change and coping with change

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At the end of the 20th century, a century characterised by both wondrous progress and mass destruction of human life, powerful forces are converging to reshape and change our lives at personal, professional, national and global levels. These forces challenge us as never before to find ways of living together in an increasingly interdependent world. Mutual respect for differences, willingness to change and be changed through non-oppressive dialogue, humility and concern for the suffering human condition, are the prerequisites for progress. Events taking place in South Africa illustrate these assertions.

Change in South Africa can be considered to be symptomatic of the social and scientific developments that have transformed the world with increasing speed over at least three centuries and are likely to reshape it even more radically in the next 50 years. The choice we all face as individuals, or as a profession or a nation, is between the relatively comfortable option of trying to maintain the security of short-term stability or the tougher option of understanding the discomforting, yet often appropriate, powerful winds of change sweeping through the world.

Domains of change

Change affects us as professionals at the individual, national and global levels. My intention is to illustrate how we adapt to and are transformed by gradual change within a given mode of thought, yet how we try to resist and oppose the powerful and subtle forces that will shape the future but which we might be able to influence to good purpose if only we could escape the confines of our own limited perspectives.

Individual level

Reflecting on our own personal pathways through medicine reminds us of the profound and ongoing transformation from medical student to professional status in which we were moulded into particular and responsible roles. In this process we learnt about the human body's structure, function and malfunctions. Our moral experience was shaped by exposure to logical reasoning and technical skills within a scientific framework and the social context of our own particular health care and value systems. Objectivity and detachment were important attributes that had to be acquired while fostering an interest in our patients as people, as well as the qualities of compassion, empathy and kindness.

We passed through another phase of guided transformation when we entered the field of research, whether in the wards or in the laboratory. Here our appreciation of the importance of objectivity was further enhanced and we became conditioned into the specialised and reductionist way of thinking which is necessary for the advancement of scientific medical knowledge and for the provision of modern medical care based on understanding pathophysiology and the application of the best available empirical evidence. The post-Flexner era in medicine was to a large extent dependent on this approach for its many successes. The question whether such training is sufficient for the humanistic and ethical practice of medicine concerned Abraham Flexner himself in 1925 when he saw what was happening to medical education as a result of some misinterpretations following his 1910 report [1]:

> 'but scientific medicine in America—young, vigorous and positivistic—is today sadly deficient in cultural and philosophic background . . . Now science while increasing our vision and solving our problems, brings with it dangers peculiarly its own. We can become so infatuated with progress in knowledge and control—both of which I unstintingly emphasized—that we lose our perspective, lose our historic sense, lose a philosophic outlook and lose sight of relevant cultural values . . . In a modern university, therefore, the more vigorously science is prosecuted, the more acute the need that society be held accountable for purposes to which larger knowledge and experience are turned. Philosophers and critics therefore gain in importance as science makes life more complex, more rational in some ways, more irrational in others.'

We should also recall that William Osler essentially rejected the Flexner report, not because he was opposed to scientific objectivity but because he resisted the notion of a scientific ethos imposing itself between physician and patient [2]. Although we have embraced science in medicine we have thought, until recently, that the traditional Oslerian model of medical ethics was adequate and we have vigorously defended this position.

SOLOMON R BENATAR, FFA(SA), FRCP, *Professor and Chairman, Department of Medicine, University of Cape Town*

The complexity of modern medicine, the plurality of individual values and the increasing weight given to autonomy, the erosion of trust in the medical profession while more is expected of us, together with the need for common standards to foster social justice and protect the public against abuses in medical practice and research, have revived interest in ethics and the philosophy of medicine [3]. Such interest was rekindled first by theologians in the 1950s and subseqently by philosophers with sceptical and critical attitudes who challenged traditional, professionally oriented ethical debate. An initially turbulent era has been followed by increasing acceptance of the enriching intellectual contributions being made to medical education and practice by philosophers and theologians and subsequently by anthropologists, sociologists, lawyers and others. The value of ethics and the humanities in medical education is now widely accepted. The ongoing challenges relate to appropriate methods of education and include questions about who should teach, how ethics should be taught, what to include in the curriculum and how to find effective ways of ensuring that what students learn in theory can become incorporated into medical practice [4].

Another recent and somewhat forced transition has been towards taking on, more formally than in the past, administrative and political functions: documenting, evaluating, choosing, planning and directing health services for the public good, functions for which we have not necessarily been adequately trained. Given our academic quest for the truth, our clinical mind set and our intense orientation towards individual patients, we often find ourselves in conflict with bureaucrats and administrators who are increasingly concerned with population health, with cost containment policies based on economic principles, and with legal considerations. But we are beginning to take on this challenge as well in the hope that the complex organisation of modern medicine will be improved by mutually enriching deliberations.

The sweeping changes in medicine in London, the intensity of the medical profession's reaction and the interaction between doctors and administrators exemplify this. In his recent summary of changes since the King's Fund Commission in London, the Tomlinson Report and the government's published response, Robert Maxwell [5] has written: . . .

> 'there are (at the extremes) two obvious policy options. One is to break away from change in London, on the grounds that it is all too difficult and unpopular. The other is to continue doggedly with current policies, regardless of opposition and criticism. Both these options must be rejected. The first, because the need for change to the balance of London services remains overwhelming to anyone who will look at the evidence open-mindedly. The second, because what has happened (and some of what has not happened) over the past two years underlines the difficulty of making changes on the scale proposed. In London there is widespread concern that the changes under way are putting patients at risk and that some of London's most famous hospitals have been pushed into a downward spiral of decline. At a minimum there is a need to re-establish confidence, revise time scales and review the management of transition.'

Similar dilemmas face us in South Africa where they are compounded by the wider gap between polar possibilities and by the political pace demanded within the context of a negotiated revolution [6]. Such transitions are difficult but we are, to some extent, assisted in coping with them by the professional and social support structures around us, especially in stable societies.

However, many other powerful currents of change tend to disrupt the interface between society and the accepted stable model of modern medical thought; forces that we may feel impelled to resist because they threaten a relatively comfortable stability. While we may be correct in opposing those that could be damaging, others have sufficient validity to ensure that they remain unscathed by such resistance. Vehement opposition to change is often inappropriate and is only credible if we have open-mindedly examined the nature, force and justification of the changing tide. The value we place on thorough evaluation requires nothing less. But can we do this? Have we the will, the skill and the courage to step into an unpredictable and rapidly changing future; a future that calls for creative broadening of our visions?

National level

Change in South Africa has been taking place at a considerable pace over at least the past 10–15 years [6]. We have finally reached a stage our oppressed citizens have long desired, as have democratically minded people within our country and beyond its borders.

Given the legacies of apartheid and the demands for social justice, the challenges for the new government and all the people of South Africa are enormous [7,8]. Achieving the greater common good will require cooperation on an unprecedented scale, innovative approaches to redistribution of resources and reshaping educational and health care services in ways that could responsibly empower our citizens to escape from dependency. Closed minds, unwillingness to change and dominance of ethnic and other power struggles for privilege could undermine the future we all desire. How can we cope with and bridge the gap that seems so wide?

Despite the injustices in our society over so many decades there has emerged, almost miraculously, a spirit of negotiation and cooperation that few believed possible [9]. The transition process has been remarkably free of violence, given the great potential that has existed for civil war. How was this achieved? There is

no simplistic answer and as with other major changes in world history, many complex forces have been interacting over decades and centuries to provide the creative tension that gave rise to these changes.

The example of President Mandela's life illustrates the power with which an individual can bring about major changes. It is important to realise that many other people have also lived constructive lives that in their various ways combined to produce the catalysing forces that made a peaceful transition possible. This should enhance faith in every individual's ability to contribute towards change, even major change, no matter how insignificant such actions may appear on their own. This applies to many aspects of life in our country, including our health care system.

Transition in the crucible at the southern tip of Africa is an experiment with implications for the world at large. Global forces, in different guises, are challenging even the most privileged nations. The move towards a European Union, the end of the Cold War and subsequent events in Eastern Europe, the unification of Germany, the spread of democracy in Latin America, the debate about partition in Canada, the negotiations and treaties for peace in Ireland and the Middle East, the 'awakening' of China, the growing economic power and influence of Japan, events on the whole African continent, and many other social revolutions are all symptomatic of these powerful forces of change. Each nation and its citizens will need to deal with its own problems in its own context.

Global change

The global problems include exponential population growth, with widening economic disparities, detrimental ecological effects, ethnic conflict, new forms of power and control (eg complex information, modern communication systems, market manipulation), and tensions over resource allocation and social justice [10]. These, together with problems such as drug addiction, violence, AIDS, multidrug resistant tuberculosis and other diseases that do not respect boundaries, nuclear threats from unstable countries and escalating refugeeism, pose challenges of a new and greater order of magnitude than any we have successfully dealt with during this century.

Solutions to these problems will not come from science alone although scientific progress will certainly contribute. For example, immunotherapy that could shorten the duration of effective treatment for tuberculosis could have a dramatic impact on this resurgent disease. However, additional social solutions will also be required [11].

To begin with, we need to develop a deeper understanding of the adverse as well as the beneficial effects of Western civilisation over the past 300 years [12–15]. We now live in a divided world, a world in which the humanity of some has been sustained at the expense of others, a world in which domination, exploitation and militarisation have led to a small and shrinking rich core, and a large and growing poor periphery. Courage is required to acknowledge deep-seated deficiencies in international relations that lie behind world events and to propel movement towards a concept of global citizenship and inter-cultural cooperation that must surely be as inevitable as the eradication of apartheid.

Herein lies the excitement of recent developments in South Africa where the world's problems come into sharp focus. A great fund of human goodwill amazingly exists in a country with such an oppressive history. There is also widespread realisation that the rewards for a successful transition towards democracy, economic growth and greater equity are so enormous and the price for failure so high that a consensus approach to the future is of prime importance. However, the turbulence of transition in other countries and the ever present risk of retrogression (even if only temporary) despite the best intentions of transformative regimes, cautions against over-idealistic expectations.

The obvious changes we see in South Africa and elsewhere reflect the less obvious global undercurrents that we either fail to detect or ignore. For example, the elimination of apartheid takes place not only in the wake of increasing concern for human rights everywhere (since the International Declaration of Human Rights) and recent anti-apartheid pressure and action, but also in the context of less obvious, but nevertheless real discrimination and oppression that regrettably continue to pervade the world in many guises. Economic, military, political, technologic, cultural and gender imperialism remain extraordinarily powerful forces with an adverse impact on the self-esteem, dignity and lives of millions of people both in the developing and the developed world.

In the developed world these manifest in the 'post modernist' movement that includes Afrocentricism, feminism, multiculturalism and deconstructivist academic and populist movements that have arisen in response to oppressive forces and which we can ignore only to our disadvantage [12].

While we may legitimately dismiss the extreme cases made by the most radical advocates of various postmodern positions, the real challenge is to recognise the valid claims for respecting different identities and for empowerment that underlie these strident claims. We cannot and should not avoid confronting academic and other critiques within the western world that have sufficient force to undermine confidence in most of the West's great intellectual projects: critiques that pose challenges to disciplines as diverse as philosophy, history, art, literature, medicine, science and of culture itself. Previous confidence in spiritual force, in our capacity for knowledge and our ability to conquer nature are being replaced by loss of faith, uncertainty in knowledge, a mutually destructive relationship with nature and intense insecurity about man's future [12].

This complex, 'postmodern' condition, shaped by a

diversity of intellectual and cultural currents with deep historical roots can either be seen as a threat to our strongly held belief system or as a dialectical force with justifiable origins, but flawed construction. Rather than being intensified through rejection, its radical elements should be confronted in a scholarly manner, and if appropriate rejected on justifiable grounds. Other aspects, established as valid in open debate, could be shaped through dialogue into a more richly informed intellectual vision and moral conception of life in an interdependent ecosystem in which the quest for knowledge must be endlessly self-revising [12].

The developments towards social democracies in Europe, and the growth of communitarianism as a new political ethic in the USA in response to a liberal culture that has allowed community values to decline [16, 17] and the response of liberal individualism to its own deficiencies [18] have profound conceptual and practical implications and are healthy signs of this self-revising process.

We need to consider not only these divisions within our Western world view; we also need to understand better the implications of our attitudes to the cultural differences between peoples of different nations that have arisen from 'deep trajectories of thought and social movement which have become institutionalized in subsequent intellectual and social life so that they form a stratum of human presupposition and habit of which people are not always fully conscious' [19].

As Sir Isaiah Berlin has pointed out, this does not have to be rejected as disastrous cultural or moral relativism but rather can be accepted as a challenging opportunity for improving communication between cultures [20]. We cannot avoid the need to try to understand value systems other than our own. This is not to say that we should blindly accept them but rather that we should be willing to enter into a dialogue that could enable us to find a middle ground on which peaceable progress could be built. Progress lies not in propagating false dichotomies but rather in deeper understanding of differences and a willingness to create solidarity through greater identification with common attributes and aspirations.

The great divide between the scientific and literary cultures within our own world was clearly described by C P Snow in his 1959 influential lecture, 'The two cultures' [21]. It was clear to Snow that there was a link between this cultural gap and the widening gap between rich and poor nations. He believed these gaps could be narrowed. But in many respects they have become wider. Further divisions, both within science and the humanities and between them, emphasise the need for intra- and interdisciplinary communication [22]. We have come to accept the need to bridge the gap between science and the humanities in medicine; the need to transcend other boundaries is illustrated by sensitive and deeply insightful writings by African authors [23,24], Western philosophers [16,17,25,26], anthropologists [27], political scientists [16,17], African-Americans [28], and many others [29,30]. They have contributed humbling and uplifting insights into how we will have to change our attitudes if we are to live together in greater international justice and peace.

At the end of the 20th century the world is indeed facing awesome challenges, and these are manifest in different ways in different countries. Such challenges call for deep introspection by those nations and groups of people who, like us, have been privileged to benefit most from human progress over the past three centuries. They also call for a re-evaluation of the costs of such progress for the least fortunate in the world who constitute a growing proportion of the total population.

Medicine

An analogy can be drawn between these global changes and the transformation of medical professionalism by a growing tendency to base the delivery of medical and health care predominantly on expensive, high technology medicine transacted as a commodity in a market place governed increasingly by economic and legal principles—surely a myopic perspective on medicine and human suffering. The universal humanistic ideals for which medicine strives are being neglected. They must be revived, promoted and cherished if we are to avoid being dominated by our acquisitive instincts and if we are to preserve professional integrity, maintain concern for individuals and improve the health of the population within a spiritual concern for life and its dignity. The need for this in the era of molecular biology will be greater than ever.

Medical education will need many innovative approaches. These will include a new substantive core of biological sciences, greater emphasis on behavioural, social, predictive and information sciences and new interactive techniques for learning [31]. There is, however, less appreciation of the need to reshape medical practice and health care delivery systems to ensure that they provide receptive environments for the evolving changes being introduced into medical education. Paying lip service to change by reshaping medical education and increasing exposure to ethics and the humanities, while allowing medical practice to be driven along a commercialised route, will be self-defeating. The medical profession will have to think deeply about itself, about its role in society and face many challenges to some of its entrenched values if the advances made in improving the health of individuals in the 20th century are not to be confined to a small elite. Advances in scientific and social practices should be designed to extend better health to large populations in the 21st century.

The lead will surely need to be taken by those nations that have sufficient financial and symbolic power to re-embody the spirit of trust, beneficence and community in the daily practice of medicine in

civil societies. Their health care systems, and especially that in the USA, have a major symbolic impact globally. Failure to appreciate how the legitimisation of entrepreneurial dominance in medicine impedes the ability of less affluent nations to build and sustain equitable health services may leave industrialised nations with the historical burden of having undermined the basic morality of medicine.

Coping with change and some conclusions

As we grow older and hopefully wiser we can reflect on the many transformations we have gone through in our lives, how we were influenced and changed by life's experiences and how we stumbled through to new horizons. If we study the history of our and other civilisations and examine ourselves deeply enough we come to realise the complexity of interacting forces that have shaped our perceptions of ourselves—perceptions that may be narrower and more emotive than we readily concede. Through recognising, acknowledging and studying them we gain greater control over our destiny. The examined life is painful but also richer.

It is through becoming more aware of the human condition and discovering our need to form communities with those different from ourselves that we rediscover spirituality on a wider scale and can search with integrity and optimism for common moral ground. Our experiences in life can thus be described as encounters that require interpretation, often associated with conflict through which we may become transformed [27].

My concern is for a constructive, creative and visionary response to local problems in the context of global awareness. I identify with Isaiah Berlin and the priority he gives to the avoidance of extreme degrees of suffering. His deeply felt concerns for the vast human sacrifices inflicted during the 20th century by 'armed prophets seeking to save mankind, and some only their own race because of its superior attributes' [20] requires loud reiteration in a frightening world in which economists have recently described two-thirds of the world's population as 'superfluous people . . . In the perspective of world capitalism as we know it these people just don't count . . . Unless that part of the world develops the capacity for terrorist blackmail, they will be in the charity ward for a long time' [32].

I conclude by quoting a passage from Isaiah Berlin's paper: 'On the pursuit of the ideal' [20]:

> 'How do we choose between possibilities? What and how much must we sacrifice to what? There is, it seems to me, no clear reply. But the collisions, even if they cannot be avoided, can be softened. Claims can be balanced, compromises can be reached: in concrete situations not every claim is of equal force—so much liberty and so much equality; so much for sharp moral condemnation, and so much for understanding a given human situation; so much for the full force of the law, and so much for the prerogative of mercy; for feeding the hungry, clothing the naked, healing the sick, sheltering the homeless. Priorities, never final, must be established. The first public obligation is to avoid extreme suffering.'

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Address for correspondence: Professor Solomon R Benatar, Department of Medicine, University of Cape Town, and Groote Schuur Hospital, Observatory, 7925, Cape, South Africa.

The Importance of Medical Ethics as an International Endeavour

Professor Solomon R. Benatar, FRCP, FACP (Hon), Department of Medicine, University of Cape Town and Groote Schuur Hospital, Observatory 7925, Republic of South Africa

Scientific and technological advances in medical practice have resulted from intellectual contributions from many disciplines other than medicine itself. Progress has been characterised by a process of incremental advance in the understanding of physiological and pathophysiological mechanisms and the design of interventions that can be tested in practice. Modern medical practice is thus the result of a close interactive collaboration between theoretical advances and their application under the scrutiny of the scientific method.

In contrast to this, moral considerations that have for many centuries been central concerns in medicine, have to a remarkable degree been continuous, consistent and largely confined within the profession until the middle of the 20th Century. It is only in the past thirty years that challenges to many traditional concepts have led to more diverse discussions on medical ethics in a broader and more public arena, most especially in the United States but also in many other countries. The background and nature of these changes and their ongoing evolution have been described. I have been asked to outline the importance of a coherent set of internationally held ethical values in medicine and to suggest how the WMA can counter threats to these and contribute to global health. A brief description of the way in which medical ethics is evolving will set the scene for my proposals.

Traditional medical ethics — professional standards

The traditional and generally accepted concept of medical ethics centres on standards of professional competence and conduct broadly outlined by the contents of formal codes of practice to which individual medical practitioners and medical organisations hold allegiance. The role of the World Medical Association in this regards is well known and acknowledged. The emphasis on learning and adhering to medical ethics has relied almost exclusively on apprenticeship, on the conscience of individual medical practitioners, and on exhortation by national and international organisations through various codes. Role modelling and professional solidarity have served to pass professional norms from one generation to the next. Although medical etiquette was a major point of focus in the past, two major principles of medical mortality have also been extensively propagated: "To do good and not harm to others" and "to respect human life and the dignity of the individual". These, combined with medical knowledge, confidentiality, empathy and compassion have formed the basis for investiture of authority in medical doctors by society and for a relationship of trust between patient and doctor that has been considered an essential component of the healing process.

The new medical ethics — the influence of philosophy

During the 1960s and 1970s a major change took place in the discourse on ethics in the United States. A more critical perspective of medicine developed, the debate became multidisciplinary and it was translocated from a position almost exclusively within the profession to the public arena. The reasons were varied and complex. They included:

(i) the increasing power and depersonalisation of medicine as it became more complex, fragmented into sub-specialities, practised within intimidating institutions at escalating cost and with profound philosophical and practical implications for living with sickness and an extended dying process;
(ii) a distrust of authority by a better educated public with access to much more information about science and medicine and increasingly concerned about the self-interest of professionals as reflected in unethical research, financial greed and scientific fraud;
(iii) erosion of traditional communal sources of morality; for example, religion, family, life, local communities;
(iv) advocacy for civil rights, individual self-determination and participatory democracy within pluralistic societies that lack a common unifying conception of the 'good';
(v) a growing emphasis on 'money as the bottom line' within a concept of rationality that gives priority to economic considerations; and
(vi) the need for a secularly based common moral standard (upheld at least by the law) that could unify members of a diverse society (a challenge most effectively taken up by philosophers).

Within the period of change it increasingly became recognised that while codes were necessary to exhort professional standards they were insufficient on their own either to provide justification for ethical decisions or to ensure high moral standards of practice. Practical responses to ethical dilemmas in pluralistic societies require the ability to work with others in the profession, as well as those outside of it, utilising a language of ethical debate and a reasoning process that can be widely shared. The process of moral reasoning allows formulation of a structured, rationally justifiable decision, clear identification of our moral aspirations and personal values and articulation of a

moral basis for action. The development of a process for decision-making also facilitates shared decision-making by health professionals, the family and other involved parties and opens the decision-making process to public scrutiny for the development of uniform standards. This approach also creates greater sensitivity to moral issues in situations where solutions are often mistakenly thought to depend purely on medical and technological considerations.

The broadening of medical ethics from a purely traditional, private, vaguely regulated, intra-professional, code-based activity to include a more public, inter-professional and explicit component in which fundamental questions of morality are raised and discussed has ensured a central role for philosophers and the philosophical method.

Principles of medical ethics

The application of general ethical theories, and of the principles and rules derived from these to problems of medical research and practice has been propagated in North America through widespread debate centering on four major principles: (i) non-maleficence, (ii) beneficence, (iii) autonomy and (iv) justice. This principle-based approach has been greatly influenced by a classic text (Beauchamp and Childress).

Non-maleficence (to do no harm) a dominant ethical principle in an era when effective medical interventions were few and poorly understood, has been supplemented by the principle of *beneficence* (the requirement to do good) in an era when effective therapies have become widely implementable. Mistrust of authority, and other changes previously listed, have gradually led to dominance of the principle of *autonomy* (self-determination) over that of beneficence. This has served as a means of redressing the imbalance of power between physicians and patients and of preserving respect for the dignity of the individual in the face of the enhanced professional power characteristic of the modern technological age.

Acknowledgement of the importance of the patient's viewpoint has thus served to enhance individual rights of patients and to encourage the communication between patient and physician that is necessary for shared decision-making and for enhancing trust in their relationship. Broad multidisciplinary endeavours involving philosophers, lawyers, physicians and professionals from the humanities have further facilitated both teaching and practical aspects of an expanded conception of medical ethics — now commonly called bioethics — that includes, but goes beyond, the traditional model. While this transformation seemingly began in North-America, it also had roots in Western Europe and the process of change is spreading, albeit slowly, through many countries.

It is appropriate to acknowledge that this process of transformation with greater emphasis on autonomy is being accepted with some reluctance by the medical profession even in the United States where the pressures for change are most prominent. It is, therefore, not surprising that in other countries with different pathways and patterns of social progress the new bioethics is only beginning to gain a foothold. Clearly it is very difficult for medical practitioners in poor and non-industrialised countries to provide all their patients with all the benefits that modern scientific medicine can offer. It must also be acknowledged that they face enormous barriers — social, economic, political, organisational — to meeting modern ethical requirements in medical practice. The ability go give appropriate weight in practice to autonomy under very adverse circumstances needs to be understood in context. Doubt could also be raised regarding the appropriateness of the absolute priority accorded to autonomy — even within the United States — given the importance of balancing this against the principles of beneficence and justice.

The principle of *justice,* particularly in relation to the allocation of resources, has until recently achieved less prominence in ethics debates probably because issues of central importance to individuals in the industrialised world have been more directly relevant to individual-orientated medical practice.

However, issues of social justice relevant to the structuring of health services that will promote the dignity and autonomy of all citizens in the longer term are now gaining prominence within many countries. The well established responsibility of physicians for the individual good of their patients is thus increasingly being extended to include acceptance of medicine's social responsibility for improving health more broadly at a community level. Outcome studies, cost-benefit studies and other aspects of health service research are being advocated as a means to providing a more rational basis for structuring health services and allocating resources both for the benefit of individuals and communities. Concern for individual dignity/rights (autonomy) for not doing harm (non-maleficence) and for doing good (beneficence) cannot be divorced from concern about inequities at the social level (justice) as all these principles are inextricably linked, most especially in relation to longer term perspectives in any society.

Experiential ethics

Some have perceived the new bioethics as being focussed on analysis, theory and individualism that gives inadequate attention to those virtues of practice, such as involved caring for others and a sense of duty, which when combined with judgement skills and rapport with patients result in authentic healing. These justified criticisms from theological, feminist, and other perspectives have variably led to pleas not to deviate from the 'sanctity of life' principle, to calls for attention to patient narratives of illness, for active attempts to develop communication skills and empathy, for supplementation of the Anglo-Ameri-



can analytical philosophical approach with the Western-European emphasis on existential, phenomenological and interpretive philosophical approaches, and for a deeper understanding of challenges to medical practice in countries beyond North America and Western Europe.

Bioethics is a relatively young field of professional activity that has arisen through scepticism and critical attitudes particularly by philosophers, to traditional, professionally oriented medical ethics. It is therefore not surprising that the new philosophical model of medical ethics should also be facing similar challenges from anthropology, sociology, theology and other disciplines that will further shape its evolution and progress to encompass more broadly the valid contributions from many perspectives.

Some global considerations

It is appropriate to re-emphasise that these developments in bioethics began in North America, in a particular context of complex interactions between social, political, economic and legal changes characteristic of a heavily industrialised western nation. Given the power and influence of the United States it should not be surprising that changes in that society have a profound symbolic and material impact (positive and negative) on the practice of medicine in many other countries — worldwide. However, the pace and ways in which other countries respond are influenced by their specific, and equally complex, socio-political contexts. Those who live, work and think in rich material and intellectual environments tend to take for granted their wealth, democracy and civil society and may have little or no appreciation of the difficulties faced by colleagues who are endeavouring to sustain universal professional ideals in poor, non-democratic and oppressive countries in which a myriad of overt and covert forces influence and obstruct them. Humility and empathy are necessary to understand fully the pervasiveness of these powerful forces, to overcome somewhat imperialistic expectations of others in vastly differing societies and to acknowledge that privilege and power generate additional moral obligations.

The Commonwealth Medical Association's project on the role of medical ethics in the protection of human rights represents a step towards bridging this gap. It takes as its starting point the fact that physicians are among the first to become aware of human rights abuses and that "the ethical regulation of their professional conduct is, therefore, an important, though little recognised, component of the observance and enforcement of human rights". In formulating a set of guiding principles linking medical ethics and human rights the CMA has also acknowledged that "the quest for political, economic and military power has polarised the world into a small, stable, privileged core of people and a large, growing, marginalised periphery", and that "it is increasingly recognised that exploitation of the human and material resources of developing countries threatens the health and dignity of those societies and ultimately the well-being of all".

The CMA has also pointed out, that the inability of many people in the world to enjoy the benefits of basic human rights is clearly linked to those economic irregularities that have arisen through complex global economic and political patterns of change and that health, human rights and justice for all can only be approached through probing and transforming those forces that drive the acquisition and use of economic resources. I should like to propose that it has been the failure to acknowledge this in the past that has frustrated the promotion of human rights at a global level.

Medical practitioners have traditionally seen themselves as part of a global community with shared goals for the protection of life and health. It is this shared mission that underpins acceptance of common concepts of medical morality, and the link between human rights and the ethics of medical practice enshrined in a range of WMA and other medical codes. These exhort individual practitioners to defend universal principles in order to protect their patients and the doctor/patient relationship even in the face of powerful, coercive and imposed national ideologies and policies. There is widespread support for this approach and we should unanimously agree that it must be sustained. Declarations by the WMA, the work of Amnesty International and other powerful documents about the role of health professionals in "crimes against humanity" have, however, been less effective than we should all like. Perhaps this is because they have not been adequately linked to movements that challenge those even more powerful economic and political forces that shape the context in which human rights can or cannot flourish.

Just as traditional international ethical codes are necessary but not sufficient within modern medical practice, so the duties of doctors to their individual patients are arguably also necessary but not sufficient. Doctors also have responsibilities to their societies, and to medical professional values and ideals with their human rights implications at the international level. It should be acknowledged that coercive ideological forces that adversely affect health care professionals also operate (albeit in a more subtle fashion) in democratic societies. As Ericson has stated ... "Even in democratic societies a constant alertness on the part of nonconformists and civil libertarians is needed to resist pressures to subordinate all institutions that shape the human spirit and to place them under the control of those who want to dominate the social order. Although there are profound differences between the extent of personal freedom within Western democracies and one-party communist societies (and these distinctions

should not be minimised), it is nevertheless true that the future of the free mind is threatened by converging forces in both these rival systems. In the Communist States and the Western nations, technological structures and bureaucracy instil in the individual citizen a feeling of helplessness and hopeless passivity. Both social systems are advancing towards corporate structures that efface individuality and freedom of expression. Both are managerial societies that tend to equate virtue with conformity, pliability and administrative efficiency ... (even) teachers of ethics [illegible] reduced to functionaries controlled by a corporate mentality concerned most of all with 'success' as measured in quantitative terms".

The American Association for the Advancement of Science has also expressed concern regarding the appropriation of science for parochial purposes. "Science, the instrument which produces power is being consciously exploited for industrial, military and economic purposes ... there is little recognition of the internal needs of science or of its purposes as a discipline of the human mind ... There is some evidence that the integrity of science is beginning to erode under the abrasive pressure of its close relationship with economic, social and political affairs". The ongoing relevance of these concerns and their global implications are reflected in the [illegible]tional Academy of Sciences' document on 'Responsible Science' and in 'The Toronto Resolution'.

While doctors in some countries are justifiably exhorted and expected to stand against coercive ideologies of their governments and unjust institutions, even at the risk of their lives, in defence of the rights of their individual patients, doctors in other, more privileged societies cannot be complacent. Their power and privilege brings with it additional moral obligations to take similar stands against powerful ideologies in order to defend the rights of people in other nations not to be dominated politically or exploited militarily and economically in ways that deprive millions of access to even the most basic of human rights. The enormous responsibility of health professionals in wealthy countries to help convert a rhetoric about universal human rights into a collective reality for millions of marginalised people in the world must surely be as openly acknowledged as the responsibilities of those who must defend individual human rights in oppressive countries. Selective moralising from positions of privilege and power lacks credibility, at least at the intellectual level.

Medicine as an industry

Considerable scholarship from a diverse range of intellectual sources is enriching our understanding of health and disease and influencing the way in which medicine will be practised in the future. In the 19th and early 20th Century medical morality was largely concerned with conflicts of interest between practitioners, (fee-splitting, self-referral, advertising etc). In the first two decades of modern medical ethics, these gave way to pre-occupations with other concerns, for example, the doctor-patient relationship and patient autonomy. In the past decade, however, commercialisation and corporatisation of medicine within the current economic paradigm of thinking is turning medicine into a "medical-industrial complex" in which economic and conflict of interest considerations are again becoming dominant. Compassion is being eclipsed and self-interest is being fostered, but the need for social justice in the delivery of healthcare is also being acknowledged.

The need is greater than ever before to reclaim much that is being lost in the practice of medicine and which is vital for the provision of authentic healing within socially appropriate healthcare services. To ensure that those who enter the health profession are motivated by valued virtues will require opposition to those powerful forces that undermine the ideals of medicine. In some countries these forces result in the co-option of doctors into "crimes against humanity" at the individual level. In others they result in the co-option of doctors into activities that deprive whole populations of access to basic human rights. For example a powerful ideology that drives medical care towards a market-place activity, in which healthcare professionals are dominated by the procedural and business priorities of corporate managers, is eroding the ethos of medicine with consequent adverse effects on the care of individual patients and on the provision of equitable access to healthcare within society.

The challenge for those concerned with the morality of medical practice is to find ways of supplementing philosophical ethical debate with teaching methods and exemplary practice that results in a science and art of healthcare which addresses more caringly and effectively the health of individuals and communities. This will require recognition (i) that individual preferences, values and perceptions are pervasively influenced by the social and institutional structures within which they operate; (ii) that medical practice in all countries is influenced by previous and present socio-political factors, and (iii) that implementing sound ethical values within nations and worldwide will require collective action to impact on the wide variety of adverse forces that influence practice within existing healthcare systems in the wealthy as well as the poor world. Health professionals, in recognising their responsibilities to populations — national and global — must use their intellectual and moral power to shape equitable healthcare systems in their own countries, and through this example and other efforts contribute to sustainable development programmes that will improve health and human rights in poor countries as vital components of a threatened, interdependent world.

National and international approaches

Many countries lag behind North America and Europe in debating indivi

dualistic bioethical issues in a multidisciplinary milieu and in offering these deliberations to public scrutiny. However, there is also a gap in wealthy countries between the individualistic level of ethical concern and the community levels at which ethical debate is also required. Hopefully, this is also changing. The recent report from the United States Office of Technology Assessment documents the extent to which bioethics initiatives are developing world-wide and it advocates the need for incorporation of bioethical analysis into national policy-making. This marks a potentially major forward step towards addressing disparities within nations and between nations.

Physicians in poor and non-democratic countries need encouragement and support in upholding the rights of their individual patients. Supportive relationships between National Medical Associations can contribute to this as outlined in the recent report from the Commonwealth Medical Association. This meeting here in Stockholm is further evidence of the desire to encourage medical ethical responsibilities at a global level. Physicians in wealthy countries, however, also need to be sensitised to, and to take on, their wider moral responsibility to strive beyond the limited perspectives of their nations, in the quest for human rights and health at a global level. If the World Medical Association wishes to make a global impact it will accept the challenge I have offered and begin formulating appropriate Declarations, the first example of which I have drafted and submit to you for your consideration (see Box).

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Proposed World Medical Association Statement on Health and Human Rights

(for discussion)

- Whereas the World Medical Association:

A. Recognises that:

1. We live in a divided world, a world in which 23% of the world's population lives in affluence on 85% of the annual global economic output, while 77% live poorly, often in misery, on 15%;
2. These disparities have deep roots in centuries of complex human development and progress that has regrettably been associated with military and economic conflict and exploitation;
3. The gap continues to widen as human and material resources flow from poor countries into the rich;
4. These disparities and their causes aggravate population growth, human misery and ecological degradation in all countries;
5. Vast resources are wastefully expended year after year on militarisation worldwide.

B. Notes that healthcare professionals have:

1. Traditionally seen themselves as part of a global medical community with shared goals for the protection of life and health;
2. Formulated codes of ethics that reflect the universal nature of these professional obligations;
3. Committed themselves through their nations to support universal human rights, including health for all;
4. Responsibility towards the common good as well as their individual patients.

C. Acknowledges that

1. The principle of justice requires access to healthcare in all countries as a basic human right without which people will suffer individually and communities collectively;

2. We live in an interdependent world in which modern communication and transport systems inform us about and expose us all to individual and collective threats to human health and survival.

The World Medical Association urges all healthcare professionals and their professional associations to:

1. Acknowledge that their responsibility for individual and population health should not be subverted by political and other ideologies either in wealthy or in poor countries;
2. Expose and contest actions taken by their respective governments that may adversely affect the health of individuals or populations, at home or abroad;
3. Assist professional organisations in other countries in their efforts to achieve this; and
4. Accept the challenge to work towards creating national and international concepts of the practice of medicine that will contribute to the health of populations as well as to the health of individuals.

Prospects for global health: lessons from tuberculosis

The primary aim of medicine is to enhance the quality of life and promote the health of mankind. Despite almost undreamed of medical progress over many decades, especially in developed countries, preventable diseases still blight the lives of billions worldwide in both rich and poor nations. The success of the World Health Organisation's programme for the worldwide elimination of smallpox exemplifies what can be achieved in our modern scientific world. Control of other diseases will be more difficult and require greater international collaboration. Societal and professional apathy to human suffering at the population level, and the paucity of coordinated international endeavours to address global health issues, are increasingly being confronted and debated. "Health for all by 2000" – or beyond – is, however, a meaningless slogan in the absence of a paradigm shift in thinking about global health.[1] Tuberculosis, an old disease again in the limelight, provides an opportunity to confront the challenge.

In the 113 years since Koch discovered *Mycobacterium tuberculosis* impressive advances have been made in our scientific knowledge of this organism, the disorders it produces in man, and its medical treatment and cure. New diagnostic techniques (including sophisticated molecular biology procedures), development of a range of therapeutic drugs with deeper understanding of their mode of action, modern drug regimens based on superbly designed and conducted trials, application of social science methodology to understanding patient perceptions of disease and to improving compliance have all contributed to a biopsychosocial understanding of the disease which contains all the ingredients for the successful control of tuberculosis, at least at the national level.[2–4]

Despite these impressive scientific advances, tuberculosis constitutes a growing and even more threatening problem worldwide.[5,6] Given the estimate that one third of the world's population is infected with *M tuberculosis*, the recognition that HIV infection is increasing the proportion of those in whom infection will progress to tuberculous disease, that HIV and *M tuberculosis* infections co-exist most extensively in the poorest parts of the world, the inadequacy of tuberculosis control programmes, the development of multidrug resistance, and the ease with which infections are transmitted across the modern world, necessary scientific progress and humanitarian aid to developing countries may be not sufficient to avert the potential tragedy of untreatable tuberculosis.[4–8]

This paradox between the success of creative scientific endeavours to cure and control a pandemic infectious disease and consequent potential failure in this quest provides an opportunity for some reflection on the past, to contextualise a perspective of the present and a vision of future requirements that could improve the health of individuals and populations.

Table 1 Population statistics for some more developed and less developed countries (mid 1990s). (Data compiled from ref 10)

	More developed countries	*Less well developed countries*
Population (million)	1214	4107
Urbanised (%)	73	32
Death rate*	9	10
Birth rate*	15	31
Infant mortality rate	16	81
Natural annual increase (%)	0·5	2·1
Population doubling time (years)	128	33
Per capita GNP (US$)	15830	710

* Per 1000 population

The past

At the turn of the 19th century when the first tuberculosis epidemic was reaching its peak in western Europe, the Industrial Revolution was well under way leading to rapid population growth, and Britain was colonising India. In 1882 Koch identified *M tuberculosis* and the next wave of the epidemic was reaching its peak in eastern Europe while major European nations were either at war or planning the colonisation of Africa (following the Berlin Conference of 1885). When tuberculosis peaked in India and China at the beginning of the 20th century, world population had increased to almost two billion. The crest of the next wave reached subSaharan Africa in the mid 20th century when the world population was four billion and the colonising powers were retreating from an era in Africa that would impact deeply into the future of the continent.

The demographic transition and stabilisation of population growth typical of countries industrialising during the late 19th and early 20th centuries in Europe and North America has not been repeated in other countries. The social, economic and political events associated with colonialism and other imperialistic forces resulted in a declining death rate without the concomitant industrialisation, education, improvement in living conditions, and fall in birth rate that were central features of the demographic transition in Europe and America (and which resulted in a progressive fall in mortality from tuberculosis and other infectious diseases). This, together with other destabilising effects of independence under adverse conditions (including the effects of neocolonialism, corruption, being used as "pawns" in the cold war, drought, famine, disease epidemics – including HIV infection – and against this background, genocidal tribal conflict) set many developing countries adrift from the industrialised world[9–10] (table 1). It is in this context that the failure of Africa (and other developing countries) to replicate the demographic transition of developed countries must be seen[18] (table 2). The global implications and very complex challenges posed by relentless population growth and the widening economic gap are increasingly being acknowledged and addressed.[9–21] The desperate plight of Africa, the continent most adversely affected by these historical developments, has recently been reviewed.[16–18]

The present

At the close of the 20th century the world's population will be almost six billion with predicted growth towards at least 11 billion by 2100 – a Malthusian problem in response to which some may see AIDS and tuberculosis (together with drought, famine, and conflict) as inevitable outcomes, while others retain faith in solutions from scientific advances[22] and humanitarian aid.[6] The recent recrudescence of tuberculosis even in wealthy countries, despite scientific advances, reveals the shortcomings of relying on such advances alone in the absence of attention to the sociopolitical contexts in which health and disease are embedded. Pathways of economic, political and social development, initiated and sustained over many centuries, have carried us into a polarised, conflict-ridden, progressively dichotomised world.[9,11,12,14,15] The peoples of all

Table 2 World population distribution, growth rates and projected to 2100. (Data compiled from ref 10)

	1800 (%)	*1900 (%)*	*2000 (%)*	*2100 (%)*	*Growth rate (1990) (%)*
Africa*	10·9	9	13·9	26·1	2·9
Asia*	64·7	54·6	59·2	55·5	1·9
Europe/USSR	21·0	26·9	13·1	7·4	0·3/0·9
Latin America*	2·5	4·0	8·6	7·6	2·1
Oceania	0·2	0·4	0·5	0·4	1·2
US/Canada	0·7	5·2	4·7	2·9	0·7
Total	±100 (1 billion)	±100	±100 (6 billion)	±100 (11 billion)	1·8
Urban %	3	14	41 (1990)		

* Developing world: 77% of total in 1990, 88% of total projected in 2100.

nations are consequently threatened individually and collectively, albeit in different ways and with varying short term implications.[9–21]

These macro problems are of increasing concern to scientists, social scientists, philosophers, theologians and secular humanists, but seem to have impacted insufficiently on the minds of health professionals, beset as we are with so many other problems at the micro level of health care of individuals and meso level of health care delivery systems. A brief review of tuberculosis control at the global level is offered in the hope that this may help to broaden debate and understanding beyond easily recognised causal factors. Deeper and less openly acknowledged historical developments merit attention, and imaginative new approaches are needed that could influence the structure of health care systems and sustainable development programmes worldwide.

The global toll of tuberculosis and its epidemiological pattern have recently been reviewed.[5,7] Each year eight million people develop tuberculous disease and almost three million die of tuberculosis, over 95% of these in developing countries. One billion people have died from tuberculosis in the 19th and 20th centuries, and 1·3 million cases and 450 000 deaths from tuberculosis occur annually in those under the age of 15 years in developing countries worldwide. In 1990 there were 1·9 million deaths of patients over the age of five from tuberculosis compared with 1·1 million deaths from leprosy, malaria, tropical diseases, AIDS and diarrhoea combined.[6]

Fewer than 15 countries have a regular monitoring system to record cure rates, death rates and compliance rates, and it is estimated that the coverage of tuberculosis treatment services in 1988–9 was 24% in Africa, 42% in the Americas (excluding USA and Canada), 44% in south-east Asia, 70% in the eastern Mediterranean, and 88% in the western Pacific (excluding China, Japan, and New Zealand).

In many developing countries fewer than 50% of patients who start treatment are cured or complete their course of treatment. The implications of such inadequate treatment for the control of tuberculosis and for development of resistant strains is becoming well known.[22,23] The amplification effect of the HIV epidemic is already apparent and the World Health Organisation estimates that 3–4·5 million persons are dually infected with *M tuberculosis* and HIV, many of whom live in subSaharan Africa.[8]

Since the first chemotherapeutic drug was introduced in 1944 only a few highly effective antituberculosis drugs have been developed. Although the therapy of tuberculosis has been placed on a sound scientific footing during the past 50 years,[24,25] inadequate implementation of control programmes has led to the emerging spectre of widespread multidrug resistance.[6,22,23] The treatment of patients so infected has become difficult because few highly effective new drugs are available, and drugs such as the quinolones are prohibitively expensive for all except the most wealthy nations.[6,23]

These developments vividly demonstrate the need for scientific advances (hopefully including immunotherapy that could shorten the duration of drug treatment[26]) with potential for improving the cure of individuals to be incorporated into sound health care systems and linked to other components of human development, if success in treating individuals is to be transformed into improved population health.

The future

In considering prospects for the improvement of health at a global level a major concern is to implement successful programmes for reducing population growth. To limit the world's population to 10 billion by the year 2100 will necessitate that all the world's couples of reproductive age have access to reliable, affordable contraceptives.[10] Currently at 50%, it is realistic to aim for 75% coverage by 2000. If this can be achieved, family size will fall to about two children per couple within approximately 15 years.

Reaching the recommended contraceptive level will require a threefold increase in expenditure on contraceptives. To achieve this would require industrialised countries to increase their annual contribution to international population control efforts from an estimated US$ 534 million in 1980 to US$ 4 billion in 2000. There is, however, no simple solution to the problem of uncontrolled population growth as this is but one manifestation of profound "system changes" in the varied processes of human development around the world. Modifying population growth can only be successfully addressed via a "systems approach" which takes into account many complex and interacting facets of development, including female literacy and empowerment, educational and job opportunities, improved living conditions, and prospects of longevity. A credible population control programme must be linked to broader endeavours to narrow the economic gap between nations and in this way foster greater global stability.[9,12,27]

A second major need, therefore, is for a new world economic order which features linkage of financial aid to sustainable human development, rather than merely to consumption with its transient humanitarian effects.[9,12,27] This is a crucial and urgent challenge and a unifying concern for both developing and industrialised countries if social justice and the possibility of peace are to be achieved at a global level. In response to those who question the availability of resources for such action, attention must be drawn to how much official international aid has been inefficiently used over many decades,[28] to the vast resources available if military expenditure can be reduced,[15] and to the potential for extending the impact of available resources through more efficient use. It has been estimated that if only one third of the financial aid being used today was directed to human priority areas, the amount available for such use would increase fourfold.[9] Examination of the activities of international drug companies also reveals the

potential for corrective measures that could increase affordable access to drugs.[29] Sustainable human development also needs to be linked to sustainable use of the environment – a challenge increasingly being recognised and addressed.[9 19 27]

Finally, as we approach the 21st century and face challenges of global magnitude, national pride and cultural hegemony must begin to accede to the call for a deeper understanding of our common humanity and its expression through tangible solidarity with the weak, underdeveloped people of the world. It is clear that the causes of tuberculosis, like AIDS and, indeed, many other diseases, are deeply rooted in social contexts and development patterns.[16-21 30 31] The problem and threat of multidrug-resistant tuberculosis within a wealthy country such as the USA reflects in microcosm, within one nation, the limitations of "reductionist" approaches to "system" derangements which threaten health. Local and specific attempts at disease control can only be partially successful and must be coupled to acknowledgement of more profound causes and attempts to address some of the macro issues facing global human progress. Without this the self-interest of developed nations will increasingly be threatened from within by poverty and diseases of poverty, and from without by a constant flow of refugees from the unchecked consequences of the fatal flaw of human development (overpopulation) in impoverished, conflict-ridden societies.[11 20 31]

Progress towards a more stable world, capable of sustaining all its inhabitants under conditions of living and health that reflect the transformation of humanitarian concerns into a human and humane existence for all, is the profound challenge for the 21st century.

Department of Medicine,
University of Cape Town
and Groote Schuur Hospital,
Observatory 7925,
Cape, South Africa

SOLOMON R BENATAR

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University of Cape Town

War, or Peace and Development: South Africa's Message for Global Peace and Security*

SOLOMON R. BENATAR

Department of Medicine, University of Cape Town and Groote Schuur Hospital Observatory 7925, Cape, South Africa

A shift in mind-set is required to appreciate the extent of change demanded at a global level to begin to reverse ideological and exploitative processes that by continuing to polarize the world into a small and shrinking rich core and a large and growing poor periphery threaten the lives of all in an interdependent world. Proposals for reversing such adverse processes include (i) acquiring a deeper understanding of the 'Third World' or 'periphery' as a problem in which all nations are deeply implicated, (ii) fostering greater support for peace movements, and (iii) propagating new ways of thinking about progress. The dramatic political transition in South Africa illustrates how war can be avoided through peaceful negotiations. Successful ongoing social transformation in South Africa will depend, at least in part, on other countries emulating South Africa's example in different, but analogous, contexts.

KEYWORDS Exploitation, Debt, Militarization, Peaceful development, Global security, South Africa

The viewpoint from which I shall present this message is that of a world citizen who has increasingly come to see life from both African and Eurocentric (especially American) perspectives – from both of which I have witnessed the heights and depths of human nature. My changing perspective has developed over several years through reading and thinking about the works of distinguished African writers, systems thinkers, world historians, philosophers, political scientists and other critical social thinkers.[1–4] Given the difficulty I have experienced in trying to acquire the mind-set shift necessary to develop a truly empathetic perspective to different world views, I am not too sanguine about my ability to deliver my message effectively in a synoptic presentation – hence my endeavour to portray it as starkly as I can.

The popular conception of this century as one of undiluted progress is contested by Hobsbawm who has described the twentieth century as 'an age of extremes'. He has divided the 'short 20th century' into three periods: 1914–50, an age of catastrophe during which two world wars raged; 1950–73, a golden age in which war-torn countries in Europe were rebuilt and America

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prospered; and 1973–91, which marked the landslide towards the unknown future in the third millennium.[5] While on the one hand this century has been indeed characterised by wondrous scientific and technological progress, for example in electronics, the new biology, increasing longevity and better lives for many, on the other hand it has also been characterized as a time of ongoing war, since 1945 especially in the developing world, with mass destruction of human life, and growing threats to our planet. Militarism and militarization driven by the technological thrust of the industrialized world have led to the threat of nuclear war, and contributed to a world economic crisis causing poverty and starvation (associated with competition for, and exploitation of, shrinking natural resources), with consequent environmental degradation and pollution (as the costs of protecting nature have not been built into consumerism). The abuse of human rights has been an associated structural feature of this complex chain of events, despite the Universal Declaration of Human Rights and all the work done to propagate the concept of human rights at a global level.[6,7]

It is sobering to note the statement by Sir Isaiah Berlin, one of this century's most thoughtful philosophers: 'I have lived through most of the twentieth century without, I must add, suffering personal hardship. I remember it only as the most terrible century in Western history.'[5]

Living in a Divided World with Widening Disparities

The fragile state of our world as we come to the end of the twentieth century is briefly described under several sub-headings:

The world economic crisis and the 'Debt-trade'

Third World debt swells at $100 billion annually. It doubled from $650 billion in 1980 to $1.3 trillion in 1990, and grew to $1.9 trillion by 1995. Between 1985 and 1992 'southern' countries paid $280 billion more in debt service than they received in private loans or government aid. Between 1980 and 1990, $500–600 billion was lost from Africa through loss of income and outflow of capital. In the 1960s the richest 20 per cent of the world lived on 70 per cent of world GDP, while the poorest 20 per cent lived on 2.3 per cent. By the 1990s the richest 20 per cent were living on 85 per cent and the poorest 20 per cent on 1.4 per cent. In 1994, 45 per cent of the world's population (2.5 billion people) lived on 4 per cent of the global GDP while 358 billionaires lived on another 4 per cent.[8]

Protectionist trade practices

Trade protectionism in industrialized countries costs developing countries $150 billion annually in lost export earnings.[9] The erection of 'Fortress Europe' is an example. As Europe tears down its internal barriers to form a single unified market of 320 million people, it might erect higher protective walls to keep out competition.[10]

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Militarization

World military expenditure per annum reached $1 trillion in 1990.[11,12] Developed countries spend on average 5.3 per cent of their GNP on the military and 0.3 per cent on aid to developing countries (Nordic countries spend 0.9 per cent on aid compared to the US's 0.15 per cent).[9] Virtually all the wars since 1945 have been fought in Third World countries, often as surrogate wars between the US and the former Soviet Union, resulting in 23 million deaths. More recently civil wars, often based on historic ethnic enmities, opposition to oppressive governments, or arising from artificial geographic assignations created by the colonial powers have produced the greatest number of casualties.[13] In 1994, 30 million children died in the world due to war and poverty (UNICEF). This amounts to a hundred times as many deaths as were caused by the atomic bombing of Hiroshima and Nagasaki! We should pause and contemplate what this implies about our state of humanity.

Exploitation

International Monetary Fund (IMF) and World Bank policies – including structural adjustment programmes – have had devastating effects on developing countries, and especially the African continent.[14,15] In Africa progress was impressive during the 1960s and 1970s. The proportion of population with primary education increased from 36 per cent in 1960 to 79 per cent in 1980. University graduates increased in number from 1,000 in 1960 to 70,600 in 1989. Child mortality halved between 1960 and 1990. The continent rode on a wave of hope. The 1980s brought global economic crises generated by huge increases in oil prices, rapidly rising interest rates, protectionism in industrialized countries, drought, civil war, poor leadership (with priority given to military expenditure), and the explosion of the AIDS pandemic.[16]

It has been estimated that developing countries lost 300,000 of their best brains (engineers, scientists, physicians, technical workers and the like) to the United States , Canada and the UK between 1960 and 1975. Scholarly research at many African Universities is dying.[17] Toxic-waste dumping and transference of industrial activities to nations where labour is cheap and there is less protection for workers are other manifestations of exploitation.[8] Widening economic disparities are a worrying feature within nations (exemplified by the growth of underclasses in the US[18] and the UK[19]) as well as between nations. In the United States, 1 per cent of the population owns 40 per cent of the nation's wealth and 20 per cent owns 80 per cent.[20] Similar proportions apply in the world and in South Africa.

Migration/refugeeism

The world now has over 18 million refugees and over 25 million displaced persons, many clustered in densely populated camps.[21] 'Fortress Europe' describes the mentality developing in Western Europe. Of 643,000 immigrants to the United States in 1988, 84 per cent originated in Latin America or South-East Asia. This pattern of immigration, largely from less

developed to industrialised countries, is similar throughout the West, and has profound implications for health, education, social security and the economic performance of both recipient and originating nations.[22]

Ideologies and Power Influences Shaping the World

Hobsbawm has concluded that in the post-colonial world following the Second World War both liberalism and socialism have failed to fulfil expectations – in their own regions and in the developing world. The interplay of ideologies at the international level, driven by wealthy elites, often corrupt, by the growth of unaccountable transnational institutions such as the IMF and World Bank, and by trade protectionism have been at the root of militarisation, resource use/distribution, and power relations, that have contributed to our current global crisis. Its successes aside, the history of the post-war world is also a history of largely *unsuccessful* attempts to reverse the implications of the arms race, to alleviate poverty in the developing world, and to uphold the rights of oppressed people.[5]

Hobsbawm quotes Alexander Solzhenitsyn's fear that 'Although the earthly ideal of socialism-communism has collapsed, the problems it purported to solve remain: the brazen use of social advantage and the inordinate power of money, which often direct the very course of events. And if the global lesson of the twentieth century does not serve as a healing inoculation, then the vast red whirlwind may repeat itself in its entirety.'

According to Wallerstein's world system analysis it is not only socialism that has failed but also liberalism.[23] He sees the world system as a capitalist world-economy, in which (i) the core dominates the world economy and exploits the rest of the system, (ii) the periphery consists of those areas that provide raw materials to the core and are exploited by it, and (iii) the semi-periphery is a residual category between the exploiting and the exploited. The shift over time is away from military dominance to economic dominance. He views the period 1989–91 as a decisive turning point in contemporary history, with the removal of the liberal-socialist justification of the capitalist world economy marking the passage into an uncertain future – which will require immense collective effort to develop a lucid strategy of transformation. He contends that pretensions about human rights and democracy will not suffice, but he also believes there is reason neither for optimism or pessimism – all remains possible but uncertain. He urges us to unthink our old analyses and strategies, and to do so as organic intellectuals of a non-unified world-wide family of multiple groups, each complex in its own structure.

Global Threats

As we come to the end of an 'age of extremes' we face a range of global threats:

The nuclear stockpile

Over 37,000 nuclear weapons are stockpiled in arsenals of the declared nuclear weapon states. This equals nearly two tons of TNT for each person on earth, with 10,000 megatons (1 megaton = 1,000,000 tons) of destructive force.[24] The 15 kiloton (15,000 tons) bomb dropped on Hiroshima killed 145,000 people, and by 1950 the death toll had risen to over 220,000.[24,25]

Landmines

There are 100 million landmines *in situ* in 62 countries (up to 9 million in one country – Cambodia) often in areas of civilian and commercial activities, and a further 100–150 million stockpiled for laying – 2.5 million annually.[24] About 360 types of anti-personnel landmines are produced by about 100 companies and government agencies in 55 different countries. The number of amputees ranges from 1:22,000 people in the United States to 1:220 in Cambodia! The social, economic and humanitarian implications are horrifying.[26]

Poverty and starvation

Poverty and starvation represent the link between 'development' and militarization. Human survival is dependent on our ability to adapt to our environment. But it is also our ability to adapt that allows us to live with and perpetuate social injustices. About 20 per cent of the world's population have their futures threatened by inadequate food supply due to severe poverty. Of 800 million chronically undernourished in the world 200 million are children. By 2010 there will be 300 million hungry and malnourished people in Africa.

Population growth

The world's population grew from 1.7 billion in 1900 to 5.0 billion in 1990, is predicted to reach 6.0 billion by 2000 along an exponential growth curve.[27]

Resource depletion

Competition for natural resources and their overuse by people in industrialized nations, has made it impossible to sustain the world's population at the rates of consumption established in highly industrialized countries.[28] Citizens of industrialized countries consume more natural resources and generate ten times more waste per capita than people living in the industrializing countries.

Environmental degradation

Shifting industries away from the industrialized world and tolerating the accumulation of toxic waste poses threats that will persist for millions of years.[29]

Epidemic diseases

The threat of old and new epidemic diseases that will not respect boundaries, and may become potentially untreatable is real and frightening. Tuberculosis and malaria are the best examples of treatable diseases that fall into this category. Human immunodeficiency virus infection is perhaps an even greater challenge.[30]

Civil strife

'Rwanda-like' scenarios are intimately related to economic and military considerations, and to associated exploitative processes.

Drug traffic and organized crime

These are further adverse manifestations of a world in which money and power rule supreme.

Proposals for Progress

There are several ways in which progress could be made towards a better world.

Addressing the Third World as a philosophical problem

Hosle, in his eloquently described analysis of the Third World as a philosophical problem, suggests three moral criteria for improving First/Third World relations: (i) rational self-interest, (ii) restitution for interfering with natural development and for exploitation through the draining of resources and brain power, and (iii) the acquisition of true human freedom by expression of solidarity with the weak. The latter requires a deep sense of identity with universal ideals, recognized through a clearer vision of our history and interaction with other cultures.[31] Embarking on such processes could lead to the generation of funds from new sources, for example a tax on electronic financial transactions, which with new approaches to debt relief and new and accountable ways of development assistance could facilitate innovative progress.

Peace movements and social activism

Identification with universal values and solidarity with the weak as the pathways towards self-understanding and true human freedom underlie the work of such Peace Movements as the United Nations, the International Physicians Movement, the American Association for the Advancement of Science, MEDACT and many others.[22,28,32] Changing the attitudes of the rich towards the ways in which the poor become and stay poor and victimised could help empower the deprived to participate more enthusiastically in self-development programmes.

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Paradigm shifts in thinking

As we move toward a new millennium there is also a need to think about the world and about progress in radically different ways. Consider, for example, South Africa as a microcosm of the world.[1-3] This country manifests such features as: core-periphery disparities, environmental degradation, disease patterns (AIDS, tuberculosis), civil/political violence and crime, cultural diversity and both internal and external exploitation. Recent events in South Africa exemplify the nature of a paradigm shift. Peaceful transition through a negotiated revolution rather than civil war, and attempts to recreate the concept of community with power sharing and resource re-distribution have given rise to world-wide admiration for this country with its blighted history and legacy of apartheid.[1,2,33] The message that it is indeed possible to make such peaceful progress also provides hope for sub-Saharan Africa, which like most of Africa, has been abandoned by the world.

The Future?

Will South Africa be able to sustain the hope it promises? Can it overcome the profound legacies of apartheid that permeate the social and economic infrastructure and perpetuate crime and violence?[34] Will its example be supported and followed by other countries, and by the world of nations in acknowledging the interdependence between us all, or will the opportunity be taken to strip this remaining relatively affluent African country of its human and material resources?

The African continent may be dying – perhaps destined to become a holocaust memorial to the economic aspirations of the industrialized world – and our humanity will in time be judged by the fate of Africa.[4] 'The United States has been retreating from Job's continent since the implosion of the Soviet Union set free America to pursue it own interests in Africa – and it found it did not have any – global economy is the foreign policy king and there has been no economic rationale for dealing with sub-Saharan Africa, especially since the continent began its free fall in the 1980s.'[35] 'The crisis is so diffuse and of such magnitude that the US and the world at large shrink from engaging it.'[36] 'In fact, history mocks the very idea of an international coalition to save Africa.'[37] Perhaps the world is dying and Africa's plight is symptomatic of this possibility.

Can we respond?

In discussing the medical implications of nuclear war Hamburg has been eloquent in stating that

> We all like to see the caring, loving, creating side of human experience. We want to believe that this side will dominate in world affairs, and perhaps it will ... The tendencies to wishful thinking, to complacency in the face of hard reality, to avoidance of facts, to denial of the

> significance of facts – these are perhaps our worst enemies in the nuclear arena. ... Historically, it has been easy for us to put ourselves at the center of the universe, attaching a strong positive value to ourselves and our group, while attaching a negative value to certain other people and their groups. It is prudent to assume that we are all, to some extent, susceptible to egocentric and ethnocentric tendencies. The human species is one in which individuals and groups easily learn to blame others for whatever difficulties exist, but in terms of the nuclear predicament, blaming is at best useless and most likely counter-productive. We have seen all too much finger-pointing between the superpowers, and for that matter, among nations throughout the world ...The world is now, as it has been for a long time, awash in a sea of ethnocentricism, prejudice and violent conflict ... In this kind of world, the scientific community must pull together in a reasonable unified way so that the physical, biological, behavioural and social sciences can address these profound and pervasive issues ... the scientific community is the closest approximation we now have to a truly international community, sharing certain fundamental interests, values and standards, as well as certain fundamental curiosities about the nature of matter, life behaviour, and the universe. The shared quest for understanding is one that knows no national boundaries, has no inherent prejudices, no necessary ethnocentricisms, and no barriers to the free play of information and ideas. So to some extent the scientific community can provide a model for human relations that might transcend some of the biases and dogmatisms that have torn us apart throughout our history and have recently become so much more dangerous than ever before.[37]

The complex array of social, cultural, political and economic constraints to freedom of scholarship which pervade all countries must be acknowledged and contested if the benefits of science are to outweigh its contribution to mass destruction of life.[38]

Globalization

The concept of globalization is widely discussed but not necessarily widely well understood. Barnett and Cavanagh have described four components of globalization: the global cultural bazaar exemplified by the communications network and the entertainment industry; the global shopping mall exemplified by products such as tobacco and food propagated though advertising, distribution and marketing; the global workplace in which mass producing factories are moved to under-developed countries; and the global financial networks through which financial transactions are used as speculative devices for repackaging and reselling money at great profit and without creating any products or delivering any services.[39] The real basis of and implications of these globalizing processes, described by Vaclav Havel in his address at the 1995 Harvard University Commencement Ceremony as the 'thin veneer of

civilization' that is sweeping the world, need to be appreciated if current trends are to be reversed.[40] Might and money do not equate with morality, and it is moral judgement the rich world will have to face in due course. If the lives of millions in the South are worthless as asserted by some economists,[41,42] then what makes the lives of those in the North valuable? These are profound questions, and our attempts to answer them will be judged by those who survive into the next century.

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Solomon Benatar graduated in 1965 from the University of Cape Town, where he is now Professor of Medicine and Director of the Bioethics Center. His interests are in respiratory medicine, medical ethics, human rights in medicine, health economics and philosophy of medicine; he has published about 200 articles and received awards and honours in these fields in South Africa, the UK and the USA. He was Vice-President of the College of Medicine of South Africa from 1989 to 1995.

Correspondence: Department of Medicine, University of Cape Town Faculty of Medicine, Observatory 7925, Cape, South Africa.

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World Health Report 1996: some millennial challenges

> 'Overall in the last 50 years, there have been substantial improvements in global health status. Disparities between the developed and the developing world have been reduced, but those between the developing world and the least developed countries as a group have widened. Gaps have also widened between population groups within countries. In recent years, health gains have slowed down and even reversed in some countries.'[1]

This extract from the *World health report 1996* comprises four important sentences. The truth of the first sentence and the first part of the second sentence are contentious and depend upon the criteria used to draw these conclusions. The remainder of the paragraph is true but it is the widely ignored basis for these trends, for example their relationship to military power and economic exploitation, that is most noteworthy.

The strength of the report lies in its pictorial and numerical description of disease patterns around the world. It weaknesses lie in its somewhat complacent trumpet blowing about the World Health Organisation's (WHO's) achievements, the absence of a section on mental health (not even a mention of the *World mental health report*[2]), its failure to report comprehensively on crucial and pervasive economic, social and political determinants of health and suffering, and how these will have to be addressed to narrow gaps and reverse the adverse trends described. Indeed, the report is little more than a superficial biomedical commentary on global health. What is missing, I suggest, are chapters on at least the following topics that are central both to understanding the powerful forces that shape population health and to embarking on the complex global approaches necessary to rectify them.

World debt, its basis, and relevance to health and human development

The external debt of developing countries has grown by $100 billion annually. It doubled from $650 billion in 1980 to $1.3 trillion in 1990, and grew to $1.9 trillion by 1994[3,4]. This represents an increase in the ratio of external debt to gross national product (GNP) from 26.8% in 1980 to 40.8% in 1994[3]. Between 1985 and 1992, the 'south' paid $280 billion more in debt service than it received in private loans or government aid. In 1994, 45% of the world's population (2.5 billion people) lived on 4% of the global GNP and 358 billionaires lived on 4% of the global GNP[4].

In 1994, 30 million people died due to war and poverty. There is no absolute shortage of food in the world and yet hundreds of millions continue to starve. Why are some countries and some sections of the population within countries so rich and others so poor, and the gaps growing wider? The fault is not entirely that of the poorest and there are other much more complex reasons that are seldom discussed. The growing literature on this topic cannot be ignored by those interested in health unless they are ignorant or uncaring[4-7]. In the specific sphere of health care, the way in which transnational pharmaceutical organisations operate, and how health care is increasingly being transformed into a market commodity, must also be acknowledged as major factors hampering the quest for better health for all. Reductionist solutions to global health remain a necessary component of progress, but they are not sufficient and will be of limited effectiveness without attention to the broader social context of health and disease, as has been illustrated for tuberculosis[8].

Expenditure on the military and implications for health and well-being

Developed countries spend on average 5.3% of their GNP on the military and 0.3% on aid to developing countries. The nuclear stockpile of over 37,000 weapons equals two tons of TNT for each person on earth. The 100 million landmines *in situ* in 62 countries, many in civilian and commercial areas, also threaten future generations. Civilian deaths in war have increased from 14% of war deaths in the First World War to 90% in wars in the 1990s. We need to understand the implications for health (and ultimately all life) of an annual global military expenditure of almost $1 trillion (much on nuclear weapons posing threats to life and the environment for tens of thousands of years), how the arms trade with developing countries has adversely affected economic and social development in many countries and how to embark on the processes required to facilitate shifting some military expenditure towards human development[9,10].

The social construction of human rights abuses and suffering

The world now has 18 million refugees and over 25 million displaced persons, many clustering in densely

SOLOMON R BENATAR, FRCP, *Professor, Department of Medicine, Groote Schuur Hospital, Cape Town, South Africa*

populated camps. Torture continues to devastate many lives. The persistence, and even growth, of human rights abuses (many in the 'home of the Enlightenment') and the failure of human rights advocacy to sustain human dignity and liveable human lives is of great concern. This situation gives rise to questions about the powerful underlying economic and military forces that frustrate sincere human rights endeavours[2,10,11] and that underpin the comfortable lives of those who complacently posture about human rights. In relation to the latter we should find repellent statements by economists of world repute that two thirds of the world's population are '. . . superfluous from the standpoint of the market. By and large we don't need what they have; they can't buy what we sell . . . In the perspective of world capitalism as we know it these people just don't count . . . unless that part of the world develops the capacity for terrorist blackmail they will remain in the charity ward for a long time'[12,13].

From 20th century to 21st century solutions

The defective way in which the WHO operates is deeply rooted in narrow and now outmoded thinking patterns. It has become an inefficient organisation in need of extensive restructuring[14,15]. As we approach the next millennium there will have to be a fundamental shift in thinking about health, disease and suffering[16], perhaps equivalent in magnitude to the shift in thinking that occurred with the scientific revolution, if we are to find ways of using our vast knowledge with the wisdom needed to achieve the sustainable improvements in health and human dignity to which we aspire[16]. The first step in this process should be to achieve widespread acknowledgement of the resemblance between the debt trade and the slave trade[7], and the extent to which the 'pathology of poverty'[17] is due to pervasive economic and military policies that need to be contested and reversed[18]. From the starting point of including such analyses in WHO Reports, work could then proceed along the difficult, but hopefully not impossible, pathway of progress away from narrow concepts of national security, endless consumerism and aspirations by wealthy countries for continuous national economic growth, towards sustainable achievement of health and human rights within broader and richer concepts of human life and security in an interdependent world[10,19,20]. As a body concerned about world health the WHO has a leadership role to play in this process.

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Address for correspondence: Professor S R Benatar, Department of Medicine, University of Cape Town and Groote Schuur Hospital Observatory, 7925, Cape, South Africa.

Personal paper

Africa in the 21st century: can despair be turned to hope?

Dorothy E Logie, Solomon R Benatar

Medical Action for Global Security, London N19 4DJ
Dorothy E Logie, *general practitioner*

University of Cape Town, 7925 Cape Town, South Africa
Solomon R Benatar, *professor of medicine*

Correspondence to: Dr Logie
delogie@aol.com

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The free flow of trade and money around the world has brought economic growth for the fortunate in the largest and strongest economies but has also created widening gaps in wealth and health between, and within, countries. These polarising forces have intensified in the past decade, creating a hundred million poor within the rich "core" in addition to the 1.3 billion people in the "periphery" who exist on $1 a day or less.[1]

Summary points

Two thirds of people living in sub-Saharan Africa are desperately poor

Health and education standards continue to deteriorate

More money is spent on debt servicing than on health and education

Within Africa, corruption, wars, and lack of commitment to health (especially women's health) have contributed towards the appalling health indices

The role of the industrialised countries in destabilising Africa needs to be openly debated

Afro-pessimism

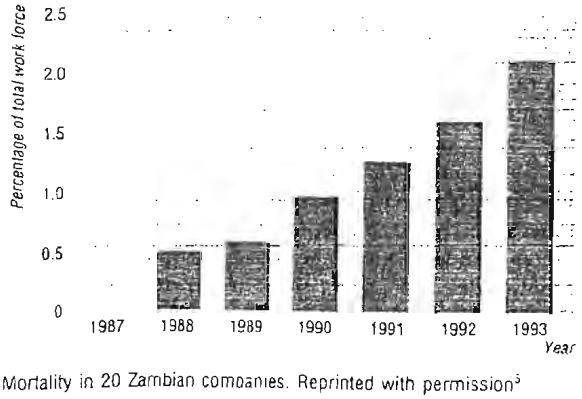
Sub-Saharan Africa is the most dramatic loser. Here poverty is at its most stark and marginalisation from the global economy most pronounced. The continent contains 33 of the world's 50 poorest countries. Improvements in health, education, and living standards have reversed in the past two decades, and standards continue to fall. By the end of the decade, two thirds of Africans will live in "absolute poverty."[2] More than half still lack safe water and 70% are without proper sanitation; 40 million children are not in primary school. Infant mortality is 55% higher than in the rest of the world's low income, developing countries, and average life expectancy, at 51 years, is 11 years less.[3] Malaria and tuberculosis are increasing, and in parts of central, southern, and eastern Africa 30-40% of pregnant women are now HIV positive.[2]

Poverty causes ill health, but ill health also imposes immense economic costs on individuals, their families, and society. African productivity could increase by 15% if illness and disability were attacked more strenuously.[4] The economic cost of malaria is estimated at 1% of gross national product, while AIDS strikes adults in their most productive years (figure). In families with AIDS, the children are forced to leave school early to work, weakening their long term financial prospects. New ways of coping with the cost of illness (selling cattle or land) cause further long term economic hardship (J Tumwine, personal communication).

Where does blame lie?

Many of Africa's setbacks have been associated with global economic policies over the past two decades which, in a complex way, reinforce the legacies of colonialism and imperialism and exacerbate Africa's internal problems. These external forces include:

- A crippling debt of $300 billion which soaks up one fifth of Africa's savings and drains the continent of more than it receives in aid or loans.[6] More money is spent on debt servicing than on health and education. In Uganda, which has one of the highest maternal and infant mortality rates and an AIDS epidemic, the government spends $2.50 (£1.69) per head of the population annually on health—and $15 per head on debt servicing.[7] In Zambia, where for every $1 spent on health care $4 is spent on debt servicing, infant mortality is rising in the face of collapsing provision of health care, clean water, and sanitation[8]
- The World Bank's economic adjustment policies, which have restricted social spending and encouraged export manufacture at the expense of food production. User fees have excluded poor people from health and education and have especially affected women, contributing to their lack of empowerment to restrict the number of children they bear,[8] while the population of the continent grows at 3% a year[3]
- Trade protectionism, which has played a large part in the region's stagnation. Low commodity prices have lost Africa $45-55 billion between 1980 and 1992[9]
- Falling foreign aid. Aid from rich countries has fallen to a trickle, well short of the UN target of 0.7%, and the trend is downward. Foreign aid has failed to bear economic fruit, entangled as it is with promoting trade and arms sales and sustaining the opulent lives of despots. Donors' experience of investing in health is also disappointing where there are low levels of health financing: inappropriately targeted aid can fragment a fragile health service; projects collapse after investment ceases because of inadequate empowerment of local



Mortality in 20 Zambian companies. Reprinted with permission[5]

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personnel; donors demand quick and measurable results to satisfy their funding sources"[10]

- The brain drain; encouraged by active recruitment by some northern countries. this is causing an exodus of Africa's ablest professionals, engineers, scientists, physicians, and technical workers
- War—in the 1980s an almost invisible war, waged by South Africa and the United States, destabilised much of southern Africa. History will record the terrible scars: "A million and a half or more dead, millions displaced from their homes. with economies in ruins, millions facing starvation and disease."[11]

But Africa too must bear responsibility for its current state. Poor governance, tribalism, pervasive corruption, and a lack of democracy have caused social and political tensions resulting, in extreme cases, in collapse of states, with devastating humanitarian consequences. Weakness of political commitment to fund better health and social services, accompanied by a disinclination to develop preventive and primary health, has meant that few people (mainly those in cities) have benefited from health expenditure.[1] Failure to value women's contribution to society and the denial of women's rights has had a huge negative impact on the health of African women and their families.[8]

Can Africa's relentless slide be halted?

However, these generalisations are only part of Africa's reality and it is neither fair nor objective to overlook the resilience of the African people or their achievements. For example, after independence, Zimbabwe's primary education increased from 36% of school age children enrolled in 1960 to 79% in 1980, and child mortality halved.[12] More recently, peace has returned to Angola, Ethiopia, Eritrea, and Mozambique. In South Africa, apartheid and its evil legacy has been dismantled without civil war, which brings hope that fundamental shifts can occur through thinking and acting in the best interest of future generations.

Cautious Afro-optimism

In the past year, three international events have given rise to cautious optimism that Africa's health, and economy, can be improved. Firstly, the World Bank's new president, James Wolfensohn, has staked his reputation on alleviating poverty.[13] Secondly, the United Nations has embarked on a joint venture (the special initiative for Africa), pooling the expertise of all its agencies and those of the World Bank.[14] Thirdly, there has been an important movement on debt relief (the highly indebted poor countries initiative).[15]

The UN Special Initiative for Africa

In March 1996, the UN agencies launched a 10 year, $25 billion initiative for Africa to reduce poverty and to coordinate follow up from the global conferences of the 1990s (box). Eighty five per cent of this money (controlled by Africans themselves) will go to expanding basic education and health. Social development cannot take place without peace, so transparent governance and conflict prevention are high on the agenda. The health plans (box) emphasise cost effective packages of basic health care and more equitable use of public funds, but many are disappointed that charges imposed at the point of delivery of care are still promoted, with their detrimental effect on health seeking behaviour and their potential for weakening preventive health.[16]



GIDEON MENDELOW PHOTOS

South Africa's fast growing population puts pressure on housing, education, and health

What makes this programme different from other high profile efforts to help Africa? Firstly, it has not been imposed from the outside but is based on home grown themes reflecting Africa's own development priorities. Secondly, there is a commitment to listen not just to governments but to ordinary people, including non-governmental organisations. And thirdly, there are none of the conditions (meaning that "if you don't adopt our priorities you don't get the money") which have so dominated Africa's development over the past decade. Even so, African organisations are concerned that the annual allocation of $2.5 billion will not be "new" but redirected money. "The people of Africa," says President Rawlings of Ghana, "will know it [the special initiative] is successful when we see schools where there were no schools, when we have health services where those services were inadequate before, when households have access to safe water."[17]

Highly Indebted Poor Countries Initiative

1996 brought an unprecedented opportunity to diminish the debt crisis of the poorest countries (box). The World Bank and International Monetary Fund accepted that some debts cannot be repaid and that the

Key goals of the UN Special Initiative for Africa

1 Primary education for all children within 10 years, with emphasis on girls
2 Basic health for all, with improved quality of and access to primary health care
3 Improved security of food and water
4 Safe water for drinking and cooking
5 Improved irrigation, drought management, soil nutrition
6 Improved sanitation
7 Transparent, responsible government by improving an independent judiciary and the electoral process and making public administration more accountable
8 Improved public information, particularly radio broadcasting
9 Support for women in food production (African women produce 80% of the continent's food supply)

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UNSIA's health plan

- Targeting the commonest preventable diseases
- Promoting the essential drugs programme
- Increasing and strengthening Africa's existing 40 000 primary care centres
- Decentralising health planning and administration
- Integrating the delivery of reproductive health care
- Giving women a say in decisions on health
- Improving health promotion

flow of money from poor to rich countries must be stopped. Although there are problems in the design (slow implementation, thresholds of debt sustainability too high, and debt relief not adequately set into a broader programme of human development), the initiative provides new thinking.

But already the initiative has received a setback. Uganda, with an excellent economic track record and six years of adjustment programmes, was to be the first to benefit (followed by the Ivory Coast and Burkina Faso), but relief was blocked for one year by political in-fighting among donors. This delay means Uganda will receive £119 million ($193 million) less than hoped for (and six times Ugandan government spending on health)—money the Uganda government had already planned to use for health and education.[18]

The harsh requirement of six years' adherence to adjustment programmes means that Ethiopia will not qualify till the end of 2000 (despite drought and post-war reconstruction); Mozambique, Tanzania, Niger, and Zambia will not qualify till 2002 or later; and Rwanda may not qualify at all despite its desperate post-genocide reconstruction.

There is an increasing groundswell of demand for a one-off debt cancellation of the poorest countries to mark the start of the new millennium.[19] This "once only" gesture would not set a precedent for repeated cancellation—the "moral hazard" so feared by the international financial institutions—but would accept that both creditors (like the Swiss banks accepting the illegal booty of dictators) and debtors have made mistakes. Starting the new millennium by such a gesture, and structuring new loans with greater accountability, could remove a great barrier to progress and justice.

Afro-pragmatism: on a knife edge?

South Africa represents the continent's problems in microcosm. The apartheid regime borrowed to oppress and kill people; now, those who suffered are being asked to repay the debt. Like the rest of Africa, South Africa has a fast growing population (swollen by illegal immigration) which puts pressure on overstretched housing, education, and health and swells unemployment—which, in turn, unleashes violence and crime. Like the rest of Africa, the country faces a balancing act between achieving economic growth by participating in globalised free markets (with their potential to enrich some people at the expense of others) and redistributing resources through paradigm shifts in approaches to health, education, housing, and other socioeconomic inequalities.[20]

A mixture of hope and fear underlies the call for a "new push for Africa": hope that internal reconstruction, with greater focus on democracy and new visions of external support, can create sustainable development; fear because Africa has been marginalised and eliminated from the foreign policy agenda of most wealthy nations, and the window of opportunity to achieve these goals will not remain open indefinitely. As has been recognised in South Africa, policies which exclude peoples, nations, or continents have only limited potential and must eventually be replaced by longer term visions.

But no more should be expected of Africa than can be delivered by wealthy nations, who in turn must set an example through reform of their consumption patterns and energy expenditure. It is vital that industrialised countries acknowledge the adverse role they play in Africa. Pessimism, based on economic considerations, should be countered by an understanding that the cost of eradicating poverty is less than people imagine, about 1% of global income.[1] Effective debt relief for the 20 poorest countries is even cheaper, with a price tag of $5.5 billion—the cost of building Euro-Disney.[21]

Highly Indebted Poor Countries Initiative: principles

- All creditors (bilateral and multilateral) will work together for comprehensive debt reduction
- Debt will be approached from a completely different angle—namely, the ability of the debtor to pay, as opposed to meeting the creditor's claims
- In judging the economic performance of countries, note will be taken of their performance in social indicators such as health, education, and sanitation
- The International Monetary Fund, in a major policy shift, has agreed, in some cases, to provide grants for the payment of debt service as opposed to loans

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Global Disparities in Health and Human Rights: A Critical Commentary

ABSTRACT

Widening disparities in health and human rights at a global level represent the dark side of progress associated with escalation of economic and military exploitation and exponential population growth in the 20th century. Even the most basic universal human rights cannot be achieved for all under these circumstances. The goal of improved population health will be similarly elusive while medical care is commodified and exploited for commercial gain in the marketplace. Recognition of the powerful forces that polarize our world and commitment to reversing them are essential for the achievement of human rights for all, for the improvement of public health, and for the peaceful progress required to protect the "rational self-interest" of the most privileged people on earth against the escalation of war, disease, and other destructive forces arising from widespread poverty and ecological degradation. (*Am J Public Health*. 1998;88:295–300)

Solomon R. Benatar, MBChB, FRCP

Introduction

Global challenges at the millennium's end call for deep introspection by the people of the nations that have been most privileged to benefit from scientific and economic progress and for reevaluation of the costs of such progress for those less fortunate. In this regard, we should consider how progress is linked to exploitation of people and nature and how it contributes to the widening national and global disparities (in health, wealth, and human rights) that now jeopardize human health and survival. Such threats to billions of marginalized people can be addressed only through a long-term perspective acknowledging that the self-interest of wealthy and powerful nations will be optimized through the pursuit of policies that foster all human well-being. Failure to respond to such global challenges can only lead to greater poverty and deprivation, continuing conflict, escalating migration of "asylum seekers" from poor to rich countries, and the spread of new and recrudescing infectious diseases (for example, drug-resistant tuberculosis) and ecologic damage that will harm all nations individually and the world collectively.

Consider, for example, that in the 1960s the richest quintile of the world's population was 30 times richer than the poorest 20% and that this gap had increased to over 60 times by the 1990s. An analogy can be drawn between this global scenario and the problems faced in delivering health care, sustaining medical professionalism, and improving public health. Here the challenge is to find ways of providing greater equity in access to health care for individuals within constrained budgets and the means for improving population health within nations and globally. If the annual per capita expenditure of $3500 on health care in the United States (10 times the total annual per capita gross national product [GNP] of half the world's population) is not enough to ensure access to a decent level of health care for all US citizens, we must ask what implications this has for US citizens and for the structure of health care systems and health care delivery in poor countries.

I should like to offer here a synoptic (and therefore necessarily incomplete) perspective on such complex global problems. My hope is that a perspective that acknowledges the complex roots of global disparities while seeking resolutely to ensure more widespread realization of human rights can refocus attention on these issues and lead to more open scholarly debate and new commitments to finding solutions that may influence the future. Imaginative, global thinking and visionary actions specific for particular societies are the seeds for initiating and propagating qualitative and quantitative changes that could have major long-term advantages for humankind.

Man's Exploitation of Man and the Creation of Two Worlds

The Western world view has been shaped over centuries through the power of the scientific method, analytical philosophy, industrialization, urbanization, democratization, liberalism, and capitalism. The modern perspective emphasizes capitalism, the pursuit of rational economic self-interest, and the nation-state framework of international relations.[1,2] These scientific, industrial, and economic developments, much cherished in the Western world, have eman-

The author is with the Department of Medicine, University of Cape Town, and Groote Schuur Hospital, Cape Town, South Africa.

Requests for reprints should be sent to Solomon R. Benatar, MBChB, FRCP, Department of Medicine, University of Cape Town, Observatory 7925, Cape Town, South Africa.

cipated human life and fostered unprecedented human progress. However, the application of a somewhat libertarian version of liberal political philosophy,[3] with overemphasis on economic thinking (and underemphasis on social and economic rights), has also been associated with erosion of spirituality, loss of a sense of community, and division of the world (and many countries) into a small, rich core and a large, poor periphery.[4] Growing polarization between these worlds as they drift apart threatens the future of both wealthy and poor countries. The failure of socialism, as implemented under communist rule in the Soviet Union, has seemingly vindicated the "capitalist" world view. However, celebration is premature, because the crisis of liberal internationalism must now be faced, particularly in regard to the competing elements of the liberal agenda—human rights and the expansion of free trade.[2] While the liberal vision has been effectively focused on limiting excessive and arbitrary state power, it has neglected the other great enemy in today's world: violence among the poor and dispossessed and the disintegration of power leading to millions of refugees fleeing poverty and disaster.[2,5]

Human domination and subordination of others in the understandable (perhaps inevitable) pursuit of self-interest has long been clearly evident. However, more recently the scientific credibility given to a form of rationality based on economics that has fostered the growth of powerful and unaccountable multinational corporations has led to the evolution of less obvious exploitative behavior. It is less widely appreciated how these more sophisticated and more covert means of achieving short-term economic self-interest cast a shadow over a broader moral conception of life.[1-13]

Fortunately, our consciences can be reawakened through critical thinking and social activism. For example, a 50-year program against slavery ultimately led to its delegitimation; the implications of destructive uses of nuclear power are increasingly being counteracted through endeavors to delegitimate nuclear testing and prevent the further development of weapons of mass destruction; the degradation of human dignity inflicted through colonial imperialism in Africa (and elsewhere) is being more widely appreciated; there is a deeper understanding that nazism in Germany reflected submission to authority and that such submission to authority also occurs with different implications in other countries; and the adverse effects of neocolonialism resulting from the collusion of superpowers with despotic leaders in developing countries are being exposed. Lessons learned from these adverse experiences increase awareness of the need for attention to a conception of human rights that goes beyond civil and political rights.

The International Bill of Human Rights (which includes the United Nations Charter [1945], the Universal Declaration of Human Rights [1948], and the International Covenant on Civil and Political Rights [1976], with its optional protocol) was a global expression of the rejection of human domination and exploitation of fellow humans, a dedication to the need for respecting individual human dignity, and an attempt to foster this through development of international law. Nations that refused to identify with the Universal Declaration of Human Rights (for example, the Soviet Union and South Africa) and placed what they perceived to be their own self-interest above high aspirations delayed their own progress toward peaceful democracies. The failures of socialism under communist rule and of apartheid provide powerful messages in favor of valuing human dignity and human rights. But less obvious human exploitation persisted and grew within and between even those nations that aspired to be the international guardians of human rights. Sophisticated forms of exploitation, propagated through cultural imperialism, militarism, and devastating wars intimately linked to economic power struggles that shaped a globalized economy, inexorably widened the gap between rich and poor peoples and nations and prevented the widespread access to education, employment, and other opportunities required to foster the realization of human rights.

A brief overview of some demographic data and of wasted resources on armed conflict will vividly portray the consequent predicament of the world's poor. In the 1990s, 77% of the world's population lives in developing countries. The 85%:15% distribution of global GNP between industrialized and developing nations reflects respective average annual per capita GNPs of $12 510 and $710[10] (Table 1). In 1986, 50% of the world's rapidly growing population lived in countries where the annual per capita GNP was less than $270.[10] Poverty is increasing in most parts of the world, and this is a major factor preventing sustainable control of population growth, which in turn threatens physical and mental health as the prerequisites for a decent human life and global survival.

In addition, modern international economic policies have resulted in the extraction of vast quantities of material and human resources from poor developing countries to rich industrialized nations.[1,4,9-15] Total developing country world debt in 1990 was $1.3 trillion (double the level in 1980), and it had grown further to $1.9 trillion by 1995.[1] The net transfer of resources from developing to industrialized nations between 1983 and 1989 was $241 billion[10]: "a kind of colonial tribute extracted by the rich nations from the poorest people on earth"[11] to service the industrial world's deficits and growth rates.[10] Thus, "the debt burden is a scandal which in numerical terms makes the international slave trade of the nineteenth century look like a petty crime."[15] Trade protectionism in industrialized countries costs developing countries a further $150 billion annually in lost export earnings.[10] Finally, the losses incurred through the "brain drain" are incalculable.

The world spends almost $1 trillion a year (according to 1990 figures) on military goods and services.[12,16] About 20% of the world's 2.5 million research scientists and engineers (50% of physicists and engineering scientists) work entirely on military research and development.[17] Approximately $340 billion worth of military arms were sold or given to developing countries between 1981 and 1988, most of which were produced by the Soviet Union or the United States.[12] The value of arms produced in developing countries (under the influence of superpowers' expansion of their military industrial complex) increased 500-fold between 1950 and 1980 (from $2 million to $1.1 billion).[12] Such militarization and the associated militarism have compromised the health of individuals and nations through many mechanisms: killing, maiming, torture, refugeeism, destruction of livelihoods, diversion of resources, crime, terrorism, black markets, poverty, starvation, environmental damage, and destabilization within developing countries.

Industrialized countries spend an average 5.4% of GNP on the military and only 0.3% on aid to developing countries. The Nordic countries admirably contribute 0.9% of their GNP to developing countries, most for social development, whereas the United States focuses most of the 0.15% of its GNP it donates on defense support for Egypt, Israel, Turkey, Pakistan, and the Philippines.[10] In 1990, Britain fell by two thirds of its 1979 value to the lowest ever, 0.27% of GNP.[15]

Despite Henry Kissinger's statement at the World Food Conference in 1974—"The profound comment of our era is that for the first time we may have the technical capacity to free mankind from the scourge of hunger"—up to 1 million people died in the Ethiopian famine,[18] the specter of Somalia

TABLE 1—Disparities between "Worlds Drifting Apart." (Data for 1988 from Human Development Report 1991[10])

	Industrialized World	Developing World
Population % total	23	77
Global GNP %	85	15
GNP per capita	$12 510 (USA $19 840)	$710
Population growth rate %	0.8	2.3
Population poor	0.3 billion	1.2 billion
Maternal mortality/ 100 000	24	290
Life expectancy yr	74.5	62.8
Under 5 mortality/ 1000	18	116
Annual urban population growth rate 1960–1990	1.4	4.0
Population below poverty line %	2%	32%
Share of world trade 1968	84.8%	15.2%
Share of world trade 1988	87.1%	12.9%
Annual per capita utilisation of energy (kilowatts per year)	3.2 (USA 9)	0.28
Losses from trade protectionism/yr		
Agriculture		$100 billion
Textiles		$50 billion

and Rwanda haunts us today, and the industrialized world continues to impose austere structural adjustment programs that divert resources away from food, education, health, and welfare in poor countries to repay debts that can in reality never be repaid.[13,15]

The wealthy, productive, and fortunate in the world cannot be burdened with all of the blame for the complex series of historical developments that polarize the world. However, insight is required into the complex adverse social forces initiated and sustained over centuries,[4,10,14,19,20] which, with destabilizing effects of "independence" under adverse conditions,[21,22] distanced and further separated many developing countries from the industrialized world.[4] Regrettably, disparities between rich and poor within industrialized nations have essentially similar causes,[4,9,14] highlighting the pervasiveness of adverse economic policies and the need to ameliorate these policies to improve social stability.[23]

Ecological Implications

Domination and subordination through exploitation of people is not the whole story. For centuries, the goals of philosophy and science had been the search for wisdom in understanding the natural order and endeavoring to live in harmony with it. Since the scientific revolution, this integrative approach to nature has shifted toward an aggressive quest to dominate nature in pursuit of economic growth that has, until recently, included little concern for its profound ecological and, hence, evolutionary consequences. "We are destroying the life support systems of this planet and threatening not only civilization as we know it, but also the survival of our species. . . . Cumulative use of fossil fuels has doubled every twenty years since 1890."[24] The world has lost 500 million acres of trees since 1972 (roughly one third the area of the continental United States). Lakes, rivers, even whole seas have been turned into sewers and industrial swamps.[25] The 1 billion people residing in industrialized countries use 10 times the resources and produce 10 times the waste per capita of the 4 billion people residing in developing countries.[24] What is needed now, as never before, is a major shift in our way of thinking about the future.[24–26]

Africa

The African continent has been most severely affected by the temporal relationship of the powerful social forces described earlier to its economic and political development.[18,21,27–30] The desperate condition of Africa has recently been reviewed from differing but complementary perspectives.[31,32] The withdrawal of industrialized nations from even attempting to deal with the dire condition of the African continent is reflected in the writings of political scientists. "The crisis is so diffuse and of such magnitude that the United States and the world at large shrink from engaging it."[30] "In fact, history mocks the very idea of an international coalition to save Africa."[27] Economic analysts now suggest that "with the end of the Cold War, Africa has lost whatever political lustre it may once have had."[27] Southern countries are weaker individually and collectively than 15 years ago, and the debt crises have reduced their control over their own economic destinies.[33]

International affairs in the 1990s are increasingly dominated by economic affairs. As the Cold War recedes, there is the danger that it will be replaced by trade wars between the three major northern economic blocks and that increased competition between southern countries may extend to armed (even nuclear) conflict.[33]

Deeply troubling questions persist and cannot be ignored. As Gill has asked in his powerful account of Africa: Whose industries benefit from continuing underdevelopment in the Third World? Whose consumers benefit from primary products that keep African producers just above the bread line? Whose bankers benefit from Third World indebtedness? Whose arms manufacturers benefit from African arms races? Whose delicate consciences are soothed by the giving of modest gifts?[18] Hancock has documented these concerns in a devastating critique of the inefficiency, inadequacies, and corruption associated with many official international development aid projects.[13]

Human Rights and International Ethics

The Universal Declaration of Human Rights has no enforcement machinery, yet as a statement of aspirations it has served as the basis for constitutions and bills of rights in many countries. Regrettably, worldwide paper support for such human rights is frequently not followed in practice.[2,8] In a discussion of such widespread violations of the declaration, a South African activist,[34] outspokenly critical of industrialized nations' morality, has suggested that the statement "All human beings are born free and equal in dignity and rights" is not a

social fact either in any liberal democracy rooted in the laissez-faire principles of capitalism or in socialist countries.

> There is no equality between the peoples of the First and the Third Worlds and there is no equality between a child born in an African township and one born in a white suburb. The child in the slum is born neither within dignity nor in dignity and he or she is born with practically no rights. . . . Theologically, we are born free and equal, sociologically we are born into differential socio-economic-emotional situations: and in the world in which we live sociology defines our reality. . . . On a global level the [Universal Declaration of Human Rights] fails because of the ethnocentric satisfaction of developed countries with their own state of freedom and their general unconcern for the freedom of others. . . . Those under their jurisdiction, as colonized or, in the sense of capitalistic exploitation, continue to be treated as lesser people, deserving of lesser rights whatever the noble articulations of the First World. . . . Self interest and expediency, and not mutual concerns for each other's freedom and dignity, govern international relations.[34]

The depressing reality of this view is intensified by the despicable attitude that two thirds of all of the people in the world are "superfluous from the perspective of the market. By and large we do not need what they have; they can't buy what we sell."[35] Inconsistencies in human rights standards demanded of other nations by powerful nations, the lack of self-assessment regarding rights that a monitoring country itself violates, and the consequent influence on human rights elsewhere should also be noted.[36,37] Human rights are most at risk when political, military, and economic considerations become the overwhelming preoccupation of governments.[8]

These concerns should not be misinterpreted as a "collectivist" critique of Western liberal values; rather, they underscore the clash between competing elements of the liberal agenda: human rights and the expansion of free trade.[2] The financial revolution that has been associated with massive expansion of the world economy since the Second World War, together with the revolution in communications that encourages international speculation and instantaneous transfers of vast sums of money, has fostered the growth of an integrated global economy. This has allowed multinational corporations, unfettered by the democratic requirement of accountability, to wield great economic and political power. Through such processes, the combined assets of the top 300 firms in the world now constitute roughly 25% of the world's productive assets. Their formidable economic power and transnational mobility increasingly undermine the ability of national governments to provide the legal, monetary, or protective functions necessary for a well-working national economy. The trillion-dollar-a-day market for foreign exchange effectively places the valuation of any nation's currency at the pleasure of the "market" rather than at the discretion of its monetary authorities, thus disrupting the relationship between the economy and the state. Less than 10% of the trillions of dollars transacted across financial networks are for trade in goods and services. Of the 5.6 billion people in the world, about 3.6 billion have no cash or credit with which to make purchases, and more and more people are clamoring to get into the global labor pool. The naive view that these trends can only be beneficial has been contested, and some of the adverse implications of such "irresponsible forces" (both for industrialized democracies and for developing countries) have been described.[38–40]

Overemphasis on market forces and on civil and political rights has eclipsed the need to affirm the associated social and economic rights that foster essential community values.[39,41] A broader formulation of human rights must include state and corporate duties to avoid depriving, duties to protect from deprivation, and duties to aid the deprived.[42] Articulating the problems of living in the modern world and vigorously proposing possible solutions to the appalling conditions confronting humanity today must become intellectual and political priorities if human rights are to be more widely achieved.[39,41,43] The challenges involved in redistribution of wealth, propagation of the education and skills required to sustain development, and reparations for centuries of human and environmental exploitation are fraught with difficulty.[40,44,45] They are, however, surely essential both within nations (as in the new South Africa) and at the global level to ensure that progress since the scientific revolution is not limited to the rich at the increasing expense of the poor.[4,14,38–40,44–46]

Medical Practice and Health for All

The foregoing suggests an analogy between global trends and Western medical practice. Advances in medicine and technology have provided many with much celebrated relief from suffering, hope for cure, and additional years of productive and satisfying lives but, through overaggressive approaches to transplantation and use of technology, have also inflicted intense suffering on others in the quest for new knowledge.[47,48]

The progressively dominating influence of "economic rationality" (with money as the bottom line) in medical care and its bureaucratic implementation by powerful multinational drug companies, insurance companies, and managers are also impoverishing the concept of medicine as a caring profession. "Increasingly, physicians find themselves engaged in bureaucratic and political struggles that sap their time and energy, exhaust their patience for treating uninsured people, and erode their dignity."[49] Impressive scientific and medical advances with profound impacts on human well-being have, regrettably, become associated with an inequitable, costly "medical industrial complex" within the most powerful nation on earth.[50]

Market-driven health care in a powerful nation has profound symbolic and material effects on health services worldwide. Health care delivery is being transformed from a professional service delivered with dedication, concern, and compassion within mutually rewarding and trusting healing relationships[49–51] toward the sale of a commodity in an adversarial marketplace in which professional satisfaction from patient care is being eroded and increasingly replaced by rewards external to the professional service: satisfying health service bureaucrats and acquiring wealth, scientific fame, and prestige among peers. Legitimation of this transition transmits a powerful message that gravely undermines the will and ability of other nations to develop and sustain equitable access to affordable health care. Established national health systems (for example, those in Canada and the United Kingdom) are fracturing under the influence of the market model, and health care reform in the new South Africa is being largely confined within a shrinking and weakened public sector while a bloated private sector continues largely unaffected.[52]

Efforts to reverse these trends by dedicated and enlightened physicians[50,51,53–55] are supported by professional organizations in the United States[56,57] and through changes in medical education that incorporate education in the humanities into the medical curriculum.[58,59] However, health care reform in the United States, and elsewhere, remains an elusive goal. Debate must go beyond medical education and the physician/patient relationship to include consideration of macro-allocation of resources, the structure of health care systems, and ways to deliver health care that will enhance the dignity and lives of individual patients and advance population

health. Recognizing international disparities in health and health care provision as the single gravest problem of medical ethics challenges physicians, lawyers, and ethicists to become involved in global aspects of justice, human rights, and health care.[60–67]

The Future

Complex interlocking contributions to the emergence of an unequal world need to be openly acknowledged and addressed if progress is to be made toward widespread achievement of human rights and improved population health.[3,4,10,42–44,63–71] Sustaining human development requires a much more sophisticated approach than can be achieved through paternalistic dispensation by well-intentioned but largely unaccountable aid agencies[13,18] or through World Bank loans.[71] The 1991 Human Development Report describes a human development index (calculated on the basis of literacy and life expectancy, as well as per capita GNP) that goes beyond economic considerations alone and suggests linking financial aid to human development rather than merely to consumption, as a strategy to accelerate human development as a unifying concern for both industrialized and developing countries.[10]

There is now also growing acknowledgment of the enormous disparity between expenditure on military endeavors and on sustainable development and of the potential for the diversion of resources to the latter in order to foster self-actualization and self-sufficiency, which could help spread respect for and achievement of human rights.[72,73] Linkage of economic growth with human rights through human well-being is the key to progress and is a unifying concern for developing and industrialized countries.[10,44]

The operationalization of such processes through (1) cancellation of some of the unpayable debt accumulated by some of the poorest countries in the world,[2,52] (2) continuing attempts to redirect military expenditures toward social development,[72] (3) taxation on electronic financial transactions, and (4) suggestions such as those by Susser[75] and others[56,67] to advance the achievement of global health and human rights are the challenges of the future. These challenges, it is hoped, will be advanced through linkage with the planned World Health Organization proposal for a global health charter.[74]

There is also a need for us to begin to understand diverse world views and value systems.[75] Progress lies not in propagating false dichotomies but, rather, in working to acquire deeper understandings of differences and the willingness to create solidarity through greater identification with common human attributes and aspirations.[68,69] Wealthy nations that show concern largely for their own short-term economic self-interest could consider whether they are unintentionally behaving like countries that failed to identify with the Universal Declaration of Human Rights in 1948. The credibility of their commitment to contributing to achieving a broad range of human rights for all is now in the world's spotlight. Their ability to acknowledge and act on their awesome responsibility to humanity will shape the world's future.

The universal humanistic ideals for which medicine strives are, like human rights for all, unattainable without serious attention to the concept of international interdependence and the consequent restructuring of health care systems, especially those in powerful and wealthy nations that serve as role models for the world.[57,76,77] The American Association for the Advancement of Science has demonstrated vision and admirable moral responsibility in its call for a human rights approach to health care reform.[57] Further support could be provided through forging closer links between the bioethics movement and the promotion of human rights.[65–67,78–80] These ideas, like the call for transnational actions by physicians and lawyers,[66,67] are embryonic but are increasingly widely shared[73,74] and in need of much hard work to be developed into action plans.

The complexity of these tasks should not be a deterrent. As the celebrated Nigerian author Chinua Achebe has stated, despair should not eclipse hope: "neither history nor legend encourages us to believe that a man who sits on his fellow will some day climb down on the basis of sounds reaching him from below. And yet we must consider how so much more dangerous our already very perilous world would become if the oppressed everywhere should despair altogether of invoking reason and humanity to arbitrate their cause."[81] □

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Millennial challenges for medicine and modernity

ABSTRACT – In our polarised modern world, we face enormous challenges that can only be dealt with through a new approach to human co-operation. Globally, the crisis in medicine poses challenges at micro, meso and macro levels which call for profound changes in medical education and in the organisation and accountability of health care services. Our view of medicine must extend beyond the domain of the physician-patient relationship to include wider aspects of medicine and bioethics. This moral perspective demands that the traditional ethical framework, with its focus on the sanctity of life, be expanded to recognise the importance of quality of life and the need for equitable distribution of resources.

In his preface to *The Age of Extremes*[1] Hobsbawm quotes Sir Isaiah Berlin: 'I have lived through most of the twentieth century without, I must add, suffering any personal hardship. I remember it only as the worst century in Western history.' The expression of this view by such a prominent thinker draws serious attention to a world in which a small and shrinking core of people lives complacently in comfort while millions of marginalised people suffer miserably.

Our modern world

Population growth, consumption of resources and ecological degradation

Population growth and its environmental effects are among the major causes of concern at the end of a century in which the world's population has increased from 1.6 billion to almost 6 billion. While population growth in poor countries has been the main focus of concern for industrialised countries, rates of consumption by inhabitants of rich countries now pose risks of equal magnitude. For example, US citizens comprise 5% of the world's population and consume 20% of the world's resources, while Chinese citizens comprise over 20% of the population, but consume only about 10% of resources[2]. Disregard for the impact on nature of both population growth and patterns of unsustainable consumption have led to ecological degradation and planetary overload[3].



This article is based on the Lilly Lecture given at the Royal College of Physicians in May 1997 by **SOLOMON R BENATAR** FRCP FACP(Hon), Professor of Medicine /Head, Department of Medicine, University of Cape Town and Groote Schuur Hospital, South Africa, and Director of the Centre for Medical Ethics, University College London Medical School, London.

Communicable diseases

Communicable diseases are the leading causes of loss of human life and potential, and most of this burden is carried by poor nations, in particular those in sub-Saharan Africa[4]. While modern medicine has eradicated smallpox and reduced the global burden of polio, malaria, and leprosy, 'new' infectious diseases such as Legionnaire's disease, Hantaan virus, Lyme disease, human immunodeficiency virus and hepatitis C have emerged in both rich and poor countries. At the same time, old pathogens, including *M tuberculosis,* over which we have gained partial control, are becoming either impossible or very expensive to treat because of multi-drug resistance[4]. The threat of communicable diseases is compounded by the fact that people in poorer countries have limited access to even essential drugs, and also by the increase in population movements (leisure travel from rich to poor countries and migration or displacement of millions of people from poor countries).

Distribution of wealth

Over the past 500 years economic patterns have evolved from mercantilism through *laissez-faire* capitalism and socialism to welfare-statism, and we have more recently experienced a move towards the globalisation of the economy. The thrust of capitalism as an economic system emphasising free trade has been, and remains, a powerful force[5]. The balance provided by socialist perspectives has helped to ensure equitable access to health care and welfare in most European and British Commonwealth countries. The New Deal in the US has been a less effective social equaliser, perhaps because the commitment to human rights is limited to civil and political rights within a highly individualistic form of liberalism which has pitted citizens against one another in competition for access to health care and social welfare.

During the second half of the 20th century, the evolution towards a world economy has continued to enrich some nations, and some people within each nation, at the expense of others. The gap between the richest 20% and the poorest 20% of the world's population doubled between 1960 and 1990. This divergence is a measure of the superior performance of the capitalist world and an indication of its exploitative powers. Yet whilst capitalism has greatly improved material conditions overall, not all have benefited, as wealth and misery have been generated simultaneously[6]. The relationship between poverty and poor health is now well-documented[7,8]. The current state of developing world debt ($2.2 trillion) and the continuing and, indeed, escalating flow of resources from poor to rich

University of Cape Town

nations is impeding development and creating an instability which threatens all nations[9].

The combined assets of the top 300 firms in the world constitute roughly 25% of the world's productive assets. Their formidable economic power and transnational mobility increasingly undermines the ability of national governments to provide the legal, monetary or protective functions necessary for a healthy national economy. The trillion-dollar-a-day market in foreign exchange values any nation's currency at the pleasure of the 'market'. Less than 10% of the trillions of dollars transacted across financial networks are for trade in goods and services. Of the 5.6 billion people in the world, about 3.6 billion have no cash or credit with which to make purchases, and more and more people are clamouring to get into the global labour pool.

The spread of export agriculture and industry in developing countries has uprooted hundreds of millions of people from their land. They are drawn to cities but with only marginal prospects of employment. Centuries-old ways of life, family traditions, child rearing practices, local community structures and bonds are disappearing. Both socialism and liberalism are collapsing and these countries are experiencing a transition towards a post-national order[6].

One adverse effect of these trends is the creation of 'underclasses' in many industrialised countries through neo-liberal policies which reject welfarism. These policies mark the transition from a world of nation states to a world of international capital and supranational organisations. Policies that dismantle social reforms and supersede national economies are the triumph of capitalism, but also accelerate its negative consequences – the degradation of the environment, increasing working class poverty, growing political autocracy, and reduction of political legitimacy[6]. Vaclav Havel has described these processes as a 'thin veneer of civilisation' sweeping across the world[10]. Ironically, we now face the possibility that the 'road to serfdom', which Hayek feared would ensue from political totalitarianism, could now result from economic totalitarianism[6].

Militarisation and its effects

The vast expenditure on weapons and the adverse impact on health of the arms trade has been well documented[11–14]. In recent years, civil wars have accounted for a great number of casualties, predominantly among civilians. Millions of women have been raped and millions of people turned into homeless and stateless refugees. In 1994, 30 million children died worldwide as a result of war and poverty.

At the end of the 20th century hundreds of millions of people are facing slow death because of destitution, disease, forced migration, political and cultural repression and other denials of life-sustenance. The world is in the grip of an economic crisis: no political or economic system has been able to extricate itself completely from it. Struggles for survival, justice, dignity and cultural autonomy are fragmented, localised and largely ineffective. No single all-embracing ideal of rationality, tolerance, science or progress prevails and scholarly research has singularly failed to produce usable wisdom[14].

World views

The technological and economic thrust of the Western world view and the advances it has generated have led many to believe that this is the most desirable way of life. Few recognise that this attitude obscures the many common values that pervade all world views, and masks the benefits which could flow from valuing diversity while seeking universality. Through understanding our own view of the world, we can acquire empathy for the local worlds of others and develop a dialogue that could lead to a greater degree of universalism. The time is now riper than ever for Westerners to strive to understand their own world view, to learn what it means to be human outside their own privileged environments, to appreciate the fragility of their own dignity in a world in which so many are deprived of the basic needs, and to participate in broader visions of sustainable progress.

Rise of fundamentalisms

Martin Marty views the rise of fundamentalisms as reactionary responses to modernity[15]. It is only by seeing the world as comprising many world views, each one attempting to dominate all others, that we can achieve a broader understanding of the rise of fundamentalisms – not only in countries such as Iran, but also in Western nations, for example within Christianity and Judaism.

Marty describes several features that all fundamentalisms have in common: origins in conservative cultures responding to perceived threats from modernity and to increasing secularisation within their own ranks; a return to the real or perceived foundations of their world view; philosophies of history dealing with beginnings and ends, for example 'creationism' and 'apocalypticism'; and the election of leaders to become agents of the divine[15].

Evolution of Western thought

The Western conception of the world and of ourselves has been changing over the past 2,000 years. The transition from the pre-modern era to modernity and the challenges now posed by 'ultra-modernity' show that neither our culture, nor how we perceive ourselves, is static[16].

In the first millennium of the common era, following the collapse of the democratic and scholarly example of ancient Greece, the structure of society was essentially feudal, communal and regionally based. Personal identity was intimately linked to religion, faith, tradition and a hierarchical form of communal life embedded in, and dependent on, nature. Political life rested on state-oriented traditions (such as monarchies), and the church and state were all powerful.

University of Cape Town

Power and force dominated the relationships between nation states. Cultural policies against minorities were characterised by denial, segregation and patriarchal attitudes. Discourse reflected the powerful influence of belief in revelation, providence and authority. Medicine was primitive but generally holistic in its approach.

With the transition towards modernity, the West's way of thinking changed profoundly. Social structures, while still manifesting religious influences and class distinctions, were increasingly shaped by secular individualism based on scholarship, reason and the concept of civic society within nation states. The concept of the 'self' became more individualistic. Indeed, individualism flourished but created a society of strangers in which civic involvement was gradually eroded. Political life shifted towards democracy and greater personal freedom. The language of discourse focused on progress through political ideology, with diminishing reference to the spiritual aspects of life. Cultural policies towards minorities became less rigidly separatist and assimilation was accepted – although still within paternalistic and imperialistic frameworks. Power shifted from the authoritarianism of individuals to the hegemony of states and corporations. Pluralism, sustained through order and international law, was increasingly advocated as the basis for interaction between states. Scientific advances fostered wondrous progress in medicine and technology, changing the face of death and human suffering, but also generated opportunities for the exploitation and domination of nature. Medicine became increasingly specialised.

Challenges for modernity: a new approach to human co-operation

As we approach the end of the second millennium, we are in the throes of another slow, but definite, shift in attitude, with implications as profound as the shift toward Christianity 2,000 years ago, and the subsequent shift towards science during the Age of Reason. Social structures have become pluralistic in a world that is shrinking as a result of advances in communication and travel. The freedom of individuals is being eroded by the concentration of power in economic organisations that are not accountable or amenable to change through democratic processes. The dominating power of some nations over others is also being transformed by the concentration of power in such organisations as the International Monetary Fund and the World Bank – structures with economic and political force across the globe that override the influence of nations over their own citizens[17]. In the realm of science, progress in molecular biology and genetic engineering is making it possible to re-invent nature through eugenics and the creation of transgenic animals.

Several responses are becoming apparent as we develop deeper understandings of history through an integrated approach embracing a wide range of interacting geographic, social and political forces. A revolt against hegemonic views of 'universalism' is gradually reshaping personal identity through greater respect both for equality and for the diversity between people. Our concept of the 'self' is extending beyond that of the 'self-interested, isolated individual inhabiting a world of strangers' to include the idea of the 'embedded self, arising from and contributing towards community'[18], while electronic communication is creating the concept of the 'virtual self', in which simulation provides a new freedom that can influence identity[19]. Political discourse is being influenced by communitarian challenges to the failings of narrow concepts of liberalism, and a growing appreciation of interdependence at a global level[20]. Integration, celebration of difference, affirmative action and a greater sense of justice and solidarity are replacing discriminatory policies against minorities, at least in some nations. Ethnographic approaches and empathy for the world views of others are shaping a dialogue that could replace authoritarianism.

Virtually all liberal democracies are either multinational, polyethnic or both[21]. In all liberal democracies one of the major mechanisms for accommodating cultural difference is the protection of the civil and political rights of individuals. It is impossible to overestimate the importance of freedom of association, religion, speech, mobility and political organisation for protecting group differences. These rights enable individuals to form and maintain the various groups and associations that constitute civil society, to adapt these groups to changing circumstances and to promote their views and interests to the wider population. The protection of these common rights is sufficient for many of the legitimate forms of diversity in society. However, it has been suggested that some forms of cultural difference can only be accommodated through special legal or constitutional measures above and beyond the common rights of citizenship. Kymlicka divides these into three categories: self-government rights (federal systems like the Canadian), polyethnic rights (eg providing public funding for cultural practices), and special representation rights (eg for women, gays, and other marginalised groups)[21]. The challenge of multiculturalism, which is more acute in South Africa than elsewhere, is to encompass national and ethnic differences in a stable and morally defensible way[21].

Ecological considerations, the ethics of international relations and the efforts of peace movements are slowly achieving higher profiles. Medicine is also moving beyond individual specialisation to include a multidisciplinary set of activities involving a growing spectrum of disciplines. A stronger primary care basis reflects an understanding of the social basis of disease and health, and that medical practices and health care systems are social constructs.

At the end of the 20th century there are, for the first time, opportunities for new kinds of research across diverse disciplines and societies. Anthropologists, philosophers and natural scientists need not inhabit separate worlds; their texts are more profitably examined when each understands what the other is doing. The extent of 'social suffering' in the world calls for a linking of social policy with health

policy, and social theory with health and public health science. Such efforts must seek to locate pragmatic programmes and policies in a historical context that takes account of the complexity of the human condition. This will require a tolerance for interdisciplinary study, and an advocacy of its intellectual possibilities[14,22].

Challenges for medicine

Societies throughout the world are facing crises in health care precipitated by: (i) the increasing domination of science and technology; (ii) the costs of delivering modern medical care with growing focus on profits, economic utility and management principles; (iii) the inevitability of rationing and whether this should be implicit or explicit in the process of balancing the good of individuals against the common good; (iv) the challenge of health care provision as a right (rather than a privilege) associated with a sense of entitlement that undermines personal responsibility; and (v) a crisis of confidence in the medical profession revealed in a growing alternative medicine industry and anti-science views. The reasons for the crisis in medicine are complex, intimately related to the problems of modernity and include the effects of dehumanisation of clinical practice, and fraud in practice and research[23].

At the *micro* level the most obvious challenge for medicine is to continue making scientific and technological advances, because while science and technology are at the heart of the crises facing medicine they could also be at the heart of the solution. There is also a need to ensure that, in a technological age, clinical skills can be retained, that professional attitudes can be sustained and improved, and that clinical decisions involve access to and use of the best available evidence and the wise judgement that can come from experience[24].

At the *meso* level, medicine is challenged to operate effectively within frameworks that offer universal access to a reasonable level of health care as a basic human right. Health care systems and their financing mechanisms need to be reformed within the conflicting requirements of equity (justice) and utility, and a balance achieved between individual health and population health through optimal inter-sectoral collaboration and social responsibility for health and welfare[25].

At the *macro* level, contributions to world health could be made by holding nations accountable (for health care provision to their citizens) to international bodies, as, for example, envisaged by the WHO in their forthcoming 1998 global Charter[26]. Medicine, as a profession concerned with science, art and humanities, could in this way serve as a model for achieving global interdependence. However, this will also require recognition of the limitations of medicine, and the expectations by doctors and patients of what medicine can legitimately offer will need to change. Greater responsibility for personal health will need to be coupled with an acceptance of the limits of life and much more restricted use of complex technology to sustain life beyond mere biological existence. This new perspective on health care will go beyond concerns of disease and death to embrace greater concern for health, suffering and dignity. This will entail moving from the idea of health care as a merely professional or market phenomenon to the concept of health care systems as equitable social constructs.

Changes in medical education

There are several imperatives for making changes to medical education: (i) the intellectual challenges of the new biology and of developing ways of critical thinking coupled with an understanding of concepts in preference to focusing on factual knowledge; (ii) the challenges posed by organisational, economic and operational influences on the delivery of health care; and (iii) the national and international social and humanitarian aspects of health – for example, the role of physicians in improving population health, in protecting human rights and contributing to peace movements.

Transition in medical education will involve embracing shifts: (i) from the balkanisation of disciplines to integrated learning; (ii) from the biomedical model focused on disease to the bio-psychosocial model emphasising understanding of illness and suffering; (iii) from an overemphasis on reductionist cures towards comprehensive care; (iv) from reliance on experience alone to the inclusion of the best available evidence; (v) from etiquette and codes to ethical analysis and improved communication skills as the basis for physician-patient relationships; and (vi) from considerations of individual health to concern in addition for population health and the common good[27,28]. These shifts are advocated to broaden and complement the successes achieved through the previous approaches.

Domains of morality: the widening spectrum of bioethics

At the *micro* level of bioethics, basic human needs can be identified as respect for human dignity, self-determination and access to the resources required to sustain the physical and mental health of individuals conceived of as rational and autonomous[29]. In this context the physician should be viewed as committed to the care of each individual patient within various models of the physician-patient relationship, embracing the concepts of contract, respect for autonomy, covenant and trust in beneficence.

At the *meso* level of ethical considerations, human needs extend towards such considerations as order and justice within the communities in which individuals are socially embedded and constructed. The responsibility of doctors here is viewed more broadly and includes some concern for public health and the common good through participation in the health care system of their country. Considerations of justice necessarily influence the physician-patient relationship, as do the social contract and utilitarian considerations. Morality should acquire an institutional component through considerations of public health and the management of

resources within a political philosophy of welfare liberalism. Interpersonal relationships should encompass the concept of civic citizenship, with primary responsibilities complementing the primary rights of individuals and the correlative duties of others to achieve these in practice[30].

At the *macro* level, human need extends even further to encompass ecological safety, security and interdependence with nature and other humans. The desired conception of the individual becomes that of an autonomous individual sharing equal rights with all other citizens in the world, in a relationship of interdependence in which the rights of some should not be acquired at the expense of the rights of even distant others. The level of complexity here is much greater because foreign policies of some countries may covertly enhance the lives of their own citizens through exploitation of unseen persons elsewhere. The role of the physician needs to be broadened to include a commitment to worldwide professional ideals, to the continuing advancement of knowledge, and to concern for global health and future generations. The moral perspective thus ranges from interpersonal morality to civic morality, and to an ethics of international relations, linked to political, military, cultural and economic issues[31].

When some ask why we should bother to go beyond the micro level of ethics, we can reply that modern communication, transport, methods of money exchange and the creation of nuclear and other weapons of mass destruction have shrunk distances and differences in many senses, and created common risks. We are all implicated in the lives of others, and it is increasingly impossible to hide with credibility behind the barrier of physical distance. Altruism aside, the importance of physical and moral interdependence is so great that self-interest alone is sufficient to drive policies towards sustainable development. Without this the prospects for humanity seem bleak[32].

Some conclusions and recommendations

Despite so many challenges we do have some grounds for optimism. At its best, the changing world order can be seen as a series of slow but definite shifts: from an anthropocentric to an ecocentric world view, from defensive nationalism to co-operative internationalism; from extreme individualism to a concept of individuals as part of a community and contributors to it; from the desire to accumulate knowledge to a perspective that seeks wisdom in the application of knowledge; from ideological hegemony to richer multicultural conceptions of life that value diversity without embracing a moral relativism that undermines universalism; from the idea that power and force are the only ways to maintain order to an understanding that negotiation and co-operation can free up resources to narrow the gaps between the core and the periphery that threaten peace between societies in an increasingly interdependent world. In the world of medicine and health care, we will see our interests and moral outlook expand from the reductionist basis of disease to include interest in the influences of family, community, national policies and global forces on health and human suffering.

The principles of a world ethic would include a commitment to a culture of non-violence and respect for life, solidarity and a just economic order, tolerance of others, a life of truthfulness, and equal rights and partnership between men and women[33]. Is it Utopian to believe that a loyalty to humanity could one day prevail in the world? We may take heart from the many people who work for and make some progress towards peace. Optimism about the future for a deeply complex, turbulent world rests on humankind's capacity for ingenuity and rational and moral thinking[34].

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Address for correspondence: Professor S Benatar, Department of Medicine, University of Cape Town and Groote Schuur Hospital, Observatory 7925, Cape, South Africa.

Occasional Essays

Respiratory Health in a Globalizing World

SOLOMON R. BENATAR

Bioethics Center, Department of Medicine, Faculty of Health Sciences, University of Cape Town and Groote Schuur Hospital Observatory, Western Cape, South Africa

CHALLENGES OF RESPIRATORY MEDICINE IN THE 1970s

The early 1970s, when I embarked on my career in respiratory medicine, were times of great excitement and challenge in respiratory medicine. Advances on many fronts were providing a powerful new impetus to the field. Progress in physiology, exciting in its own right, was leading to improved life support in intensive care units (ICUs). Technical advances were encouraging transplant surgery. Large-scale, well-designed drug trials established short course chemotherapy for tuberculosis with hopes for eradicating this disease from the world. Inhaled corticosteroids were revolutionizing the treatment of asthma. Technological advances with new imaging and other diagnostic techniques such as fiberoptic bronchoscopy and a range of techniques for doing lung biopsies gave respiratory physicians a new interventionist role. These developments spawned a new generation of knowledgeable and competent respiratory physicians.

THIRTY YEARS OF PROGRESS

Much has been achieved during the past thirty years. Improved understanding of the pathophysiology of asthma, occupational lung diseases, chronic obstructive pulmonary disease, cystic fibrosis, interstitial lung diseases, pulmonary hypertension, and other diseases has led to newer and more effective therapies. ICU care has been transformed by modern technology into a sophisticated and highly effective practice, resulting in the saving of many years of high-quality life. Noninvasive ventilation, domiciliary oxygen, continuous positive airway pressure (CPAP), and transplantation have radically transformed the lives of many patients with respiratory failure. New diagnostic techniques and increased rigor and standardization in the design of clinical studies have made major contributions to evidence-based practice.

ON THE THRESHOLD OF A NEW ERA

We are now on the threshold of a new era. Advances in genetics have the potential to transform medical practice, although many obstacles will need to be overcome to achieve desired goals. Some examples of what could be achieved include the ability to determine genetic susceptibility to disease and prevent disease by linking environmental control measures to those at particular risk; the use of gene therapy to correct genetic defects; and the use of new molecular biology techniques to design new, more specific therapeutic agents. New functional imaging diagnostic techniques, less invasive surgical methods, and specifically designed target drugs could contribute to more efficient treatment of many disorders. Advances in information technology could enable home monitoring of patients with asthma and chronic obstructive pulmonary disease (COPD) and further empower patients, especially those who can afford it, to care for themselves. Distance diagnosis and teaching (e.g., through Internet transmission of radiological and video images) and more widespread access to electronic literature sources could facilitate the spread of knowledge and expertise. While it is the hope of many that such advances will improve respiratory health globally, the risk that such advances will be available only to those with resources should not be underestimated (*see below*).

RESPIRATORY HEALTH IN THE WORLD TODAY

It is necessary to step back from these wonderful advances and the optimism of progress in treating individual patients and to reflect on the overall state of respiratory health in the world today as compared with 30 years ago. A few statistics reveal that improvements in respiratory health have not been shared by all. Lower respiratory tract infections account for 9.1% of disability-adjusted life years (DALYs—years of healthy life lost) from all diseases in the developing world and 1.5% in developed countries, while tuberculosis accounts for 3.1 and 0.3%, respectively. Lower respiratory tract infections cause 17.7% of deaths between the ages of 0 and 4 years in developing countries as compared with 6.1% in developed countries (1).

The problem of tuberculosis illustrates the paradox of how advances in scientific knowledge and the ability to cure individual patients have not been accompanied by public health gains. While in the 1970s there was hope of eradicating tuberculosis from the world at a price that was easily affordable, the threat now is that tuberculosis may become a multi-drug-resistant disease that is too expensive to treat except perhaps in the most affluent countries. This is not the result of lack of knowledge but rather an example of lack of wisdom in the application of knowledge and a failure to appreciate the complex social and economic aspects of health and disease (2, 3). There are other examples of the paradox between scientific advances and lack of improvement in public health. Many other organisms causing respiratory and other infections are becoming resistant to antimicrobial drugs (4). Lung cancer, one of the few malignancies for which the main cause is definitively known and that can be prevented, is on the increase—especially in developing countries that have been targeted by tobacco companies (5). The incidence and prevalence of asthma are increasing. More than 25 new infectious diseases have emerged since the 1970s, with HIV/AIDS the most threatening (6).

These examples are disappointing to physicians. Understanding why we have failed to improve respiratory health at the world population level requires insight into the state of our world at the beginning of a new millennium, and appreciation

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Correspondence and requests for reprints should be addressed to Solomon R. Benatar, Bioethics Centre, Faculty of Health Sciences, University of Cape Town and Groote Schuur Hospital Observatory, 7925 Western Cape, South Africa, E-mail: sbenatar@uctgsh1.uct.ac.za

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that improving respiratory health globally will require new ways of thinking and innovative action. A brief review of the world at this time will illustrate these claims.

SOME CHARACTERISTICS OF OUR MODERN WORLD

Population Growth

In 1999 there were nearly 6 billion people in the world. Another 80 million are added each year. World population doubled between the late 1950s and the late 1990s and is projected to reach 9.4 billion by 2050.

Economic Disparities

At the beginning of the 20th century the wealthiest 20% of the world's population were nine times richer than the poorest 20%. This ratio has grown progressively—to 30 times by 1960, 60 times by 1990, and to over 70 times by 1997. The combined wealth of the world's 225 richest people is the same as the annual income of the poorer 50% of the world's population. The extent of absolute poverty has also increased. Today, almost half the world's population lives on less than U.S. $2 per person per day and more than 1 billion people live in absolute poverty on less than U.S. $1 per day—nearly half of them suffering from chronic malnutrition (7). Even in the developed world one in six children lives below their country's poverty line. Indeed, many of the most serious social and health problems facing today's advanced industrialized nations have roots in the denial and deprivation faced by many in childhood (8). These economic disparities have adverse effects on health.

Relationship between Economics and Health

It is now well established that there is a definite relationship between wealth/poverty and health/disease, although this relationship is complex and not linear. Both absolute and relative wealth affect health. In developed countries health status is determined more by income differentials between rich and poor than by overall wealth (9). The United States spends a higher percentage of the gross domestic product (GDP) on health care than any other country (14%). Fifty percent of the U.S. $2 trillion spent on health care in the world each year is spent in the United States (5% of the world's population). Despite this, the United States is ranked 24th in overall population health as judged by disability-adjusted life expectancy, 37th in efficiency of its health care system, and 54th, alongside Fiji, in how fairly the financial burden of health care is distributed (10).

Poverty (defined as lack of economic resources, lack of education, lack of access to basic life resources such as food, water and sanitation, and lack of control over the reproductive process) directly accounts for almost one-third of the global burden of disease (11). Poverty leads to poor health, which in turn aggravates poverty. Despite the difficulty in making accurate intercountry comparisons it is clear that improvements in economic status are associated with better health statistics, and that economic growth is necessary to improve the living conditions conducive to good health, independent of benefits that may arise directly from health care. The falling death rate from tuberculosis in the prechemotherapy era illustrates the beneficial impact of improved socioeconomic conditions on this disease (12).

Disparities in Health and Disease

At the end of the 20th century patterns of diseases and of longevity differ markedly across the world. Life expectancy is increasing worldwide. However, in 16 of the world's poorest countries it has fallen in recent years. Life expectancy at birth ranges from well over 70 years in highly industrialized countries to below 50 years in many poor countries. In sub-Saharan Africa gains in longevity achieved during the first half of the 20th century are rapidly being reversed by the HIV/AIDS pandemic.

Of 52 million deaths in the world each year, 17.5 million (34%) are due to infectious and parasitic diseases (16 million of these in the developing world). Ten million (20%) result from diseases of the circulatory system (4.5 million of these in the developing world). Six million (11.5%) are from malignant diseases (3.5 million of these in the developing world), and 2.9 million deaths (5.6%) are due to respiratory diseases. Of all deaths, 6% are from acute lower respiratory infections, 5% from tuberculosis, and 4% from HIV/AIDS. Among the poorest quintile of people in the world, 55% die of communicable diseases, as compared with 5% of the richest. The World Health Organization (WHO) estimated that in 1998, 11 million children and adults of working age died of six infectious diseases that could have been prevented at the cost of U.S. $20 per life saved (13).

Poor countries bear over 80% of the global burden of disease expressed in DALYs. This burden is likely to increase as the epidemiological transition progresses, with added disability and suffering from noncommunicable causes of disability such as vascular disease, malignant neoplasms (especially of the lung associated with smoking), neuropsychiatric disease, accidents, and trauma. Tobacco is big business—an acre of tobacco sells for more than 20 times an acre of wheat. The main market opportunities now lie in less developed countries, not least of which is China, where tobacco consumption is higher than anywhere else and has increased by almost 50% in the past 20 years. Smoking-related deaths are projected to rise to 10 million a year by the 2020s, 70% of these in the poorer countries.

Comparative Health-care Expenditure

Since the 1960s major advances in medicine and technology have been associated with escalating expenditure on health care—most of this in highly industrialized countries. Annual per capita expenditure on health care ranges from over U.S. $4,000 in the United States down to less than U.S. $5 in the poorest countries in Africa. Half the world's population lives in countries that cannot afford annual per capita health expenditures of more than U.S. $5–10, and many people do not have access even to basic drugs. The WHO has estimated that in 1990 the annual per capita cost of providing a basic package of public health and essential clinical services in a low-income country was U.S. $12. In most such countries health care expenditure is typically less than U.S. $6. Even though some parasitic diseases (e.g., onchocerciasis, schistosomiasis, and lymphatic filariasis) could be controlled by mass treatment campaigns using inexpensive drugs, the infrastructure required to provide such coverage is inadequate. Effective treatment of diseases such as tuberculosis and leprosy, and HIV/AIDS, as well as prevention of HIV transmission, require more complex infrastructures than can be afforded on current health care budgets in poor countries (14).

In the 1990s, 89% of annual world expenditure on health care was spent on 16% of the world's population, who bear 7% of the global burden of disease (in DALYs) (15), and 90% of medical research expenditure was on health problems accounting for only 10% of the global burden of disease (16). These are examples of global injustice that should be intolerable if there were genuine commitment to universal human rights and human dignity, and to improving health at the level of whole populations. Vaccine development programs and drug donation programs for poor countries, admirably promoted and supported by some pharmaceutical companies and

major foundations in the industrialized world, are necessary but insufficient responses to such injustices. Human progress and meaningful development in poor countries allowing modest increments in economic status, if combined with provision of a basic health care package, offers the potential for improving health significantly.

Military Expenditure and Foreign Aid

Industrialized countries spend on average 5.3% of the GNP on the military (global military expenditure in 1990 amounted to US $1 trillion) but less than 0.3% on economic aid to developing countries (17). The United Nations target is for rich countries to give 0.7–1% of their national income in foreign aid. Denmark, Norway, Sweden, and the Netherlands did well at 0.8% in 1997. However, on average, 21 Organization for Economic Cooperation and Development (OECD) countries donated only 0.22% of their GNP to development assistance in 1997, down from 0.25% in 1996. The United States donated less than 0.1% in 1997, down from about 0.2% in 1986 (18). This may surprise many Americans, as a poll conducted by the Program on International Policy Attitudes at the Maryland University showed that the median level of proposed foreign aid was 15 times greater than the amount actually spent—revealing the gap between concern expressed for the well-being of distant others and its translation into practice (19). The goodwill of many American citizens toward less fortunate people around the globe, for example, through volunteer programs and foundation support, must of course be gratefully acknowledged—but this is independent of U.S. national policy that is resulting in progressive withdrawal of financial support to developing countries in recent decades. Many Americans may be unaware that the African continent as a whole does not feature on the U.S. foreign policy agenda (20).

There are close links between the arms trade and economic aid, with a considerable proportion of foreign aid repatriated to donor countries through arms sales. This link has contributed significantly to the escalating number of wars, conflict, and widespread torture since the Second World War. More than 110 million people have died in over 250 wars in the 20th century—the bloodiest in human history. In 1980 there were about 22 million refugees worldwide. By the early 1990s this figure had almost doubled and by 1997 it had declined a little to just over 35 million. Such displacement of people and total disruption of social life has profound adverse effects on life and health, and refugee camps are often hot spots for epidemics.

Some Other Comparative Expenditures

The estimated annual cost of providing basic education for all in the world is U.S. $6 billion, and the cost of providing access to reproductive health services for all women in the developing countries is U.S. $12 billion. These costs are small in comparison with global military spending at U.S. $780 billion in the late 1990s (two thirds of its level in 1985 at the peak of the Cold War), U.S. $50 billion spent on cigarettes in Europe, U.S. $105 billion spent on alcoholic drinks in Europe, and U.S. $500 billion spent on narcotic drugs in the world (6). In the United States, more than U.S. $11 billion is spent each year by pharmaceutical companies in promoting and marketing drugs (21). The annual budget of the WHO in 1990 was equivalent to 2.5 hours of global military expenditure, and in 1997 the United States was $35 million in arrears of its contributions to the WHO (22).

Global Political Economy and Health

At the beginning of the 21st century, the world is thus characterized by widening disparities in economic and health status (between countries and even within wealthy countries where the size of the underclass is growing), and by suffering, conflict and alienation associated with pervasive social forces (9, 17, 23). Erosion of the economies of many poor countries, under the impact of the neoliberal economic policies driving globalization, has obstructed the introduction of effective forms of modern medicine into many poor countries and prevented achievement of widespread access to even basic health care for billions of people (23–29). Third world debt requires special mention. The ways in which such debts have been created, the fact that third world debt is a small component of total world debt and can never be repaid, and that in sub-Saharan Africa four times as much is spent on debt repayment each year than on health and education combined, make insistence on debt repayment the modern equivalent of slavery (25).

The emergence of new diseases such as AIDS, that afflict predominantly those marginalized by poverty (80% of HIV-positive persons live in the poorest countries in the world), has been attributed to the social and environmental niches created by the nature of the global political economy and its ideology (26). Failure to appreciate such associations will result not only in inability to control such diseases as HIV/AIDS (as for tuberculosis in the past (2), but more importantly, will probably favor the emergence of new infectious diseases in the future. The changes in demography resulting from urbanization, migration, travel, multiple small-scale wars, ethnic conflict, and displacement of people and refugees facilitates the spread of such diseases from which no one should feel immune.

WHO IS RESPONSIBLE?

The facts and interpretations offered above are not intended to imply that the wealthy, productive, and fortunate in the world should bear the whole burden of the blame for the complex series of historical developments that polarize the world. Political realities within developing countries, including corruption, ruthless dictatorships, ostentatious expenditure by elites, and underinvestment in education and health, have contributed greatly to the suffering of billions. However, it is vital for privileged people to have insight into the extent to which these deficiencies in many developing countries have been facilitated by the policies of wealthy nations in pursuit of their own interests (24–29). Insight into how favored lives are sustained by overt and covert exploitation of unseen others could allow those of us who live comfortable lives anywhere in the world to appreciate that we do not have a monopoly of entitlement to the benefits of progress (30–34)

A VISION FOR THE FUTURE IN A CHANGING WORLD

All countries are facing fiscal constraints in health care—some because they are spending too much, often inefficiently, trying to apply all that is technically possible; others because their economies are eroding under powerful global forces. As the limits of medicine and how political and economic forces shape health care are increasingly recognized, it becomes necessary to question personal and social meanings of illness and what it means to seek help from our communities and those they empower to provide health care. Many countries consider access to basic health care as a basic human right that nation states should be committed to providing for their citizens. Some form of equitable health care is provided in all Western European nations and in Canada. Regrettably, the example of medical care as a marketable commodity (albeit with considerable state assistance for the poor and the aged) set by the United States is being widely mimicked. Such privatization of medical care, aided and abetted by structural adjustment pro-

grams promoted by the policies of the International Monetary Fund and the World Bank with American backing, is adversely affecting health in many poor countries (26–28). Acknowledging the need for universal access to a basic health care package could allow new relationships to be forged between physicians, patients, and society. The moral power and potential impact on global health of such action if exemplary leadership were to be provided by the United States should not be underestimated.

The conclusions flowing from the Copenhagen Seminars for Social Progress are that (*1*) economic globalization that propagates a model of development and progress based solely on freedom of the individual and acquisition and consumption of increased quantities of goods and services is not sufficient to create a harmonious world community; and (*2*) building a moral community focused on the common good will require a synthesis built around three substantive goals (democracy, a humanist political culture, and an economy oriented to meeting human needs in the widest sense), and two procedural goals (development of a coalition of social forces with a global agenda, and the building of a structure for multilateral governance) (35).

What can physicians do to improve the conditions described above? First, we have an obligation to know about and understand the impact of the global forces described on health. Second, we should become more introspective about our privileged lives. Third, we should appreciate that our personal skills, developed on the basis of labor and investment by previous generations, represent social capital and involve social obligations for us. Fourth, we should become a force in coupling excellent treatment of individual patients to national programs that improve public health within nations. Finally, we need to locate our activities within the global context described above and promote new ways of thinking about local and international activities that have the potential to improve well-being and health at the global level (36–40). Diagnosis is usually easier than effective treatment, but if physicians, scholars, and other influential persons (individually and collectively) were to accept these responsibilities there would at least be some hope of moving beyond the present impasse towards healthier and better lives for all.

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South Africa's transition in a globalizing world: HIV/AIDS as a window and a mirror

SOLOMON R. BENATAR*

An alarming tide of new and resurgent diseases has been arising around the world for decades. Now it advances faster than ever. This signals a crisis in the history of the human species. We have brought it on by rending the fabric of our environment, changing our behaviour and ironically, by our inventiveness in increasing the length and quality of our lives.

Arno Karlen, *Plague's progress: a social history of man and disease* (1996)

It is a terrible and inexorable law, that one cannot deny the humanity of another without diminishing one's own; in the face of one's victim, one sees oneself.

James Baldwin, 'Fifth Avenue uptown' (1961)

South Africa's transition from apartheid to fledgling democracy is a remarkable example of how negotiation, compromise and cooperation can lead to peaceful progress, bypassing the civil war that could have resulted from centuries of oppression and many decades of brutal apartheid policies. Peaceful transition through a 'negotiated revolution' exemplifies a paradigm shift that has been widely recognized and admired. However, this political transition is only the first step on a long road towards achieving a new society in which all citizens are equally respected and the disparities fostered by apartheid are significantly narrowed.[1]

Six years after the transition, it is appropriate to ask several questions about South Africa. Will it be able to sustain the hope it promises to all its citizens? Can it overcome the profound material and psychological legacy of apartheid

* I am grateful to Stephen Graubard, Kogila Moodley, Heribert Adam, Stephen Gill, Evelyn Benatar and anonymous reviewers for constructive criticism, advice and encouragement to pursue this project, and to the University of Cape Town and the University of Toronto for support.

[1] Heribert Adam and Kogila Moodley, *The negotiated revolution: society and politics in post-apartheid South Africa* (Johannesburg: Jonathan Ball, 1993); Jeffrey Butler, Richard Elphick and David Welsh, eds, *Democratic liberalism in South Africa: its history and prospects* (Connecticut: Wesleyan University Press, 1987); Robin Lee and Lawrence Schlemmer, *Transition to democracy: policy perspectives* (Cape Town: Oxford University Press, 1991); Frederick Van Zyl Slabbert, *The quest for democracy: South Africa in transition* (London: Penguin, 1992); Augustine Shutte, *Philosophy for Africa* (Cape Town: University of Cape Town Press, 1993); Robert Schrire, ed., *Critical choices for South Africa* (Cape Town: Oxford University Press, 1990).

that permeates its social and economic infrastructure? Will the symbol of racism vanquished and the establishment of formal respect for the dignity of every citizen release the creative energy required to promote the flourishing of African people in what has been widely and loosely spoken of as the 'African Renaissance'? Within the context of a country that is undergoing such a profound transition, and within a continent that is in such turmoil, it is also appropriate to ask: what are the relevance and implications of the HIV/AIDS pandemic, both for South Africa and for the African continent?

Asking these questions gives rise to many more questions. What does the HIV/AIDS pandemic tell us about a world in which such a disease can emerge? Is there a link between the wide disparities resulting from imperialistic exploitation, apartheid and globalization, and the emergence and spread of new infectious diseases such as HIV/AIDS? If so, we may ask whether the realization of South Africa's potential for success in achieving its desired goals beyond the peaceful political transition will require a new global era, in which economic, social and political change is effected to narrow disparities and ensure progress towards a more widespread flourishing of humanity.

What can be learned from influential countries about the prospects for such progress? What will such countries learn from South Africa's transition? Will they emulate its example by breaking away from old patterns of behaviour and achieving their own paradigm shift in response to the critical problems they face? Is the language of human rights sufficient to address many pressing world problems? Will the fact of global interdependence become not only widely recognized but also a basis for action to reduce human suffering by amplifying processes that could diminish exploitation and contribute to meaningful development, in South Africa and elsewhere? How can true development be achieved? Indeed, we may ask whether development is more than the mere accumulation of money and other material resources, and, if it is, to what extent many so-called developed countries require development.

Looking in the other direction, we must also contemplate whether the much-admired transition may merely pacify erstwhile critics of racial exploitation and create opportunities for the entrenchment of economic apartheid, leading to this relatively affluent African country being stripped of its human and material resources while the HIV/AIDS pandemic is allowed to run its course in the absence of any understanding of how this scourge has emerged as a consequence of a global political economy that marginalizes whole populations.

These are crucial questions to address in considering the future of South Africa, not as a country in isolation, but as an integral part of a subcontinent, a continent and a world facing profound challenges at the beginning of the twenty-first century. This article is an attempt by a physician to add to our understanding of some of these complex issues by using HIV/AIDS both as a window through which to view South Africa's transition and as a mirror to reflect the globalizing forces influencing the emergence and propagation of this plague.

Globalization

The wider picture

Globalization is the popular term used to refer to the development of an emerging world order characterized by progressive acceptance and implementation of democracy and human rights, and by the growing impact of a neo-liberal economic system. The most recent forces driving globalization include advances in information and transport technology, and the development of a dense network of international and transnational agreements that facilitate free trade and promote the concepts of democracy and universal human rights.

Globalization has been ostensibly spearheaded by a few hundred corporate giants, the development of earth-spanning technologies and products that can be produced anywhere and sold everywhere, and the spreading of credit through pervasively penetrating global channels of communication. Four interconnecting, and considerably integrated, transnational commodity chains have been described: a *global cultural bazaar* (the entertainment industry and communication networks); a *global shopping mall* (through which tobacco, food, and clothes are promoted by aggressive advertising, distribution and marketing); a *global workplace* of factories, law offices, hospitals and restaurants (facilitated by population growth, mass production, automation and cheap labour); and a set of *global financial networks* (that include speculative devices for repackaging and reselling money in what is increasingly labelled a 'casino economy').[2]

However, globalization is both a more complex and a more ambiguous concept than this, going beyond economics to include social, cultural and ecological dimensions. Nor is it, indeed, a new phenomenon, but rather the outcome of a long and interwoven economic and political history, involving a wide range of actors. Its effects are both beneficial and damaging—although it is arguable that, as with population growth, it is the adverse manifestations that are now becoming starkly apparent.

Positive manifestations of progress associated with globalization include advances in science and technology; increased longevity; enhanced economic growth; greater freedom and prosperity for many; improvements in the speed and cost of communications and transport; and popularization of the concept of

[2] Richard J. Barnet and John Cavanagh, *Global dreams: imperial corporations and the new world order* (New York: Simon & Schuster, 1994); Paul Kennedy, *Preparing for the twenty-first century* (New York: Random House, 1993); Anthony Richmond, *Global apartheid: refugees, racism and the new world order* (Oxford: Oxford University Press, 1994); Richard Falk, *Predatory globalization: a critique* (Cambridge: Polity, 1999); Samir Amin, *Capitalism in the age of globalization* (London: Zed, 1997); Paul Streeton, 'Global prospects in an interdependent world', *World Development* 19, 1991, pp. 123–33; Robin Atfield and Barry Wilkins, *International justice and the third world* (London: Routledge, 1992); Alan Gilbert, *An unequal world: the links between rich and poor nations*, 2nd edn (London: Nelson, 1992); Gary Teeple, *Globalization and the decline of social reform: into the 21st century*, 2nd edn (Aurora, Ont.: Garamond, 2000); John Cavanagh, Daphne Wysham and Marcos Arruda, eds, *Beyond Bretton Woods: alternatives to the global economic order* (London: Pluto, 1994); John Gray, *False dawn: the delusions of global capitalism* (London: Granta, 1998); Richard W. Mansbach, *The global puzzle: issues and actors in world politics* (Toronto: Houghton Mifflin, 1994); Joseph Rotblat, ed., *World citizenship: allegiance to humanity* (London: Macmillan, 1997).

human rights. In South Africa, the most positive impact of globalizing forces has been to promote the demise of apartheid.

Negative effects of globalization include widening economic disparities between rich and poor (within and between nations), and increases in both absolute and relative poverty. At the beginning of the twentieth century the wealthiest 20 per cent of the world's population were 9 times richer than the poorest 20 per cent. This ratio has grown progressively to 30 times by 1960, 60 times by 1990 and to over 80 times by 1997. World debt grew from $0.5 trillion in 1980 to $1.9 trillion in 1994 and $2.2 trillion in 1997. The 'debt trade' (and the way in which this has been created and its relationship to the arms trade) has been a major factor in perpetuating and intensifying poverty and ill-health.[3] Most countries that were required by the World Bank to pursue structural adjustment programmes are in greater debt than ever before. Third World debt, although accounting for a small proportion of total world debt, has reached obscene and indeed unpayable levels in relation to these countries' income.[4]

The development of a complex web of material, institutional and ideological forces, and the power of massive multinational corporations in a globalizing world, have had profound implications for the accumulation of capital and for the way in which resources are controlled. In 1970, 70 per cent of all money that changed hands on a daily basis was payment for work, while speculative financial transactions accounted for 30 per cent. By 1997 these proportions had changed to 5 per cent and 95 per cent respectively. Such a striking shift in the distribution of money arguably reflects devaluation of the lives and work of most people in the world, and has particularly serious implications in South Africa, where the unemployment rate is almost 40 per cent.

The influence of the shift in the locus of economic power from the nation-state to global corporations alters the balance of power in the world, effectively blurring boundaries between states, and between foreign and domestic policies—in the process undermining small states' control over their own economies, and threatening their ability to provide for their citizens. Economic disparities have become so marked and their adverse effects so apparent that a very significant degree of incompatibility has arisen between neo-liberal economic policies and the goals of democracy.[5] This too has important implications for South Africa,

[3] Ruth Leger Sivard, *World military and social expenditures 1996* (Washington DC: World Priorities, 1996); B. S. Levy and V. W. Sidel, eds, *War and public health* (New York: Oxford University Press, 1997); Susan George, *A fate worse than debt* (London: Penguin, 1988).

[4] Ann Pettifor, *Debt, the most potent form of slavery* (London: Christian Aid Society, 1996); *Kicking the habit: finding a lasting solution to addictive lending and borrowing—and its corrupting side effects* (London: Jubilee 2000 Coalition, 2000).

[5] Gray, *False dawn*; Stephen Gill, 'Globalization, democracy and the international financial institutions', paper presented to seminar on 'World Bank, structural adjustment and Nordic visions: welfare and development cooperation', session 3, Helsinki, 27 March 1998; Stephen Gill, 'The constitution of global capitalism', paper presented to International Studies Association Annual Convention, Los Angeles, 15 March 2000; Barry Gills and Joel Rocamora, 'Low-intensity democracy', *Third World Quarterly* 13: 3, 1992, pp. 501–23; Peter Wilkin, 'New myths for the South: globalization and the conflict between private power and freedom', *Third World Quarterly* 17: 2, 1996, pp. 22–38.

now freed of its apartheid legislation but challenged to cope with the power of the global economy while struggling to become a social democracy.

In addition to progressive widening of the economic divide between nations, and growing external control over the economies of small countries through the 'debt trade' and increasingly global markets, other powerful forces are creating new patterns of inclusion and exclusion. Evidence is accumulating that alongside the more public aspects of globalization a large (but little discussed) illicit global economy has developed, comprising an uncontrolled arms trade, money laundering, an illicit drugs trade (now an industry worth over $500 billion annually), massive migration and smuggling of people, trafficking in endangered species, toxic waste dumping, prostitution, and unprecedented levels of sexual exploitation and child labour.[6] Such developments, increasingly affecting South Africa, breed crime and violence, especially under conditions of high unemployment.

Globalization and the emergence of new infectious diseases

Life is characterized by symbiotic and parasitic relationships between microbes and humans. Evolutionary changes and the impact of human behaviour on the environment have contributed to changes in these relationships and to imbalances favouring sporadic plagues. The latter half of the twentieth century has been characterized by more striking changes than ever before: a doubling of the world's population from 3 billion to 6 billion; changes in the global economy resulting in rapidly widening economic disparities, with billions of people now living under dehumanizing conditions of poverty and squalor; new patterns of war and ethnic conflict, with consequent displacement and migration of millions of people; rapid travel and new forms of communication; and widespread ecological damage—all of which promote new ecological niches that alter the balance between microbes and humans.

It is against this background that more than 25 new infectious diseases have emerged in the past 27 years to afflict humankind. These include Legionnaire's disease, Lyme disease, various forms of encephalitis, bovine spongiform encephalopathy, Hantaan virus disease, Ebola fever and other haemorrhagic diseases, new forms of E. Coli and Vibrio cholera—and, the most threatening of all, HIV/AIDS. In addition, many other infectious diseases that had become localized, limited or controlled have recrudesced with serious adverse implications for all: for example, measles and multi-drug-resistant tuberculosis and malaria.[7]

[6] H. Richard Friman and Peter Andreas, eds, *Illicit global economy and state power* (New York: Rowman & Littlefield, 1999).

[7] *World Health Report 1996* (Geneva: World Health Organization, 1996); Laurie Garrett, *The collapse of public health* (New York: Hyperion, 2000).

Interpretations of globalization's impact

The impact of globalization during recent decades and its implications for the future have generated widely varied and intensely debated responses. These range from unrealistic optimism to profoundly sceptical and pessimistic interpretations of the trajectory of economic history, with more cautious perspectives between these extremes.

David Mercer (a 'futurologist') views the current pains being caused by globalization as temporary, and writes with considerable optimism about the benefits that he believes will flow from the process. These include progressive narrowing of economic gaps, reduction in ethnic conflict, the rise of women as managers, colonization of outer space, increasing longevity, technologically driven changes in how we live, empowerment of individuals leading to the breakdown of groups, weakening of the nation-state, and the emergence of many economically and politically empowered individuals in an enriched Third World that will join the 'club of developed nations ... within our life time'. His predictions are based on research drawing predominantly on the opinions of the wealthy, and on the central assumption, for which no evidence is provided, that 'the future of humanity is in general no longer constrained by significant shortages of resources'.[8]

This latter assumption flies in the face of many scholarly works on ecological degradation that provide more sober analyses of the impact of globalization.[9] Mercer's optimistic view also contrasts with the analyses of those who view economic globalization with profound misgivings and fear that global *laissez-faire* has become a threat to peace among states as the lives of many people are disrupted and states struggle for control over the earth's dwindling resources.[10] For example, the new alignment of forces (with concealed locus of power) contributing to globalization, as described above, is very different from the alternative world orders that Richard Falk and others have proposed as normative projects that could promote peace, economic well-being, social justice and environmental sustainability. Falk also expresses concern that there is 'widespread reluctance to give academic credibility to those forms of enquiry that are dedicated to preferred futures for the organisation of political life on the planet ... and that the humane or compassionate state is being phased out'.[11] The profoundly adverse effects of globalization associated with dismantling the social reforms of the postwar years have been eloquently described by Gary Teeple,[12]

[8] David Mercer, *Future revolutions: unravelling the uncertainties of life and work in the 21st century* (London: Orion Business Books, 1998).

[9] Anthony J. McMichael, *Planetary overload: global environmental change and the health of the human species* (Cambridge: Cambridge University Press, 1993); *Health and environment in sustainable development: five years after the Earth Summit* (Geneva: World Health Organization, 1997); Herman E. Daly, 'The perils of free trade', *Scientific American*, Nov. 1993, pp. 24–9.

[10] Barnet and Cavanagh, *Global dreams*; Teeple, *Globalisation and the decline of social reform*; Cavanagh et al., eds, *Beyond Bretton Woods*; Gray, *False dawn*; Gill, 'Globalization, democracy and the international financial institutions'.

[11] Richard Falk, 'State of siege: will globalization win out?', *International Affairs* 53: 1, 1997, pp. 123–36.

[12] Teeple, *Globalization and the decline of social reform*.

while the historical sweep within which such changes have occurred has been portrayed by Immanuel Wallerstein in his description of the social transformation of the world.[13]

Tensions in interpreting the effects of globalization are reflected in the controversy over the significance of the public demonstrations against the World Trade Organization (in Seattle in November 1999), the International Monetary Fund and the World Bank (in Washington and Prague, June and September 2000), and in the concern about the potentially deleterious effects of the WTO's aspirations to control health care and education. The sympathy for such protests of Joseph Stiglitz, former chief economist at the World Bank, speaks volumes.[14]

However, utopian and doomsday perspectives on globalization are separated by the views of those who recognize the benefits of progress but also acknowledge the dangers and harms of untrammelled capitalism. For example, Robert Heilbroner expresses optimism that capitalism with a 'human face' can emerge, although he notes first, that 'anarchic global markets destroy old capitalisms and spawn new ones, while subjecting all to increasing instability ... very obviously benefiting some in the short term, but with no potential long-term winners (... one of the many tragedies of the 20th century ... in which a hubristic ideology runs aground on enduring human needs that it has failed to comprehend),' and second, that 'a range of capitalisms is emerging with little resemblance to the western model—and without necessarily promoting the universal spread of western liberal democracy.'[15] Others have suggested that a 'global new deal', using the example of the 'New Deal' introduced in the United States in the 1930s to ameliorate the adverse effects of rampant capitalism, is what is needed to achieve economic growth, social stability and a sustainable environment in the twenty-first century.[16]

The issue is not one simply of support for or opposition to globalization. Globalization cannot be avoided. It is an integral aspect of a world in which the clock cannot be turned back on advances in technology, communication, production and transport. The distinction that needs to be made is between neo-liberal globalization and social democratic globalization. On the one hand, pragmatic neo-liberals accept the inexorability and, usually, the desirability of global free markets. They seek merely to mitigate their worst effects, but without challenging the interests of the rich and corporate capital. On the other hand, social democrats champion the building of integrated but socially embedded

[13] Immanuel Wallerstein, *The end of the world as we know it: social science for the 21st century* (Minneapolis: University of Minnesota Press, 1999).

[14] 'After Seattle', *The Economist*, 11 Dec. 1999, pp. 17–19; *Time*, 27 April 2000, pp. 18–22; Gill Walt, 'Globalization of international health', *Lancet*, 351, 1998, pp. 434–7; D. Price, A. M. Pollock and J. Shaoul, 'How the World Trade Organisation is shaping domestic policies in health care', *Lancet*, 354, 1999, pp. 1889–92; Joseph Stiglitz, 'What I learned at the world economic crisis: the insider', *New Republic*, 17 April 2000.

[15] Robert Heilbroner, *21st century capitalism* (New York: Norton, 1993).

[16] Richard J. Barnet and John Cavanagh, 'A global new deal', in Cavanagh et al., eds, *Beyond Bretton Woods*, pp. 175–87.

markets for goods, capital, technology and skills. They believe that the structures and inequalities of capitalism require democratic reform, including a redistribution of income and power from rich to poor. A social democratic pattern of globalization is considered to require two types of enforceable international agreements: one set to regulate international competition among firms and states, so as to yield socially and environmentally desirable outcomes; and another set to redistribute some of the economic gains from globalization towards those who are vulnerable and most in need.[17]

The impact of globalization on South Africa's transition

Globalization in its broadest sense has shaped South Africa almost throughout the history of the state, and its recent manifestations have had striking effects on the transition process. The impact of liberal internationalism, and the spread of democracy and human rights, clearly played an important role in achieving the shift in local mind-sets required for the transition. However, recognition of the power of neo-liberal market polices, and of the impracticability of attempting to contest them, subsequently resulted in a tension between the rather radical redistributive strategies embodied in the Reconstruction and Development Programme (RDP) planned by the African National Congress (ANC) when it was a government in waiting, and the macroeconomic policy of the new government, promulgated under the banner of Growth, Employment and Redistribution (GEAR), faced with the necessity of dealing with a global corporatist and consumerist society in which the power of the market-oriented economy predominates.[18]

The short-term outcome of this tension has been a self-inflicted macro-economic policy whose effects resemble the outcome of the structural adjustment programmes imposed on other countries by the World Bank. The modest success of this policy, designed to ensure that government expenditure does not exceed income and that debt can be reduced, or at least prevented from increasing, is reflected in the reversal of the negative economic growth rate that characterized the last 10–15 years of the apartheid regime to positive annual growth of 1–2 per cent. This is not as large an improvement as had been hoped for. Moreover, the promotion of, and faith in, the neo-liberal economic strategy needs to be seen in the context of the employment figures: rather than leading to job creation, this strategy has seen more than 500,000 jobs lost since 1994—and in a society only 3 per cent of whose 40 million members fall into the socio-economic class of entrepreneurs, managers and executives, and as few as 12 per cent are skilled professionals and technicians, while almost 40 per cent are semi-skilled workers and over 45 per cent are unskilled peasants or

[17] Richard Sandbrook, *Closing the circle: democratisation and development in South Africa* (London: Zed, 2000).
[18] Adam Habib and Vishnu Padayachee, 'Economic policy and power relations in South Africa's transition to democracy', *World Development* 28, 2000, pp. 245–63; Hein Marais, *South Africa, limits to change: the political economy of transition* (London: Zed, 1998).

unemployed. Other short-term adverse effects include much less building of houses than is needed or was promised; the creation of an economic black elite seemingly as insensitive to the poverty of the masses as white elites; growing disparities in access to health care and education; cooption into arms trading to generate resources for the nation; and escalation in crime. Whether these effects will be temporary, beyond which a better future lies ahead for all, including the oppressed and the poor, or whether they contain the seeds of civil unrest based on economic rather than political disparities, remain intensely debated issues.[19]

It has been argued that the economic challenges currently facing South Africa cannot be understood or dealt with by focusing merely on technical solutions to the economics of transition. Attention is drawn to the deeper roots of South Africa's economic malaise, to the central role of what has been called the 'minerals–energy complex' in the nation's economy over most of the twentieth century and to the military–industrial complex as a component of a complex system of accumulation, both of which have exercised a malign influence on the pattern of industrialization. This analysis underpins a more nuanced understanding of the interlinked roles of the state and the market in the achievement of development, and supports the recommendations of the Macroeconomic Research Group (MERG) for a state programme of public expenditure to create social and economic infrastructure as part of the strategy to provide for basic needs.[20]

Health care reform in South Africa and its implications for HIV/AIDS

During the apartheid era intense criticism, local and international, was focused on the wide disparities in health and access to health care in South Africa.[21] Determination to change this was a significant feature of the ambitious health and welfare policies outlined in the RDP of the new government. However, the limited extent of economic recovery in the succeeding six years, accompanied by a maldistribution of new wealth, has generally thwarted plans to improve health care. More specifically, it has been difficult to develop effective ways of dealing with an HIV/AIDS epidemic that is powerfully influenced by the complex interaction of individual, cultural, social and economic forces in southern Africa, a region adversely affected by decades of both 'low-intensity democracy' and low-intensity war/conflict since the achievement of independence in the 1960s, and an even longer history of disrupted development—

[19] Habib and Padayachee, 'Economic policy and power relations'; Adam and Moodley, *The negotiated revolution*; Heribert Adam, Frederick van Zyl Slabbert and Kogila Moodley, *Comrades in business* (Cape Town: Tafelberg, 1997).

[20] Ben Fine and Zavareh Rustomjee, *The political economy of South Africa: from minerals–energy complex to industrialisation* (Johannesburg: Witwatersrand University Press, 1996).

[21] Solomon R. Benatar, 'Medicine and health care in South Africa', *New England Journal of Medicine* 315, 1986, pp. 527–32; Solomon R. Benatar, 'A unitary health service for South Africa', *South African Medical Journal* 77, 1990, pp. 441–7.

knowledge of which is essential in understanding the complex social epidemiology of HIV/AIDS.[22]

Despite the lack of new resources, massive redistribution of public health expenditure is being undertaken, with striking effects on the structure and function of the public health system. Of the government budget (for the year 2000) of R200 billion (US$26.7 billion at an exchange rate of R7.5=$1), 20 per cent ($5.3 billion) is allocated for debt servicing, 20 per cent for education and 10 per cent ($2.7 billion) for health.[23] The annual public health budget is used to provide primary, secondary and tertiary level health care for the 80 per cent of the population (32 million people) who do not have private health insurance and who are served by 40 per cent of the nation's doctors. The public health budget also provides the major resource for all medical, nursing, dental and allied health professional education in the country. Even excluding the 20 per cent of the population who have private insurance and are cared for by the 60 per cent of the country's doctors who work full-time in the private sector (private patients also benefit from medical education and tertiary services in public hospitals), this implies an annual per capita expenditure on health care of no more than R625 (less than $85) per person—as compared with $4,000 in the United States.[24] At this level of health expenditure it is understandable why treatment of HIV infection for the many infected people in the country (even at a cost as low as $50 per patient per month) is unaffordable, and why there is hesitation to embark on a national programme of any kind that focuses excessively on drug treatments.

Clearly, if the debt burden could be reduced considerable resources would be released for potential expenditure on social services. It should also be noted that the restructuring of the health care system, with the goal of developing long-neglected primary health care services, is being achieved by radically downsizing the modern tertiary medical services provided largely to the poor in South African academic institutions. Furthermore, medical graduates are now required to do community service for a year following internship before their degree is registrable. New health legislation is thus resulting in profound

[22] Douglas Webb, *HIV and AIDS in South Africa* (London: Pluto, 1992); Tony Barnett and Piers Blaikie, eds, *AIDS in Africa: its present and future impact* (London: Belhaven, 1992); Douglas Webb, 'The sexual and economic politics of (re)integration: HIV/AIDS and the question of stability in southern Africa', in David Simon, ed., *South Africa in southern Africa: reconfiguring the region* (Cape Town: David Philip, 1998), pp. 222–39.

[23] South Africa's total debt burden (1999) is in the region of R300 billion (US$50 billion, 57% of GDP), of which R100 billion is foreign debt for which the Reserve Bank is responsible. R4 billion could provide housing for 200,000 families; R0.4 billion could provide textbooks for all the country's schools.

[24] Although South Africa is a middle-income country with a per capita GNP of about one-tenth that of high-income countries, comparison is made with the United States (rather than with other countries in southern African with per capita GNPs of less than one-tenth that of South Africa) because this is the model most closely followed by South Africa's highly privatized health service. The wide disparities seen in South Africa are also evident in South America. The suicide of the prominent Argentinian cardiac surgeon, Rene Favalloro, because of the impact of globalization on his prestigious cardiothoracic medical centre, illustrates the impact of globalization on health care services in middle-income countries striving to provide sophisticated medical treatments for poor patients. See *Washington Post*, 25 Aug. 2000, p. A101.

structural changes in the public health system. While such changes are necessary under conditions of severe resource constraints to improve access to basic primary health care, many of the newly built primary health care clinics are not yet functioning optimally. Indeed, as a result of the pace and manner in which cutbacks and changes are being made, existing public health services are becoming increasingly dysfunctional. It is arguable that in the short term little has been achieved, while much has been lost. It is to be hoped that this is a temporary phenomenon; possibly it is a price that has to be paid during the transition period for moving the focus from modern, technologically and hospital-based medicine to basic primary care in rural areas in order to secure a more balanced public health care system in the future.

However, other forces are at work entrenching intolerable long-term disparities. For example, the abovementioned changes to the public system, combined with continued growth of private health care, actively promoted during the apartheid era (as in the United States, in contrast to the European model of universal access within a social democracy), are resulting in the conversion of racial apartheid into economic apartheid in health care.[25] As noted above, two-thirds of the country's doctors currently work exclusively or almost exclusively in the private sector, caring for about 20 per cent of the population (both whites and blacks) who have health insurance. Such private medical care consumes two-thirds of the 8.5 per cent of GNP spent on health in the country. Those with health insurance retain access to most of what modern medicine can offer—but their contributions to health insurance are escalating rapidly, and more restrictions and exclusions are being built in than ever before. Reform of the public health system and the problems facing a bloated private sector thus have both immediate and long-term implications for public health issues such as HIV/AIDS and tertiary health care for the poor, and for the academic institutions necessary for educating the next generation of health care professionals—especially postgraduates.

Dealing with the HIV/AIDS epidemic in poor countries: the limited role for drugs

Africa has the highest burden of HIV/AIDS in the world. It is estimated that four million people were newly infected with HIV in Africa in 1998. In 16 countries one-tenth of adults aged between 15 and 49 are infected. Seven countries, including Zambia, have HIV prevalence of almost 20 per cent. There are 500,000 AIDS orphans in Zambia and an estimated 10 million across Africa. In 1998, 200,000 people died in wars in Africa; in the same year, over 2 million died of AIDS. Uganda's government was the first to recognize the danger of HIV to national development, and through a broad-based approach has

[25] Solomon R. Benatar, 'Health care reform in the new South Africa', *New England Journal of Medicine* 336, pp. 891–5, 1997; H. C. J. Van Rensburg, 'Health and health care in South Africa in transition: a macro perspective', *Acta Academica* 31, 1999, pp. 1–26.

managed to reduce its estimated prevalence rate from 14 per cent in the early 1990s to about 8 per cent in 1998.[26]

The rapid spread of HIV infection in South Africa, as revealed by anonymous testing of pregnant women during the 1990s (an increase in overall prevalence from 0.7 per cent in 1990 to 22.8 per cent in 1998), has resulted in over 3.5 million persons (almost 10 per cent of the population) being HIV positive and as many as 200 HIV positive children being born in the country each day, with up to 46 per cent of positive mothers passing the virus on to their children. In 1998 the frequency of HIV positivity in South Africa in pregnant women attending public health service ante-natal clinics ranged from 5.2 per cent in the Western Cape to almost 32.5 per cent in Kwa-Zulu Natal.[27] It is estimated that 65 per cent of new infections occur between the ages of 15 and 25 years.

The social and economic implications of HIV/AIDS were foreseen many years ago, but are only now becoming widely appreciated. For example, it has been estimated that the number of employees lost to AIDS over the next ten years in South Africa could be the equivalent of about 40–50 per cent of the current workforce, and that by 2005 there will be about 800,000 orphans under the age of 15 years.[28] The loss of human labour power and the increased work required to care for AIDS sufferers will profoundly affect the lives and well-being of all in South Africa. Adverse effects on the economy will affect all aspects of development—income; access to food and basic living requirements; interpersonal, class and gender relationships; government credibility in caring for its citizens and in upholding human rights. In brief, HIV/AIDS is resulting in medical and social disasters in Africa.[29]

Clearly, scientific progress and the delivery of modern medical care make major contributions to dealing with disease, as illustrated by the development of effective anti-retroviral drugs for the treatment of AIDS and their impact in wealthy countries. However, the cost of medical treatment needs always to be considered in relation to the availability of resources. What is reasonably priced in some countries may be too expensive in others, and therefore impossible to implement—despite being very cost-effective. For example, in Uganda, a country with an annual per capita income of $310 that spends 40 per cent of annual government income on debt servicing (much more than on education and health combined), and with annual public health expenditure of less than US$5 per capita, it is clear that unless the country benefits from the debt relief so actively championed by the Jubilee 2000 campaign,[30] even the cheapest and most cost-effective treatments for HIV/AIDS cannot be offered to more than a small proportion of patients.

[26] *Report on the global HIV/AIDS epidemic* (Geneva: UNAIDS, 2000).
[27] *South Africa Health Review 1999* (Durban: Health Systems Trust South Africa, 1999).
[28] *The impending catastrophe: a resource book on the emerging HIV/AIDS epidemic in South Africa* (Love Life with support from the Henry J. Kaiser Family Foundation, 2000). www.lovelife.org.za
[29] Barnett and Blaikie, *Aids in Africa*.
[30] Jubilee 2000, *Kicking the habit*.

It surprises many that, despite the considerable attention given to HIV/AIDS, so little has been achieved in slowing the pace of the pandemic. Such surprise reflects failure to consider the nature of the disease, how it arose, the factors associated with its propagation and the limited role of medicine in controlling a pandemic with such deep roots in social structures and human behaviour. Extreme poverty, subhuman living conditions, lack of access to basic education, poor sanitary and living conditions, dysfunctional families, lack of recreational facilities, sexual freedom and high crime rates are endemic in Africa. All are fuelled by the powerful forces that have been promoting global disparities for many generations.

Over the last 20 years the World Bank and the IMF have held the balance of power in formulating global health policy. In the exercise of this power they have encouraged liberalization of economies, cut subsidies from basic foods, shifted agricultural policy to promote export crops to the detriment of home-grown food production—all resulting in devastating malnutrition and starvation that have caused billions to suffer, especially in Africa. It is an indictment of the IMF and World Bank's structural adjustment programmes that they reduce government expenditure on health care, education and other social services, and encourage privatization, even within health care. The availability of condoms, STD treatments, anti-tuberculosis therapy and treatments for co-infections of HIV is subject to user charges introduced and still encouraged by the World Bank in many African countries. The whole public health agenda (information surveillance, epidemiology, research and behavioural surveillance) has thus been reduced to a skeleton. Structural adjustment programmes, debt repayments, cuts in aid budgets (especially by the United States), discrimination against African trade, increasing malnutrition and the Cold War activities of the great powers have all played a significant part in fanning the AIDS pandemic. Illness and death from AIDS in a family results in loss of breadwinners, substantial funeral and mourning costs, and the removal of children from school to increase household income.[31]

It is a sad reflection on organizations that promote public health that these adverse forces are not adequately acknowledged or discussed. HIV/AIDS cannot be dealt with unless these underlying conditions are gradually reversed. Recognition of the adverse effects of overt racial apartheid in South Africa, but not of the adverse effects of covert economic apartheid at a global level, regrettably reflects a form of 'selective moral blindness'. Moreover, it is not necessary to go beyond considerations of the rational long-term interest of the world's privileged people to grasp this.[32] Unless the conditions that promote such ecological niches are addressed, other new diseases will in all probability emerge in the future, with potentially devastating effects worldwide. An appreciation of this prospect led President Clinton to declare HIV/AIDS a security threat to the industrialized world. In 1999 the Commonwealth Heads

[31] Shailen Nandy, Robert Scott, Dorothy E. Logie and Solomon R. Benatar, 'Realistic priorities for AIDS control', *Lancet* 356, 2000, pp. 1525–6.

[32] Vitorio Hosle, 'The third world as a philosophical problem', *Social Research* 59, 1992, pp. 227–62.

of Government Meeting declared HIV/AIDS a global emergency. The importance of this insight lies in understanding that more is needed than the mere development of 'drugs as weapons' to combat the pandemic. Acknowledgement of and attention to both the proximate and ultimate causes of plagues are essential.[33]

Education about safe sex and about the use of condoms is an important aspect of the thrust against HIV/AIDS, but is not remotely sufficient to overcome deeply entrenched suspicion of such advice, which interferes with procreation and goes against centuries of socially accepted and psychologically driven sexual practices in other cultures. Failure to recognize the pervasive social, economic, behavioural and political aspects of HIV/AIDS—in terms of both its origins and its control—spells defeat for efforts to combat the infection before they have started. The complexity of the scientific endeavour required to understand the pathobiology of the disease and to develop appropriate treatment is more than matched by the complexity of understanding and dealing with the social underpinnings of HIV/AIDS and other plagues, locally and globally. The example of the anti-smoking campaign illustrates the difficulty of achieving behavioural change even for acquired habits with only mild addictive effects. The greater challenge of achieving change in relation to such basic drives and needs as sexual relations should not be underestimated—especially when interacting with those whose social and sexual mores differ from, and who may be suspicious of the underlying motives of, 'educators'. The programme of action against HIV/AIDS in South Africa includes culturally sensitive education, information and behaviour change strategies, but the impact of these will take many years to become manifest. It will also need to be amplified by definitive and convincing political and cultural action to dispel the regrettable denial that surrounds HIV/AIDS, and by significant social and economic progress.

The controversy over HIV transmission prevention programmes

Over and above the development of drugs for treating HIV/AIDS, one of the most important advances in the medical management of the pandemic has been the ability to reduce transmission of HIV infection from mother to child.[34] The poor outlook for infants infected during childbirth or infancy—91 per cent mortality by the age of eight years—provides good reason to promote the widespread introduction of effective preventive measures.[35]

[33] William H. McNeil, *Plagues and peoples* (New York: Anchor/Doubleday, 1998); Arno Karlen, *Plague's progress: a social history of man and disease* (London: Gollancz, 1996); Kelly Lee and Anthony B. Zwi, 'A global political economy approach to AIDS: ideology, interests and implications', *New Political Economy* 1, 1996, pp. 355–73; T. J. John, 'Can plagues be predicted, prevented?', *Lancet* 354, Supplement No. IV, 1999, p. 54.

[34] Solomon R. Benatar, 'Preventing HIV transmission: the controversy in South Africa', *Journal of Women's Health and Law* 1:3, 2000, pp. 313–18.

[35] N. Soderlund, K. Zwi, A. Kinghorn and G. Gray, 'Prevention of vertical transmission of HIV: analysis of cost effectiveness of options available in South Africa', *British Medical Journal* 318, 1999, pp. 1650–6.

The expense of the first successful method (ACTG076) for preventing vertical transmission has led to the search for cheaper regimens that could be applied cost-effectively in middle- and low-income countries. It has been estimated from mathematical simulation models of various preventive methods (drugs or formula feeding alone or in combination) that it would cost R100 million annually ($13.3 million—0.5 per cent of South Africa's annual public health budget) to set up and run a programme to provide the CDC–Thai (Center for Disease Control-Thailand) regimen for HIV transmission prevention in South Africa.[36] While this expenditure could save money that might otherwise be spent in the future on HIV positive children, the resources required in order to embark on this life-saving and future cost-saving exercise would have to be found immediately. Money could be borrowed for the programme, if the money saved the following year could be used to repay the loan. However, it is well known that the expanding of health care services seldom results in money being saved. In the absence of new sources of funding, and with strict adherence to the nation's macroeconomic policies, the only alternative would be to close some existing services. Given that significant reductions are already being made in tertiary facilities in the public sector in order to shift resources towards primary health care, further diversion of resources would have to take place either by continuing to withdraw them from currently provided tertiary services, with all the implications this has for health care (especially for the poor) and health care education in the country, or by delaying the development of the highly desired primary care services—both difficult decisions for politicians.

Before implementing potentially expensive and complex intervention programmes, with consequent opportunity costs for other aspects of desired health care, it is also necessary to consider whether mathematical modelling is supported by empirical evidence. Pilot studies have been set up in South Africa to seek such evidence. If these studies were to confirm the results obtained from modelling, it would then also be necessary to determine whether the success achieved within an experimental setting could be achieved within a comprehensive national programme. While it should be acknowledged from experience with other diseases that it is far from clear that such a programme can work as effectively in the field—especially in countries where breast-feeding is the rule and cannot easily be discouraged or substituted—as in experimental conditions, it is regrettable (some would say even criminal) that the South African government has interrupted the process of progressively acquiring such knowledge by terminating pilot studies. It is gratifying that the continuation of some such studies in the Western Cape may provide convincing evidence of their potential impact.

Follow-up studies of intervention programmes should also generate additional data to provide continuing support for treatment that could reduce HIV transmission, including the long-term results of such programmes within specific settings. For example, it is important to determine what happens to children

[36] Ibid.

born of mothers who are HIV positive; to document whether the short-term benefits of reduced transmission are associated with long-term survival, or whether poverty, orphanhood and lack of social support services lead to death from other preventable causes not adequately dealt with in our society; and to determine what could be done to ameliorate these deficiencies. The impact of stopping breast-feeding, the extent of drug side-effects and inadequacies in operationalizing preventive programmes also need to be evaluated and addressed.

Valid obstacles to the immediate introduction of a comprehensive HIV transmission prevention programme thus include constraints on resources and their maldistribution; an inadequate health care infrastructure in the country to ensure widespread success of a programme to reduce vertical transmission; inability to stop breast-feeding as part of a prevention programme; concern about potential adverse effects of retroviral drug therapy in a poor and nutritionally vulnerable population; paucity of knowledge of the long-term implications of such a programme; and concern about the possibility of promoting drug resistance.

Scepticism about a predominantly 'high-technology' approach to HIV/AIDS

In addition to many clearly valid obstacles to dealing with the HIV/AIDS pandemic, there are other less obvious pressures that we can presume are affecting those in the South African government who may be sceptical of an approach to HIV/AIDS in which an intense focus is placed on drug treatments. First, there is concern about the motives of the drug industry in poor countries, especially against the background of vehement interference by powerful nations and multinational drug companies in attempts by poor countries to import generic drugs to lower excessively high drug costs. Even the recent decision by drug companies radically to reduce the price of AIDS drugs in developing countries does not necessarily solve the problem. The conditions linked to this decision include provision of a guaranteed counselling and monitoring delivery infrastructure that will be difficult to meet.[37]

Some insight into the sociology of the drug industry is also helpful in understanding scepticism about the motives of the pharmaceutical companies. Drugs account for a significant and growing proportion of health expenditure in all countries—ranging from 6.9 per cent in the UK to 8.2 per cent in the public sector in South Africa and 10.5 per cent in Germany, up to 14 per cent in the United States.[38] Expenditure on drugs is the fastest-growing component of health expenditure in the US market-dominated practice of medicine. The US drug market accounts for 40 per cent of the industry's sales and 60 per cent of its

[37] Barton Gillman, 'The belated response to AIDS in Africa', *Washington Post*, 5 July 2000, p. A01; Barton Gillman, 'An unequal calculus of life and death', *Washington Post*, 27 Dec. 2000, p. A01; Barton Gillman, 'A turning point that left millions behind', *Washington Post*, 28 Dec. 2000, p. A01.

[38] John Iglehart, 'American health services: expenditures', *New England Journal of Medicine*, 340, 1999, pp. 70–6.

profits. The size and distribution of the major pharmaceutical houses illustrate the power structure of the drug industry. Nine US pharmaceutical houses dominate in the first division by market capitalization, with market values ranging from $198 billion to $59.3 billion. Three companies based in Europe feature in the first division, with market values of between $123 billion and $115 billion. Companies in Europe dominate the second division, with market values of just over $30 billion each. It has been estimated that by 2002 only three of the world's 25 top-selling drugs will be made in Europe, while US companies will account for 20.[39] In 1992 approximately 44 per cent of global expenditure on health research and development was provided by the pharmaceutical industry.[40]

Without detracting from the major benefits that have flowed from intensive drug development activities, or from some of the recent renewed attention to tropical diseases, it is necessary to draw attention to the observation by the World Health Organization that 'the multinational pharmaceutical industry operates like any other industry. It makes investment decisions to maximise the present value of future returns from the money invested. As such, it responds to economic demands rather than to statements on social or human needs.'[41] It is also necessary to reflect on criticisms of the role of the pharmaceutical industry in world health and in particular its business in the Third World,[42] where up to 50 per cent of people do not have access to even the most basic drugs. The lack of pharmaceutical interest in infections such as malaria, tuberculosis and other diseases that cause considerable mortality and morbidity is a reflection of the attitudes expressed in the regrettable statement that two-thirds of the world's population are 'superfluous from the perspective of the market. By and large we do not need what they have; they can't buy what we sell.'[43]

Second, many in developing countries are concerned about the extent to which the purely biomedical approach deflects attention from broader considerations affecting health. For example, it is asked whether spending the resources on improving the literacy rate of women and empowering them through education may be a potentially more powerful approach to reducing the HIV/AIDS pandemic. Thus the answer to the question of what is the most effective way of using limited resources to retard the progression of the epidemic in South Africa is not obvious. The current annual per capita GNP in South Africa of approximately US$2,500 is less than one-tenth the per capita income of the United States, and less than the US$4,000 per capita spent each year on health care alone in the United States. It should be noted that 50 per cent of annual global expenditure on health care is spent in the United States—

[39] David Pilling, 'Winning the drugs war', *Financial Times*, 13 April 1999.
[40] *Investing in health research and development: report of the ad hoc committee on health research relating to future intervention options* (Geneva: World Health Organization, 1996).
[41] Ibid.
[42] Andrew Chetley, *A healthy business? World health and the pharmaceutical industry* (London: Zed, 1990).
[43] Nathan Gardels, 'The post-Atlantic capitalist order', *New Perspectives Quarterly*, Spring 1993, pp. 2–3.

which has just 5 per cent of the world's population;[44] and yet, the United States is ranked 24th in overall population health (as judged by disability-adjusted life expectancy), 37th in efficiency of its health care system, and 54th (alongside Fiji) in how fairly the financial burden of health care is distributed.[45] Such wasteful expenditure is both unsustainable and a totally inappropriate model for health care in most other countries—even the wealthy ones.

It is therefore unrealistic to pitch expectations for health care in South Africa (where annual per capita health care expenditure at present is less than $100) at levels remotely similar to those of industrialized countries. Even with reasonable economic growth rates, South Africa's economic status will remain well below that of developed nations for many decades. And yet it should be noted that poorer countries in Africa have taken a more constructive approach to HIV/AIDS and devoted more of their resources to its control than South Africa. A narrow biomedical response to a disease such as HIV/AIDS, focusing on drug treatment of pregnant women, is likely to have a very limited long-term impact.

Of most widespread and valid concern is the South African government's vacillating attitude to the HIV/AIDS pandemic. After wasting millions of dollars on a theatrical performance about AIDS and supporting an untested drug (Virodene) claimed to be the cure,[46] the government provided support for an ambitious vaccine development initiative,[47] and then more recently expressed outmoded ideas about the lack of a causal link between HIV infection and AIDS.[48] Science may not have all the answers to the diseases that afflict humankind; but the failure to appreciate sufficiently both scientific knowledge and the value of the scientific method is a serious disadvantage for a country concerned about the welfare of its citizens and hoping to maximize the benefits it can accrue for them in the modern world.

Against this background of irrational government behaviour, three other points must also be made. First, failure to implement public health policies based on solid epidemiological data is not unique to South Africa. For example, in reviewing the silicone breast implant saga in the United States and the large sums of money spent on diseases not caused by the implants, Angell pointed out that the 'breast implant story illustrates ... how litigation, fear, bias and greed interfere with scientific efforts to answer an important public health question'.[49]

[44] Barry Bloom, 'The future of public health', *Nature* 402, 1999, suppl. 2, C62–4; 'The health of nations', *The Economist*, 24 June 2000, p. 118.

[45] *World health report 2000* (Geneva: World Health Organization, 2000).

[46] Peter Folb, Anton van Gelder and G. E. Swan, 'Virodene—support misguided', *South African Medical Journal* 87, 1997, p. 466.

[47] Michelle R. Galloway, 'Vaccine initiative on track as first funding allocations are made: four projects to receive funding', *AIDS Bulletin* 8: 4, 1999, pp. 10–11.

[48] P. Mankhlana, 'What the president said', *Mail and Guardian*, South Africa 31 March–6 April 2000. p. 39; I. Powell, 'The self-styled Galileo of the modern age—who is Peter Duesberg?', *Mail and Guardian*, 31 March–6 April 2000, p. 31; William Makgoba, 'The perils of pseudoscience', *Science*, 19 May 2000; Edward Rybicki, Ann-lise Williamson, Lynn Morris, 'AIDS dissidents aren't victims—but the people their ideas kill will be', *Nature* 405, 18 May 2000, p. 273.

[49] Marcia Angell, 'Evaluating the risk of breast-implants: the interplay of medical science, the law, and public opinion' (Shattuck Lecture), *New England Journal of Medicine* 334, 1996, pp. 1513–18.

Failure to make the highly rational decision to move towards universal access to health care within a single payer system in the United States is another example of the power of politics over reason. The existence of such problems in a country with an educated population and the intellectual and material resources to provide superb health care makes it possible to understand (while also strongly objecting to) the existence of adverse forces in less sophisticated societies, and the irrationality of President Mbeki's attitude.

Second, commitment to the modern biomedical approach to disease should not eclipse recognition of the fact that the adverse forces contributing to the initiation and perpetuation of the HIV/AIDS pandemic are well beyond the reach of medical solutions, and that excessive confidence should not be placed on the role of drugs alone in reducing the impact of the epidemic. It is appropriate to reflect here on the fact that despite the availability of curative drug therapy for tuberculosis for over 50 years, and at affordable prices—US$1 per year of life saved—this disease not only remains prevalent but also is a growing problem in South Africa and worldwide. With 30 million deaths from tuberculosis in the 1990s, this organism retains its position as the most serious pathogen for humankind. The predicted rise in the number of patients who will suffer from tuberculosis as a result of the HIV-induced reduction in immunity, as well as the emergence of multi-drug-resistant strains, threaten to make the disease potentially untreatable.[50] This example provides insight into the complexity of effectively treating infectious diseases and highlights the powerful influence of social, economic and behavioural forces on the emergence and propagation of both new and old infectious diseases.[51]

Third, South Africa, like many other countries, continues to spend considerable resources on new military equipment. While military expenditure in South Africa decreased from 13.1 per cent of government expenditure in 1989 to 8 per cent in 1994 and to 6.8 per cent in 1995 (4.1 per cent, 2.6 per cent and 2.2 per cent of GDP respectively in these years), the recent allocation of R43 billion (US$5.73 billion) for military equipment has justifiably come under severe criticism. On the other hand, cuts in military expenditure do not automatically result in reallocation to civilian purposes, and a 'relationship between disarmament and development needs to be politically constructed', incorporating new ways of thinking about non-military aspects of security and peaceful development.[52] While military expenditure is also falling globally, further reductions are needed, along with a planned shift in expenditure from security against war towards expenditure that could reduce threats from social disintegration, if we are to move towards safer and more secure societies.

[50] Solomon R. Benatar, 'Prospects for global health: lessons from tuberculosis', *Thorax* 50, 1995, pp. 489–91.

[51] Lee and Zwi, 'A global political economy approach to AIDS'; Solomon R. Benatar, 'Aids in the 21st century', *New England Journal of Medicine* 342, 2000, pp. 515–16; McNeil, *Plagues and peoples*; Karlen, *Plague's progress*.

[52] Peter Batchelor and Susan Willet, *Disarmament and defence industrial adjustment in South Africa* (Oxford: Oxford University Press/SIPRI, 1998); Susan Willet, 'In the wake of war: military transitions in southern Africa', in D. Simon, ed., *South Africa in southern Africa* , pp. 19–33.

Open debate on constructive global means of tackling the HIV/AIDS pandemic will thus require objective evaluation of all data, acknowledgement of the fundamental causes for the emergence of such plagues as HIV/AIDS, and the meeting of minds in search of solutions to complex issues that can be perceived differently. The ethical challenges posed at many levels by HIV research illustrate the complexity of the national and international agendas that need to be addressed, over and above the scientific complexities of producing effective vaccines.[53] It is hoped that in South Africa, a society aspiring to be a participatory democracy, such debate and imaginative collaboration with colleagues internationally can take place to achieve progress in dealing with a pandemic with the gravest effects on individuals and whole populations.

'Economic apartheid' and HIV/AIDS

South Africa is a microcosm of the world. During the era of racial apartheid its abject failure to meet universal aspirations to human dignity created wide disparities in wealth and well-being. Even after the close of that era, however, and well beyond South Africa, racial discrimination, exploitation (although more covert) and widening economic disparities remain striking characteristics of today's world. The term 'global apartheid' was coined to illustrate how similar disparities manifest themselves in many nations—for reasons not quite so overtly related to racial discrimination but with similar adverse effects to those forces operative in South Africa. These disparities, and the radical demographic and sociological changes associated with the effects of postindustrialism, post-modernism and globalization on international migration, racial conflict, ethnic nationalism and health status, have been eloquently explicated.[54] Denial by powerful nations of their role in creating and sustaining such exploitative conditions is as blameworthy as the denial by some African governments of their failure to take appropriate action to curtail the HIV/AIDS epidemic in their countries.

However, it is not only discrimination determined by legal and social legacies that must be overcome, but also—and more importantly—the deeper subjective reality of apartheid within people's hearts. An appalling legacy of such covert racial discrimination still pervades the world, sustained by forces that perpetuate racism at three levels: institutional, personally mediated against individuals, and internalized.[55] The impact of racism on self-esteem and the human dignity we should all enjoy has been described with sensitivity and eloquence by African, African American and other writers whose own experiences have led them to challenge the imperialistic Eurocentric notions of how universal human values should be applied—namely, without appropriate consideration of context. The

[53] Solomon R. Benatar, 'Global issues in HIV research', *Journal of HIV Therapy* 5: 4, 2000, pp. 89–92.
[54] Richmond, *Global apartheid*; Titus Alexander, *Unravelling global apartheid* (Cambridge: Polity, 1996).
[55] Camara P. Jones, 'Levels of racism: a theoretic framework and a gardener's tale', *American Journal of Public Health* 96: 8, 2000, pp. 1212–15.

works of many distinguished authors provide access to both humbling and exhilarating insights into what is required of us all in our lives together in an interdependent world, and of the need for some rewriting and teaching of aspects of history that have hitherto been presented only from a narrow perspective.[56]

We live in a divided world, in South Africa and elsewhere: a world in which the humanity of some has been sustained at the expense of others; a world of exploitation in which ambitious nations have not yet had the courage to acknowledge their own weaknesses and begin to move towards a concept of global citizenship that must surely be as inevitable as the eradication of apartheid. Herein lies the excitement of recent developments in South Africa. This country represents both the world's problems and its potential solutions in microcosm. Recognizing and acknowledging this will add to hope for global progress by restoring faith in the ability of humans to see themselves at the edge of an abyss and to step back, rethink and choose a path to peace and progress.

Universal human rights: the pathway to civilizing progress

It is in vogue today to attempt to address many of the problems outlined above, not least the right to health care for those suffering from HIV/AIDS, through promoting the concept of human rights. A brief review of this approach will reveal its limitations as a single-channel agenda. The concept of human rights, evolving from endeavours to achieve respect for freedom, dignity and equality; the Universal Declaration of Human Rights (UDHR); the subsequent development of international law; and the proliferation of movements advocating and fighting for individual human rights have succeeded in instilling some respect for these values in the people of many nations. Much has been achieved by cutting across complex political, social and economic developments in international relations and setting human rights as a new standard of civilization.[57] Indeed, the birth of the new South Africa owes much to this process. This new inclusive human rights standard, adherence to which is required for full membership of international society, is now advocated as a means to prevent

[56] Chinua Achebe, *Hopes and impediments: selected essays 1965–1987* (Oxford: Heinemann, 1988); Ngugi Wa Thiong'o, *Moving the centre: the struggle for cultural freedoms* (London: James Currey, 1993); James Baldwin, *The price of the ticket*: Collected non-fiction, 1948–1985 (New York: St Martin's, 1985); W. E. B. Du Bois, *The souls of black folk* (New York: Fawcett World Library, 1961); Franz Fanon, *Black skin, white masks* (London: Paladin, 1970); Ali A. Mazrui, *The Africans: a triple heritage* (London: BBC Publications, 1986); Adu A. Boahen, *African perspectives on colonialism* (Baltimore: Johns Hopkins University Press, 1987); Rex Nettleford, *Inward stretch, outward reach; a voice from the Caribbean* (London: Macmillan, 1993; Molefi K. Asante, *Afrocentricity* (Trenton, New Jersey: African World Press, 1988); Toni Morrison, *Playing in the dark: whiteness and the literary imagination* (Cambridge, MA: Harvard University Press, 1992); J. M. Washington, ed., *A testament of hope: the essential workings of Martin Luther King Jr.* (San Francisco: Harper and Row, 1986).

[57] Jack Donnelly, 'Human rights: a new standard of civilization', *International Affairs* 74:1, 1998, pp. 1–24; David R. Penna and Patricia J. Campbell, 'Human rights and culture: beyond universality and relativism', *Third World Quarterly* 19: 1, 1998, pp. 7–27; Richard Falk, 'False universalism and the geopolitics of exclusion: the case of Islam', *Third World Quarterly* 18: 1, 1997, pp. 7–23.

the violation of human rights within states, and to allow intervention where required to protect the rights of the vulnerable and abused. Human rights have indeed become an everyday, (ostensibly) non-partisan aspect of foreign policy.

Civil and political rights are required components of political citizenship of any nation. However, recognition of political citizenship is not sufficient for humans to flourish; for this, recognition of social, economic and cultural rights is also necessary. The claimed universality and indivisibility of human rights reflect the need for observance of both sets of rights in order to achieve respect for the dignity of individuals within a peaceful state. When social citizenship is not accepted, for example in the United States by denying social and economic rights, there is no acknowledged responsibility for providing universal access to health care.[58] Such a narrow approach to human rights has profound implications for access to health care in South Africa and other middle-income countries whose health care policies more closely mimic the American model than those of social democracies. The challenge of achieving global citizenship for all is even more daunting in the face of such resistance from a powerful state to the notion of full social citizenship within its own borders.

Regrettably, insufficient progress has so far been made towards achieving ambitious social goals, and in recent years there seems to be movement away from, rather than towards, a more just world. Reasons for the limited success of the human rights endeavour include the failure of the movement to reach beyond elite circles to capture the imagination of ordinary citizens; the failure of powerful nations to document and acknowledge human rights abuses within their own borders; insincerity in the application of human rights standards in their relationships with foreign powers; and a failure to appreciate that the notion of Western ownership of human rights poses a risk to the success of the human rights movement as a global endeavour.[59]

J. K. Galbraith has warned of the danger of being comfortable with high-minded debate about human rights from positions of contentment and privilege. He views such complacency as reflecting, first, our co-option into false images of beneficence and global progress; second, general unawareness of how high ideals are distorted by the powerful political and economic forces that propagate injustice; and third, the power of psychological processes that allow us to believe

[58] 'My country is now embarked on a massive attack on the poor and on people of colour. In the US Congress, there are serious attempts to destroy the social welfare system . . . to end affirmative action for minorities and women, to deny women's rights to reproductive choice, to slash the funding for health care and public education, to increase taxes for the poor and reduce them for the rich, to reduce food subsidies and heating assistance for the poor and elderly, and even to end the program of free school lunches for low income children. This campaign is driven by a thinly disguised racism.' Jack Geiger, 'The political context of health care: some warnings from the US', in M. A. Seedat, ed., *Health care team: unity in action* (Durban: Westville, 1995), pp. 2–19.

[59] David Reith, 'The precarious triumph of human rights', *New York Times Magazine*, 8 Aug. 1999, pp. 36–41; Michael Ignatieff, 'Human rights: the middle life crisis', *New York Review of Books*, 20 May 1999, pp. 58–62; Tim Dunne and Nicholas J. Wheeler, eds, *Human rights and global politics* (Cambridge: Cambridge University Press, 1999); I. Black, 'Rights for all still remain a dream', *Mail and Guardian*, 11–17 December 1999, p. 31.

in a just world by detaching ourselves from the profound misery of so many.[60] While the extent to which human rights are respected in many countries is regrettably minimal, for example in Rwanda, Bosnia, Chechnya, China, Saudi Arabia—and even in prisons in the industrialized and privileged world,[61] many remain hopeful that the infusion of human rights norms will progressively impact constructively on the lives of many.

South Africa's liberal constitution has established the foundations for the promotion and protection of human rights—a striking advance, given the country's history of serious human rights violations. A Bill of Rights, a Constitutional Court, many statutory human rights institutions (including a Public Protector, a Human Rights Commission, a Commission on Gender Equality and a Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities) embrace the full spectrum of human rights ideals. Creating these institutions has been a great achievement; but much effort by many people and groups over many years will be required to build and sustain a culture of human rights capable of overcoming the legacy of apartheid and the current wave of crime, corruption and fraud in social life.

Globalization and human rights

The impact of globalization on the concept of human rights has considerable implications for South Africa and many other countries. The idea of human rights was shaped in an era in which national sovereignty was respected and indeed was essential to holding states responsible for ensuring the rights of their citizens. Another level of complexity is introduced when there is a need to promote human rights under conditions in which the power of states to deliver the rights expected by their citizens is being diluted by the profoundly adverse effect of globalizing forces on national economies. Economic policies that perpetuate and worsen debt, and that frustrate economic growth in poor countries, serve to create conditions that prevent the achievement of the economic opportunities, job satisfaction, education, access to basic health care and decent living conditions that are essential for human flourishing. It is also important to recognize that globalization, especially since the end of the Cold War, has facilitated the proliferation of an uncontrolled small arms industry that diminishes the extent to which many countries can control internal warfare perpetuated by independent warlords and militant groups.

Other forces further reduce optimism about the role of a universal concept of human rights within a state-centric system. Donnelly, a champion of the human rights approach, has suggested that it can reasonably be doubted whether universal human rights can constitute an effective international morality, given

[60] John K. Galbraith, *The culture of contentment* (Boston, MA: Houghton Mifflin, 1992).

[61] *Human rights for all: the United States of America* (London: Amnesty International, 1989); Anthony Cassese, *Inhuman states: imprisonment, detention and torture in Europe today* (Cambridge: Polity, 1996). Mary Robinson, Chechnya, http://www.unhchr.ch

the degrees of ideological and political diversity that remain in the world. He expresses concern that despite the apparent widespread acceptance of the UDHR, it is not clear that its values have genuine significance for all. It is necessary to acknowledge that there are many world views, and that the West has not worked hard enough to understand the implications of these for making real progress towards a more peaceful world.[62] Others have described how neglect of potential contributions from other cultures to the concept of human rights discourages ownership and weakens the discourse.[63] Attempts by theologians to find the common ground on which all world religions can meet,[64] and approaches to understanding how world views are constructed,[65] offer at least some potential for facilitating processes of peaceful interaction between diverse peoples. The failure of national law to prevent many human rights abuses within wealthy industrialized nations should help us to recognize the even more complex task facing countries like South Africa.

Universal duties to supplement universal rights

Concern has been expressed that in popularizing human rights there has been a failure to emphasize that an essential component of the conceptual logic of rights is a correlative set of duties. Who will meet the duties required to honour rights if members of society see themselves only as holders of rights? As the bearer of rights, each citizen also has the duty to respect the rights of others and to promote conditions conducive to the implementation of rights. In South Africa the quest to achieve the aspirations enshrined in the UDHR will not be successful if promotion of rights is not linked to promotion of civic and other duties. This applies not only within a nation but also between nations: human rights cannot be satisfied in poor countries if rich countries do not honour their duty not to exert economic and military power in ways that undermine the rights of vulnerable others.

There can be some optimism that promotion of duties alongside rights may be facilitated by the Trieste Declaration of Human Duties (1997), which was drafted because:

> Whereas the Declaration of Human Rights represents one of the great advances of the twentieth century, it fails to address Human Duties and Responsibilities as necessary counterparts of these Rights . . . Recognition of and respect for human rights demand the acceptance of specific duties, in order to assure an adequate quality of life for all people and the persistence of a favourable environment for future generations.

[62] Jack Donnelly, *Universal human rights in theory and practice* (Ithaca, NY: Cornell University Press, 1989).
[63] Penna and Campbell, 'Human rights and culture'; Falk, 'False universalism and the geopolitics of exclusion'.
[64] Hans Küng, *Global responsibility: in search of a new world ethic* (New York: Continuum, 1993); Hans Kung, *A global ethics for global politics and economics* (New York: Oxford University Press, 1998).
[65] Ninian Smart, *World views: cross-cultural explorations of human beliefs* (Princeton, NJ: Prentice-Hall, 1995); C. Inglis, *Multiculturalism: new policy responses to diversity*, MOST (Management of Social Transformation) policy paper 4 (Paris: UNESCO, 1996).

The International Council of Human Duties (ICHD), a non-governmental and non-profit-making organization, has among its objectives the promotion of international understanding of the concepts of human duties, and encouraging the adoption by the United Nations of a Universal Declaration of Human Duties with comparable stature to the Universal Declaration of Human Rights.[66] The promotion of human rights and of the duties listed in the Trieste Declaration will be necessary, but not sufficient, for moral renewal and achievement of the harmonious civil society aspired to in post-apartheid South Africa, and indeed for dealing with the HIV/AIDS pandemic. These difficult tasks should also embrace the promotion and acceptance of many everyday duties of good citizenship. These include, among others, respect for the law and public property, and honesty and diligence in the working environment—from parliament through business and industry to everyday service jobs.

Learning from an influential nation

Some insight into whether South Africa's peaceful paradigm shift from exploitation and oppression towards solidarity and cooperation can be emulated more widely may be provided by briefly recalling an analysis of an influential nation's relationship to the world.[67] In his analysis of 'America and the world', Wallerstein expressed the fear that the achievement of greater equality among Americans would require continued exploitation of other regions of the world. Such activities would widen the core–periphery gap and encourage migration from the periphery to the core. Attempts to stem these developments through a 'fortress' approach would, in his view, fail. He also predicted further revolt against Western values that could encourage the possibility of nuclear belligerence from the periphery and set back the clock of progress by 150–200 years. Avoiding this pessimistic scenario would, in his view, be dependent on realizing that the salvation of 'Northern countries' is bound up with the salvation of all humankind—indeed a paradigm shift for the world's greatest power. Whether or not his analysis is entirely correct, or the only explanation of events in the United States and that country's relationship with the world, Wallerstein makes points worth considering regarding the broad geopolitical framework influencing the history of nations, and the potential moral force of the actions of a powerful nation.

Heilbroner, too, warns against ignoring the need for change. In reviewing the capitalist system, affirming that there is no alternative to capitalism in the short run, and considering a range of possible capitalist societies, he cautions that history warns us that modern-day consciousness has been formed in a period that is now moving to a close. He expresses the view that profound change in all

[66] Trieste Declaration of Universal Duties, Trieste University Press, 1997.

[67] Immanuel Wallerstein, 'America and the world: today, yesterday and tomorrow', *Theory and Society* 21, 1992, pp. 1–29.

countries is inevitable, and that in the context of twenty-first-century realities America needs to 'change mightily'.[68]

While the trajectory of history in South Africa and other middle-income countries differs greatly from that of a major world power such as the United States, such countries aspire to similar goals—the achievement of a greater degree of equity for their citizens, as well as economic growth. The big question is how this will be achieved in South Africa, given the enormous economic and social legacy of apartheid[69]—by continuing exploitation of the vulnerable, or through paradigm shifts towards the 'complex interdependence' essential to achieving the long-term rational self-interests of us all? Although South Africa is a developing country, and the economic giants of the world dominate its economy, it nevertheless has the potential to continue exploiting its own citizens and those of poor and weak countries to its north. Similar questions arise in many other countries, for example, Brazil.[70]

It is not only internal economic tensions that face South Africa. There is also a need to face the reality of the current and potential immigrant influx from countries to the north as a result of the massive instability created by poverty, war, famine, floods and HIV/AIDS. It is appropriate to reflect here on the substantial destabilization and economic damage inflicted by the major world powers during the Cold War.[71] Against the background of these internal and external tensions it is apparent that the choice for South Africa, as for the United States, lies between further exploitation of the many by the few—buttressed by the creation of a fortress mentality—and the recognition of a complex form of interdependence requiring a more modest sense of entitlement (and aspiration to less luxurious lifestyles) as well as a willingness to work towards achieving a greater degree of solidarity.

'Development'

Deeper understanding is now being achieved about the meaning of, and the forces behind, the idea of 'development'. Some, by analysing the definition of the term, reviewing its history and seeing its use as a 'Western myth' to change the course of history by promoting a 'world system', have gone so far as to criticize 'development' as a 'collective delusion' that claimed to eliminate

[68] Robert Heilbroner, *21st century capitalism* (New York: Norton, 1993).

[69] H. C. J. Van Rensburg and Solomon R. Benatar, 'The legacy of apartheid', *South African Journal of Sociology* 24, 1993, pp. 99–111; Solomon R. Benatar, 'Transition towards a new South Africa', *South African Medical Journal* 81, 1992, pp. 295–8; H. C. J. Van Rensburg, A. Fourie and E. Pretorius, *Health care in South Africa: structure and dynamics* (Pretoria: Academica Press, 1992); Francis Wilson and Mamphele Ramphele, *Uprooting poverty: the South African challenge* (Cape Town: David Philip, 1989); Mamphele Ramphele, 'Social disintegration in the black community: implications for transformation', in D. Everett and E. Sisulu, eds, *Black youth in crisis* (Johannesburg: Ravan Press, 1992), pp. 10–29; Pamela Reynolds, *Childhood in crossroads* (Cape Town: David Philip, 1989).

[70] 'Brazil: burden of the past, promise of the future', *Daedalus* 129: 2, 2000.

[71] Lee Butler, 'Lessons from the Cold War: a personal view', *Medicine, Conflict and Survival* 14, 1998, pp. 186–96; Richard Falk, 'The terrorist foundations of recent US foreign policy', in A. George, ed., *Western state terrorism* (Cambridge: Polity, 1991), pp. 102–20.

discrimination and exclusion while taking maximum advantage to maintain and reinforce it by extracting human and material resources from vulnerable regions.[72] The value of this radical perspective lies in how much it reveals that refutes the popular view that the poor are solely responsible for their own misery. Others, through impeccable empirical studies that identify successes as well as errors in the quest for development, have provided insights into how deeper understanding of other societies can reveal ways of achieving widespread human development.[73]

A long-term and broader perspective on economic growth and human development is now needed. Investments with an eye to rapid short-term gains are potentially exploitative and have little true development capacity. Investments with a long-range view would reflect acknowledgement of the need to stimulate economic growth and social infrastructure through empowerment of people in ways that could foster energetic, enthusiastic, productive and law-abiding citizenship. Such considerations about the nature of development are essential to dealing with diseases like HIV/AIDS, where the idea of development in health care cannot be limited to mimicking a high-technology, expensive, drug-based approach.

Some conclusions: progress through paradigm shifts

The many and varied paradoxes and contrasts that characterize human life around the world are manifested in South Africa in a unique combination that has focused international attention on this country, both because of its infamous past but more especially because of the implications of its success for the rest of the world. However, there is a formidable complexity in striving to achieve the ambitious goals aspired to in the face of the profound legacy of apartheid,[74] and in the context of powerful globalizing forces. Falk's description of globalization as a predatory process that cannot be changed 'from above', and his advocacy of 'globalization from below' as a means of developing a global civil society capable of modifying globalization,[75] poses even greater challenges for South Africa.

This country's embarkation on a political journey that offers hope for progress into a fruitful relationship with the world could make it a catalyst for sub-Saharan development. The transition in South Africa reflects a crossroads in human progress and in many human relationships—between capital accumulation and equitable distribution; between selfish individualism and oppressive collectivism; between Eurocentric and Afrocentric ideologies; between wealth

[72] Gilbert Rist, *The history of development: from Western origins to global faith* (London: Zed, 1997); S. M. Lele, 'Sustainable development: a critical review', *World Development* 19, 1991, pp. 607–21.

[73] Carol Lancaster, *Aid to Africa: so much to do, so little done* (Chicago: University of Chicago Press, 1999); Sandbrook, *Closing the circle*.

[74] Anthony Lewis, South Africa: building a culture of law. *Annual Survey of International Comparative Law*.2: (1) 1995, pp. 1–14.

[75] Falk, *Predatory globalization*.

and poverty; between progress and retrogression; between intercultural belligerence and mutual understanding; and between destruction and conservation of a precious ecology. Wallerstein's analysis of the current bifurcation point in world history and the uncertainty of the future illustrates parallels between South Africa and the global system.[76] Sandbrook's analysis of the complexity of democratization and development in Africa, and his arguments for social democratic globalization instead of neo-liberal globalization,[77] are echoed in the Danish foreign ministry recommendations for building a world community.[78]

Acknowledging both apartheid and HIV/AIDS as manifestations of exploitation provides insight into the need for paradigm shifts in thinking to achieve real global progress through development at levels beyond the merely economic. New metaphors by which we may live could be derived from shifts in thinking such as these:

- from the idea of 'might is right' to the realization that 'right is might' (replacement of force with high moral aspirations), as in South Africa's transition;
- from the idea of power as 'power over others' to the notion that more can be achieved through 'power with others' (empowerment);
- from the idea of continuous accumulation of economic resources (as the sole goal of development) to an acknowledgement that the earth can tolerate neither continued population growth nor the consumption patterns of privileged nations;
- from states of mind that promote hegemonic world views to those that respect diversity and acknowledge that we can all learn something from one another, while avoiding a collapse into moral relativism;
- from feelings of 'endless entitlement' (rights) to the acknowledgement that 'entitlement combined with responsibility' (rights and duties) is more likely to foster long-term satisfaction of self-interest and widespread advantage;
- from arrogance about who we are to humility about the role of privileged people in the world.

Using the HIV/AIDS pandemic as a window on South Africa and as a mirror to reflect our modern world should promote shifts in thinking that offer the opportunity to reflect on the influence of globalizing forces on ourselves both as individuals and as members of a global society. Prospects of such shifts in thinking generate hope that the release of African people from centuries of subjugation to sub-human status will unleash their suppressed creative spirit and energy to foster an 'African Renaissance' that could contribute to greater

[76] Wallerstein, *The end of the world as we know it*.
[77] Sandbrook, *Closing the circle*.
[78] *Building a global community: globalization and the common good* (Copenhagen: Royal Danish Ministry for Foreign Affairs, 2000).

harmony among people in Africa.[79] Clearly, in speaking of this concept, loose rhetoric and scepticism must be replaced by the articulation of new, imaginative and credible approaches that enable building with confidence on diverse strengths—a 'conversation', at present in its infancy, that needs nurturing and guidance towards meaningful maturity.

It is abundantly clear that prospects for human progress in its widest sense at a global level are dependent on our ability to move beyond global economic apartheid. If ridding South Africa of racial apartheid and the dehumanizing disparities to which this gave rise was a global priority, it would require a powerful argument to refute the argument for giving similar status to the need to narrow the grotesque disparities created by global economic apartheid. This is the prerequisite for dealing with HIV/AIDS and for diminishing the potential for the future emergence of new and perhaps even more devastating plagues that may blight the lives of all throughout the world. The 75th Anniversary issue of *International Affairs* has opened the way to more intensive discussions about the route to justice in the world economy.[80]

Lest fellow physicians and scientists believe that these are the views of a naïve humanist, I conclude by referring to the recent presidential address by Bruce Alberts to the US National Academy of Sciences, in which he emphasized the importance of science to progress and noted that 'for the long term success of a nation, free markets need appropriate regulation ... we urgently need to learn to use our knowledge to create a more just and sustainable world ... reducing the gap between rich and poor is a moral imperative. In the 21st century, science and scientists will be judged on how well they help solve local and world problems, not only on how well they generate new knowledge.'[81]

[79] Until a few decades ago Africa, as 'the heart of darkness', was popularly considered to be a continent without a history until discovered by Europeans. However, and fortunately, a modern revolution in European understanding of African history has been under way since the Second World War. It is now becoming apparent that 'medieval Africa supported civilizations and societies, different from but as colourful as those of medieval Europe.' The adverse imperialistic role of those who, with good intentions, applied many inappropriate development practices has now been unmasked. See M. E. Chamberlain, *The scramble for Africa*, 2nd edn (London: Longman, 1999). The inhumane role played by those involved in the 'scramble for Africa' who committed horrifying atrocities on vulnerable people in the pursuit of wealth and power has also been exposed. See Adam Hochschild, *King Leopold's ghost* (Boston: Houghton Mifflin, 1998).

[80] Nicholas Rengger, 'Justice in the world economy: global, international or both?', *International Affairs* 75: 3, 1999, pp. 469–71.

[81] Bruce Alberts, 'Science and Human Needs', Presidential address, 137th Annual Meeting US National Academy of Sciences, 1 May 2000, Washington DC.

SOLOMON R. BENATAR

The coming catastrophe in international health

An analogy with lung cancer

INTRODUCTION

During the 20th century, developments in science and technology and their application in medical practice have transformed the nature of health care and improved the lives of many people. In the 21st century, advances in genetics have the potential to transform medical practices even further through a revolution in applied genomics and molecular medicine. Some examples of what could be achieved include the ability to determine genetic susceptibility to disease and to prevent disease by linking environmental control measures to those at particular risk; the use of gene therapy to correct genetic defects; and the use of new molecular biology techniques to design new, more specific therapeutic agents. New functional imaging diagnostic techniques, less invasive surgical methods, and specifically designed target drugs could contribute to more efficient treatment of many disorders. The global reach of communications technology, which can bring appropriate

Professor of Medicine, Director Bioethics Centre, University of Cape Town and Groote Schuur Hospital Observatory, Cape, South Africa; Visiting Professor, Departments of Public Health Sciences and Medicine, Joint Bioethics Centre, University of Toronto.

health care knowledge to health care workers worldwide, also offers the possibility of enhancing health and well being globally. This is an exciting and challenging time for medicine and health care professionals.

Changes in the world economy, especially in the past 50 years, have generated great wealth, which has also enhanced the lives of many people. Some believe that continued economic growth is the primary factor in improving human life. However, current economic trends are both widening the gap between rich and poor and exacerbating the extent of absolute poverty. Because health care systems are shaped by both societal values and the distribution of wealth and power, the result is striking disparities in health care expenditure and health research priorities, neither of which mirrors disease burdens. Lack of access to modern communication facilities, unwise use of new biological power, and a failure to make basic health care widely accessible are widening rather than narrowing the gap between rich and poor - as vividly illustrated by the lack of access of millions of people to modern treatment for HIV/AIDS.

At the end of a century in which spectacular scientific and technological progress greatly enhanced the lives of about one-fifth of the world's population but available knowledge and resources were not used wisely the warning signs of an impending catastrophe in international health were increasingly apparent. Intense poverty, widespread hunger, and preventable diseases, the emergence of many new infectious diseases, environmental degradation, profound human suffering, and internecine conflict on a large scale (adversely affecting the lives of up to 80 per cent all people in the world) can be interpreted as malaise and instability within a complex global system. These features are late manifestations of humanly determined processes that have been under way for many years. They warn us of the potential for a phase in human history characterized by malnutrition and rampant infectious disease pandemics as a result of multidrug resistant organisms on the one hand and a growing burden of morbidity and mortality from obesity, diabetes, vascular disease, and malignancies on the other.[1]

Economic growth, progress in science and technology, and the unprecedented potential power of gene-based health care should not

1 See, for example, R.J. Barnet and J. Cavanagh, *Global Dreams: Imperial Corporations and the New World Order* (New York: Simon and Schuster 1994); and Titus Alexander, *Unravelling Global Apartheird: An Overview of World Politics* (Cambridge: Polity Press 1996).

blind us to the fact that threats to the health status of billions of the planet's citizens could today be greatly attenuated by improving access to essential drugs and vaccines and through well recognized public health measures. Today, more than ever, it is necessary to acknowledge that equitable access to health care is a morally required basic need for humans to grow to maturity and achieve their potential. Advances in knowledge and the application of technology alone are not sufficient to achieve such goals.

We will have to make major shifts in the way we think about the health of individuals and populations, present and future, to encourage the policy changes necessary to achieve more widespread human well being. Understanding today's threats to world health and the complex social system in which it is located requires considerable knowledge of history, economics, sociology, political science, and philosophy. It also requires the ability to analyse, integrate, and interpret this knowledge.[2] The example of the physician's role illustrates the processes required.

Physicians are accustomed to gathering data about people as complex biological systems, sorting out relevant facts, making diagnoses (often of fatal diseases), considering prognoses (often disheartening), and counselling patients. Doctors, therefore, have to have knowledge of anatomy, physiology, pathology, psychology, clinical medicine, therapeutics, and the natural history of disease. Good clinical judgement is also required, and this calls for individualized interpretation of complex generalized knowledge of particular diseases, discernment in making treatment recommendations, and good communication skills to guide patients through complex management regimens.

As patients are always apprehensive and usually distressed by 'bad news,' physicians also have to deal with denial, anger, and grief. Patients often must face unpleasant and debilitating treatments, especially for malignant disease, in the knowledge that such treatments may not be effective. Acceptance tempered by hope is the rule, but, almost inevitably, death must be faced. The courage to try new treatments has been rewarded by some success, and many patients have survived despite gloomy prognoses. Individual examples of success (by no means rare) have given hope to many and are the driving force for new

2 V. Hosle, 'The third world as a philosophical problem,' *Social Research* 59(1992), 227-62.

advances. The example of Stephen J. Gould's response to a potentially fatal malignancy is an inspiration to those who believe that even the smallest possibility of cure must be pursued.[3]

There is a close analogy here with the reactions (of even intelligent people) to discussion about the dark side of progress and the threats it poses. Those who have benefited from progress generally react to the idea of global malaise in the same way that many patients react to the diagnosis of a fatal disease. Denial and anger are the initial responses. It is too difficult to accept that the good life they enjoy may have limited horizons and that a major change in lifestyle and in expectations of entitlement is required to deal with the diagnosis. I suggest that a greater degree of introspection and the courage to face the diagnosis of global malaise and its arduous treatment are essential.

I am acutely aware that I do not remotely possess the level of scholarship and experience regarding global affairs that I have for making diagnoses and recommending treatment of medical diseases. I also acknowledge that interpreting global social data and making predictions for the future are less certain 'sciences' than medicine - even for those who have extensive social knowledge. However, I shall be bold enough here to attempt to apply the analogy of the medical model, as exemplified by cancer of the lung, to the malaise of our modern world, and to prognosticate about the possibility of coming catastrophes (as indicated above) in international health. At the very least this exercise may enhance our understanding and acceptance of some harsh facts about the world and allow us to consider new ways of coping with threats to health at a global level.

LUNG CANCER AS A MODEL

It should be noted that many diseases, especially malignancies, produce symptoms and signs only late in their natural history. Cancer of the lung is a good example. The underlying pathophysiological process is the change in a single cell from growing and multiplying in a benign regulated manner to a malignant cell that grows and multiplies unregulated by normal bodily requirements - and ultimately at the expense of the normal body tissues from which it has arisen.

It takes up to 30-40 years of cigarette smoking before a single cell in the lung becomes malignant. At a doubling time of 102 days (the aver-

3 Stephen J. Gould, *Adam's Navel* (New York: Penguin 1997), 15-21.

age for a series of documented cases) it would take 8.4 years for a single cell to double 30 times, at which point the tumour would be one centimetre in diameter - the smallest size that can be seen on a chest radiograph. After a further 1.4 years, the tumour is three centimetres in diameter (35 doublings), and symptoms and signs of the malignant process have usually become evident. After yet another 1.4 years, when 40 doublings have taken place, the tumour is ten centimetres in diameter and the patient is unlikely to be alive (Fig 1). While it appears that the tumour has grown rapidly from three centimetres to ten centimetres, in fact the rate of growth in terms of doubling time has been slow and constant over the 11.4 years since the first cell became malignant.[4] During the first ten years after the first cell becomes malignant the patient would have felt perfectly well and been asymptomatic, while enjoying the smoking habit. When the disease is diagnosed during this asymptomatic phase - for example on a routine chest radiograph - it comes as a great shock, and it is difficult for patients to accept the diagnosis of a potentially fatal disease.

As a tumour grows, it can produce symptoms and signs locally, regionally from extension to nearby structures, or at distant sites. At the local site there may be pressure on, or obstruction of, a vital structure such as an airway. Spread to regional structures may cause a wide range of effects, for example, hoarseness because the laryngeal nerves have been invaded, difficulty in swallowing because the oesophagus has been invaded, and chest pain because the disease has spread to the chest wall. Secretion of hormones and other mediators by the tumour can produce a range of non-metastatic effects on several other systems, such as the nervous system, and on metabolism. Blood borne spread of malignant cells to other parts of the body can also produce direct mass or pressure effects in those areas - most commonly the brain, liver, and bones.

By the time cancer of the lung is diagnosed, less than 20 per cent of patients are candidates for potentially curable surgery. In the rest extensive spread has already occurred, and only palliative treatment with drugs or radiation is possible. Of those operated on, perhaps 40 per cent will survive five years; the others will die from spread that was undetectable by any tests at the time of surgery.[5]

4 D.M. Geddes, 'The natural history of lung cancer: a review based on rates of tumour growth,' *British Journal of Diseases of the Chest* 73(1979), 1-17.

5 *Ibid.*

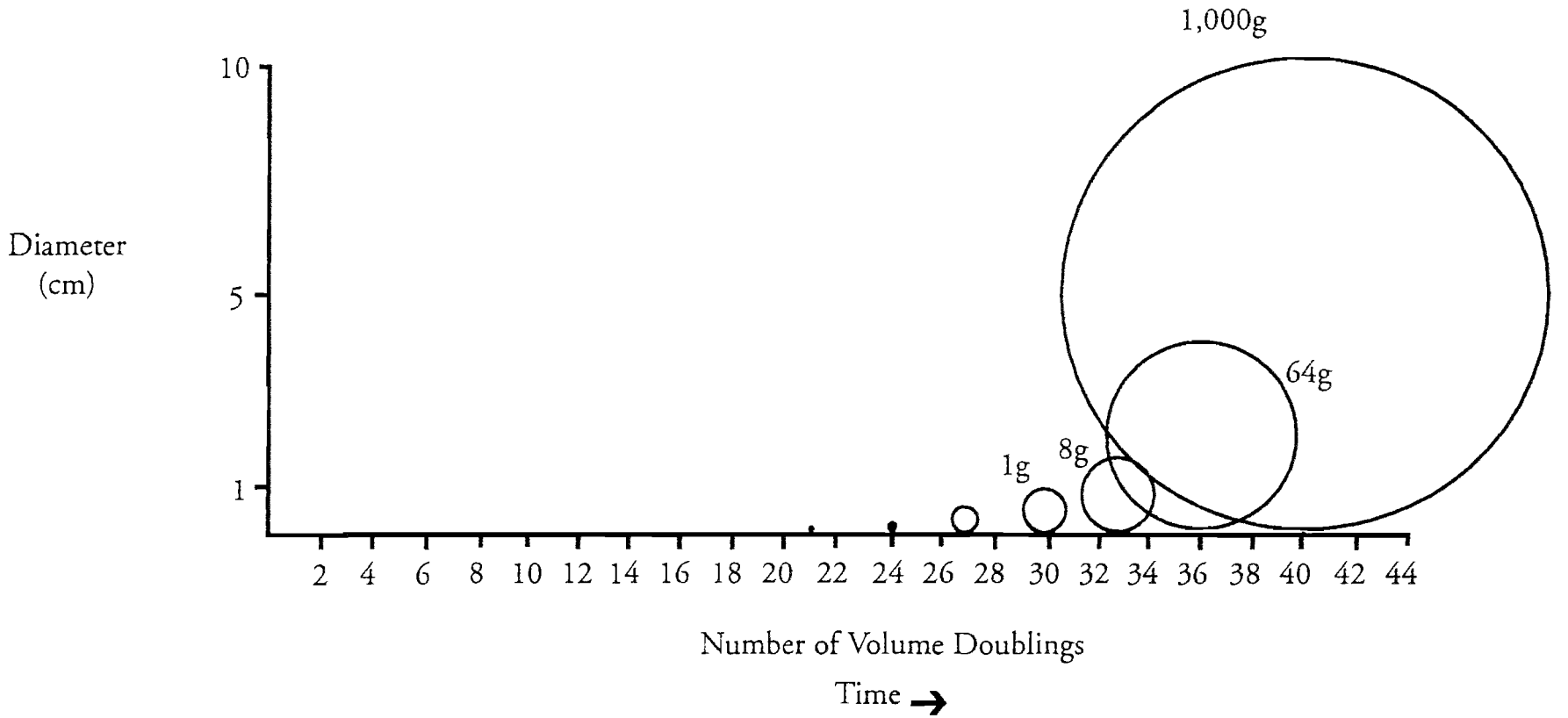


Figure 1. The life of a solid tumour. Time is expressed as volume doublings. A tumour with a doubling time of one month takes 40 months to reach ten centimetres in diameter; another with a doubling time of one year takes 40 years. Reproduced, with permission, from D.M. Geddes, 'The natural history of lung cancer: a review based on rates of tumour growth,' *British Journal of Diseases of the Chest* 73(1979).

Of all cancers, lung cancer is one of the few for which the predominant cause has been known for many decades (smoking) and which can largely be prevented. Nonetheless, and to a considerable extent because of the aggressive marketing and promotion of tobacco,[6] the death rate is rising steeply in both men and women (Fig 2), with a lag phase for women that reflects the delay in women becoming smokers. Smoking also causes death from many other diseases; it is estimated that about four million people die each year from all tobacco-related illness (the equivalent of 27 Boeing 747s full of passengers crashing each day).

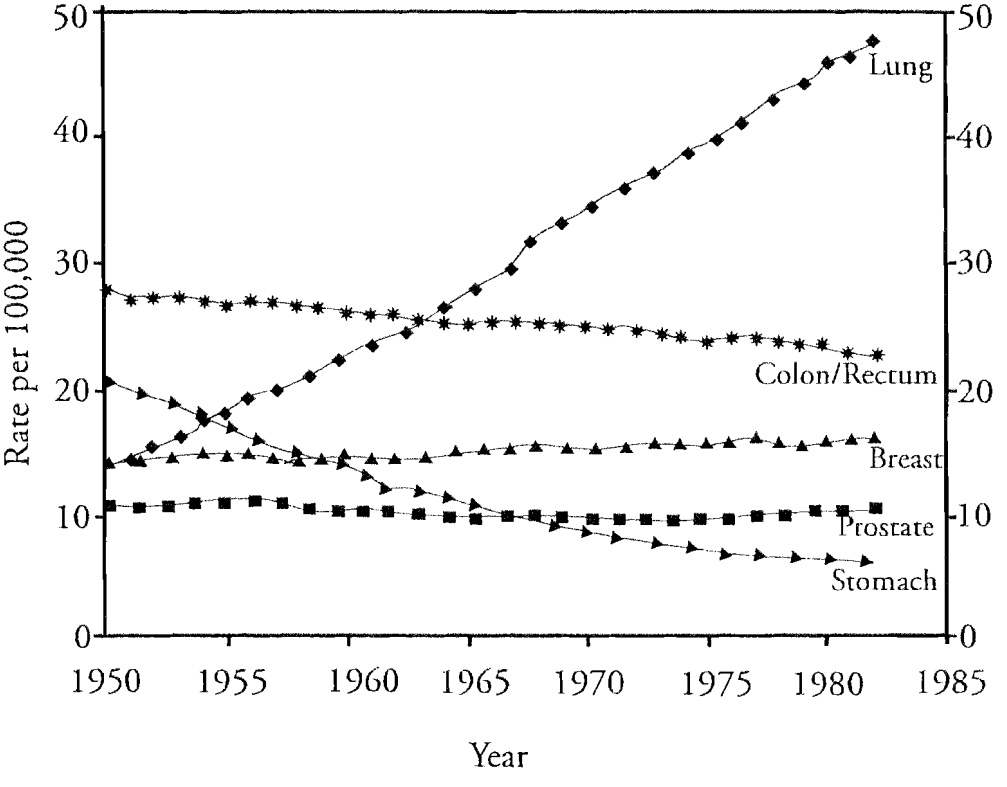


Figure 2. Mortality from cancer of selected sites, 1950 through 1982, in the total United States population. Age was adjusted to the United States population of 1980. Reproduced, with permission, from J.C. Bailar and E. Smith, 'Progress against cancer?, *New England Journal of Medicine* 314(1986). Copyright 1986, Massachusetts Medical Society. All rights reserved.

6 M.D. Read, *The Politics Of Tobacco: Policy Networks and the Tobacco Industry* (Aldershot: Avebury 1996).

GLOBAL MALAISE

The diagnosis that I offer for the global malaise described above can be compared with a malignant tumour that presents as 'multiple systems failure.' Economic failure is evident from progressively widening economic disparities, with obscene wealth and grinding poverty at the polar extremes. Failure of health care as a system is revealed by access of some to every available scientific advance and lack of access of most of the world's population to even basic health care and essential drugs. The extent to which so many can live lavish lives with minimal, or only evanescent concern for poor and vulnerable fellow humans, even those in their midst, illustrates a lack of real respect for human dignity - and thus a failure of the 'human rights endeavour' and of civic society. Last but not least, environmental degradation is an expression of failure to preserve our ecological system - reflecting lack of insight into, or concern for, the consequences of our actions.

In terms of global health problems the underlying pathophysiological process is a shift, from partly regulated capitalism with some safety net to ameliorate the most adverse effects of untrammelled capitalism, to progressive deregulation and exploitation that allow selective growth for some at the expense of others - a 'trickle up effect' of resources that increases rich/poor disparities, rather than the so much vaunted 'trickle down effect.' Exploitation takes place under many guises and at many levels - most recently under the rubric of 'globalization,' a popular term to refer to a phase of history characterized by the escalating impact of a neo-liberal economic system, in which free market considerations eclipse concern for democracy and social justice.[7]

Globalization is a complex and ambiguous concept that includes social, cultural, and ecological dimensions with at least four interlinked manifestations: widening economic disparities - with adverse implications for health; human belligerence - with powerful links to economic accumulation; changing spatial dimensions of human relations - with associated profound social disruption; and excessive population growth and consumption - with serious ecological implications. These are manifestations of a long, interwoven economic and political

7 See, for example, Jason Ralph, 'American democracy and democracy promotion' (Review Article), *International Affairs* 77(January 2001), 129-140; and S. Amin, *Capitalism In The Age Of Globalisation* (London: Zed Books 1997).

history in which peoples, economies, cultures, and political processes are subject to international influences.[8]

Globalization has allowed major advances in science and technology to improve the lives of a privileged segment of the world's population. These advances integrate the privileged worldwide but also marginalize the vulnerable, wherever they are, through pervasive discriminatory processes. Exploitation is covert because globalization is only seemingly linked to democracy and human rights. Although much has been achieved to promote human rights since the Universal Declaration of Human Rights, and there seems no plausible alternative to democracy, it is becoming clear that modern democracy is not flourishing (even in developed nations), and there is no coherent and sincere propagation of the human rights agenda.[9]

PROSPECTS FOR INTERNATIONAL HEALTH

In our modern world, global malaise, as with lung cancer, has diverse manifestations. At the level of the individual, the evolving balance between microbes and humans has been disrupted, and new adverse ecological niches have been created that favour the emergence of many new infectious diseases, HIV/AIDS being the most frightening to date. Inefficient treatment of old infectious diseases, such as tuberculosis and malaria, has resulted in the development of resistance to multiple antibiotics - making treatment increasingly difficult and expensive.[10] The speed and volume of modern travel ensures that any infection can rapidly spread around the globe. Gains in life expectancy in Africa during the first three-quarters of the 20th century are being reversed - mainly as a result of the HIV pandemic.

While the toll of infectious diseases is exacerbated by widespread malnutrition that reduces host immunity, chronic diseases (lung disease, heart disease, diabetes, and hypertension) are on the upswing as a result of promotion (through powerful market forces) of smoking, Western eating patterns (fast foods and toxic preservatives), and lack of

8 Erik Hobsbawm, *The Age of Extremes: A History of the World 1914-1991* (New York: Pantheon 1994).

9 See, for example, Richard Falk, *Human Rights Horizons: The Pursuit of Global Justice* (New York: Routledge 2000).

10 Solomon R. Benatar, 'Prospects for global health: lessons from tuberculosis' *Thorax* 50 (1995), 487-9; and Laurie Garrett, *Betrayal of Trust: The Collapse of Public Health* (New York: Hyperion 2000).

exercise. Ill health is further exacerbated by inequitable access to health care, its rising cost and the need to care for an ageing population.

At the regional level of systems, the neo-liberal forces driving the economy and simultaneously commodifying medicine have eroded social support systems, increased privatization of health care, and reduced universal access to health care - with many adverse effects on the health of individuals and indeed whole populations. These adverse effects are at risk of being intensified if existing national health systems erode further under the pressure for their privatization promoted by new trade agreements and World Trade Organization (WTO) rules.[11]

In the face of the fact that 89 per cent of annual global healthcare expenditure is spent on 16 per cent of the world's population that bears seven per cent of the global burden of disease,[12] and 90 per cent of health research expenditure is devoted to diseases that cause ten per cent of the global burden of disease,[13] it is difficult to escape the conclusion that medical research and the provision of health care are driven by forces other than health considerations. The rising cost of drugs, increasing emphasis by pharmaceutical companies on developing profitable life-style drugs for the well, while neglecting drugs needed for treating diseases that cause premature death of millions of children and young adults, reveal that health care is 'off the rails' as a system.[14] The system now resembles a 'malignant' process with all its 'local,' 'regional,' and 'distant,' implications. Deprofessionalization of medicine through the dominating power of market forces contributes to the erosion of virtue and values in the healing profession.[15]

New ecological niches created at the regional level have great potential to affect health adversely over the long term - for example, nuclear stockpiles and potential leakage of stored radioactive waste. Not only

11 D.M. Price, A. Pollock and J. Shaoul, 'How the world trade organisation is shaping domestic policies in health care,' *Lancet* 354(1999), 1889-92; and A.M. Pollock and D. Price, 'Revising the regulations: how the World Trade Organisation could accelerate privatisation of healthcare systems,' *ibid* 356(2000), 1995.

12 J. Iglehart, 'American health services: expenditures,' *New England Journal of Medicine* 340 (1999), 70-6.

13 World Health Organization, *Investing in Health Research and Development. Report of an Ad Hoc Committee on Health Research Relating to Future Intervention Options* (Geneva: WHO 1996).

14 Oxfam, *The Oxfam Poverty Report* (Oxford: Oxfam 1996).

15 E.D. Pellegrino and T. Thomasma, *The Virtues In Medical Practice* (New York: Oxford University Press 1993).

are such weapons a waste of resources that could have been used to improve human life; they are also a danger to many generations into the future. Malignancies can arise many years after exposure to low levels of radiation, and the timeframe of such a global threat remains under-appreciated. Neurotoxic and other adverse developmental affects of environmental pollutants are not yet fully understood,[16] and the possible adverse effects of production, storage, and use of biological weapons are only minimally appreciated.[17]

At a global level, ecological changes have potentially profound effects on health. If high levels of energy consumption are perpetuated and widely emulated, and deforestation, water, air and soil pollution continues, the impact of climate change, water shortages, and loss of species diversity will have an adverse impact on health. Catastrophic consequences will include changing rates of illness and disease related to exposure to thermal extremes, changes in the geographical ranges and incidence of vector borne diseases, new 'infectious diseases,' adverse effects on child growth and development from changed food production and distribution, more malignancies, and a growing burden of debilitating chronic diseases that even wealthy countries will not be able to afford.[18] The continuous desiccation of the Aral Sea since 1960, and the consequences for the climate (increases of salt and dust storms and shortening of the vegetation period), ecology and economy (degeneration of the delta ecosystems, total collapse of the fishing industry, and decreased productivity of agricultural fields), and health (increase in cholera, typhus, asthma, cancer, and birth defects) exemplify the prospects for ecological devastation at a wider level.[19]

In an era of scientific and technological progress that now embraces the new biotechnology that seems to offer so much hope for spectacular progress in health for all, the creation of new ecological niches through the production of transgenic animals, new methods of grow-

16 R. Doll, 'Health and the environment in the 1980s,' *American Journal of Public Health* 82(1992), 933-41.

17 British Medial Association, *Biotechnology, Weapons And Humanity* (London: British Medical Association 1999).

18 See, for example, the work of A.J. McMichael, *Planetary Overload: Global Environmental Change and the Health of the Human Species* (Cambridge: Cambridge University Press 1993) and *Human Frontiers, Environments and Disease: Past Patterns, Uncertain Futures* (Cambridge: Cambridge University Press 2001).

19 http://www.dfd.dlr.de/app/land/aralsee (accessed 17 September 2001).

ing and producing food, and the production of biological weapons have as yet undreamed of potential adverse effects on health.

PROGNOSIS

Against this background it would be irresponsible not to conclude that a catastrophe in international health can be anticipated, unless action is taken now to attempt to provide new hope for the future. Even now it may be too late, as are most - but not all - interventions for lung cancer at the time of diagnosis.

What should be done? The major ethical imperatives of our time - and we should have no difficulty recognizing these unless we are morally blind - are to relieve hunger and alleviate profound poverty, to improve (through sustainable processes) the lives and health care of those living under abominable conditions, and to foster global peace and ecological security for the benefit of present and future generations. But can we achieve this? Lives of comfort and luxury seem to have dulled the moral sensitivity of many to the needs of fellow humans. A denial of the value of others' lives (like the denial of the implications of a potentially fatal personal illness) delays potentially effective action, and we should face up to and address this stark reality.

A TREATMENT PLAN

The measures that need to be taken resemble those taken for serious malignant disease in that they are complex, controversial, and have many potential adverse effects. They will also require modulation during the course of therapy. Courage, perseverance, and hope will have to be linked to understanding that there is no guarantee of success. An honest approach asks us to acknowledge the extent to which global problems are a product of obfuscation (deluding ourselves - like smokers), lack of integrity (for example, the actions of tobacco companies and many powerful organizations), lack of solidarity (greed and hyper-individualism), closed minds (hegemonic views), and short-term perspectives on the future. We thus suggest the need to re-examine collectively our habits and our privileged lives.

Paradigm Shifts in Thinking

The failure of the Master Settlement Agreement with the tobacco industry to recover health care costs and to hold tobacco companies accountable for decades of wrong-doing (with the broad goal of reduc-

ing the effects of tobacco marketing on young children),[20] illustrates the need not merely for reparations but also for innovative new responses to a devastating threat to health. The analogy for global malaise is for new ways of thinking about ourselves as individuals and societies in a global totality and our universal moral obligations. Such new paradigms of thinking about ourselves and of our relationship to others must be based on deeper insights into how complex systems function and what it means to be a (transient!) citizen in an increasingly interdependent world if we are to: (i) link concepts of human rights to the need for social justice within and between nations; (ii) embrace concern for population well-being as well as individual well-being; (iii) develop an ethic for institutions and international relations that recognizes the responsibility to balance individual goods and social goods; (iv) ensure the survival of future generations within a self-renewing ecological system. New ways of looking at the world and how states should interact must embrace renewed concepts of civic citizenship, solidarity, and concern for others, including those very distant from our own daily lives and future generations.[21]

From Ideas to Action

Making a diagnosis and offering a prognosis are easier than providing effective therapies. Because words and concepts have great power, I suggest that an important first therapeutic step would be to promote new metaphors for living.[22] Some suggestions follow. First, we should shift our thinking away from military and market metaphors of life to moral and ecological metaphors. This requires a shift away from a totally anthropocentric view of the world to one that is more ecocentric. A shift from the idea that 'might is right' to the idea that 'right is might' (from 'realism' to a human rights and humanitarian view of the world) could be coupled with a shift from the idea of power as 'power over' to 'power with' (from dominance to co-operation). Second, with

20 D.A. Kessler and M.L. Myers, 'Beyond the tobacco settlement,' *New England Journal of Medicine* 345(2001), 538-41; and C. King III and M. Seigel, 'The Master Settlement Agreement with the tobacco industry and cigarette advertising in magazines,' *ibid*, 504-11.

21 See, for example, G. Elfstrom, *Ethics for a Shrinking World* (London: Macmillan 1990).

22 Solomon R. Benatar, 'Streams of global change,' in Z. Bankowski, H.H. Bryant, and J.G. Gallagher, eds, *Ethics, Equity and Health for All* (Geneva: Council for the International Organisation of Medical Sciences 1997), 75-85.

regard to health, a shift from concern only with the health of individuals to concern for both individual and population health could result in major improvements in global health. Third, within the economic realm, the shift from 'neo-classical' economics to 'ecological' economics, coupled with a shift from claiming 'rights' to understanding that 'rights and responsibilities are inseparably linked,' would allow both individuals and communities to flourish.

Globalization from Below

Globalization from below is seen by some as a means of moderating many adverse economic forces associated with globalization from above.[23] Globalization from below is a gathering momentum of nationally based social movements, including the environmental movement, formation of G-77 in 1970s to engage in dialogue on North-South issues, debt relief programmes, opposition to the WTO, labour movements, identity movements (for example, feminism), consumer movements, the struggle against racism, and global opposition to sweat shops. A confluence of these movements is now taking place, even though participants have different goals and there are contradictions within this counter-movement.[24] The relationship between economics and health illustrates the need for redistributive processes that would have many advantages over current patterns of expenditure.[25]

The Relationship between Economics and Health

That there is a definite relationship between wealth/poverty and health/disease is now well established, although the relationship is complex and not linear beyond an annual per capita income of US$5000.[26] Poverty (defined as lack of economic resources; lack of education; lack of access to basic resources such as food, water, and sanitation; and lack of control over the reproductive process) directly

23 See, for example, Richard Falk, *Predatory Globalization: A Critique* (Cambridge: Polity Press 1999); and J. Brecher, T. Costello, and B. Smith, *Globalization from Below: the Power of Solidarity* (Cambridge MA: South End 2000).

24 J. Brecher, T. Costello, and B. Smith, *Globalization from Below.*

25 R.L. Sivard, *World Military and Social Expenditure* (16th ed, Washington DC: World Priorities Press 1996).

26 R.G. Wilkinson, *Unhealthy Societies: The Afflictions of Inequality* (London: Routledge 1996).

accounts for almost one-third of the global burden of disease. Poverty leads to poor health, which in turn aggravates poverty. Both absolute and relative wealth affect health. In developed countries, health status is determined more by income differentials between rich and poor than by overall wealth. At 14 per cent, the United States spends a higher percentage of gross national product (GNP) on health care than any other country. Fifty per cent of the $2 trillion spent on health care in the world each year is spent in the United States, even thought it accounts for only five per cent of the world's population.[27] Nonetheless, the United States is ranked 24th in overall population health as judged by disability-adjusted life expectancy, 37th in efficiency of its health care system, and 54th alongside Fiji in how fairly the financial burden of health care is distributed.[28]

Despite the difficulty in making accurate inter-country comparisons, it is clear that improvements in economic status are associated with better health statistics, and that economic growth in poor countries is necessary if the living conditions conducive to good health are to be improved, independent of benefits that may arise directly from health care. The falling death rate from tuberculosis in the pre-chemotherapy era illustrates the beneficial impact of improved socio-economic conditions on one disease.

Demilitarization

Given that the amount of money spent globally on military activities was US$750 billion per year in the 1990s, that the annual budget of the World Health Organization is in the region of $1 billion, and that the estimated costs of providing basic education for all children globally and for promoting reproductive health in developing countries are $6 billion and $12 billion respectively, it is clear that redirecting even a modest portion of military expenditure could generate considerable resources for health and development.[29] Associated reduction in conflict and the promotion of peace could contribute to sustainable progress towards better lives for many and encourage new

27 B. Bloom, 'The future of public health,' *Nature* 402(supp 1999), C63-4.

28 WHO, *World Health Organisation Report 2000. Health Systems: Improving Performance* (Geneva: WHO 2000).

29 R.L. Sivard, *World Military and Social Expenditure.*

visions of global security. The example of how excessive expenditure on militarization in South Africa impeded development in that country is salutary.[30]

Debt Restructuring

Debts that can never be repaid should surely be abolished.[31] Maintaining third world debt in the knowledge that it was to a large extent created through inappropriate arms trading and defective development projects undermines both the humanity of those who demand repayment and the lives and dignity of the those who are effectively enslaved by debt. Debt relief will not remove the need for loans and financial assistance, but it does require that these be restructured on more accountable grounds to ensure their legitimacy in the future. The transparency and accountability that the rich ask of the poor through structural adjustment programmes should apply to their financial transactions that have such profound effects on the lives of billions.

Implementation of Appropriate International Taxation

Given that less than ten per cent of the $1 trillion daily in global financial transactions is for services rendered and that the remainder is merely repackaging and reselling of money within what has been called a 'casino economy,' [32] it is difficult to contest the legitimacy of taxing electronic monetary transactions for a global development fund. Similarly, it is being acknowledged that current concepts of free trade have to be modified to include environmental costs in business activities, which would indicate an acceptance that we cannot have free access to the 'natural commons' in our own countries to the disadvantage of distant others or future generations.[33]

30 B. Fine and Z. Rustomjee, *The Political Economy of South Africa: From Minerals-Energy Complex to Industrialisation* (Johannesburg: Witwatersrand University Press 1996).

31 A. Pettifor, *Debt, the Most Potent Form of Slavery: A Discussion of the Role of Western Lending Policies in Supporting the Economies of Poor Countries* (London: Debt Crisis Network 1996).

32 www.globalexchange.org; Susan Strange, *Casino Capitalism* (Oxford: Blackwell 1986).

33 Falk, *Predatory Globalization;* A.J. McMichael, *Human Frontiers;* N. Lou and B. Gleeson, *Societ and Nature* (London: Routledge 1998).

New Sustainable Development Programmes

The achievement of real development within poor countries is also an ethical imperative.[34] The risks for all if this is not achieved - extreme poverty giving rise to 'violence from below,' new and old infectious diseases spreading rapidly across the world, and an irrevocably compromised environment. Given that 50 per cent of the world's population lacks access to even the most basic essential drugs, millions of impoverished people are becoming desperate in the face of lack of concern for their lives and basic human dignity. Couple this with increasingly evident threats from new infectious diseases and ecological degradation, and rational self-interest alone provides sufficient reason for promoting sustainable development programmes, even if the need for altruism and reparations is denied.[35] Ordinary citizens, health care professionals, and informal organizations, such as NGOs, can build a process of education and 'globalization from below' that could contribute to sustainable development.[36]

Restructuring International Relations

The inability and failure of the great powers to shape successfully a fair, just, and peaceful world is evident from the scale and magnitude of war, ethnic conflict, and the disparities and associated human misery that have characterized the 20th century. Highly egoistic notions of humanity, reflected in selfish individualism and long-standing concepts of state-centricity with considerations of security limited to military issues, have run their course.[37]

New ways of looking at the world and at how states should interact are gradually being shaped. A deeper understanding of what it means to be a citizen in an increasingly interdependent world will need to embrace renewed concepts of civic citizenship, solidarity, and concern for others, even those very distant from our own daily lives. New paradigms of thinking would embrace deeper insights into how complex systems function; and the development of ethics for institutions and international relations that recognize the responsibility to balance indi-

34 V. Hosle, 'The third world as a philosophical problem'; G. Elfstrom, *Ethics for a Shrinking World*; G Rist, *The History of Development: From Western Origins to Global Faith* (London: Zed Books 1997).

35 F. Raspail, *The Camp of the Saints* (Petoskey MI: Social Contract Press 1982).

36 Falk, *Predatory Globalization*; Brecher, et al, *Globalization from Below*.

37 C. Brown, *Understanding International Relations* (London: Macmillan 1997).

vidual goods and social goods and not to harm weak and poor nations or groups of people through economic and other forms of exploitation that frustrate the achievement of human rights and well-being.[38]

An Ecological Approach to Justice

In recent years it has been cogently argued that neither well-respected theories of justice nor the individualistic human rights approach has taken into consideration the adverse effects of population growth and of ecological degradation. As a result, the environment has become a commons that has been abused and severely compromised. Loss of biodiversity, global warming, damage to the ozone layer, soil erosion, pollution of the air and the sea have all been allowed to escalate without sufficient attention to their implications for the future of life on our planet. One might mention, in addition to increasing resistance to antibiotics mentioned earlier, adverse implications for nutrition from new patterns of agriculture and control over food, a rising prevalence of asthma because of pollutants, and food poisoning as a result of lengthening food supply lines, intensification of production processes, and the liberalization of trade.

It is not only redistribution of resources that must be faced but also over-population and over-consumption. An ecological approach to justice and to population health requires a shift from a predominantly anthropocentric view of the world to an ecocentric worldview that includes concern for nature and for all forms of life. A long-term perspective on life and a concern for rights that includes the well being of future generations is essential to this viewpoint. The age-old concept of stewardship of nature here replaces the idea of the subjugation of nature. Consideration of all costs associated with consumerism - rigorous economics - is required to operationalize these concerns

Setting a Moral Example

As powerful as human rights and other moral languages may be, the power of wealthy countries setting a moral example is potentially more influential. Amnesty International's report on the extent of human

38 J. Girling, *Democracy, Corruption and Capitalism* (London: Routledge 1997); Jack Donnelly, 'Human rights: a new standard of civilisation?' *International Affairs* 74(January 1998), 1-24; W. Aiken and H. La Follette, eds, *World hunger and morality* (London: Prentice Hall 1996); Solomon R. Benatar, A. Daar, and P.A. Singer, Global health ethics (in preparation).

rights violations in the United States and Cassese's description of such violations in the prisons of Europe[39] provide insight both into how such abuses can continue even in wealthy democratic countries and into the great need for setting moral examples. Neglect of the poor within rich societies, perpetuation of unsustainable consumerist lifestyles, lack of universal access to health care within the United States, and the continuing production of weapons of mass destruction,[40] are also poor examples for other nations. A shift from the idea that 'might is right' to the idea that 'right is might' would certainly help. At a time when civil war seemed the only possible process of change, South Africa's peaceful political transition illustrated another possibility. Whether or not such political change can be followed by the social and economic changes required to ensure better lives for all in South Africa will depend, at least to some extent, on the possibility of paradigm shifts in the attitudes and actions of other countries.[41] Similarly, the concept of a global health fund to help address the burden of disease in developing countries is laudable but not sufficient on its own.[42] The Jubilee 2000 programme to relieve poor nations of crippling debts exemplifies the need for even more powerful moral leadership at a global level. Widespread support for this endeavour could provide evidence of the power of rational persuasion and illustrate sincere belief in the role of human rights in dealing with poverty and associated intense human misery.[43]

CONCLUSIONS

Fostering greater human well-being on a global scale will require an acknowledgement that unbridled materialism and wasteful consumerism are associated with impoverishment of the human spirit and

39 Amnesty International, *The United States of America: Rights for all* (London: Amnesty International 1998); A. Cassese, *Inhuman States: Imprisonment, Torture and Detention in Europe Today* (Cambridge: Polity Press 1996).

40 Iglehart, 'American health services: expenditures'; Sivard, *World Military and Social Expenditure*.

41 Solomon R. Benatar, 'South Africa's transition in a globalising world: HIV/AIDS as a window and a mirror,' *International Affairs* 77(April 2001), 347-75.

42 P. Brugha and G. Walt, 'A global health fund: a leap of faith?' *British Medical Journal* 323(2001), 152-4.

43 H. Shue, *Basic Rights: Subsistence, Affluence and US Foreign Policy* (Princeton NJ: Princeton University Press 1980).

threaten the lives of billions.[44] Perpetual economic growth for some cannot continue at the expense of others without sacrificing our humanity. The root causes of poverty should be studied more seriously and addressed more constructively. While poor countries must also accept some blame for their condition, the causes of poverty are complex. Wealthy industrialized nations are deeply implicated in creating and sustaining poverty. Powerful nations need to resolve to deal with the root causes of intolerable economic disparities through processes such as those described above. Their wealth, their sense of entitlement, and their moral insensitivity are as problematic as the existence of poverty.

Crucial to a new approach will be a recognition that it is not altruism or reparations that are called for but more importantly a long-term perspective on rational self-interest in an increasingly interdependent world. To achieve this will require a broader approach to morality that firmly embraces but also goes beyond the concept of human rights, and includes concern for human needs worldwide and for the environment on which all life is crucially dependent.

Sustainable development and respect for human rights and human dignity are in the interest of all. These can be achieved only through a combination of analytically incisive and honest thinking about global problems; and the active promotion of solidarity devoid of economic, cultural, and ethical imperialism. Is should also be acknowledged that all people and cultures have something to contribute to the development of a more just world and a true form of universalism. The goal of achieving a global mindset to which all can contribute is the challenge for the 21st century. If this can be achieved, the prospects of reducing suffering and disease will be greatly enhanced.

Finally, it is necessary to consider the possibility that the desired changes will take place. In his penetrating evaluation of the pursuit of justice through the promotion of human rights as an integral aspect of global politics and law, Richard Falk has concluded that, despite all efforts, realist morality (might is right) continues to underpin global security and that, while the shift in world order required for humanitarian morality to underpin global security seems unlikely, ' it is possible that within the next decade or so, the economic, ecological and cul-

44 H. Kung, *A Global Ethic for Global Politics and Economics* (New York: Oxford University Press 1998).

tural pressures of inadequately regulated globalization-from-above will generate acute alienation of sufficient magnitude as to create new revolutionary opportunities, including those that would mount a challenge to realist morality as the basis for global security ... Whether such resistance will turn into a movement dedicated to the drastic reform of global security and an insistence on humanitarian morality, will perhaps be the most profound question of the next hundred years.'[45]

The conception of how a peaceful process of globalization from below could be promoted and used to foster progress towards a world based on the principles of economic and environmental justice that is ultimately in the best interests of the great majority of people everywhere provides hope for the idea that human ingenuity and motivation will promote this agenda. My hope is that extending the ethics debate to the level of global health ethics could ratchet progress in this direction by highlighting the path for visionary leadership.

45 Falk, *Human Rights Horizons.*

University of Cape Town

Global health ethics: the rationale for mutual caring

SOLOMON R. BENATAR, ABDALLAH S. DAAR AND PETER A. SINGER*

Despite spectacular progress in science and technology during the twentieth century, as we enter the twenty-first the world is more inequitable than it was 50 years ago. Disparities in wealth and health within and between nations are widening inexorably, and the rapidly expanding global economy has failed to reduce poverty and improve health for all. This is evident both in terms of access to health care for individuals, and in relation to the health of whole populations. Billions of people live in degrading poverty with little if any access to health care, and the Universal Declaration of Human Rights remains an unrealized aspiration for the majority of the world's people.[1] Given these realities, no single discipline or body of knowledge is likely to make much difference. For example, approaches based only on neoliberal economics, as exemplified by the structural adjustment programmes (SAPs) of the World Bank, have not been successful in promoting health equity.[2] An interdisciplinary approach is required. Bioethics, an interdisciplinary field, could, with an expanded scope embracing widely shared and foundational values, make a contribution towards improving health globally.[3]

Until the 1960s the formal ethics discourse was largely confined to the realm of philosophical or theological studies. Professional groups and individuals held traditional views on ethics about which there was little public discussion. In the 1960s advances in technology and medicine, together with increased concern for individual rights and freedoms, led to involvement of theologians, philosophers, lawyers and other scholars in a public discourse on applied ethics—predominantly, but not exclusively, on biomedical issues. The 'new bioethics' began with a focus on access to life-extending procedures and power relationships within the doctor–patient relationship—for example, in relation to withholding

* The authors thank Lou Pauly and James Orbinski for constructive comments on an earlier draft of this article.

[1] S. R. Benatar, 'Global disparities in health and human rights', *American Journal of Public Health* 88, 1998, pp. 295–300.

[2] K. Abassi, 'The World Bank and health', *British Medical Journal* 318, 1999, pp. 1132–5.

[3] It should be noted that morality refers to what people believe is right or wrong about relationships, and that a wide range of 'local moralities' can be observed around the world. Ethics is defined as a branch of philosophy that examines the basis for right and wrong, good and bad, and attempts to provide reasons for recommending norms for behaviour.

and withdrawing treatments, advance directives (living wills) and physician-assisted suicide. More recently, the debate has included the use of reproductive technology, the implications of the new genetic biotechnology, and ethical issues at the level of health care organizations (institutional ethics) and populations (public health ethics).[4]

Since the birth of modern bioethics the world has changed profoundly. The most striking changes include widening economic disparities; rapid population growth; the emergence of new infectious diseases, including HIV/AIDS; escalating ecological degradation associated with modern consumption patterns; numerous local and regional wars and a stockpile of nuclear weapons; massive shifts and dislocations of people around the world; advances in science and technology (in particular biogenetic and communication technologies) with profound implications for individuals and populations; and, most recently, new terrorist threats to life that have shockingly demonstrated how interconnected we all are.

These changes call for interest in health and ethics to be extended beyond the micro-level of interpersonal relationships to include ethical considerations at the meso-level of institutions and nations and at the macro-level of international relations. Extending the discourse on ethics towards a more comprehensive approach could promote the new mindset needed to improve health and well-being globally. Such a mindset requires a realization that health, human rights, economic opportunities, good governance, peace and development are all intimately linked within a complex, interdependent world. The challenges we face in the twenty-first century are to explore these links, to understand their implications and to develop processes that could harness economic growth to human development, narrow global disparities in health and promote peaceful coexistence.

A set of values that combines genuine respect for the dignity of all people with a desire to promote the idea of human development beyond that conceived within the narrow, individualistic, 'economic' model of human flourishing, could serve to promote peaceful and beneficial use of new knowledge and power. A global agenda must extend beyond the rhetoric of universal human rights to include greater attention to duties, social justice and interdependence. Health and ethics provide a framework within which such an agenda could be developed and promoted across national borders and cultures. We contend that failure to make paradigm shifts in ethical discourse and in human cooperation worldwide will increase the likelihood of 'revolt from below' and the destruction of so much that has been gained in recent decades.

Bioethics offers a way forward for global health reform through five transformational approaches: developing a global state of mind; promoting long-term self-interest; striking a balance between optimism and pessimism about globalization and solidarity; strengthening capacity; and enhancing the production of global public goods for health.

[4] D. Buchanan, *An ethics for health promotion* (New York: Oxford University Press, 2001).

The context of global health ethics

The context within which global health ethics needs to be developed highlights the importance of the problems for which ethical solutions must be sought. We begin here by describing key elements that frame the context for an unstable world increasingly at risk of massive rebellion and violence from those who are excluded from the benefits of progress and who have nothing to lose from destroying what others thoughtlessly or selfishly enjoy.

Advances in science and technology

Twentieth-century developments in science and technology have transformed health care and improved the lives of many people.[5] Most recently, the rapid acquisition of biological knowledge has surpassed all past theoretical and technological achievements. Advances in genomics and genome-related biotechnology could, *if applied correctly*, transform medicine and health care in the next few decades, and perhaps even reduce inequities in global health both between and within countries.[6]

Health professionals will have the opportunity to investigate genetic determinants in relation to individually expressed responses to environmental influences; use gene therapy to correct genetic defects; and use new molecular biology techniques to design more specific therapeutic agents. Plants could be genetically engineered to manufacture or incorporate vaccines, nutrients and drugs of major public health significance, which could then be purified and packaged as pharma- or agri-ceuticals (this area covers such initiatives as molecular farming, nutraceuticals, functional foods). Alternatively, and more alluringly, the same desired products could be grown in commonly eaten foods to become edible vaccines, nutrients and drugs, with potentially impressive public health benefits. The underlying technology, once developed and validated by industry or public research institutions, might be easily transferable even to the poorest of developing countries, where fertile land may be readily available to grow the biomass needed, and where public health needs are the greatest. Local harvesting could drastically reduce transportation, refrigeration and storage costs.

However, the social implications of these advances must be anticipated before stakeholders' positions become deeply entrenched. Used inappropriately and unwisely, the new power of genome-related biotechnologies may, like other forms of power, benefit only a privileged minority and actually increase inequities in global health.[7] It is salutary to consider that we have not yet wisely applied

[5] R. Porter, *The greatest benefit to mankind: a medical history of humanity from antiquity to the present* (London: HarperCollins, 1997).

[6] P. A. Singer and A. S. Daar, 'Harnessing genomics and biotechnology to improve global health equity', *Science* 294, 2001, pp. 87–98.

[7] S. R. Benatar, 'A perspective from Africa on human rights and genetic engineering', in J. Burley, ed., *The genetic revolution and human rights* (Oxford: Oxford University Press, 1999); S. R. Benatar, 'Human rights in the biotechnology era: a story of two lives and two worlds', in G. S. Bhatia, J. S. O'Neil, G. L. Gall and P. D. Bendin, eds, *Peace, justice and freedom: human rights challenges in the new millennium* (Edmonton: University of Alberta Press, 2000), pp. 245–57.

already proven drugs and vaccines, or our accumulated impressive knowledge, to improve the health of people across the world.

Ethical evaluation and the widespread promotion of ethical values that are truly universal must go hand-in-hand with new discovery, not lag behind. An extended bioethics discourse should involve the public and help create a new social contract between science and society.[8] However, it is also necessary to acknowledge that science is not value free and has deep social foundations.[9] The extent to which the scientific endeavour is driven by social priorities is revealed by several facts. For example, 66 per cent of US government expenditure on research and development is devoted to military research,[10] and 90 per cent of global expenditure on medical research is on diseases causing 10 per cent of the global burden of disease.[11] Moreover, of 1,223 new drugs developed between 1975 and 1997, only 13 were for the treatment of tropical diseases. It is evident from these facts that the questions posed by scientists are not necessarily determined by the need for knowledge. The interests of powerful nations, those who fund research and perhaps even the interests of many researchers often outweigh the interests of research subjects or society as a whole. It is also fair to note that the value placed on acquiring new knowledge exceeds that placed on how best to apply existing knowledge.[12]

The global social context of research thus needs to be understood in order to unravel the values that drive the scientific quest.[13] The emphasis on military research and the neglect of diseases that afflict billions of people living in abject misery reflects a value system that marginalizes and devalues with impunity the lives of more than half the world's population. It is also important to make the point that saving lives in poor countries is not dependent predominantly on medical research. Just as mortality rates for tuberculosis and measles fell precipitously with improved living conditions before specific treatments became available,[14] so many lives could be saved now by economic and social policies that would improve basic living conditions.

In his presidential address to the US National Academy of Sciences in 2000, Bruce Alberts emphasized the responsibility of the scientific community for making social progress.[15] Science cannot be focused solely on acquiring new knowledge. It must also examine the ethical implications of the application of

[8] M. Gibbons, 'Science's new social contract with society', *Nature* 402, 1999 (supplement), pp. C81–4.

[9] National Academy of Sciences, National Academy of Engineering and Institute of Medicine, *On being a scientist* (Washington DC: National Academy Press, 1995).

[10] R. L. Sivard, *World military and social expenditures*, 16th edn, *1996* (Washington DC: World Priorities Press, 1996).

[11] World Health Organization, *Investing in health research and development: report of the ad hoc committee on health research relating to future intervention options* (Geneva: WHO, 1999).

[12] N. Maxwell, *From knowledge to wisdom: a revolution in the aims and methods of science* (Oxford: Blackwell, 1984).

[13] E. Hobsbawm, *The age of extremes: a history of the world 1914–1991* (New York: Pantheon, 1994).

[14] L. A. Sagan, *The health of nations* (New York: Basic Books, 1987).

[15] B. Alberts, 'Science and human needs', presidential address, 137th annual meeting of the US National Academy of Sciences, Washington DC, 1 May 2000.

such knowledge in an international context in order to form legitimate public policy and promote ways to ameliorate the miserable conditions in which the majority of the world's people live.

Disparities in health

In spite of unprecedented advances in science, technology and medicine, marked disparities in health persist. Life expectancy has improved dramatically worldwide during the twentieth century, but in recent years this trend has been reversed in the poorest countries. For example, life expectancy in Canada is 80 years and rising, but in some countries in Africa it is 40 years and dropping. It is expected to fall to as low as 30 in Botswana by 2010 if the trend is not checked and reversed.[16] Disparities in health and life expectancy, posing threats to the lives of all, are linked to wealth and poverty, within and between rich and poor nations. Moreover, 'Among the developed countries it is not the richest societies which have the best health, but those that have the smallest income differences between rich and poor.'[17]

The challenge of achieving improved health for a greater proportion of the world's population is one of the most pressing problems of our time and is starkly illustrated by the threat of infectious diseases. A few decades ago there was hope that the major infectious diseases plaguing humankind could be eliminated. The World Health Organization's unprecedented success with smallpox was a remarkable model. However, the recrudescence of tuberculosis and malaria in multi-drug resistant forms, and the appearance of HIV infection (and other new infectious diseases) have dashed such expectations and illustrated the limitations of a narrowly focused scientific approach to public health.[18] We cannot ignore the adverse historical, political and economic factors that contribute to the ecological conditions conducive to the rise and spread of these diseases.[19] Communicable diseases continue to be the leading causes of loss of human life and potential. Their control is not merely a problem for individual nations but rather one for the whole world.[20] Infections have no respect for geographical boundaries, particularly in an era of extensive and rapid transportation allowing easy transmission of infectious agents.

Chronic diseases are also becoming more prevalent in developing countries, producing a 'double burden' of disease. The deteriorating state of health is further aggravated by the consumption in richer and poorer countries of mass-produced and highly processed foods, leading to obesity and diabetes, and the relentless promotion of tobacco, leading to coronary artery disease and congestive

[16] 'HIV/AIDS in Africa', http://www.securethefuture.com/aidsin/data/aidsin.htm.
[17] R. G. Wilkinson, *Unhealthy societies: the afflictions of inequality* (New York: Routledge, 1996).
[18] S. R. Benatar, 'Prospects for global health: lessons from tuberculosis', *Thorax* 50, 1995, pp. 487–9.
[19] K. Lee and A. B. Zwi, 'A global political economy approach to AIDS: ideology, interests and implications', *New Political Economy* 1, 1996, pp. 355–73.
[20] L. Garrett, *The coming plague: newly emerging diseases in a world out of balance* (New York: Farrar, Straus and Giroux, 1994).

heart failure, chronic lung disease and cancer. Violence associated with the trade in small arms, illicit drugs and sex are additional aggravating factors.[21]

Widening economic disparities and extreme poverty

Changes in the world economy during the past century have generated great wealth that has enhanced the lives of many. However, neoliberal global economic trends are both widening the gap between rich and poor and exacerbating extreme poverty,[22] defined as 'a condition of life so limited by malnutrition, illiteracy, disease, squalid living conditions, high infant mortality, and low life expectancy as to be beneath any reasonable definition of human decency'.[23] At the beginning of the twentieth century, the income of the richest 20 per cent of the world's population was nine times that of the poorest 20 per cent. By 1960, it was 30 times as large; and since then the gap has widened ever more rapidly, to the point where at the end of the century the richest fifth had an income 80 times that of the poorest fifth (see table 1). Today, 2 billion people live on less than US$2 per day, and more than a quarter of the world's population lives under conditions of 'absolute poverty'.

World debt grew from US$0.5 trillion in 1980 to US$1.9 trillion in 1994 and to US$2.2 trillion in 1997. 'From 1982–1990 the "South" received US$927 million in aid, grants, trade credits, direct private investment and loans ... but the "South" paid out US$1.3 trillion in interest and principal on debt (excluding royalties, dividends, repatriated capital and underpriced raw materials).'[24] Grants to developing countries went down from US$35 billion in 1991 to US$23 billion in 1998. The IMF extracted a net US$1 billion from Africa in 1997 and 1998. Developing countries paid back US$13 for every US$1 they received in grants in 1998.[25] Although Third World debt accounts for a small proportion of total world debt, it has reached obscene levels in relation to these countries' income. How such debt has been created, and the fact that Third World debt is a small component of total world debt yet can never be repaid, has led to debt being described as the modern equivalent of slavery.[26]

Continuing wars contribute to massive social disruption. Unlike wars in the past between powerful and wealthy nations, most conflict today occurs within the weakest and poorest states in the world. Indeed, the phenomenon of conflict and warfare is changing profoundly, with citizens suffering disproportionately.[27] Bitter and vicious conflict between peoples, even those who are separated by

[21] H. R. Friman and P. Andreas, eds, *Illicit global economy and state power* (New York: Rowman and Littlefield, 1999).
[22] R. Falk, *Predatory globalization: a critique* (Cambridge: Polity Press, 1999); R. Barnet and J. Cavanagh, *Global dreams: imperial corporations and the new world order* (New York: Simon & Schuster, 1994).
[23] *World military and social expenditures 1996*.
[24] 'The G8 and the debt crisis', Alberta Council for Global Co-operation, http://www.web.ca/acgc.
[25] 'Jubilee 2000 news', http://www.jubilee2000uk.org/jubilee2000/news/imf0904.html.
[26] A. Pettifor, *Debt, the most potent form of slavery* (London: Christian Aid Society, 1996).
[27] M. Clarke, 'War in the new international order', *International Affairs* 77: 3, 2001, pp. 663–71.

Table 1: Indicators of an unjust world

Ratio between richest 20% and poorest 20%	
1900	9:1
1997	70:1
Ratio of extremely poor people 1975:1990	1:2
Life expectancy (years)	
World average	About 68
Sub-Saharan Africa	40 and falling
World population (1994) living on 4% world GNP	45%
Number of billionaires owning 4% of world GNP	385
World population living on <US$300/year	50%
World population living in absolute poverty[a]	>25%
GNP per capita	
Of richest country (US$)	35,000 +
Of poorest country (US$)	200
Debt owed to rich countries by poor countries (US$, 1997)	2.2 trillion
Developed countries	
% of GNP spent on military	5.3
% of GNP spent on aid to developing countries	0.24
% of GNP spent by United States on aid to developing countries	0.1
Worldwide expenditure on military goods and services (US$, 1995)	0.75 trillion
% of US government R&D expenditure spent on military research	66
Cost of arms for developing countries (US$, 1981–8)	340 billion
Increase in value of arms produced in developing countries (US$, 1950–1980)	× 500

[a] Defined as 'a condition of life so limited by malnutrition, illiteracy, disease, squalid living conditions, high infant mortality, and low life expectancy as to be beneath any reasonable definition of human decency'.

only minor differences and who have managed to live peacefully together for many decades, is one of the dominant resurgent tragedies of our modern era. The development of ethnic tension—described by Michael Ignatieff as the 'narcissism of minor difference'[28]—leading to ethnic cleansing in Bosnia and genocide in Rwanda,[29] has resulted in horrifying conflict, continuing displacement of millions of people from the culture and environmental roots that sustain their social lives, the creation of vast numbers of refugees, suffering on a massive scale, wastage of natural and human resources and the *potential for destabilizing the lives of privileged people everywhere*. It should be appreciated that it is not the ethnic differences per se that cause the conflict, but rather competition for resources

[28] M. Ignatieff, *The warrior's honour* (London: Chatto & Windus, 1998).

[29] P. Gourevitch, *We wish to inform you that tomorrow we will be killed with our families: stories from Rwanda* (London: Picador, 1998).

and the exploitation of ethnicity in the pursuit of power. The failure of powerful Western nations to avert such tragedies is sobering.[30]

Economic disparities have become so marked and their adverse effects so apparent that a very significant degree of incompatibility has arisen between neoliberal economic policies and the goals of democracy. These extremes of poverty and wealth are dehumanizing, both for those who live in poverty and for those who make it possible and even necessary for the poor to do so. If the underlying causes of these disparities are ignored, and merely medical and biological approaches are adopted to address inequalities in health, success in improving global health will be very limited. Determinants of poverty and ill health on which scholars, politicians, policy-makers and the public need to reflect, and which must be constructively addressed to advance moral and social progress, include the following:

- The evolution towards a globalized economic system that seems more concerned about free trade than about equitable and sustainable development, human freedom and population health.
- The flourishing of processes (often exploitative) that drive disproportionate accumulation of wealth by a small elite with little concern for the poor.
- Excessive consumerism of private goods as a 'way of life', with neglect of public goods and devaluing of civic society.
- The increasingly dominant global role of multinational companies and the adverse influence of some of them on the economies of small and weak states.
- The adverse effects of speculative, short-term financial investments and sudden movements of large amounts of capital.
- The impact on developing countries of earlier structural adjustment policies instituted by the IMF and the World Bank.
- The creation and perpetuation of Third World debt, which cannot be repaid and poses insuperable impediments to development.
- Many years of excessive military expenditure and the accumulation of a massive arsenal of weapons of mass destruction with the potential to destroy all life on our planet.

While these forces operate in a world of gross imbalances of wealth and power between the rich developed countries of the 'North' and the poor developing countries of the 'South', many political realities within developing countries have also contributed to the suffering of whole populations. These include corruption, ruthless military dictatorships, ostentatious expenditure by the ruling elite, underinvestment in basic education and health, excessive military expenditures, and ethnic strife and civil wars. While such deficiencies are open to appropriate criticism, it is also necessary to acknowledge that these adverse forces have been promoted by powerful nations pursuing their own economic and geopolitical

[30] S. Power, *A problem from hell: America and the age of genocide* (New York: Basic Books, 2001).

interests, often through collusion with despots who have much to gain in personal wealth at the expense of their citizens.

Patterns of expenditure on health care and research

With modern advances in medicine, and many causes of wasted resources in the provision of health care, the proportion of GNP spent on health care has escalated rapidly in many industrialized countries. The United States alone spends above 50 per cent (US$1.2 trillion) of the total health care expenditure in the world (approximately US$2.2 trillion a year)—on 5 per cent of the world's population.[31] In some developing countries per capita GDP has been declining steadily over the past 20 years, and with this the proportion of GDP spent on health care has also diminished markedly. For example, in sub-Saharan Africa, per capita GDP fell from US$590 in 1980 to US$500 in 1997; over the same period, government expenditure on health care fell from 5.8 per cent to 1.6 per cent of GDP.[32]

Regrettably, medicine is becoming increasingly linked to and influenced by market forces, with consequent conflicts of interest and dilution of professionalism.[33] Loss of public trust in the medical profession undermines society by threatening the effective and equitable delivery of valued social services.[34] The moral dilemma for wealthy nations and multinational pharmaceutical companies that make vast profits has been powerfully portrayed in relation to lack of treatment for HIV/AIDS in poor countries.[35]

Table 2: Health-care realities

Approx. total world expenditure on health care (US$)	2.2 trillion
Expenditure on health care by United States alone (US$)	1.1 trillion
% GNP spent on health care	
United States	14.1
Sub-Saharan Africa	1.6
Global GNP spent on health care for 16% of the world's population	89%
Their contribution to global DALYs	7%

Population, consumption and ecological degradation

Since 1850, the world's population has increased nearly sixfold, from little over 1 billion to almost 6 billion. Non-discriminatory, peaceful means of curbing such unsustainable growth rates are clearly required. However, it is disputed whether

[31] B. R. Bloom, 'The future of public health', *Nature* 402, 1999, Supplement, 2 Dec., pp. C63–4.
[32] R. Sandbrook, *Closing the circle: democratisation and development in Africa* (London: Zed Books, 2000).
[33] R. G. Spece, D. S. Shimm and A. E. Buchanan, *Conflicts of interest in clinical practice and research* (New York: Oxford University Press, 1997).
[34] E. Freidson, *Professionalism: the third logic* (Chicago: University of Chicago Press, 2001).
[35] P. Bond, 'Globalisation, pharmaceutical pricing and South African health policy', *International Journal of Health Services* 29: 4, 1999, pp. 765–92.

this can be achieved without first improving literacy, living conditions, access to health care and educational opportunities for those living in extreme poverty.

Massive population growth over the past 150 years has been accompanied by a 30-fold increase in consumption. US citizens, who comprise 5 per cent of the world's population, account for over 20 per cent of the world's annual energy use, while Chinese citizens, who comprise 20 per cent of the population, consume 10 per cent of annual energy use. Industrialized patterns of consumption clearly cannot become the norm for the whole world. Evidence is accumulating that consumption of environmental capital exceeds its regeneration rate by nature, and future generations will pay the price in terms of consequent disease, impaired quality of life and shorter lifespan.[36]

The impacts of climate change, water shortages, increasing exposure to radioactivity and loss of species diversity will include changing rates of illness and disease related to exposure to thermal extremes, changes in the geographical ranges and incidence of vector-borne diseases, new infectious diseases, adverse effects on child growth and development from changed food production and distribution, more cancers, and a growing burden of debilitating chronic diseases that even wealthy countries will not be able to afford to treat.[37] The attitude of the Bush administration to the Kyoto protocol on CO_2 emissions illustrates the danger to all when the economic aspirations of a single nation take precedence over the well-being of all other nations and future generations of humankind across the planet.[38]

If they are to be credible, calls for population control in developing countries will have to be matched by the example of consumption control in industrialized nations. The rate of population growth must be reduced, new attitudes to consumption fostered, and new, less environmentally damaging approaches to the generation of energy developed. New insights into the processes leading to destruction of environmental capital (the 'global commons') and how this could be diminished present additional challenges. These can be dealt with only through international collaborative endeavours that require 'forms of communication, information and trust that are broad and deep beyond precedent, but not beyond possibility'.[39] The challenge for global health ethics is to create a framework and processes to help achieve these goals in order to sustain peace, prosperity, freedom and justice for all.

[36] A. J. McMichael, *Planetary overload. global environmental change and the health of the human species* (Cambridge: Cambridge University Press, 1993); World Health Organization, *Health and environment in sustainable development: five years after the Earth Summit* (Geneva: WHO, 1997).

[37] A. J. McMichael, *Human frontiers, environments and disease: past patterns, uncertain futures* (Cambridge: Cambridge University Press, 2001).

[38] http://www.washingtonpost.com/wp-dyn/articles/A2354-2001Mar27.html, *International Affairs* 77: 2, April 2001, The climate change debate.

[39] E. Ostrom, J. Burger, C. B. Field, R. B. Norgaard and D. Policansky, 'Revisiting the commons: local lessons, global challenges', *Science* 284, 1999, pp. 278–82.

Values for global health ethics

We contend that all of the values we review below must be fostered to form a basis for global health ethics. Although none can stand alone, the most important for global health ethics is *solidarity*. Without solidarity it is inevitable that we shall ignore distant indignities, violations of human rights, inequities, deprivation of freedom, undemocratic regimes, and damage to the environment. However, if a spirit of mutual caring can be developed between those in wealthy countries and those in developing countries, constructive change is possible.

Respect for all human life and universal ethical principles

The idea of respect for human life springs partly from the long-standing religious belief, common to many cultures, that 'man is made in the image of God'. Given the diversity of religions and the unfortunate tendency to highlight only their differences, imaginative approaches are needed to promote respect for human dignity on these grounds. Hans Küng argues that, despite their wide range, all religions have many common elements that can be used to promote a sense of spiritual kinship while respecting a diversity of customs and rituals. His global ethic for humankind, offered as a means of promoting peaceful progress in a world divided by religious (and other) differences,[40] has been a major achievement and it is regrettable that it has not achieved a higher action profile (box 1).

In the secular sphere, for the past 50 years respect for human dignity, expressed through the Universal Declaration of Human Rights (UDHR), has achieved a high profile and many highly significant and valued results. However, its successes are difficult to quantify and many regard them as limited. For example, many oppressive regimes continue to participate with relative impunity in international activities, and the United States has both failed to ratify several crucial international agreements and refused to accept humanitarian treaties on landmines and the International Criminal Court. In addition, as Richard Falk has noted, the United States is widely perceived as using its diplomatic strength to protect its friends from well-deserved allegations of abuse of human rights, and has used force unilaterally—all of which undermine its advocacy for human rights.[41]

Underlying the debate about universal human rights and universal ethical principles are the hotly debated questions about what counts as a right, and whether ethics are relative to particular cultures and societies or if there are indeed ethical universals. Ruth Macklin has argued affirmatively for the universal position—while taking care to avoid viewing this as absolutist. If she is correct, these ethical universals provide a foundation for global issues and global bioethics that crosses national borders and cultures.[42] Others both dispute the

[40] H. Küng, *A global ethic for global politics and economics* (Oxford: Oxford University Press, 1997).
[41] R. A. Falk, *Human rights horizons: the pursuit of justice in a globalising world* (New York: Routledge, 2000).
[42] R. Macklin, *Against relativism* (New York: Oxford University Press, 1999).

Box 1: Declaration made by the World Conference of the Religions of Peace, Kyoto, Japan, 1970

Bahai, Buddhist, Confucian, Christian, Hindu, Jain, Jew, Muslim, Shintoist, Sikh, Zoroastrian and others—we have come together in peace out of a common concern for peace.

As we sat down together facing the overriding issues of peace we discovered that the things which unite us are more important than the things that divide us. We found that we share:

- a conviction of the fundamental unity of the human family, of the equality and dignity of all human beings;
- a sense of the sacredness of the individual person and his conscience;
- a sense of the value of the human community;
- a belief that love, compassion, unselfishness and the force of inner truthfulness and of the spirit have ultimately greater power than hate, enmity and self-interest;
- a sense of obligation to stand on the side of the poor and the oppressed as against the rich and the oppressors;
- a profound hope that good will finally prevail.

Source: H. Küng, *Global responsibility: in search of a new world ethic* (New York: Continuum Press, 1993), p. 63.

ontological status of values (claiming these are less than universal) and deny an epistemology based on reason as the foundation of human nature, through which universal values could be accessible.[43]

The dispute between universal and relative moral values within the field of bioethics is largely due to a failure to distinguish between the observed differences in moral behaviour accepted as the norm in different societies (descriptions of what 'is'), and universal principles that represent an attempt to provide, through critical reasoning, justification for universal norms (prescriptions of what 'ought to be'). There is also a lack of understanding that universal principles neither imply any form of essentialism,[44] nor suggest that simple deductions can be made from universal principles to achieve uniformity in how the principles are applied.

Considerations of context are essential aspects of moral reasoning in the application of universal principles within specific situations, and this process does not entail supporting the moral relativism that would make all local

[43] T. Dunne and N. J. Wheeler, eds, *Human rights in global politics* (Cambridge: Cambridge University Press, 1999); R. C. Fox, 'Is medical education asking too much of bioethics?', *Daedalus* 128: 4, Fall 1999, pp. 1–25.
[44] D. Callahan, 'The social sciences and the task of bioethics', *Daedalus*, Fall 1999, pp. 275–94.

practices legitimate.[45] Failure to distinguish moral relativism from the morally relevant considerations of context that are necessary for the specification of universal principles reveals a superficial understanding of the meaning of universal principles and of the ethical decision-making process required to apply these. Anthropologists who describe the local world as 'the moral context' of life are quite right in doing so.[46] However, they are wrong to proceed from their descriptions to imagining that the existence of local moral worlds negates both criticism of local morality and the quest for prescriptive universal norms that could be applied with sensitivity and judgement in local contexts.

Thankfully, the acrimonious debate about the importance of the contributions that can be made to bioethics by anthropologists (and other social scientists) is maturing.[47] There is now some appreciation of the need to go beyond dichotomous approaches to an understanding that the description and knowledge of local moral worlds, though necessary, is not sufficient, and that the analytical skills of philosophers are required to facilitate the development of prescriptive norms. The description by Kevin Wildes of 'medicine as a social institution' and 'bioethics as social philosophy',[48] and the elaboration of 'social moral epistemology' by Allen Buchanan,[49] illustrate that if moral progress is to be made, we must first recognize that contemporary applied ethics is impoverished by failure to acknowledge the extent to which it is parochial. Buchanan eloquently describes the need to improve our understanding of how social practices and institutional functions facilitate or impede the formation, preservation and transmission of morally relevant beliefs required for the proper functioning of virtues. These perspectives shed light on how the contested gap between the 'local' and the 'universal' could be narrowed through a deeper understanding of their intimate interaction.

Human rights, responsibilities and needs

'Human rights', as a secular concept for promoting human dignity, has the potential to transcend religions, national borders and cultures. In recent decades the human rights movement has flourished and more countries seem to be accepting universal human rights as a 'civilizational' standard,[50] despite the inconsistencies already mentioned.

Although human rights are widely accepted in the rhetorical sense, much argument continues about the nature and extent of such rights. Since the early 1990s a complex debate has also emerged regarding the Western bias and origins of

[45] T. L. Beauchamp, 'The role of principles in practical ethics', in L. W. Sumner and J. Boyle, eds, *Philosophical reflections on bioethics* (Toronto: University of Toronto Press, 1996), pp. 79–95.
[46] The word 'morals' derives from the Latin *mores*, meaning 'customs', which *are* local.
[47] D. Callahan, 'Universalism and particularism: fighting to a draw', Hastings Center Report 30: 1, 2000, pp. 37–44.
[48] K. W. Wildes, 'Bioethics as social philosophy', *Social Philosophy and Policy Foundation* 19, 2002, pp. 113–25.
[49] A. Buchanan, 'Social moral epistemology', *Social Philosophy and Policy Foundation* 19, 2002, pp. 126–52.
[50] J. Donnelly, 'Human rights: a new standard of civilisation?', *International Relations* 74, 1998, pp. 1–24.

human rights, and the extension of human rights from the West to the rest of the world, while superficially successful, must still be considered as largely 'unfinished business'.[51]

Insincerity in the initial formulation of the UDHR, lack of agreement on what qualifies as a right, a rhetoric about rights that neglects the corresponding duties that are inherent in the concept of rights, and threats to the idea that there can be such universal values all undermine the implementation of the 'rights revolution' and the derivation of benefit from its power.[52] Other reasons why success in the implementation of human rights has been only limited include the failure of the movement to reach beyond elite circles to capture the imagination of everyday citizens, the failure of powerful nations to document and acknowledge human rights abuses within their own borders, insincerity in the application of human rights standards in relationships between powerful and less powerful nations, and failure to appreciate that the notion of Western ownership of human rights poses a risk to the global success of the human rights movement.[53]

Inadequate attention has been paid to the fact that rights and duties are intimately connected; that the conceptual logic of rights entails corresponding duties. Thus duty bearers need to be identified to ensure the realization of rights. If all claim rights but none is willing to bear duties, rights will not be satisfied. Our ability to enjoy rights is thus determined by our willingness to accept our responsibilities. Audrey Chapman expresses concern that political discourse is impoverished by a human rights discourse in the United States which, 'far more than in other liberal democracies, is characterised by hyper-individualism, exaggerated absoluteness, and silence with respect to personal, civic, and collective responsibilities'.[54]

She draws attention to three advantages of paying greater attention to the duties related to specific rights: (1) moving the human rights debate in the direction of who has to do what if these rights are to be realized; (2) more focused and specific discussions of questions of priority among rights and other important social goals; and (3) discussion of the inadequacies of the contemporary international political and economic order. She eloquently describes the shift required from an excessively liberal human rights paradigm to a social model of human rights that links benefits and entitlements with the acceptance of a series of responsibilities—the starting point for such rights being the principle of respect for all persons in the context of community.

The recently proposed Declaration of Universal Duties could further strengthen the rights approach.[55] A focus on duties would expose the responsibility of

[51] Falk, *Human rights horizons*.

[52] D. Rieff, 'The precarious triumph of human rights', *New York Times Magazine*, 8 Aug. 1999, pp. 37–41.

[53] Falk, *Human rights horizons*.

[54] A. R. Chapman, 'Reintegrating rights and responsibilities', in K. W. Hunter and T. C. Mack, eds, *International rights and responsibilities for the future* (Westport, CT: Praeger, 1996), pp. 3–28; A. Robertson, 'Critical reflections on the politics of need: implications for public health', *Social Science and Medicine* 47, 1998, pp. 1419–30.

[55] Trieste Declaration of Universal Duties, Trieste University Press, 1997.

developed nations not to act in ways that may abrogate the rights of people in developing countries. It could also promote recognition of the role developing countries themselves play in causing and perpetuating the misery of their peoples.

The application of human rights must thus extend beyond civil and political rights to include social, cultural and economic rights and their close integration with the reciprocal responsibilities required to ensure that rights are honoured and basic needs are met.[56] Just as the concept of 'political citizenship' requires non-discriminatory enfranchisement of all, so the concept of 'social citizenship' requires access to the basic requirements for survival and potential flourishing—a requirement of modern democracy (see below).

Considerations of group rights to protect minorities add another layer of complexity. Protecting minorities is more than an extension of human rights and is an essential component of the quest for international peace and security. Much remains to be achieved if human rights are to become an integral aspect of global politics and law.[57]

Equity

'Equity' is another concept that could transcend national borders and cultures. Equity can be defined as the provision of equal shares for equal needs, or the allocation of unequal shares for unequal needs as long as proportionality is maintained. However, proportionality is difficult to assess because of incommensurability.[58] Some inequalities in wealth, health and disease are inevitable aspects of life. Eliminating all inequalities is not possible. In addition, not all inequality is inequitable. Inequity refers to those inequalities that are considered to arise from unfairness.

Inequitable disparities in health have become a major focus of attention in recent years. The Global Health Equity Initiative (GHEI) funded by the Rockefeller Foundation is based on the idea that advocacy, capacity building and a focus on specific product initiatives can effectively harness the new sciences to counter health-product market failures. Its work includes accelerating the development and distribution of vaccines and drugs to fight the diseases that afflict those who are poor and who are bypassed by commercial research and development, notably AIDS, malaria and tuberculosis. For example, market failure to develop new drugs for tuberculosis will be dealt with through the Global Alliance for TB drug development (GATB). The GATB is seeking a minimum of 50 per cent government funding and the balance from private sources. Its social mission is to establish immediate equitable access to new

[56] Together with the Civil and Political Rights Covenant, the General Assembly of the United Nations adopted in 1966 the International Covenant on Economic, Social and Cultural Rights, obliging governments to protect the rights of all their citizens to labour, social, economic and cultural rights.

[57] Falk, *Human rights horizons*.

[58] By incommensurability is meant the impossibility of weighing and balancing values that cannot be measured against each other on any common scale—for example, additional years of normal life against years of disabled life.

innovative treatments for tuberculosis, including strains that are resistant to many drugs, and to disseminate a directly observed therapy strategy (DOTS) using innovative approaches to public relations, transfer of technology and capacity building.[59]

However, it is unlikely that inequitable disparities in health will be reduced merely through changes in the health sector alone. As the achievement of good health requires more than the provision of health care services, so attention needs to be directed towards the forces that drive and perpetuate economic inequity: for example, to the forces that in recent years have shifted much of the discourse in international health policy debates away from considerations of equity towards an efficiency-driven perspective. While this market influence, which reflects a narrow, direct approach to health, has value, it also has considerable potential to damage the equity valued by more egalitarian approaches.[60]

Instead of taking a direct approach that focuses on equity in health (a difficult concept to define) as an end in itself, Fabienne Peter has suggested an indirect approach that sees the pursuit of health as embedded in the broader pursuit of social justice (as an important determinant of health) in general.[61] This approach emphasizes the concept of agency and well-being (defined as 'having the capabilities that a person can achieve') and the freedom (see next section) to pursue one's own life goals within a pluralistic world.[62] It also provides space to address the 'politics of need [for food, shelter, education and protection from harm] in the context of the modern welfare state in general and in relation to public health in particular'.[63]

John Rawls's theory of justice (central to which is a 'fair system of cooperation' among individuals who all enjoy fundamental equality and freedom within a particular society) offers an appealing vision of a social order that every citizen finds *legitimate* despite large differences in their personal values. It has been suggested that such an approach could open the path to considering the implications of cooperation and justice at a global level.[64] Rawls's Law of Peoples attempts to achieve this goal by describing how 'peoples' (as nations) that hold liberal values, or that are at least decent societies, could agree to structure their international relations.[65]

[59] http://www.rockfound.org/rocktext/t_99prog/t_health/t_indicators.html.

[60] L. Gilson, 'In defence and pursuit of equity', *Social Science and Medicine* 47/12, 1998, pp. 1981–96.

[61] F. Peter and T. Evans, 'Ethical dimensions of health equity', in T. Evans, M. Whitehead, F. Diderichsen, A. Bhuyia and M. Wirth, eds, *Challenging inequities in health: from ethics to action* (New York: Oxford University Press, 2001), pp 24–33.

[62] A. Sen, *Development as freedom* (New York: Anchor Books, 1999).

[63] A. Robertson, 'Critical reflection on the politics of need: implications for public health', *Social Science and Medicine* 47: 10, 1998, pp. 1419–30.

[64] Peter and Evans, 'Ethical dimensions of health equity'.

[65] Rawls offers eight laws: Peoples are free and independent, and their freedom and independence are to be respected by other peoples. Peoples are to observe treaties and undertakings. Peoples are equal and are parties to the agreements that bind them. Peoples are to observe a duty of non-intervention. Peoples have the right of self-defence but no right to instigate war for reasons other than self-defence. Peoples are to honour human rights. Peoples are to observe certain specified restrictions in the conduct of war. Peoples have a duty to assist other peoples living under unfavourable conditions that prevent their having a just or decent political and social regime.

Global health ethics

Allen Buchanan has levelled criticisms at Rawls's Law of Peoples on the grounds that Rawls fails to take into consideration, first, 'that there is a global basic structure (the Westphalian system of states), which, like the domestic basic structure, is an important subject of justice because it has profound and enduring effects on the prospects of individuals and groups', and second, that 'the populations of states are not "peoples" in Rawls's sense and are not likely to become so without massive, unjustifiable coercion ... Rawls's failure to take these two facts into account explains two puzzling omissions in the Law of Peoples: the lack of principles of international distributive justice and the lack of principles addressing intrastate group conflicts.'[66] The economic polarization of the world illustrates the importance of the first omission. The conflict between religion/culture and the law in modern secular states in which human rights are respected illustrates the relevance of the second omission.[67] These failures seem to make Rawls's set of laws of limited value for a world in which national sovereignty, though waning, remains powerful.[68] The potential for Rawls's theory of justice to impact on everyday life globally would be enhanced if the United States added to its acclaim for this theory greater commitment to justice in access to health care within its own borders.

Norman Daniels has helped to bridge philosophical theories and practical realities by proposing benchmarks of fairness for health reform and adapting these for developing countries.[69] He has also, with James Sabin, made important contributions towards understanding fair processes in health care institutions by developing a model called 'accountability for reasonableness'.[70]

Freedom

Freedom is another highly prized value. This includes 'freedom from' as well as 'freedom to'. Good health and satisfying lives are determined both by the freedom from want (of basic subsistence and educational needs) and by the freedom to undertake activities of one's choice to achieve personal goals. In Amartya Sen's view, action should be focused on ensuring the opportunities to undertake these activities (defined by him as 'capabilities'), as he believes that equality can be best promoted by enhancing the capabilities of individuals.[71] Freedom from want (dependent at least to some extent on the actions of others) is essential to achieving these goals. Ian Gough and Len Doyal argue on moral grounds that the freedom to develop one's potential must be coupled to 'freedom from' through security of person and access to first-order biological needs—food,

[66] A. Buchanan, 'Rawls's Law of Peoples: rules for a vanquished Westphalian world', *Ethics* 110: 4, 2000, pp. 697–721.
[67] 'The end of tolerance: engaging cultural differences', *Daedalus*, Fall 2000.
[68] Buchanan, 'Rawls's Law of Peoples'.
[69] N. Daniels, D. Light and R. Caplan, *Benchmarks of fairness for health care reform* (Oxford: Oxford University Press, 1996).
[70] N. Daniels and J. Sabin, *Setting limits fairly: can we learn to share medical resources?* (Oxford: Oxford University Press, 2002).
[71] Sen, *Development as freedom*.

clean water, shelter, etc.—as the essentials for decent lives. A sense of empowerment and control over ourselves is, in their view, essential for human flourishing.[72] Respect for the basic needs and dignity of others, respect for the full range of human rights, belief in the rule of just law, willingness to take responsibility for one's actions and societal well-being, deriving satisfaction from work well done, contributing to new knowledge, and the freedom to develop one's full potential are essential for the achievement of personal fulfilment and human flourishing.

Sen's work has achieved the highest of accolades—not least because it focuses on 'freedom to'. In *Development as freedom* he draws on both philosophy and economic analysis to provide an eloquent conceptual exposition and ethical defence of today's dominant development thinking, the approach that has been called 'pragmatic neoliberalism'.[73] This is a market-oriented approach that goes beyond orthodox neoclassical analysis and macroeconomic reforms (although these remain central) to include responsive governance, political freedoms, improved education, health care and social safety nets, gender equity, and environmental sustainability.

Although Sen is considered to be among those who most eloquently promote the neoliberal agenda, largely by arguing for the freedom to achieve one's capabilities, his exposition and defence of the dominant neoliberal development paradigm has been criticized by Richard Sandbrook as being incomplete or implausible on three grounds.[74] First, Sandbrook contests the assumption that market exchange is 'a natural and intrinsically valuable pattern'. He draws upon the seminal work of Polanyi to remind us that, while market practices have existed throughout history, the modern market system, in which people satisfy their material needs by treating land, labour and money as commodities, is an invention of the past three centuries. Polanyi's analysis showed that 'reciprocity' and 'redistribution' were two alternative forms of economic organization that operated on a logic quite contrary to that of market exchange—with highly significant implications for development.[75]

Second, Sandbrook identifies shortcomings in Sen's conception of democracy and in his analysis of the 'challenges facing democracies'. While not contesting the standard arguments provided in favour of democracy, Sandbrook suggests that what is missing in Sen's account is an understanding of the dilemma of democracy in poor countries, and an analysis of the limits that a range of forces, including the concentrated economic power of major corporations and international economic systems, place on capitalist democracy in developing countries. Others have also argued that the ideology of trade liberalism obstructs the achievement of democracy by giving greater weight to freedom of the

[72] L. Doyal and I. Gough, *A theory of human need* (London: Macmillan, 1991).

[73] R. Sandbrook, 'Globalisation and the limits of neoliberal development doctrine', *Third World Quarterly* 21: 6, 2000, pp. 1071–80.

[74] Ibid.

[75] K. Polyani, *The great transformation: the political and economic origins of our time* (Boston, MA: Beacon Press, 1957).

market than to methods of governance and sustenance of democratic ideas.[76]

Third, Sandbrook suggests that there are major flaws in Sen's conception of 'reasoned social progress'. While Sen portrays a world in which citizens, through informed discussion in the context of free speech and free markets, can select policies to promote a just and prosperous society, the reality is that the majority of poor and oppressed will have to confront not only dictatorial states bent on dominating markets but also global and national power structures rooted in production and exchange. These criticisms highlight the challenges that need to be faced if human freedom is to be more widely achieved.

Democracy

Democracy, coupled to the capitalist free-market system, has been an essential and well-recognized feature of progress during the twentieth century. Less widely recognized are the tensions between democracy and capitalism. Democracy, a concept that has evolved considerably since its inception in ancient Greece,[77] should be more than either mere procedural democracy ('free and fair elections') or constitutional democracy (with its focus on legislated civil and political rights). It should also include more accountable decision-making and mechanisms for dealing with the inequities that are created and exacerbated by social and economic structures and processes.

Although there may be no true democracies, modern democracies aim to provide equal rights to a reasonable income, access to education for children and adequate health-care facilities. The fact that few societies can meet these requirements within the system of resource distribution operative under the current capitalist system (the US health care system, which excludes about 20 per cent of its population from health coverage, is a prime example) reveals the difficulty of achieving the goals of true modern democracy even in developed nations.[78]

Understanding such failure requires a recognition that democratization at the global level is not always seen as being in the best interests of capitalist countries.[79] An example is provided by Jason Ralph in recounting William Robinson's description of how 'under the banner of "market democracy" the US ... promotes polyarchy—a political system that leaves socio-economic circumstances in place while providing for political representation and the

[76] G. Teeple, *Globalisation and the decline of social reform: into the 21st century* (Aurora, Ont.: Garamond Press, 2000); Royal Danish Ministry for Foreign Affairs, *Building a global community: globalisation and the common good* (Copenhagen: RDMFA, 2000); Falk, *Human rights horizons*; J. Girling, *Corruption, capitalism and democracy* (London: Routledge, 1997). Classical economic theory assumes an entirely different relationship between means and ends from democratic theory. While both espouse freedom (of market exchange on one hand and of political identity/activity on the other), by deferring to powerful business interests governments renege on electoral pledges, and in the collusion between capitalism and democracy become corrupt.

[77] J. Dunne, ed., *Democracy: the unfinished journey, 508BC–AD 1993* (Oxford: Oxford University Press, 1992).

[78] I. Wallerstein, *The end of the world as we know it: social science for the 21st century* (Minneapolis: University of Minnesota Press, 1999).

[79] Ibid.; J. Dunne, ed., *Democracy*.

appearance of democracy—that legitimises the domination of transnational capital even though it fails to address and even exacerbates social injustice'. Ralph contends that 'America's standing in the world is threatened as much by [these] longstanding democratic failings as by recent concerns about the electoral procedure' for the 43rd President of the United States, and that an irresponsible market place can be as repressive as an unresponsive dictator.[80]

John Dunne argues that 'At the height of its present triumph, three great questions still confront representative democracy': (1) How do modern economies really work and what constraints do their workings really place on how governments can hope to act effectively? (2) How should democracies be governed and by whom? And (3) how far is it sane to hope that representative democracy can ever realize for all its citizens the goal of living together in freedom?[81]

The Royal Danish Foreign Ministry (summarizing the discussion held at several seminars on social progress in Copenhagen) argued that the forces of economic globalization are eroding democracy. At the same time, it advanced four reasons why the future world community needs to be more equitably and meaningfully democratic: (1) keeping the dangers threatening a globalized world under control requires cooperation and commitment of a maximum number of states and other institutions; (2) the process of globalization is in need of control and orientation, notably in its financial and economic facets—more freedom does not mean more equity or equality;[82] (3) peace and cooperation will prevail over conflict and wars only through shared values of greater scope and depth; and (4) a set of reasons can be advanced justifying the search for a global democratic community as the only morally and politically acceptable form of social organization.[83]

As democratic market regimes have varied enormously, geographically and historically, four criteria have been offered for assessing the quality of a democracy: (1) economic participation of all in a wide range of productive activities; (2) economic justice (fair rewards for activities); (3) economic morality (addressing the behaviour of all actors in the market economy—including public authorities); and (4) economic moderation—one of the most difficult virtues to achieve in a market economy. Achieving better-quality democracy is a challenge for all countries, including those that already consider themselves to be stable democracies. It is appropriate to recall here the admonition by Virchow that 'Medicine is politics and social medicine is politics writ large.'[84]

[80] J. Ralph, review article, 'American democracy and democracy promotion', *International Affairs* 77: 1, 2001, pp. 129–40.
[81] Dunne, ed., *Democracy*.
[82] Cf. 'Total freedom for the wolves means death for the lambs' (Isaiah Berlin).
[83] Royal Danish Ministry for Foreign Affairs, *Building a global community*.
[84] Cited in F. Eskin, 'Public health medicine: the constant dilemma', *Journal of Public Health Medicine* 24: 1, 2002, pp. 6–10.

Environmental ethics

As realization grows of the impact on the planet of the sixfold increase in world population and the 30-fold increase in annual energy consumption over the past 150 years, respect for our common environment is another value that is increasingly becoming accepted. Globalization of the world economy adversely affects the environment by encouraging the unrestrained use of natural resources and through pollution of rivers, soil and air in countries where legislation is less stringent or is not enforced. Such environmental abuse has potentially profoundly adverse effects on health and human well-being.[85] In this context the perspective of public health ethics must be extended beyond the local to include the global.[86] Environmental and ecological ethics thus have important contributions to make to the study of global bioethics, as originally recognized by Van Renselaar Potter.[87]

Now more than ever before, the *cooperative instinct* will need to supplement the *competitive forces* that promoted magnificent progress over several centuries but that now threaten to annihilate life on our planet. An alteration in the spectrum of concern from one narrowly focused on ourselves (an anthropocentric ethic) towards a broader spectrum that embraces concern for the environment on which all life depends (an ecocentric ethic) has become crucial. The challenge is to prevent an unmitigated, market-driven, global monoculture, that treats life and nature (including animals) as exploitable, from eclipsing a broader moral vision of the good life.[88] The emergence of bovine spongiform encephalopathy and epidemics of foot and mouth disease requiring the mass slaughter of animals is a sad reflection of failed human stewardship of nature.

Solidarity

Capitalism, as both an economic system emphasizing free trade and a political order within the Western philosophy of liberal individualism, constitutes a powerful global force driving economic growth. Constructive responses to socialist perspectives emphasizing social solidarity and constraints on market freedom have enabled capitalism to construct Keynesian welfare policies within many democracies. The ameliorating effects of such policies on the adverse effects of capitalism have been most successful in the Scandinavian social welfare states and less successful in the liberal welfare states of European countries. The New Deal, initiated in the United States by President Roosevelt in 1933, introduced social and economic reforms similar to those in Europe. Although this reflected a rejection of 'laissez-faire' capitalism, it was weakly administered

[85] C. P. Howson, H. V. Fineberg and B. R. Bloom, 'The pursuit of global health: the relevance of engagement for developing countries', *Lancet* 351, 1998, pp. 586–90.

[86] P. Beaglehole and R. Bonita, 'Public health at the crossroads: which way forward?', *Lancet* 351, 1998, pp. 590–2.

[87] R. Van Potter, *Global bioethics: building on the Leopold Legacy* (East Lansing: Michigan State University Press, 1998).

[88] Michael W. Fox, Bernard E. Rolin, *Bringing life to ethics: global bioethics for a humane society* (New York: State University of New York Press, 2001).

and has not been long-lasting. The United States thus does not have a welfare state in the Keynesian tradition, and under its influence the Keynesian state in Europe has been in sharp decline since the early 1970s.

The emphasis in recent decades on the US version of capitalism, based on strong individualism in association with neoliberal economic policies, has deflected attention from the need to belong to, and contribute to, communities, and there has been considerable erosion of support for the notion of civic society. A central aspect of the tension between rugged individualism and social democracy relates to the conception of the self—what it means to be a self-determining person. For strong individualists, the conception of the self emphasizes individual rights (especially civil and political rights), unconstrained personal freedom and a society structured on the basis of free association of such individuals. This version of liberty, with responsibility exclusively to the self, contrasts with the view of social democracy according to which individuals arise from and are shaped by their societies; their freedom to choose is embedded in social attachments, and their social and economic rights acknowledge solidarity as a balance between rights and responsibilities to themselves and others.[89]

But even solidarity is not a monolithic concept. For example, within the African value system, solidarity takes on a perspective that contrasts significantly with the Western notion. An African-centred worldview is characterized by several features: a sense of self that is collective—an attitude wherein one accepts the sameness in oneself and others; a clear sense of one's spiritual connection to the universe; a sense of mutual responsibility; and a conscious understanding that human abnormality is any act that is in opposition to oneself and one's fellow humans, or in opposition to God.[90] An African philosophy and unifying worldview is enshrined in the maxim *umuntu ngumuntu ngabantu*—'a person is a person through other persons' or 'to be human is to affirm one's humanity by recognizing the humanity of others' or 'I am because we are.'[91]

The African conception of democracy embraces a strong desire to deliberate and to reach consensus through dialogue,[92] as captured in the word *simunye*—'we are one', or 'unity is strength.' While this idea is supposed to safeguard the rights of individuals and minorities, it may also be exploited to enforce group solidarity. The fact that an inclusivist conception of individuality can easily derail into an oppressive collectivism or communalism is well recognized and has been extensively debated. Finally, the intense competitiveness of the Western world is not mirrored in the African world, where there is a preference for group work. The word *shosholoza*, meaning 'to work as a team', describes a spirit that has held African people together under conditions of great adversity and oppression.

[89] C. Taylor, *Sources of the self: the making of modern identity* (Cambridge, MA: Harvard University Press, 1989).

[90] http://butts1.cookman.edu/myricke/african_values.htm.

[91] D. J. Louw, *Ubuntu: an African assessment of the religious other*. See http://www.bu.edu/wcp/Papers/Afri/Afri1ouw.htm.

[92] Such an idea is mirrored in the idea of deliberative democracy. See A. Gutmann and S. Thompson, *Democracy and disagreement* (Cambridge, MA: Belknap Press/Harvard University Press, 1996).

The values held by Canadian First Nations resemble African values—and those of other indigenous peoples—emphasizing holism, pluralism, autonomy within community, a balance among the mental, physical and spiritual aspects of life, stewardship over nature, and respect for the integrity of the human body after death. Healing requires spirituality and relationships among all of the above.

Richard Rorty argues that solidarity is not discovered by reflection and reasoning, but rather by increasing our sensitivity (empathy) to the pain, suffering and humiliation of others. Such sensitivity, he argues, would make it difficult to marginalize 'the other'.[93] Progress towards achieving solidarity requires humility. Humility and arrogance involve general attitudes to one's place in the world and to whether or not one considers oneself subject to the same constraints of morality as other rational beings. Superior intelligence, exquisite beauty, great wealth and high social status, as well as fundamentalist religious beliefs, can lead to the arrogant attitudes that allow some to try to impose their will or way of life on others. In a world characterized more by arrogance than by humility, a world in which the lives of some are considered to be of infinite value while the lives of others are considered irrelevant and dispensable, there is a great need for empathy and humility in order to promote solidarity and mutual caring.[94] This realization, and the description by Jonathan Glover of how moral imagination is needed to protect our moral identity and to prevent moral human responses to atrocities from being eclipsed by ideology, tribalism or distance,[95] brings us back full circle to the respect for dignity and universal ethical principles with which this section began.

The way forward for global health ethics

Developing a global state of mind

Developing a global state of mind about the world and our place in it is perhaps the most crucial element in the development of an ethic for global health. To do this requires some understanding of the world as an unstable and complex system. In his masterly analysis of the world as a complex social system, Immanuel Wallerstein predicted that 'the first half of the twenty-first century will ... be far more difficult, more unsettling, and yet more open [to change] than anything we have known in the twentieth century.' He bases this assessment on three premises: (1) that historical systems, like all systems, have finite lives and in their trajectory move away from a relatively stable state towards unstable 'points of bifurcation' at which further progress may proceed in markedly different directions; (2) at such points of bifurcation, small inputs can have large outputs because the outcome of change is dependent more on the direction of change than on the magnitude of the force of change; and (3) that the modern world-

[93] R. Rorty, *Contingency, irony and solidarity* (Cambridge: Cambridge University Press, 1989).
[94] B. Gert, *Morality* (New York: Oxford University Press, 1988).
[95] J. Glover, *Humanity: a moral history of the twentieth century* (New Haven, CT: Yale University Press, 2001).

system, as a historical system, has entered into a terminal crisis and is unlikely to exist in its current form in 50 years. However, as the outcome at the current bifurcation point is uncertain, we do not know whether the resulting system will be better or worse than the one in which we are now living.

From these premises he draws several moral and political conclusions. First, progress as envisioned by the Enlightenment project is not at all inevitable—although it is not impossible. Second, the belief in certainties, a fundamental premise of modernity, blinds us to the possibilities of choices and cripples our ability to act courageously. Third, in human social systems the struggle for the good society is a continuing one. Precisely at these points of bifurcation, the human struggle takes on the most meaning, and the free will of individuals and the collectives they may form can outweigh the pressures of the existing system and restore equilibrium. Wallerstein argues that fundamental change towards a substantively rational system would embrace democratic and egalitarian principles as intimately and inseparably linked to each other.[96]

Another example of the need for new ways of thinking in a world that has changed so much is provided by Michael MccGwire. He explicates the context in which the current 'adversarial national security paradigm' evolved over the past 60 years and has now 'lost its way'. He argues convincingly that a paradigm shift is necessary towards what he calls a 'cooperative global security paradigm'—because times and threats have changed—and that progress will be possible only if attitudes about relationships, diplomacy, power and security can be reshaped.[97]

In his view the current paradigm emphasizes relationships characterized by exclusion, confrontation, domination and enmity; diplomacy that is adversarial, intransigent, unilateral, vengeful and exploitative; power that is used to maintain superiority through compulsion and punishment; and ideas of security that are based on inequality, deterrence, coercion and national interests. As this paradigm is less than 60 years old, and was shaped by many beliefs that were a product of specific times and events, he believes, like Wallerstein, that deliberative change can be achieved through human agency in response to changing times.

MccGwire proposes that achieving the new paradigm will require shifts towards relationships characterized by inclusion, détente and engagement; diplomacy that is cooperative, compromising, multilateral, magnanimous and reciprocal; new attitudes to power that would foster persuasion and reward; and security at an international level pursued through reassurance and cooperation on a global scale. He concludes his thesis with a description of four prerequisites for achieving the paradigm shift: a precipitating cause for change, an impulse for change, an engine for change and removal of obstacles to change.[98]

In our analysis through the lens of human health and disease and by analogy with MccGwire's analysis, the precipitating causes for change are widening

[96] Wallerstein, *The end of the world as we know it*.
[97] M. MccGwire, 'The paradigm that lost its way', *International Affairs* 77: 4, 2001, pp. 777–803.
[98] M. MccGwire, 'Shifting the paradigm', *International Affairs* 77: 1, 2001, pp. 1–28.

disparities in health and the double burden of infectious diseases and non-communicable diseases that threaten the future security of all. The impetus for change comes from growing recognition of the unsustainability of exclusively individualistic approaches to human health and the pressing need also to improve health at the level of whole populations. [99] We propose that an expanded discourse on ethics could be the engine for change if linked to capacity building through global strategic alliances. The greatest challenge, as with McGwire's proposal, will be removing the obstacles to change. It would seem that the predominant obstacles are the persistence of short-term perspectives on self-interest and belief that the power of money, knowledge and weapons can protect the privileged.

Such considerations raise the perennial problem of how to strike a balance between the rights (and needs) of individuals and the common good of societies. While the focus on individual rights is vital and necessary for the well-being of individuals, and contributes substantially to the well-being of societies, such a focus is not sufficient for the achievement of improved public health.

New paradigms of thinking that could be widely shared would allow extension of the conception of human rights beyond civil and political rights to include social, economic and cultural rights and their close integration with the reciprocal responsibilities required to ensure that rights are honoured and basic needs are met. Ann Robertson has argued eloquently for a language of public health that articulates the reciprocity and interdependence that characterize community—a language based on a 'moral economy of interdependence' (defined as the collectively shared basic moral assumptions constituting a system of reciprocal relations) rather than one of moral nihilism and radical individualism.[100]

In a world in which disparities are widening to grotesque dimensions and consumption patterns are damaging the environment on which all are dependent, there is also a need to extend the ethics discourse to the level of global security and a safe environment.[101] A deeper understanding is required of how complex systems function and of how they could be influenced by extending the 'ethics discourse' to include considerations of the ethics of institutional function and international relations—for example in relation to economics, power and trade between nations.[102]

The level of complexity here is much greater because of the way in which the foreign policies of some countries may covertly enhance the lives of their own citizens through exploitation of unseen persons elsewhere. The moral

[99] S. R. Benatar, 'Global disparities in health and human rights: a critical commentary', *American Journal of Public Health* 88, 1998, pp. 295–300; S. R. Benatar, 'Millennial challenges for medicine and modernity', *Journal of the Royal College of Physicians* 32, 1998, pp. 160–5.

[100] Robertson, 'Critical reflection on the politics of need'; see also S. R. Benatar, 'Just health care beyond individualism: challenges for North American bioethics', *Cambridge Quarterly of Healthcare Ethics* 6, 1996, pp. 397–415.

[101] N. Low and B. Gleeson, *Justice, society and nature: an exploration of political ecology* (London: Routledge, 1998).

[102] S. R. Benatar, 'Streams of global change', in Z. Bankowski, J. H. Bryant and J. Gallagher, eds, *Ethics and equity for all* (Geneva: Council for the International Organisation of Medical Sciences, 1997), pp. 75–85.

Figure 1: Expanding the ethics discourse



perspective is thus extended from 'interpersonal morality' to 'civic morality' and to an 'ethics of international relations' that has dimensions intimately linked to political, military, cultural and economic issues.[103]

All these changes would be dependent on relinquishing our arrogance about who we in favour of humility about the role of privileged people in the world. Such larger-scale ethical considerations would allow recognition of the responsibility to balance individual goods and social goods, and not to harm weak and poor nations through economic and other forms of exploitation that frustrate the achievement of human rights and well-being. Unless such progress is made, the prospects for dealing adequately with such threats as the HIV/AIDS pandemic and the growing burden of non-communicable diseases seem bleak. 'Justice without borders' is the challenge.

In seeking to develop a global mindset, participants in the Copenhagen seminars on social progress have suggested that building a moral community focused on the common good will require a synthesis built around three substantive goals (democracy, a humanist political culture and an economy oriented to meeting human needs in the widest sense) and two procedural goals (development of a coalition of social forces with a global agenda, and building a structure for multilateral governance). Their rationale is that economic globalization is propagating a model of development and progress based on the freedom of the individual and

[103] S. R. Benatar; G. Elfstrom, *International ethics: a reference handbook* (Santa Barbara, CA: ABC-Clio Press, 1998); T. V. Paul and J. A. Hall, eds, *International order and the future of world politics* (Cambridge: Cambridge University Press, 1999); K. Smith and M. Light, eds, *Ethics and foreign policy* (Cambridge: Cambridge University Press, 2001); Dunne and Wheeler, *Human rights in global politics*; V. Hosle, 'The third world as a philosophical problem', *Social Research* 52, 1992, pp. 227–62.

the acquisition/consumption of increased quantities of goods and services that, by themselves, are not sufficient to create a harmonious world community.[104] The emergence of a multifaceted social movement dedicated to 'globalization from below' illustrates additional pathways to constructive change.[105]

Promoting long-term self-interest

In arguing that it is both desirable and necessary to develop a global mindset in health ethics, we also suggest that this change need not be based merely on altruism, but could be founded on long-term self-interest. For example, it has been shown by mathematical modelling for hepatitis B that the resources needed to prevent one carrier in the United Kingdom could prevent 4,000 carriers in Bangladesh of whom, statistically, four might be expected to migrate to the UK. Thus it would be four times more cost-effective for the UK to sponsor a vaccination programme against hepatitis B in Bangladesh than to introduce its own universal vaccination programme.[106]

Perhaps the clearest example of self-interest in the face of mutual interdependence is the threat posed by the HIV/AIDS epidemic. Recent information about the origin of HIV/AIDS highlights the importance of new ecological niches in the genesis of epidemics. HIV/AIDS is only one of several microbial threats.[107] Microbial antibiotic resistance, as in the case of tuberculosis, is on the upswing, and the underlying social and economic reasons for this must be understood and countered if future and potentially more devastating plagues are to be avoided.[108] Acknowledgement by the United States that health has important security implications for US foreign policy has provided space for an argument that improving the health status of people in developing countries makes both moral and strategic sense. In the past, security has focused on striving for competitive advantage. With the development of nuclear and other weapons of mass destruction it became evident that humankind could destroy all life on the planet in the quest for superiority by one group over others. In this context, it would be prudent to assume that genuine security can be achieved only through cooperation and not through 'mutually assured destruction' doctrines. This goal requires a shift in mindset towards seeing ourselves as intricately linked to the lives and well-being of others and to the state of the global environment, on which we are crucially dependent. Such a mindset is more likely to promote the self-interest of all and less likely to damage the global commons. We also have a biological imperative to recognize that we are of one species and that this fact requires a collective interest in species-wide survival.

[104] Royal Danish Ministry for Foreign Affairs, *Building a global community*.
[105] J. Brecher, T. Costello and B. Smith, *Globalisation from below: the power of solidarity* (Cambridge, MA: South End Press, 2000).
[106] N. J. Gay and W. J. Edmunds, 'Developed countries should pay for hepatitis B vaccine in developing countries', *British Medical Journal* 316, 1998, p. 1457.
[107] Garrett, *The coming plague*.
[108] S. R. Benatar, 'The coming catastrophe in international health', *International Journal* LV 1: 4, 2001, pp. 611–31.

In addition to the naturally occurring microbial threats, advances in biotechnology that have enabled legitimate research into the human genome and into potentially beneficial microbiological agents for use in medicine and agriculture have also led to frightening new threats from biological and toxic weapons. The extent to which these have been developed and pose threats has been extensively described.[109] Control mechanisms to prevent their use in warfare are poorly developed, and even less adequately implemented. It seems unlikely that effective control processes will be implemented unless a greater spirit of cooperation is achieved among all people.[110]

The demise of apartheid provides a useful example of how a major change, that most believed would be effected only by civil war, can occur peacefully. A decade ago, the South African government was faced with a choice—to maintain political power and an ongoing exploitative economy and thus risk civil war, or to negotiate a peaceful transition, in the interests of all, towards majority rule. The realization that apartheid was not sustainable led to the 'negotiated revolution' as the best approach to reshape the self-interest of all stakeholders. As South Africa's future is intimately bound up with global economics, whether or not the new South Africa can achieve its aspirations of a non-racial, more egalitarian society will in part be determined by whether its own peaceful transition and quest to narrow the economic disparities caused by apartheid are seen as examples to be emulated by other countries whose current economic activities fuel disparities in global health and wealth.[111]

Striking a balance between optimism and pessimism about globalization and solidarity

There are both pessimistic and optimistic viewpoints about the prospects for achieving real progress for all through current globalizing trends. Both views are valid from different perspectives. As pessimism leads to inaction, and unjustified optimism to ineffectiveness, it is necessary to strike an appropriate balance between these stances.

A caricature of pessimistic attitudes includes:

- the idea that what has happened in the past will continue to happen in the future;
- a lack of conviction that the self-interest of the powerful can be reshaped to serve the needs of the less powerful;
- distrust of technology and innovation;
- excessive concern about precautionary principles without necessarily understanding their implications;
- doubt about the goodwill of those who claim to be interested in development;
- belief in the tyranny of institutions.

[109] *Biotechnology, weapons and humanity* (Amsterdam: BMA Books/Harwood Academic, 1999).
[110] T. Mangold and J. Goldberg, *Plague wars* (London: Macmillan, 1999).
[111] S. R. Benatar, 'South Africa's transition in a globalising world: HIV/AIDS as a window and a mirror', *International Affairs* 77: 2, 2001, pp. 347–75.

Pessimists take the view that, in our quest for material possessions and economic rationality, we have lost the ability to empathize with others and no longer value virtue or the spiritual and existential aspects of life. Such scepticism extends to distrust of the free market and questioning whether democratic values are being appropriately applied.

A caricature of the optimistic mindset on globalization characteristically includes:

- belief that progress enables complex tasks to be undertaken more effectively and more cheaply;
- faith that progress for all will follow through scientific and technological innovation and economic growth;
- trust in our ability to promote just institutions through promotion merely of civil and political rights;
- belief that human intelligence working with good intentions will solve problems;
- belief that our ability to harness nature through new biological knowledge holds the solutions to many health problems.

This optimistic view accepts disparities as the starting point, sees no gap between self-interest and the common good, considers it possible to have empathy without experience, and has faith that minimalist democratic values and free-market forces will inevitably promote public goods.

Some middle path must be identified between the polar perspectives. The problem is not one of choosing between enthusiasm for and hostility to globalization, or between individual freedom and community solidarity within two different languages about politics. As Sandbrook has pointed out, globalization cannot be avoided. It is an integral aspect of a world in which the clock cannot be turned back on advances in technology, communication, production and transport.[112] He argues that the distinction that needs to be made is between neoliberal globalization and social democratic globalization. On the one hand, pragmatic neoliberals accept the inexorability and, usually, the desirability of global free markets. They seek merely to mitigate their worst effects, but without challenging the interests of the rich and of corporate capital. On the other hand, social democrats champion the building of integrated, but socially embedded, markets for goods, capital, technology and skills. They believe that the structures and inequalities of capitalism require democratic reform, including a reduction of inequities in incomes and power between rich and poor.

A social democratic pattern of globalization is considered to require two types of enforceable international agreements: one set to regulate international competition among firms and states so as 'to yield socially and environmentally desirable, outcomes'; another set to redistribute some of the economic gains from globalization towards those who are vulnerable and most in need.[113] Jeremy Brecher and his colleagues have spelt out in some detail how the social move-

[112] Sandbrook, *Closing the circle*.
[113] Ibid.

ment of 'globalization from below' can contribute to achieving these goals constructively.[114]

Striking a balance between optimism and pessimism will require a platform for dialogue among stakeholders, and a space where people can share different views about globalization. Bioethics offers such a space.

Strengthening capacity

If the themes of global health ethics are to be brought to the fore, a shift in focus will have to be brought about from tools to people. Normally, the primary concern in international ethics is with tools—for example, the Universal Declaration of Human Rights, the Declaration of Helsinki and other international declarations, conventions or policies. This is misguided because it overlooks the key ingredient needed to advance the cause of ethics around the world—people. It is people who develop, adapt and use tools.[115]

The field of bioethics is now well established in many developed countries. There is a plethora of bioethics centres and training programmes. Universities and hospitals have begun to employ 'bioethicists'. Undergraduate and postgraduate medical programmes must teach bioethics as a condition of accreditation. The system of research ethics review is well entrenched in many countries. By contrast, there are few people trained in public health ethics and its practical applications in either developed or developing countries. This is unfortunate, because it means the human capital is not in place to conduct research ethics reviews, develop policies to ensure fair priority setting in health-care organizations, harness biotechnology for health and social development, improve the quality of end-of-life care, or press for patient-focused care in equitable health systems. The situation may also reflect a lack of deep commitment to ethics. It is noticeable that many influential organizations supporting science devote only a very small proportion of their resources to promoting and sustaining ethics in science.[116]

Our vision for promoting an ethic for global health features the development of a much greater capacity and commitment to a broader discourse on ethics propagated through centres regionally and globally networked in growing and supportive North–South partnerships. The programme funded by the Fogarty International Center of the US National Institutes of Health is an example of such a developing partnership. This programme has funded 12 centres to train faculty from developing countries in ethics and help them establish their own local bioethics research and training programmes. The impact of this strengthened human capital in health ethics could be enormous in promoting equity,

[114] Brecher et al., *Globalisation from below*.

[115] P. A. Singer and S. R. Benatar, 'Beyond Helsinki: a vision for global health ethics', *British Medical Journal* 322, 2001, p. 747–8.

[116] For example, the Wellcome Trust in the UK devotes less than 0.2% of its US $600 million annual budget to ethical issues of science and its role in society.

freedom, democracy and solidarity within research ethics, priority setting, biotechnology, end-of-life care, and other important policy areas that are the concern of global health ethics.

To achieve such ambitious goals will require the development of a global alliance for health ethics (GAHE), in which major global institutions—WHO, WTO, IMF—will play a major role.[117] A recognition of the responsibility of multinational corporations and national governments in changing our world for the better should be reflected in an insistence that they appreciate their new roles in enabling the correct choice of direction (at a time of vital 'bifurcation' in world history) to build the better future that Wallerstein sees as possible and others have described.[118] The extension of a GAHE-type approach that takes the ethics debate beyond the health-care sector could be a major contribution to foreign affairs. Indeed, we propose that such a broader approach in the twenty-first century could be a valuable contribution to the social movement for 'globalization from below'.

Enhancing production of global public goods for health

Achieving widespread access to such public goods as education, basic subsistence needs and work requires collective action, including financing, to make sure they are produced, and good governance, to make sure they are properly distributed and used. Global public goods involve more than one country or region of the world. The current international system is very effective at stimulating the production of private goods (as witness the role of the WTO in promoting international trade) but not at doing the same for public goods—for example, education for all children, and the realization of labour rights and human rights.[119]

Constructing new ways of achieving economic redistribution is the key to resolving many global problems. If wealthy people progressively care less for the lives of those whom they relegate to living under inhumane conditions, the lives of the wealthy will become more meaningless and inhuman to the underprivileged masses. This global trap in which neither rich nor poor care if millions of the other group should die is the recipe for persistent conflict and unnecessary loss of life on a grand scale. While economic equality is an impossible goal, narrowing of the current gap is surely well within our grasp. Debt relief, various forms of taxation, such as the Tobin tax on currency trades across borders (which could generate US$100–300 billion per year[120]) and environmental taxes, have been suggested as means of facilitating the development of the solidarity required for peaceful coexistence in a complex world.

[117] M. Koivusalo and M. Rowson, 'The World Trade Organisation: implications for health policy', *Medicine, Conflict and Survival* 16, 2000, pp. 175–91; I. Kickbusch, 'The development of international health policies: accountability intact?' *Social Science and Medicine* 51, 2000, pp. 979–89.

[118] Falk, *Human rights horizons*; Brecher et al., *Globalisation from below*

[119] G. Soros, *On globalisation* (New York: Public Affairs, 2002).

[120] Fact sheet on Tobin taxes, http://www.ceedweb.org/nrp/factsheet.htm (accessed 21 March 2001).

There is a glimmer of hope that such progress is possible. For example, the recent report from the US Council of Foreign Relations and the Milbank Memorial Fund, outlining the importance of health to US foreign policy, is encouraging.[121] Having acknowledged the relationships between health and social capital, political stability, the economy and war, the United States and other nations could develop a deeper commitment to the moral and strategic importance of improving global health. The work of the Commission on Macroeconomics and Health,[122] the inauguration of a Global Health Fund,[123] and George Soros's recent proposal for a market in global public goods, involving use of special drawing rights from the IMF, all highlight a new way for international institutions to stimulate the production of global public goods.[124]

Conclusions

We have argued that increasing global instability calls for new ways of thinking and acting. An extended public debate promoted by building capacity for this process through a multidisciplinary approach to ethics in education and daily life could be a driving force for such change.

We concede that it will be very difficult to displace the obstacles to change. In his penetrating evaluation of the pursuit of justice through the promotion of human rights as an integral aspect of global politics and law, Falk has concluded that despite all efforts realist morality (might is right) continues to underpin global security; but he goes on to reflect that, while the shift in world order required for humanitarian morality to underpin global security seems unlikely, 'it is possible that within the next decade or so, the economic, ecological and cultural pressures of inadequately regulated globalization-from-above will generate acute alienation of sufficient magnitude as to create new revolutionary opportunities, including those that would mount a challenge to realist morality as the basis for global security.'[125]

Achieving human development globally requires more than economic growth. It also requires confronting the current challenging context of global health, developing a global mindset, basing a response on shared values, and adopting transformational approaches in governance, global political economy and capacity strengthening. Education and the development of such human values as empathy, generosity, solidarity, civic responsibility, humility and self-effacement require an interdisciplinary space to thrive. We propose that global health ethics offers such a space, and that it can help to catalyse crucial improvements in global health.

[121] J. S. Kassalow, *Why health is important to US foreign policy* (New York: Council on Foreign Relations/ Milbank Memorial Fund, 2001).

[122] World Health Organization, *Macroeconomics and health: investing in health for economic development. Report of the Commission on Macroeconomics and Health* (Geneva: WHO, 2001).

[123] G. Brugha and G. Walt, 'A global health fund: a leap of faith?', *British Medical Journal* 323, 2001, pp. 152–4.

[124] Soros, 'On globalisation'.

[125] Falk, *Human rights horizons*.

Project MUSE

MEETING THREATS TO GLOBAL HEALTH

a call for American leadership

SOLOMON R. BENATAR* AND RENÉE C. FOX†

ABSTRACT Although the application of major biomedical advances has yielded spectacular results for individual health, there has been little improvement in the health of whole populations. There is a "back to the future" irony in the fact that at the inception of the 21st century, the eruption and spread of a multitude of "old" and "new" infectious diseases has become the most serious global threat to the health of humankind. At this historical juncture, the United States is the country with the most potential for favorably influencing global health and health care. Although there are historical, cultural, economic, and political factors that impede the United States from rising to this challenge, there is both a moral imperative and a rational long-term self-interest basis for the U.S. medical profession and government to exercise leadership in facing the health challenges of tragic and genocidal proportions that threaten everyone in an increasingly interdependent world.

DESPITE SPECTACULAR ACHIEVEMENTS in individual health as a result of a host of biomedical advances, and the potentialities of new biotechnology for improving global health equity (Singer and Daar 2001), there has been little

*Department of Medicine and Bioethics Centre, University of Cape Town, Cape, South Africa.
†Department of Sociology and Center for Bioethics, University of Pennsylvania, Philadelphia, PA 19104.
Correspondence: Dr. Solomon R. Benatar, Department of Medicine and Bioethics Centre, University of Cape Town, Observatory, 7925 Cape, South Africa.
E-mail: sbenatar@uctgsh1.uct.ac.za.

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improvement in the health of whole populations. Indeed, in some parts of the world the health and life expectancy of billions of people have deteriorated in recent decades, especially with the emergence and reemergence of infectious diseases, among which the HIV/AIDS pandemic has had the most catastrophic consequences (WHO 2002).

There is a "back to the future" irony in the fact that the eruption and spread of a multitude of "old" and "new" infectious diseases has become the most serious global threat to the health of humankind (Benatar 2001a; Garrett 1994). The current epidemics of infectious diseases—including the "white plague" of tuberculosis that was supposed to have yielded to the powers of antibiotics—take their greatest toll on populations of so-called developing countries, and also among disadvantaged groups in privileged "developed" societies (Benatar 2001b; Gandy and Zumla 2003). The recent epidemic of severe acute respiratory syndrome (SARS; Lee et al. 2003) is a small-scale example of the new, acute, rapidly fatal infectious diseases that may, like the 1918–1919 flu epidemic, sweep through the world with high mortality rates in all countries, with accompanying profound social and economic implications.

This paper, by a South African physician and an American medical sociologist, considers challenges that face global health, health care professionals, and governments at the beginning of the 21st century. Our reflections rest on three major premises: that global health problems pose major medical, social, and economic threats to *all* countries; that it is in the long-term self-interest of wealthy nations to address the forces that significantly affect the health of whole populations; and that at this historical juncture, the United States is the country with the most *potential* for favorably influencing global health trends. In addition to discussing the nature of threats to global health, we explore some of the major impediments to efforts that could be undertaken to foster alterations in policies that would effectively address the tragic discrepancies in health care and research that currently exist, and to overcome global apathy to the HIV/AIDS pandemic (Hogg et al. 2002). These obstacles involve a confluence of important American values, exemplified by political ideologies that have global as well as national health import; the prevailing ethos of bioethics in the United States; and the current views of many other countries towards the international policies and actions of the United States.

As sociologist Robert N. Bellah (2002) has provocatively stated, in and through the "relentless" process of globalization, the United States has become a "cultural model and economic dynamo" as well as a military superpower, and more "by default" than by intention, a country with "imperial power." In our view, because of its singularity in these respects (for better or for worse), the United States not only has the scientific, political, and economic capacity to assume major responsibility for improving world health, but also the moral obligation to exemplify and implement values in action that are conducive to this advancement. We make this statement with two caveats. First, we are wary about

unduly promoting the dominance of American influence in the world by encouraging its moral hegemony in global health. Second, as noted above, we are mindful of the cultural and political factors that curtail the readiness and willingness of the United States to assume such a leadership role, and that contribute to health inequities in the American health care system that call for reform rather than emulation. We believe, however, that these caveats should be superseded by the moral imperative of facing up to national and global threats posed by disparities in health and emerging epidemics. Moreover, we believe that the long-term interests of Americans, and indeed of all privileged people and their societies, will be served by major improvements in global health (Benatar 2003).

HEALTH, ILLNESS, MEDICINE, AND THE ETHICAL OBLIGATIONS OF PHYSICIANS

In their broadest, most encompassing scope, health, illness, and medicine not only involve and affect individuals and their families, but whole societies, their institutions, and their global interconnections and ramifications. In the words of an American Association for the Advancement of Science project to promote health care reform: "Health care is first and foremost a social good dedicated to the improvement of the health and well-being of the entire community. . . . A great deal more than individual need and advantage is at stake. . . . The nature and humaneness of the society in which current and future generations will live depend on decisions made regarding the structure and standards of the health-care system" (Chapman 1994, p. ix).

Regardless of their cultural roots, social background, or nationality, physicians have obligations and commitments to their patients that have been articulated in universalistic medical principles in the codes of the World Medical Association and of numerous national medical professional bodies. However, the different social, cultural, and societal contexts within which physicians practice medicine influence the ways that they interpret these precepts and responsibilities, and implement them in their relationship to patients. What physician-jurist M. Gregg Bloche (1999) has called doctors' "clinical fidelity"—their allegiance to doing what is most beneficial for each individual patient under their care—often conflicts with their responsibility to serve the "social purposes of medicine." The prototypical form in which physicians experience this tension between "clinical loyalty" and "social purpose" occurs in connection with public health concerns, when they may be called upon to subjugate their commitment to an "individual ethic" to the espousal of a "distributive ethic," one that emphasizes more collectivity-oriented, community-wide health concerns, in ways that may curtail or even run counter to what benefits individual patients (Kassirer 1998).

The difficulty of reconciling these dual responsibilities to individuals and society has contributed to the discrepancy between achievements in furthering the health of individuals and the considerably lesser gains that have been made

in improving the health of populations. A second factor is the disinclination of physicians to think of health, illness, and medical care in broad social terms, because this entails confronting the degree to which population health is affected by larger economic, political, cultural, and historical factors, many of which extend beyond the orbit, competence, authority, and control of physicians and their professional organizations (Desjarlais et al. 1995; Sagan 1987). The HIV pandemic and the recent thrust towards greatly improving access to antiretroviral treatment across the world have revealed the need to go beyond the biomedical approach and address the forces that cause and maintain poverty.

THREATS TO GLOBAL HEALTH

Growing disparities in life expectancy and health between and within nations—even the wealthiest ones—pose threats to the lives of all. At the beginning of the 21st century, life expectancy and patterns of diseases differ markedly across the world. Life expectancy at birth ranges from well over 70 years in highly industrialized countries to below 50 years in many poor countries, and in some countries in Africa it is 40 years and dropping—largely due to the HIV/AIDS pandemic. Wide disparities in life expectancy are also observed between rich and poor in rich countries. Among the poorest quintile of people in the world, 55% of deaths are from communicable diseases, as compared with 5% of deaths among the richest quintile. The World Health Organization (WHO) estimated that in 1998, 10 million children and adults of working age died of six infectious diseases that could have been prevented at the cost of $20 per life saved. Demographically developing countries, which include about 4.5 billion of the world's 6 billion people, bear over 80% of the global burden of disease in disability-adjusted life years. This burden is likely to increase as the epidemiological transition progresses, with added disability and suffering resulting from non-communicable causes such as vascular disease, malignant neoplasms (especially of the lung associated with smoking), neuropsychiatric disease, accidents, and trauma.

The challenge of achieving improved health for a greater proportion of the world's population is one of the most pressing problems of our time and is starkly illustrated by the threat of infectious diseases. A few decades ago there was hope that the major infectious diseases plaguing humankind could be eliminated. WHO's unprecedented success with smallpox was a remarkable model. However, the recrudescence of tuberculosis and malaria in multi-resistant forms, the appearance of HIV infection, and other new infectious diseases such as SARS have dashed such expectations and have illustrated the limitations of a narrowly focused scientific approach to public health. Communicable diseases continue to be a leading cause of loss of human life and potential. We cannot ignore the adverse historical, political, and economic factors that are determinants of the ecological niches conducive to the rise and spread of these diseases. Their control is not merely a problem for individual nations but for the whole world

(Kassalow 2001). Infections have no respect for geographic boundaries, particularly in an era of extensive and rapid transportation.

Chronic diseases are also becoming more prevalent in both developed and developing countries, producing a double burden of disease. The deteriorating state of health is further aggravated by mass-produced, highly processed Western foods that contribute to obesity and diabetes, and by the relentless promotion of tobacco, which contributes to coronary artery disease, congestive heart failure, chronic lung disease, and cancer. Violence associated with the trade in small arms, illicit drugs, and sex are additional aggravating factors (Friman and Andreas 1999).

HEALTH CARE IN THE UNITED STATES

"The way medicine is practiced in the United States has a strong influence on the rest of the world, for better or for worse," a Swiss physician has written (Mosimann 2002). If this is indeed the case, it is instructive to consider, from a worldwide perspective, some of the striking disparities in prevailing patterns of expenditures for health care and medical research. Nowhere is this more apparent than in the amount of money that the United States spends for these purposes as compared with the rest of the world. Of the over $2.2 trillion globally disbursed for health care in the late 1990s, over 50%—more than $1.2 trillion—was spent on the 5% of the world's population in the United States—approximately $5,000 per year for each American (Iglehart 1999; IOM 2003). This is the highest annual per capita amount in the world—more than twice the average of that allotted in other comparably advanced modern societies, and in dramatic contrast with the less than $15 spent per person in countries containing half the world's population. Similarly, 90% of annual global expenditure on medical research is being spent on those diseases that account for 10% of the global burden of disease (Commission on Health Research 1990). These trends in medical care and research are augmented by the degree to which they have been driven increasingly by commercial interests in the United States (Relman and Angell 2002).

Despite its per capita health care expenditures, there is a long-standing pattern of serious inequity in access to health care in the United States that is integrally related to one of the most conspicuous characteristics of the American system: its entrenched ideological and political opposition to the establishment of national health insurance (Smedley, Stith, and Nelson 2003). The United States is the only wealthy, industrialized, Western nation that does not offer its citizens universal access to health care through a national system, with the consequence that the collective health status of Americans is lower than that of the members of other comparable societies (WHO 2000).

Since the 1980s, this steadfast resistance to national health insurance, emanating in large part from long-standing philosophical and political concern about government control over health care services, has been accompanied by the burgeoning of the for-profit sector in health care on the American scene. To the

distress of many physicians as well as patients, health care has increasingly become a private, marketable commodity, rather than a public good and a societal responsibility.

Eliot Freidson (2001), an American sociologist who has been a harsh critic of the medical profession, has retracted some of his criticisms and convincingly described how the powerful "logics" of the market and of bureaucracy are eclipsing the logic of professionalism and the trust in professionals that he now sees as essential for any society to flourish. Normative aspects of traditional virtue, civic citizenship, and compassion are being eclipsed, and narrow, economically driven self-interests are being fostered. Lack of attention to public health activities threaten even wealthy nations, as illustrated by the SARS epidemic and its implications (Glasser 2004; National Advisory Committee 2003).

Relevance of Political Ideology

The underlying political philosophy fostering opposition to national health insurance and supporting the for-profit sector is the libertarian version of liberal democracy, in which self-determination, civil and political rights, and free trade are highly prized, but socioeconomic rights are limited, government control over health care ser-vices is feared, and civic duties are underemphasized. Concern about exces-sive state power, potentially subject to public accountability through the democratic process, however, seems to have been traded for the progressive accumulation of power by private corporations that have been freed from accountability by "deregulation"—even though this permits them to diminish the freedom of the market (Lee and Etheridge 1989; Woolhandler and Himmelstein 1995).

American medical care is organized, delivered, and funded in a cobbled-together, primarily market-based system—one that Marcia Angell (former editor-in-chief of the *New England Journal of Medicine*) indicts as a flagrant "absurdity," because it creates pressure to increase health care expenditures, rather than to reduce them. "All piecemeal attempts to improve the system—while keeping it market-based," she goes on to say, "have run into the following dilemma: if access to services is expanded, costs rise; if costs are lowered, access is cut." The only way to avoid this dilemma, she concludes, "is to change the system entirely [to a] national single-payer system that would eliminate unnecessary administrative costs, duplication and profits" (Angell 2002; see also American College of Physicians 1990, 2000; Stevens 2001).

Highly individualistic American social values underlie the distinctive institutional characteristics of the U.S. health care system. Nowhere have these values been more penetratingly described and analyzed than in *Democracy in America* by the French social philosopher Alexis de Tocqueville, based on his astute observations and his extensive conversations with Americans during his visit to the United States in the 1830s, when the country was still a very young nation. Tocqueville (1835) coined the word *individualism* to express what he viewed as

a striking "new idea" that was salient in the American mores. "Individualism," he wrote, "is a calm and considered feeling which disposes each citizen to isolate himself from the mass of his fellows and withdraw into the circle of family and friends; with this little society formed to his taste, he gladly leaves the greater society to look after itself." He searched for attitudes and activities that drew Americans out of their solitude and self-interest into the realm of larger, common concerns that were "other than themselves," and found them in American family life, religious traditions, and especially in the involvement of citizens in a myriad of associations that they voluntarily chose to form and join.

The radically individualistic nature of the American value system, combined with the deeply rooted cultural preference of the country's citizens for involvement in voluntary community organizations rather than in "politics" or "government," so brilliantly discerned and articulated by Tocqueville, have strongly influenced the staunch tendency for any national health insurance plan to be viewed as "tainted by anti-individualistic socialism," to "come under attack," and ultimately to be defeated (Lidz 2002).

AMERICAN BIOETHICS AND INDIVIDUALISM

The American genre of individualism that Tocqueville both admired and found worrisome has had a significant influence on the foundational values and conceptual framework of bioethics in the United States, which has accorded primacy to the principle of "autonomy" that emphasizes an independent, "self-determining" form of individualism and individual rights. As bioethicists themselves have recognized, the weight attached to autonomy and individual rights, particularly in the early years of U.S. bioethics, has overshadowed the attention paid to more social values—to the interconnectedness of individuals, to obligations to known and unknown others, and to the good of the community (*Hastings Center Report* 1987).

The American view of the individual as an autonomous, self-governing entity is seen as problematic by scholars involved in thinking about and studying how bioethically relevant issues are posed and expressed in other societies. Pakistani-American pediatric surgeon and bioethicist Farhat Moazam (2000) and African philosopher Godfrey Tangwa (2000), for example, describe how bioethics and medical decision-making differ in non-Western societies, where the notion of what it means to be a person and a doctor is more community-oriented and is situated within kinship relations that extend across several generations. Within Europe, too, there are concerns about a highly individualistic approach. British sociologist and bioethicist Robert Dingwall, for example, believes that the "limited cultural understandings that have [been] built into bioethics as a result of its U.S. origins and the priority given to patients as individuals, rather than the acknowledgement of the interests of communities," creates "difficulty in European environments," where there is "broad consensus . . . about the determina-

tion of [the] collective provision [of health care] by reference to some communal understanding of what is an appropriate and equitable distribution of resources" (personal communication, Oct. 21, 2002). British philosopher Onora O'Neill (2002) writes eloquently about how public health ethics has been neglected by an excessive focus on autonomy.

THE INFLUENCE OF AMERICAN INDIVIDUALISM ON GLOBAL HEALTH

What sociologist Talcott Parsons would term the "institutionalized individualism" of American society has also had a major influence on global health. Bioethics' focus on individualism, as well as the field's intellectual dominance by the Anglo-American tradition of analytic philosophy in which most U.S. philosophers have been trained, underlie the sparse attention that has been given to issues of social justice, such as those involved in both national and global health inequities. By and large, U.S. bioethicists have paid more attention to ethical questions associated with genetics and new reproductive technologies than to the moral implications of the serious inequities in access to health care that exist in American society.

To physician-anthropologist Paul Farmer, from the national and international vantage point of a doctor "who serves the poor in Haiti, Boston, Peru, and Russia," the "leading ethical question of our time" concerns the "obscene disparities" that exist globally between "too much care" on the one hand, and "no care at all" on the other. "In the broader social field in which the 'bottom billion' have no access at all to modern medicine," he declares, "the very real dilemmas of those who *do* have access to care have been the focus of most inquiry by medical ethicists." The fact that, in his opinion, bioethics has "almost nothing" to say about this burning question of social justice, in an era that is characterized by "the persistence of readily treatable maladies and the growth of both science and economic inequality" on a global scale, is connected to what he terms the need to "resocialize the way we see ethical dilemmas in medicine," so that in practice, and not just in rhetoric, health becomes a "human right" that extends to the "poor . . . disempowered . . . and marginalized"—the "lot of most of humanity," those who bear the heaviest "burden of disease" (Farmer 2003, pp. 196–212; see also Benatar 1997).

American influences—cultural, ideological, political, and fiscal—have been exerted powerfully through the predominant role that the United States has played in the World Bank and the International Monetary Fund (IMF), both in shaping and in enforcing certain aspects of what has been called the "Washington Consensus" policies. These policies have been rooted in an American-supported belief in the ability of an autonomous market to bring about economic prosperity, and in the capacity of such a free market to be self-correcting. It is an out-

look that has drastically played down the dangers of "rapid capital market liberalization without accompanying regulation" (Stiglitz 2002, p. 150).[1]

Over the past 20 years, the World Bank and the IMF have held the balance of power in formulating global health policy. In so doing, they have encouraged liberalization of economies, cut subsidies from basic foods, and shifted agricultural policy to promote export crops to the detriment of home-grown food production. The structural adjustment programs imposed by the IMF and World Bank have reduced government expenditure on health care, education, and other social services, and encouraged privatization, even within health care. In many African countries, availability of condoms, sexually transmitted disease treatments, anti-tuberculosis therapy, and treatments for co-infections of HIV are subject to user-charges introduced and still encouraged by the World Bank. Resulting malnutrition and starvation have caused billions to suffer, especially in Africa. Resistance to disease has also been reduced, and malnourished people die more quickly once infected by HIV. Of the 50 million people currently living with HIV/AIDS, over 30 million live in sub-Saharan Africa. In Zambia, a country of 10 million people, HIV prevalence is 20%, half the country's children are malnourished, and there are 500,000 AIDS orphans. This is a crisis rooted in poverty and enhanced by debt and structural adjustment programs (Hogg et al. 2002; Katz 2002; Labonte et al. 2003).

Structural adjustment programs, debt repayments, cuts in aid budgets (especially by the United States), discrimination against African trade, increasing malnutrition, and the Cold War activities of the great powers have all played a significant part in fanning the AIDS pandemic. Health care in many countries is also being adversely affected by ongoing privatization of public health services through endeavors by the World Trade Organization (WTO) to "outlaw the use of cross subsidization, universal risk pooling, solidarity, and public accountability in the design, funding, and delivery of public services" (Pollock and Price 2000, 2002).

Negative aspects of the U.S. government's concern for global health are reflected in the fact that for many years the country was millions of dollars in arrears of its subscriptions to the WHO, with consequent adverse effects on the power of that organization (Bloom 1999).[2] The government-backed complaint by pharmaceutical companies against South Africa's intention to import generic drugs to deal with the human tragedy of HIV/AIDS, while taking a comparable action themselves to override Trade Related Intellectual Property Rights to import drugs for a potential public health anthrax threat, is another example of

[1] Although the IMF and the World Bank are sister institutions that are physically located across the street from one another in Washington, D.C., it is Stiglitz's view that the IMF, whose mission is to maintain global stability, has been more responsible for the kind of rapid, unregulated, capital market liberalization policies supported by the "Washington establishment" than the World Bank.

[2] These arrears were paid after the events of 9/11.

how an opportunity was lost to set a moral example in improving global health (Bond 1999). The further failure in December 2002 of the United States to add its support to 143 nations' willingness to endorse a WTO program designed to provide poor countries with better access to life-saving medicines reveals the extent to which the narrow self-interest of a powerful nation threatens to undermine the positive influences emanating from much that is admirable in that country, and to fan the regrettable, but increasingly held, perception of the United States as a nation whose moral values are being eroded.

A NEW APPROACH: NEEDS AND CONSTRAINTS

Current and widening disparities in health around the world—even within many countries, including the United States—and the particular plight of Africa during the HIV/AIDS pandemic, together with the implications of new threats from the natural or deliberate spread of infectious diseases (bioterrorism), demonstrate the pressing need for more attention both to moral responsibilities and their underlying values, and to the long-term national interest of wealthy nations in a complex interdependent world. In the visionary words of former President of the Czech Republic, Václav Havel (2002): "If humanity is to survive and avoid new catastrophes, then the global political order has to be accompanied by a sincere and mutual respect among the various spheres of civilization, culture, nations, or continents, and by honest efforts on their part to seek and find the values or basic moral imperatives they have in common, and to build them into the foundations of their coexistence in this globally connected world."

Extending the ethics discourse beyond interpersonal relationships to institutional interactions, national approaches to health care, and international relations that have profound effects on population health could help promote the new mindset needed to narrow disparities in health and reduce the potential for new infections diseases to emerge and rapidly spread globally. Such a mindset requires the realization that health, human rights, economic opportunities, good governance, peace, and development are all intimately linked. The challenges we face in the 21st century are to explore these links, to understand their implications, and to develop processes that could harness economic growth to sustainable human development, progressively narrow global disparities in health, and promote peaceful coexistence (Benatar, Daar, and Singer 2003; Lee, Walt, and Haines 2004).

Strategies to effect a new approach to dealing with global health problems will have to address the difficult task of ameliorating constraints that impede the medical profession and other possible change agents from taking an active leadership role in such an effort. These constraints, as we have suggested, include the strong adherence to individualism as a principal cultural value; the types of powerful ideological, political, and economic forces that have perpetuated inequities in access to health care and derailed efforts to develop national health care coverage in the United States; and the fears of many nations about American imperialism.

The magnitude and complexity of this task should not be underestimated. Nonetheless, the importance of taking up the challenge also should not be minimized. Privileged people, we believe, need new ways of thinking about the value of the lives of others as well as their own, and about the goals and purposes of medicine and health. Such a requirement cannot be avoided in a world in which almost half the people alive today benefit little if at all from any of the advantages accrued during centuries of progress. New paradigms of thinking and action became vital at various other times in history in the face of profound change, and they are called for again to confront the current threats to human life and security posed by rampant infectious diseases, environmental degradation, and biological terrorism.

Those who live, work, and think in rich material and intellectual environments understandably tend to take for granted their wealth, democracy, and civil society (Bethke-Elshtain 1995; Galbraith 1992; Pogge 2001). They may have little direct knowledge or comprehension of how their societies have acquired, and continue to acquire—including through exploitation of distant others—the resources that enable them to lead comfortable lives. They are also remote from the "world of victims" (Farmer 1996, 2003), and from the difficulties faced by colleagues who are endeavoring to sustain universal professional ideals and accessible services in poor, nondemocratic, and oppressive countries, in which a myriad of overt and covert forces influence and obstruct them. The HIV/AIDS pandemic has highlighted some of these issues both in relation to research in developing countries and in making new therapies available to those most in need (Bond 1999; Trouiller, Olliaro, and Torreele 2002). The impact of the SARS epidemic on Toronto was a wake-up call to the fact that privileged societies are not immune to the health, security, and economic threats posed by the emergence and spread of new infectious diseases.

As John Kenneth Galbraith (1992) warned many years ago, it is time for privileged people to move beyond self-satisfied complacency. The time is ripe for deep introspection by Americans and other wealthy nations about what they do individually and collectively, and for wider debate about the global impact of the ideology driving highly selfish individualistic behavior. Humility, empathy, and a broad intellectual approach are necessary for several reasons. First, we need to appreciate the pervasiveness of powerful economic and political forces that shaped the past and will shape our future (Donnelly 1989; Falk 1999). Second, this could enable us to better understand the difficulties faced by people in vastly differing societies, and to accept that there is much that can be learned through respect for other cultural perspectives and closer interaction with them. Third, it is necessary to understand that theories and ideas we consider to be universal are to a considerable extent socially constructed and may play out differently in various social and cultural contexts. Finally, we should acknowledge that legitimacy is acquired by those with privilege and power only when they meet their moral obligations to those less fortunate than themselves. Such responsibilities extend

beyond merely elaborating universal theories and exhorting others to follow them. Recent human rights abuses at Guantanamo Bay and in the Abu Ghraib prison illustrate how decades of work to promote human rights can be set back by the failure of powerful nations to set an example of the behavior they expect of others.

Within the realm of health care, such an introspective approach could deepen our understanding of the extent and depth of conflicts of interest in medical practice and research—a glaring example of which is the pharmaceutical industry's control over global drug prices, which has had markedly adverse effects on the availability of essential drugs in poor countries (Relman and Angell 2001). There is increasing acknowledgement of the need for social justice in the delivery of health care, and escalating urgency both to reclaim much that is being lost in the practice of medicine, and to redefine what is considered necessary for the provision of preventive and curative health care services that meet individual and community needs (Adson 1995; Annas 1995; Buchanan 2001; Lyons 1994; Stevens 2001).

SETTING A MORAL EXAMPLE

The commendable thrust by Médecins Sans Frontières to promote the development of drugs for neglected diseases provides an example that could, and should, be amply emulated towards improving global health (Trouiller, Olliaro, and Torreele 2002). The gratifying challenge by Binka, Horton and colleagues to WHO to squarely face the challenges of global health (Binka et al. 2002; Horton and Pablos-Mendz 2002) might lead to a more comprehensive attempt to deal with complex global health issues in ways that could avert the security threats implicit in gross global health imbalances (Benatar 2001a).

The United States has long espoused interest in global health. For example, in the Institute of Medicine's 1997 report on "America's vital interest in global health," a 1995 survey is described showing that Americans believe 1.5% of their GNP should be donated in foreign aid. (This indicates the potential for American generosity, even though much less aid is actually given). The United States reduced its foreign aid to developing countries from only 0.2% of GNP in 1987 to 0.13% in 2002—as compared with over 0.8% of GNP by Nordic countries, 0.38% by France, 0.31% by the United Kingdom and 0.23% by Japan (Oziewicz 2004). These figures underscore the fact that professed beliefs have not been translated into governmental commitment and action.

Responding to the growing realization that the global apathy towards the unfolding tragedy of the HIV/AIDS pandemic in developing countries is a "crime against humanity," former U.S. Secretary of State Colin Powell set a positive example in expressing the view that HIV/AIDS "is a catastrophe far worse by orders of magnitude than any problem or crisis we have on the face of the earth now . . . a catastrophe worse than terrorism" (Hogg et al. 2002). If an expensive

war against terrorism that threatens the lives of many thousands can be justified in the minds of some, a war against diseases that threatens the lives of millions of people should receive much greater support. Stephen Lewis (2003), the U.N. Secretary General's special envoy for HIV/AIDS, has been exemplary in courageously accusing world governments who ignore starvation and HIV/AIDS in Africa of "mass murder by complacency," and in raising the question of whether future peacetime tribunals will hold such governments accountable for these forms of crimes against humanity.

The value of Lewis's challenge lies in the opportunity it provides to use the lessons learned from the complacency about genocides in Armenia, Germany, Cambodia, Afghanistan, Rwanda (and elsewhere) to avert the unfolding tragedy in Africa. America journalist and human rights lawyer Samantha Power (2002) describes Raphael Lemkin's 15-year struggle to invent the word *genocide* and secure the first U.N. human rights treaty to ban genocide, and the dedicated work of other Americans, including William Proxmire and Peter Galbraith, to muster U.S. support for the treaty.[3] Her account illustrates the difficulty in arousing sufficient empathy to promote preventive action for distant others (Power 2002).[4] The challenge for the 21st century is to find more rapid ways of overcoming complacency so that an African tragedy of monumental proportions with global implications can be averted.

SELF-INTEREST AS A FORCE FOR IMPROVING GLOBAL HEALTH

Just as America has sought widespread solidarity in its campaign against terrorism, so is it now in America's best interests to go beyond merely expressing concern about global health. It should set the example of providing solidarity with

[3]Proxmire delivered 3,211 (daily) speeches over 19 years on the U.S Senate floor urging ratification of the U.N. human rights treaty on genocide.

[4]Power notes that the genocide in Rwanda resulted in loss of life equivalent to more than two World Trade Center attacks every single day for 100 days. This is equivalent to the death of 23 million Americans (Power 2002, p. 512). To understand U.S. responses to genocide, Power interviewed more than 300 Americans who influenced U.S. policy. Most were officials of varying ranks at the White House, State Department, Pentagon, and Central Intelligence Agency. Also included were lawyers and staff members on Capitol Hill and journalists or nongovernmental advocates. She notes that "U.S. policy makers knew a great deal about the crimes being perpetrated. Some Americans cared and fought for action, making considerable personal and professional sacrifices. And the United States did have countless opportunities to mitigate and prevent slaughter. But time and time again, decent men and women chose to look away. We have all been bystanders to genocide. The crucial question is why." Her answers to this question are that despite graphic media coverage, American policy makers, journalists, and citizens are extremely slow to muster the imagination required to reckon with evil, and somehow they convince themselves that their intervention will both be futile and harmful to American interests. Her work highlights important potential analogies with complacency about HIV/AIDS and famine in Africa.

others in their quest for access to the basic requirements for decent and healthy living that would give hope for their futures. In this sphere, self-interest and a globally responsive and responsible purview coincide.

A glimmer that such thinking could increasingly impact on action is evident in the report from the U.S. Council of Foreign Relations and the Milbank Memorial Fund, outlining the importance of health to American foreign policy (Kassalow 2001). American economist Jeffrey Sach's work on the Commission on Macroeconomics for Health, the inauguration of a Global Health Fund, and President Bush's announcement that the United States will increase its annual development aid from $10 billion to $15 billion—while as yet only partially realized promises—are manifestations of both a deeper understanding of the importance of global health and an acknowledgement of the moral responsibility of developed nations to address this constructively (Friedman 2002; Global Fund 2002/3; WHO 2001).

For the best American values—embracing both individual freedom and community responsibility—to become globally pervasive and sustainable, it will be necessary for the power of moral example and long-term national interest to complement economic and military power. Unless the world's most powerful country moves towards showing concern for the lives, health, and well-being of the underprivileged, both within its own borders and beyond, it is likely that the lives of the privileged in America and elsewhere will be progressively devalued by those who have little to lose (Nye 2002).

The war on Iraq has severely damaged the reputation of the United States as a source of admired values and commitment to human well-being. It has also reduced the potential for the best of American values to be widely emulated (Soros 2004). The challenge of improving health for millions of people provides a window of opportunity to reclaim lost ground for the benefit of Americans and others. The vast gap between the 2004 U.S. military expenditure of $450 billion and official development assistance of only $15 billion illustrates the potential for innovative global health initiatives led by the United States (Sachs 2004).

THE ROLE OF THE AMERICAN MEDICAL PROFESSION

In our view, it is both crucial and obligatory for the American medical profession to play a central role in the transformation of thought and action that would enable the United States to assume symbolic and substantive leadership in meeting present challenges to global health. As economist Jeffrey Sachs (2004) has stated: "For the first time in decades, we must strive to understand problems—tropical diseases, malnutrition, and the like—[that] are urgent concerns of people abroad. In the case of a superpower ignorance is not bliss; it is a threat to Americans and to humanity." The members of the American medical profession have the trained competence to understand these problems. What is more, as

physicians, they have a collective professional responsibility to be the "conscience of society" in matters that affect and are affected by health and illness.

There are those both within and outside the U.S. medical profession who would respond to this exhortation with the claim that at this historical juncture, individually and collectively, American physicians do not have sufficient authority to assume the leadership role being asked of them—that they are too demoralized by the barrage of criticism for excessive dominance and autonomy to which they have been subject from the 1970s through the 1990s, and by their struggles to practice, under the current system of managed care, the kind of medicine that meets their standards of clinical and moral excellence. In response to this contention, we join with medical historian Rosemary Stevens in affirming that there are strong reasons to believe that if the profession mobilizes itself organizationally, its role as moral leaders could be effective:

> The profession has long had an authoritative voice in American culture. . . . Despite the doom and gloom expressed over managed care from the early 1990s to the present, doctors have not lost their normative role in American society. They embody a huge reservoir of goodwill inherited from the past. This is derived in various parts: from long respect of the doctor as healer; from the ideology of medicine as public service and the doctor as hero; from the huge advances of scientific medicine in the 20th century, continuing through promises to the future; from claims for scientific objectivity; from the symbolic value of medicine as culturally suited to other American values . . . and . . . from the sheer visibility of national medical organizations, even in the absence of a unified governmental health policy. (Stevens 2001, pp. 348–49)

We hope that the perspective and convictions on which our essay is based will help to embolden the American medical profession to draw on this reservoir of resources and to utilize them to spearhead, enlighten, and augment the way the United States responds to both the threats to and the potential for global health.

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Essay

Moral Imagination: The Missing Component in Global Health

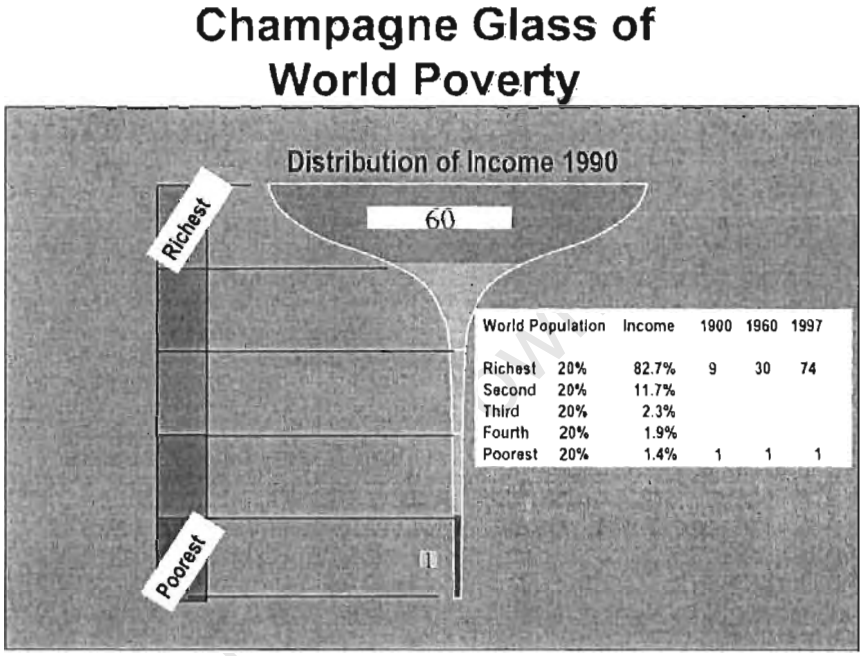
Solomon R. Benatar

The deplorable state of global health and the failure to improve this state have been debated extensively. Recent editorials in the *Lancet* in relation to the failure of Roll Back Malaria and the potential failure of the 3 by 5 programme [1,2] illustrate how disappointment, surprise, and admonitions about such failures are usually followed by optimism about the success envisaged from future efforts [1,3].

There are several possible reasons for our failure to make adequate progress in improving global health. First, it seems that there is generally more interest in doing research to acquire new knowledge than in using existing knowledge, unless it is commercially profitable—illustrating how market forces are a more powerful influence on the practice of medicine than health needs [4]. Second, concern for those who are most severely affected by ill health seems to be generally transient, perhaps because they are anonymous and out of sight, but maybe also because their lives are less highly valued [5,6]. Third, there is a tendency to focus on new technologies through "silo" (narrowly contained) approaches to improving global health [7–9]. Fourth, there is insufficient attention to the social determinants of health [10,11].

Finally, while many are concerned about the plight of others, collective action through nongovernmental organisations can only achieve limited results, and there is reluctance to acknowledge and more explicitly address the indirect, causal, complex global system forces that underlie poverty and many fatal diseases [5,11–15]. Fortunately, there is now growing recognition that new infectious diseases pose a major threat to human health and security worldwide [16,17], and that imaginative new solutions are needed to improve global health [18,19].

The Essay section contains opinion pieces on topics of broad interest to a general medical audience.



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Global distribution of wealth
(Figure adapted from [68])

While it is entirely appropriate to consider scientific and technological advances and economic growth as necessary for social progress, it is arguable that these will not be sufficient to ensure movement towards a more just world in which the health of whole populations could be improved. The controversy about globalisation versus antiglobalisation will not be revisited here, except to say that the debate should rather be about how globalisation can be modified to extend the benefits of progress more widely [20,21].

In this essay, I begin by suggesting that achieving substantial improvements in global health will depend on acknowledging that poor health at the level of whole populations reflects systemic dysfunction in a complex world. I then address why development aid is a necessary but not a sufficient solution for improving global health. I conclude with the idea that greater moral imagination (the ability of individuals and communities to empathise with others) and innovative 21st century approaches

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Solomon R. Benatar is Professor of Medicine and Director of the Bioethics Centre, University of Cape Town, Cape Town, South Africa, and Visiting Professor in Medicine and Public Health Sciences at the University of Toronto, Toronto, Ontario, Canada. E-mail: sbenatar@uctgsh1.uct.ac.za

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University of ...

are required to break the impasse we currently face in improving global health.

An Unstable and Dysfunctional World

In the domain of economics, there is a disjunction between massive economic growth over the past 50 years and fair distribution of new wealth [22]. The global economy has increased 7-fold since 1950, yet the disparity in per capita gross domestic product between the 20 richest and the 20 poorest nations has more than doubled between 1960 and 1995 [23]. As a result, there are ever-widening disparities between rich and poor (Figures 1 and 2), and almost half the world's population lives on less than US$2 per day [24]. Disproportionate pursuit of short-term self-interest, fostered by market fundamentalism, emphasises production of goods for consumption by individuals, corporations, and governments, while long-term interests and the production of public goods for whole populations are undervalued [25].

Economic stability is threatened when aggregate economic growth is valued as an end in itself rather than as a means to improving human lives, and consequently, there is a failure to achieve a more just distribution of economic and social benefits [26]. Economic dysfunction persists when conventional economic theory continues to be revered and applied despite its many failures [26–29], and thus reduces the potential for improving global health and increasing human security worldwide [30].

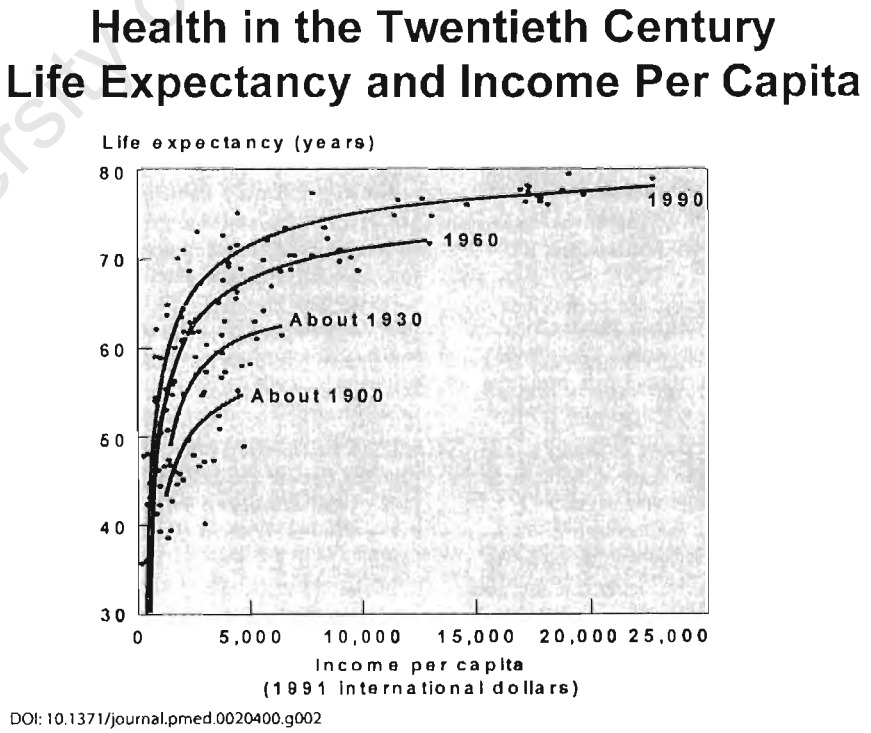
In the domain of political and social life, instability is revealed by ongoing wars, ethnic conflict, fundamentalist attitudes, failed responses to genocide in many countries, large-scale disruption of communities, refugeeism, terrorism, fragmentation of health services, and attrition of public health-care services—all reflecting a lack of global leadership and a failure to achieve basic human rights for more people in the world [5,13,14,26,30,31]. Moreover, the full potential of the human rights approach is greatly diminished by a predominant focus on civil and political rights. Insufficient attention is paid to the social, cultural, and economic rights that are essential for human flourishing, and which are part of the "indivisible human rights" package described in the Universal Declaration of Human Rights, which most human rights activists use as their source of authority. It seems that higher value is placed on the rights and lives of those with resources than on the common good and the lives of the poor, and inadequate attention is given to identifying and motivating those who have duties to uphold a broad spectrum of rights [32,33].

These shortcomings, together with ecological instability from environmental degradation, global warming, and ongoing loss of biodiversity, arguably facilitate the creation of niches for the emergence and propagation of new infectious diseases, promote the development of multidrug resistance [34], and make it more difficult to maintain the social structures required to provide care and support for so many in need [35].

Development Aid: A Necessary but Insufficient Solution

Greenwood's call for increased development aid to provide the US$2–US$5 needed for each year of life that could be saved through an effective worldwide malaria control programme [3] resembles the approaches taken for tuberculosis and HIV/AIDS (http://www.theglobalfund.org). It must be gratefully acknowledged that generous philanthropy from concerned individuals and many foundations, organisations, and new global initiatives can, and do, make valued contributions to improving the health and health care of marginalised people in the world. Development aid from many countries should also be welcomed, and recent endeavours to increase aid from the current average of 0.23% gross domestic product to the recommended 0.7% are admirable [36].

However, development aid has been progressively reduced in recent years, and is increasingly being directed towards emergency humanitarian aid and the perceived security needs of wealthy nations, rather than towards sustainable development [37,38]. Therefore, the main problem is not merely lack of philanthropy and development aid. More poignantly, the problem is how the high profile given to relatively small amounts of aid eclipses recognition of the fact that financial, human, and other material resources are continuously being extracted from developing countries by



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Relationship between life expectancy and income per capita
(Figure adapted from [69])

University of Cape Town

wealthy nations striving for their own ongoing economic growth [19,24].

Modern trade rules [39], bribery and other means of controlling national economies and the lives of millions of poor people [40], and recruitment of health professionals trained at the expense of developing countries to sustain health care in wealthy countries [41] all reflect new forms of exploitation that result in much more being extracted from developing countries than is given to them in aid or in any other form. For example, annual farming subsidies of US$350 billion in industrialised countries [42] and trade protectionism cost developing countries US$50 billion annually in export earnings [43]. Allowing farmers in developing countries to sell their products at a fair price and not in competition with massive subsidies could eliminate the need for development aid [39,44].

Debt is another major problem. Poor countries' debt (US$2.2 trillion in 1997) has been associated with, and perpetuated through, arms trading (often coercively linked to aid) [45–47]. Such debt, particularly sub-Saharan Africa's debt of US$275 billion, fostered by both eager lenders and often corrupt borrowers can never be repaid. Sustaining debt perpetuates economic dependence and human misery. Resulting annual interest payments, of greater magnitude than the US$21 billion annual aid donated to Africa, cripple health and other social services and stultify development [48,49].

While some countries have achieved economic development, this has been generally less than desired and, sadly, lacking in most of sub-Saharan Africa. Moreover, much done in the name of development has been counterproductive, with adverse effects on the potential for globally improved human security [50–53]. The meaning of development and its evaluation needs to be reconsidered. Development means more than overall economic growth, and must include social progress, for example, in basic living conditions, education, and access to health care, so that all can have the opportunity to reach their achievable human capacities [50,54,55].

The unpalatable facts about how development is stultified are not being adequately confronted, and little attempt is made to acknowledge and address the complex systemic forces that sustain poverty and poor health [19,24]. Instead, obfuscation by politicians and indomitable optimism focused on economics, science, and human rights all promote continued hope for improving health in the developing world through market forces and new technologies [7–9].

Inadequate Moral Imagination

Some critical questions about world poverty have been asked and need to be answered [24]. Why does extreme poverty of almost half of humankind (income of less that US$2 per day) continue despite scientific, technological, economic, and moral progress? How do we explain why affluent individuals and wealthy nations are not morally embarrassed that so many people can be relegated to lives of poor quality with such limited opportunities to reach their full human potential? What does support (by individuals and nations) for processes that aggravate and sustain poverty tell us about ourselves and about the values we hold deeply? How can the rich remain secure in a world in which so many are so desperately poor that they may be provoked to rise up and rebel? Widening disparities within wealthy nations add another troubling dimension [56].

Many privileged people believe that poverty is not the fault of wealthy countries, but rather the result of bad government elsewhere. This is, indeed, partially true, and the prominent exposure of the extent of corruption and poor governance, for example in Africa [24,36,44,57], should be followed by sustained condemnation, retribution, and prevention. However, much less openly discussed is the complicity of powerful nations in supporting leaders who are despots and kleptocrats—by legitimising their right to sell their countries' natural resources, spend profligately on themselves, and incur debts that their impoverished citizens must repay [24,52]. Because wealthy nations, and by association their citizens, are deeply implicated in the generation and maintenance of forces that perpetuate social injustice and poverty, they need to face their responsibilities to alleviate the lives of those most adversely affected [24,52]. Reliance solely on perpetual philanthropy is clearly not the long-term solution to global health problems.

While we talk increasingly about disparities in wealth and health in an unjust world, most privileged people remain complacent about the suffering of the poor—both distant and within our midst [58,59]. In considering the many genocides across the world during the 20th century, Jonathan Glover has suggested that it is only moral imagination (our ability to imagine ourselves in the shoes of others) that can enable us to alter our outlook and actions significantly [60]. Our moral imagination is dulled, and insight into our global interdependence is diminished by insufficient public acknowledgment of how the quest of wealthy nations for endless economic growth, and luxuries that their citizens expect, has profoundly adverse effects on access to basic necessities of life for millions of others [24,26,49]. The ability to empathise with others requires the critical examination of our individual lives and of our nations' actions, the capacity to see ourselves as bound to all other human beings, and the sensitivity to imagine what it might be like to be a person living a very deprived and threatened life [24,61,62].

Making a diagnosis of social ills, like making diagnoses in medical practice, is much easier than providing effective remedies [63]. The magnitude and importance of achieving solidarity and cooperation in an interdependent world calls for a major research programme and considerable scholarship from many disciplines. Some pointers have been provided [18–21,24,64–66].

If lack of moral imagination were to be seen as one of the grand challenges for global health, resources and scholarly energy would surely be applied to promoting such imagination and to seeking innovative new approaches to improving global health. The quest for improved global health will be elusive if we continue to neglect the upstream forces that cause, sustain, and aggravate the poverty and misery that characterise the lives of almost half the world's population. The writing is on the wall [67]. ■

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GOPAL SREENIVASAN and SOLOMON R. BENATAR

CHALLENGES FOR GLOBAL HEALTH IN THE 21ST CENTURY: SOME UPSTREAM CONSIDERATIONS

Scientific, technological, and economic successes in the modern era have resulted in spectacular advances in medical treatment and life expectancy. These advances have been accompanied by exponential growth of the world's population and even greater increases in production and consumption, with striking ecological impact and implications for health.[1] However, disparities in wealth and in health are widening within nations and also globally, between nations. Moreover, despite high expectations for their control, infectious diseases are becoming of crucial importance again. The recrudescence of infectious diseases as the major threat to human life and health suggests that progress is neither linear nor continuous. There may now even be a tendency towards entropy within the global system. Infectious diseases, exemplified by HIV/AIDS and SARS, have made it necessary to view health as much from the level of whole populations as from the perspectives of individual health.[2]

In this special issue, we address some of the major social and economic challenges for global health from perspectives that are not covered in significant detail in most medical or bioethics journals. Our focus is on those upstream forces that have a profound impact on the health of whole populations. We venture to suggest that while new scientific advances – for example, through biotechnology and nanotechnology – may have much to offer, they will fail to achieve their potential if we do not address with equal vigor the issues identified here.

One of the most prominent challenges to global health comes from the phenomenon of globalisation. 'Globalisation' means different things to different people. To consider its impact on health, it helps to disentangle the various dimensions that jointly constitute the phenomenon. A general feature shared by many of these dimensions is a decline in the barriers to, and consequent growth in, the international mobility of different factors of interest. Thus, globalisation variously comprises the increased mobility of trade, money, people, pathogens, cultural practices, and ideas between nations and around the globe.

While much discussion focuses on the economic dimension of globalisation, the other dimensions are also important, not least in terms of their impact on health. In addition, globalisation comprises significant changes in international governance – for example, the emergence of new global institutions, such as the World Trade Organisation (WTO), and of new supra-national institutions, such as the European Union. These changes have facilitated the mobility of the indicated factors.

Globalisation is not a new phenomenon, but rather the outcome of a long interwoven economic and political history involving a wide range of actors, with both beneficial and adverse effects on human well-being.[3] Like population growth, it is arguable that the adverse manifestations of globalisation are now becoming starkly apparent.

We shall not attempt to provide a comprehensive overview of the complex set of inter-connections between the various components of globalisation and health.[4] However, it may be instructive to illustrate some of that complexity. Consider one of the core pathways between economic globalisation and health, one that is invoked by advocates who argue that 'globalisation is good for your health'.[5]

Economic globalisation here refers to the increasing liberalisation, integration, and volume of international trade. Roughly, the general argument is that increased participation in international trade by poor countries contributes to significant growth in their income; and this, in turn, contributes to a significant improvement in their citizens' health. Even at this basic level, the argument rests on the conjunction of two separate claims, each of which depends on a complicated empirical literature. The first claim depends on what might be called a 'neo-liberal' reading of the economic development literature.[6] The second claim emerges from the epidemiological literature on income as a determinant of health.[7] In some respects, this is less controversial than the first claim, since it is fairly straightforward that, at least for poor people in poor countries, individual life expectancy increases as a function of individual income.

However, a further complication is introduced by the fact that 'income' means different things in the two claims. In the second claim, it means *individual* income, whereas in the first claim it means *average national* income. Hence, even if the argument's first two claims are correct, it does not follow that the health of the world's poorest inhabitants will improve significantly, unless it is their incomes in particular that grow. In other words, the argument actually rests on a third claim as well, which is that the gains from

trade asserted by the first claim satisfy a distributive constraint. This constraint stipulates that the income growth resulting from a poor country's increased participation in international trade extends to the people at the bottom end of its national income distribution.

Some of our contributors discuss material that is relevant to this argument. Those who do take a rather sceptical position. In her chapter on economic globalisation, Meri Koivusalo reviews some of the grounds for opposing the neo-liberal position on economic development. She thereby disputes the first claim used to argue that globalisation is good for your health. Stephen Gill and Isabella Bakker question the extent to which the incomes of the global poor have grown as a result of trade liberalisation, which is to dispute the third claim we distinguished as part of that argument.

Koivusalo also distinguishes between health outcomes and health policy, arguing that we should attend separately to the impact that globalisation has on each. Her distinction is especially pertinent when it comes to analysing the impact on health of the changes in global governance. The direct health impact of the various international agreements administered by the WTO, for example, falls on the health *policy* of member nations, rather than on health outcomes among their inhabitants, which are affected only indirectly.

Now the impact of the WTO agreements (or other changes in global governance) on health policy can be assessed from either of two standpoints – that of procedural merit or that of substantive policy merit. A common criticism of the WTO by civil society groups has been that it is undemocratic. This is an example of a procedural critique. Elsewhere, one of us has developed this critique in relation to the restrictive impact of the General Agreement on Trade in Services (GATS) on the domestic health policy options of WTO members.[8] Like other WTO agreements, the GATS seeks to entrench – in effect, to constitutionalise – a particular economic policy ('neo-liberalism') as the framework within which international trade is governed. This framework restricts domestic policy options in many other domains, including health.

In this issue, by contrast, Gill and Bakker criticise what they aptly term the 'new constitutionalism' not so much because it is undemocratic, but because the policy it entrenches is substantively misguided, at least as health policy. Their primary objection, in other words, is not to policy entrenchment *per se*, but to the entrenchment of poor policy. Koivusalo echoes their substantive critique on a number of points.

As a complement to these contributors, who question some of the key steps in the argument that economic globalisation is good for health, Cecile Bensimon and Solly Benatar object to any conception of 'development' that focuses narrowly on income or other economic indicators. Even the recent discourse regarding 'sustainable development', they argue, does not move far enough away from this overly narrow focus. They propose a new paradigm of development that abandons four flawed assumptions lying behind previous approaches: (i) that developing countries' problems are entirely internal; (ii) that developed countries are an example to be globally emulated; (iii) that the role of developed countries in promoting development is defined by altruism; and (iv) that the poor lack the potential to improve their own lives significantly.

Among the features of Bensimon's and Benatar's new paradigm is the explicit inclusion of a moral dimension in development. As this suggests, not least among the challenges posed by the massive disparities in global health is the ethical challenge. On the face of it, the vast numbers of the global poor and their very low life expectancy (measured either in absolute terms or relative to life expectancy in the developed world) represent a clear and significant injustice. One natural way to analyse this injustice is through the lens of global distributive justice – for example, in terms of an obligation to redistribute resources from rich countries to poor countries. However, even among egalitarians, the basis, character, and extent of any such obligation are actually rather controversial.[9]

Still, the purchase of the theoretical controversies seems to pale in comparison to the moral severity of the practical problem. One idea, accordingly, is to look for minimum interim measures on which reasonable agreement may be secured, so that urgent practical action may begin *before* the theoretical controversies are resolved. If there are particular measures of this kind on which all reasonable theories of global justice agree, then certain steps toward a more just world can be licensed theoretically without having to settle which particular theory of justice is correct in all (or even, many) of its details.

Elsewhere, one of us has described this idea as an exercise in 'non-ideal theory' and has proposed an obligation on the major seven countries in the Organisation for Economic Co-operation and Development (OECD) to transfer 1% of their GDP to developing countries as an example of a minimal interim measure.[10] Suitably targeted on basic health care and on the fundamental social determinants of health, 1% of GDP from the OECD major seven would

make possible a significant improvement in life expectancy among the global poor.

In their contribution to this issue, Allen Buchanan and Matthew de Camp pursue a very similar strategy, which they describe as a form of overlapping consensus. However, they focus on different minimum measures, which usefully broadens the scope of the strategy. One of their best examples is the obligation to refrain from fighting unjust wars. On the one hand, it is hard to think of a less controversial obligation of international justice; and on the other hand, even using fairly minimal criteria for defining an 'unjust war', the potential savings in life from due observance of this obligation is enormous. Just how many lives stand to be saved in this way is described in grim detail by Salahaddin Azer, in his chapter on global health and the arms trade. Since 1945, over 30 million people have been killed using conventional weapons, while civilian deaths in war as a percentage of all war deaths have increased from 14% during WW II to 90% in the 1990s. Moreover, these victims are heavily concentrated among the world's worst-off inhabitants. 'More than 85% of the major conflicts since the second world war have been in poor countries'.[11]

As Buchanan and de Camp's example illustrates, a significant part of the ethical challenge concerning the health of the global poor is a challenge to our moral and political will, rather than a matter of any special innovation or development in moral theory. If the will could be found to ensure general observance of certain very basic minimum duties, whose nature and force is clear enough, considerable practical progress would be made in improving the health and lives of the worst-off. This is hardly to deny that a lot would remain to be done. But it would be an important start.

We conclude our introduction with a brief overview of the individual contributions. Koivusalo's opening chapter outlines the impact of economic globalisation on health. She describes economic globalisation as comprising three processes: (i) mobility of capital, goods, services, and labour; (ii) global economic integration and its impact on nation states; and (iii) the influence of globalisation as an ideology. She points out how economic globalisation has a different impact in different countries, depending on the structure and funding of their health services, and that the impact is often, but not always adverse. Koivusalo reiterates the need to extend the debates in medical ethics beyond the individual issues so extensively discussed in recent years. She advocates for the ethical debate to consider the

interpretation of commercial rights, the bases and promotion of population health, and equity aspects of health care systems.

Gill and Bakker provide an insightful explication of the 'new constitutionalism' – the progressive international trends towards locking into place new global rules and regulations based on neo-liberal economic policy. In their view, the new constitutionalism fosters economic growth for wealthy countries and allows economic disparities to widen. They highlight three areas of economic policy (fiscal policy, monetary policy, and trade liberalisation) through which reproduction of caring social institutions (e.g., provision of health care), essential to the flourishing and security of the majority of the world's people, is adversely affected. They emphasise the excessive and adverse impact on women. While opposition to the new constitutionalism comes from relatively powerless groups, examples of success (as in Brazil) provide inspiration to others to pursue imaginative agendas.

Bensimon and Benatar draw attention to several crucial paradoxes associated with globalisation and the neo-liberal development agenda. They provocatively suggest that development and underdevelopment should not merely be considered in economic terms, but also in terms of many other requirements for a decent human life. Such an approach reveals that many economically developed countries are underdeveloped in some non-economic ways. To reflect this wider perspective, Bensimon and Benatar propose changing the metaphor from sustainable development to the development of sustainability. They conclude by outlining a report card in terms of which 'development' in both developed and developing countries can be continually assessed according to a range of relevant criteria of development, criteria that should be weighted differently in different regions.

One of the saddest features of human life is the extent to which humans kill and maim their own kind. Methods of so doing have 'progressed' from stones and arrows to guns and weapons of mass destruction. Indeed, there has long been a threat of total annihilation from atomic warfare. Although such doomsday scenarios have not materialised, they remain worrisome possibilities. Nonetheless, wars using smaller weapons continue unabated, with resulting loss of life and limb, as well as many indirect costs from opportunities lost due to massive expenditures on war.

Azer's chapter on the arms trade and global health is a sobering account of the extent to which physical and emotional aspects of human life and health have been damaged by the machinery of war and human belligerence. In addition, it draws attention to how the

vast expenditure on weapons and war detracts from the provision of education and health services. Azer provides data on who sells and who buys weapons; and describes the extent to which the arms trade contributes to human conflict, to human rights violations, and to global instability and environmental degradation. He concludes with a discussion of efforts to limit the arms trade.

In the concluding chapter, Buchanan and de Camp analyse who is responsible for global health and why; and what could be done to address this major 21st-century challenge. They outline the need to translate vague commitments to doing 'something' to improve global health into a coherent set of more determinate obligations for states and non-state actors. They propose a 'coherent cosmopolitan ethical perspective that acknowledges the importance of all persons, regardless of where they live...' as a 'normative basis for taking global health seriously as a moral issue'.

Our purpose in this volume is to propagate within medical and bioethics journals, scholarly debate and constructive action that could begin to alleviate problems of global magnitude that profoundly influence health. We do so in the belief that progress through science alone is not inevitable, that negative feedback loops operate in all complex systems, that these can result in instability and collapse of systems, and that we have the capacity to recognise adverse pathways into the future and to influence these positively. We acknowledge the complexity of the task and the immensity of the challenges posed. But if we are indeed 'homo sapiens', then it should be within our capacity to face up to such complex issues and tackle them.

NOTES

[1] S.R. Benatar, 'Global disparities in health and human rights', *American Journal of Public Health* 88 (1998): 295–300.

[2] S.R. Benatar, 'The coming catastrophe in international health', *International Journal* 56 (2001): 611–631.

[3] See, e.g., J. Osterhammel and N. Petersson, *Globalization: A Short History* (Princeton: Princeton University Press, 2005).

[4] See, e.g., D. Woodward, N. Drager, R. Beaglehole and D. Lipson, 'Globalization and Health: A Framework for Analysis and Action', *Bulletin of the World Health Organisation* 79 (2001): 875–881; G. Walt, 'Globalization and Health', *Medicine, Conflict and Survival* 17 (2001): 63–70.

[5] D. Dollar, 'Is Globalization Good for your Health?', *Bulletin of the World Health Organization* 79 (2001): 827–833; R. Feachem, 'Globalisation is Good for Your Health, Mostly', *British Medical Journal* 323 (2001): 504–506.

[6] See, e.g., World Bank, *Globalization, Growth, and Poverty* (Oxford: Oxford University Press, 2002). For an opposing view, see (e.g.) F. Rodriguez and D. Rodrik, 'Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-national Evidence', in *Macroeconomics Annual 2000* eds. B. Bernanke and K. Rogoff (Cambridge, MA.: MIT Press, 2000), pp. 261–325.

[7] For a recent survey, see A. Deaton, 'Health, Inequality, and Economic Development', *Journal of Economic Literature* 41 (2003): 113–158; see also, S.R. Benatar, 'Health in Developing Countries', in *International Encyclopedia of the Social & Behavioral Sciences* eds-in-chief. N.J. Smelser and P.B. Baltes (Amsterdam: Elsevier, 2001), pp. 6566–6570.

[8] G. Sreenivasan, 'Does the GATS Undermine Democratic Control Over Health?', *Journal of Ethics* 9 (2005): 269–281; and L. Belsky et al., 'The GATS: Implications for Health Policymakers', *Health Affairs* 23 (2004): 137–145.

[9] For a survey, see S. Caney, 'International Distributive Justice', *Political Studies* 49 (2001): 974–997; and for more recent discussion, see D. Chatterjee (ed.) *The Ethics of Assistance* (New York: Cambridge University Press, 2004); and S. Caney, *Justice Beyond Borders* (Oxford: Oxford University Press, 2005), pp. 102–147.

[10] G. Sreenivasan, 'International Justice and Health: A Proposal', *Ethics and International Affairs* 16 (2002): 81–90.

[11] D. Southall and B. O'Hare, 'Empty Arms: The Effect of the Arms Trade on Mothers and Children', *British Medical Journal* 325 (2002): 1457.

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Gopal Sreenivasan
Department of Philosophy
University of Toronto
Canada
E-mail: gopal.sreenivasan@utoronto.ca

Solomon R. Benatar
Bioethics Centre
Department of Medicine
University of Cape Town
South Africa
E-mail: sbenatar@uctgsh1.uct.ac.za

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CÉCILE M. BENSIMON and SOLOMON R. BENATAR

DEVELOPING SUSTAINABILITY: A NEW METAPHOR FOR PROGRESS

ABSTRACT. In this paper, we propose a new model for development, one that transcends the North–South dichotomy and goes beyond a narrow conception of development as an economic process. This model requires a paradigm shift toward a new metaphor that *develops* sustainability, rather than sustains development. We conclude by defending a 'report card on development' as a means for evaluating how countries perform within this new paradigm.

KEY WORDS: development, free trade, growth, health, report card, sustainability, security, underdevelopment

INTRODUCTION

The concept of development emerged as a framework for thinking about how best to modernise former colonies. It invoked a particular perspective of the world, one in which improving the lives of the 'masses' was predicated on supplanting traditional ways of life with a model of society driven by economic interests and individualist structures. Western development theorists professed that the key to any kind of development was economic development – that is, economic growth and the associated increasing production and consumption that it underpins – from which human and political development would inevitably follow. In the later 1980's the concept of *sustainable development* emerged as a way of integrating Western economic and individualist conceptualisations of development into the international discourse. Since then support for development has been replaced by an unwavering faith in the 'developmental power' of economic globalisation.

There is no question that the discourse on sustainable forms of development pointed toward a significant paradigm shift in strategies for development.[1] The effort to link the environmental debate to issues of development and justice reflected a concern for both

humanity and the environment.[2] That the idea of sustainable development has become institutionalised is apparent from its express endorsement by numerous new sustainable development commissions and organisations that define policy for conservation, development, science, technology, and society. It has changed the tone and substance of environmentalist, ecological, public health, political, socio-economic, and corporate discourses. Today, 'fervent discussion about human aspirations, dignity, morals, values, and conquering of an uncertain future, are regular elements of the debate on sustainable development'.[3]

Yet, we live in a world of unprecedented inequality and continued environmental degradation. According to United Nations Development Program (UNDP) figures, increases in global inequality have been staggering: the ratio of income per capita in the richest quintile of countries to that of the poorest quintile increased from 30:1 in 1960, to 74:1 by 1997.[4] The 2003 Human Development Report, commissioned by the UNDP, found that 30 out of 34 'low human development' countries at the bottom of the Index are in sub-Saharan Africa; roughly half of the countries in Latin America and the Caribbean recorded either a decline or stagnation in income during the 1990s; and Eastern Europe and Central Asia saw an overall decline in 2003.[5] According to the United Nations, 'a third of the world's people live on an income of less than two dollars a day, use of fossil fuels is rising rapidly, patterns of production and consumption continue to consume natural resources faster than they can be replenished, three-quarters of the world's fisheries are fished to their sustainable limits or beyond, mountain glaciers are slowly melting away and the world's forests have shrunk in the last decade...'[6]

Such a stark reality prompts the question: what exactly are we sustaining and what are we developing? Despite more than a decade of world conferences focusing attention on the global development agenda, global trends in inequality, extreme poverty, and other indicators of social penury only seem to grow or deepen. Most recently, on the 10th anniversary of the Rio Earth Summit, world leaders met in Johannesburg in search of concrete initiatives to move the agenda of sustainable development forward in a paradoxically interdependent and divided world.[7] At the dawn of the Summit, the United Nations declared, 'this is a historic opportunity to confront serious and growing threats to human well-being'.[8] That even modest expectations went unfulfilled at this World Summit on Sustainable Development does not just point to the failure of summit diplomacy.[9]

It reveals the unsustainability of the international discourse on sustainable development. This is because it is predicated on a conception of development that is inadequate.

The international community exerts much effort at developing the poor through the widespread implementation of a neo-liberal model of capitalist development, yet it pays no heed to the fact that *all* countries – not just those we regard as developing countries – need to make progress toward sustainable practices and processes. The development myth – 'it worked in the West, now take it on the road' – does not consider that what we regard as 'developed' may not be all that developed after all. Indeed, so-called developed countries show signs of underdevelopment that have been completely ignored in the global development agenda, while developing countries offer much in the way of sustainable human life.

EXPOSING THE DEVELOPMENT MYTH

Any successful attempt to shift institutional, political, and rational frameworks toward sustainable practices and processes requires that we abandon the following four assumptions.

(1) That developing countries' problems are entirely internal;
(2) That developed countries are an example to be globally emulated;
(3) That the role of developed countries in promoting development is defined by altruism;
(4) That the poor do not have the potential to improve their own lives significantly.

These assumptions rest on a North–South dichotomy that presupposes that some countries are developed and others are developing or not developed. This is problematic because it narrowly focuses on 'shortcomings' in poor, developing countries, while positing that they could, and should, emulate the Western model of development (to make progress toward the current level of economic status and standard of living of rich, developed countries). Beyond this, however, the North–South dichotomy masks a broad, complex continuum of development, underdevelopment, and undevelopment (social, economic, cultural, civic, etc.) in both Northern and Southern countries. There are entire categories of people in the North who find themselves totally marginalised and excluded from the benefits of

'development', along with the majority of the world's poor living in the South. There is in fact a major rift between the localised poor and the globalised rich. This rift – separating a small global upper class and larger global middle class from a marginalised majority outside the circuits of the world economy – suggests that the North–South dichotomy is in fact a false construct. Indeed, increasing inequity, growing poverty, and ill health is escalating between countries *and* within countries, in the North as well as in the South.[10] As we shall now illustrate, these problems are captured in the paradoxical discourses on growth, free trade, and security – all of which are underpinned by key social forces affecting each of these apparently separate aspects of sustainability.[11]

The Discourse on Growth

The discourse on growth is that growth itself is central to the development process – continued and expansive growth of free trade, of the production of goods and services, and of consumption, all of which centre on economic growth. This is paradoxical, since development measured in terms of economic growth – enabled by unlimited, unrestrained economic and resource consumption – is untenable as a sustainable strategy.[12,13]

Yet, growth continues to be the cornerstone of the development paradigm. The sustainable development discourse posits that economic growth and resource consumption are compatible with conservation. It is generally suggested that economic growth can occur 'if the content of growth is changed' and that the resource base should be conserved and enhanced, even as 'the international economy speeds up world growth'. Commonly proposed are 'changes in purchasing patterns to reduce resource use' and 'efforts to promote green consumerism'.[14] But while it is acknowledged that some changes need to be made in the quality of growth, the overall merits of the system are hardly questioned. In fact, the sustainable development discourse presents environmental degradation as an obstacle to continuing economic growth, rather than raising questions about the role of continuing economic growth in causing environmental degradation and social injustice. This is not difficult to substantiate: to develop, so-called 'developed' societies have been, and continue to be, highly dependent on the seemingly limitless and ever-increasing sources of energy and materials. Barely 20% of the world's population, mostly

from 'developed' countries, consume over 80% of global resources and produce 80% of the global contamination.[15]

Even those who challenge the effects of unlimited growth promote growth. According to the Bruntland Commission, a critical objective for achieving sustainable development is reviving growth. Other seminal international reports reinforce this logic. Even the UNDP, which attempts to identify and solve base problems of social inequality, poverty, and resource distribution, argues in every Human Development Report it has published that 'the purpose of development is to improve people's lives by expanding their choices'.[16] In the same vein, the 1996 UNDP Human Development Report defines human development as a 'process of enlarging people's choices', adding that 'economic growth is ... a subset of Human Development Models'.[17]

The Discourse on Free Trade

The discourse on free trade is seen as a means to economic development and poverty alleviation – that is, a means to improve people's lives. But current trade practices are increasingly locked into place through the 'new constitutionalism' (see chapter by Gill and Bakker in this issue), which benefits a minority of the world's population, while exacerbating inequality and poor conditions of health for the majority.[18] This is because 'competitiveness remains the central organising and constitutive purpose of free trade agreements', while the sustainable development discourse 'has increasingly become linked with, and subsumed within, the context of a competitiveness agenda with free trade as its centrepiece (...)'.[19] In other words, the trade agenda overrides the objectives of sustainable development because of the overwhelming concern for protecting competitiveness and promoting consumption. Consequently, commitments to sustainability are mere adjuncts to trade agreements. Indeed, the same governments that ratified multilateral and regional agreements on, for example, biodiversity and climate change – and adopted Agenda 21, a plan of action that integrates economic, environmental, and social concerns into a single policy framework – have continued to strongly argue against obstructing trade negotiations with what is deemed to be a merely secondary social agenda. They thereby sideline the critical need to link issues of health, equity, and environmental sustainability to trade and economic development. Trade agreements, in sum, place trade 'interests' over what economists call 'external conditionalities', such as the environment and health protection.

The Discourse on Security

Since the end of the Cold War, there has been significant debate over what security means. While it has been broadened to include economic, ecological, human health, and social problems, this broader notion of security continues to be predominantly conceived in terms of its conventional definition of military threats.[20] But security seen through this lens cannot adequately address global problems. This is especially relevant in the context of global disease threats.

Health and disease transcend national borders, challenging conventional frameworks of sovereignty, public policy, and governance.[21] This is reinforced by the changing nature of public policy-making, which has steered towards an ever more internationalised policy-making process, blurring the lines between foreign and domestic policy. The distinction between forces and actors that were once considered firmly on one side or the other is increasingly artificial, as the convergence of foreign and domestic policy is becoming more and more apparent. Foreign policy-making has become entangled within a widening web of shared jurisdiction and networks of influence. Yet, Western countries continue to address global health problems from the standpoint of national security concerns. Consider the following:

In 2000, David Gordon (a national intelligence officer for economic and global issues with the National Intelligence Council) wrote a CIA report on the *Global Infectious Disease Threat and Its Implications for the United States*, to warn American policy-makers of the threat posed by infectious diseases and the growing probability of a bioterrorist attack against US civilian and military personnel overseas or in the United States.[22] Gordon explains the rationale for such a report:

> This report represents an important initiative on the part of the Intelligence Community to consider the national security dimension of a non-traditional threat. It responds to a growing concern by senior US leaders about the implications – in terms of health, economics, and national security – of the growing global infectious disease threat. The dramatic increase in drug-resistant microbes, combined with the lag in development of new antibiotics, the rise of megacities with severe health care deficiencies, environmental degradation, and the growing ease and frequency of cross-border movements of people and produce have greatly facilitated the spread of infectious diseases.

Testifying before the House Committee on International Relations, he warned that 'new and reemerging infectious diseases will

pose a rising – and in the worst case, a catastrophic – global health threat'.[23] But the real danger, members of Congress were told, is that infectious diseases 'can weaken U.S. troops abroad and slow social and economic development in countries of interest to the United States. Embargoes may become necessary to protect from infectious diseases, *disrupting trade*'. Dr. David Satcher, then U.S. Surgeon General, concurred. At the same hearing, he testified that U.S. investment in global health could preserve domestic health, enhance the nation's economy, and advance U.S. foreign policy interests.

Dr. Paul Farmer, an infectious disease physician who writes from the front lines of the destitute sick in rural Haiti, explains how infectious diseases seen through a national security lens play out in poor countries:

> In a wealthy country, the spectre of biological warfare, for which there is exceedingly slender evidence, triggers a sort of officially blessed paranoia. In a poor country tightly bound to the rich one, real infections continue to kill-off the poor, and we are told sternly to look harder for cheaper, more 'cost-effective' interventions. At best, those of us working in places like Haiti can hope for trickle-down funds if the plagues of the poor are classed as 'U.S. security interests'.[24]

For example, ongoing tropical disease research conducted by the U.S. Department of Defense's Institutes is motivated by the 'security interest' to understand infectious diseases that threaten military personnel abroad.[25] According to Henry and Farmer, the rationale for priority setting in disease research 'can be characterised in part by the reigning logic of cost-effectiveness'.[26] Even the World Health Organisation's 1999 *World Health Report* maintained that it 'does not make economic sense to try to provide comprehensive medical services for everyone'.[27] The dominant international public health discourse that has emerged is reduced, therefore, to the cost-effectiveness argument: '[effective] treatment is too expensive to be considered "realistic" in resource-poor settings'[28] and the only way to circumvent this is to lower the standards of care.

While health care providers in developing countries are expected – at times, forced – to lower standards of care on the grounds of 'cost-effectiveness',[29] the United States pours substantial resources into bioterrorism prevention and response.[30] On the eve of the 2001 Presidential State of the Union, just a few days after the September 11 attacks, the Project for the New American Century (PNAC) issued a statement complaining that the current US military budget of almost 400 billion dollars – greater than the world's 15 next biggest military

establishments combined – was not enough to sustain U.S. strategy abroad.[31] Significantly, world military expenditure for 2001 is estimated at $839 billion, accounting for 2.6% of the world's GDP.[32] In contrast, the world's 21 richest nations currently spend about $58 billion a year on foreign aid.[33] There is no question that we live in a world fraught with insecurity. Is military spending, however, the most productive way to achieve health and human security, as defined by Acharya as 'security of the people, their livelihoods, their health and their sense of well-being'?[34]

TOWARDS A NEW PARADIGM OF DEVELOPMENT

Efforts to address pressing global problems 'continue to be dominated by what can be termed "conventional" approaches'.[35] Put another way, problem-solving approaches use a 'silo' concept of knowledge to address micro aspects of existing norms and institutions that recreate poverty and inequality. In so doing, they sustain the existing system, no matter what the cost.

It is not surprising that the new poverty agenda that surfaced in the 1990s, and was embodied in the Millennium Development Goals (MDGs) 10 years later, 'stresses the importance of market-led growth itself as *the* most important method to address poverty'.[36] In other words, the new poverty agenda 'has shifted the terrain of debate away from such issues as the conditions under which land reforms (or asset redistribution more generally) and basic needs provisioning are effective in reducing poverty. Instead, the focus now is on the types of economic growth that may be most conducive to poverty alleviation, and how state policies can promote such patterns of growth'.[37]

So while the concept of poverty has been broadened beyond a narrow definition of income to include other dimensions of human development (an approach to poverty reduction presented as the *post*-Washington Consensus), both the issues and the strategies that anti-poverty programmes identify as central to the alleviation of poverty are rooted in market-oriented policies – reflecting and reinforcing the dominant neo-liberal discourse. The new poverty agenda has remained a discussion about development in its conventional sense, i.e. poverty reduction can be achieved through faster economic growth.[38] Drawing on Gill's concept of the new constitutionalism,[39] Weber concludes that 'normative discourses underpinning the post-Washington Consensus are argued to be instrumental to efforts

to legitimate the consolidation, "constitutionally", of what *continues* to be the Washington Consensus'.[40]

The dominant development paradigm thus remains intact. While 'global institutional efforts have been stepped up in support of the international development targets [also the MDGs]',[41] current global trends are 'sustaining privilege, sustaining poverty, sustaining abuse of the earth, sustaining inequality, sustaining starvation, sustaining violence'.[42] In short, current global trends are devastatingly unsustainable and global heath is threatened.[43]

DEVELOPING SUSTAINABLITY

The problems surrounding the dominant development paradigm suggest that we are in need of a new model of development; one that *develops sustainability* rather than *sustains development*.[44] Whereas sustainable development means managing growth, developing sustainability means creating new institutions and systems that require a shift away from the economic towards an ethic that, as Robertson argues, takes needs 'out of the marketplace where they are commodified'.[45] On this view, 'the best response to extreme poverty', echoes Gomberg, is to put in place 'social understandings and relationships that put the fundamentals of human well-being outside the forces of the market'.[46]

Many years ago, it was suggested that not only were extremes of rural poverty being ignored, but there was also failure to appreciate the richness, validity, and power of the knowledge of the rural poor, which if constructively tapped into could result in significant improvements in their lives.[47] More recently, an approach to sustainable livelihoods that builds on the 'wealth' of the poor has been proposed. This focuses on empowering them by emphasising the knowledge, resourcefulness, and adaptive skills that have allowed the poor to survive against terrible odds. The sustainable livelihood approach is based on the premise that most adaptive strategies can be made more productive and more sustainable with the application of a little contemporary knowledge, technology, financial services, and improvements on governance.[48]

The view that basic human needs should not be turned into commodities – and hence, subject to competitive market pricing and market allocation mechanisms – is a central feature of a new paradigm of (human) development. In fact, it echoes Amartya Sen's

well-known notion of basic needs as 'entitlements'. Sen, who addresses questions of development and underdevelopment by explicitly applying ethical principles, argues that development cannot be understood as economic growth, industrialisation, or modernisation. He argues that these are, at best, only means to such ends as the expansion of people's valuable capabilities and functionings.[49]

Of the many issues central to the development process, Sen argues that the moral notion that takes priority over any other in understanding and securing development is that of human well-being, achieved through the capabilities and functions that provide people with the freedom to improve their own lives. In other words, everyone has the right (that is, is *entitled*) to an adequate level of morally basic capabilities. In sum, Sen's capabilities thesis bolsters the important view that the commodification of needs does not develop *human* sustainability, including, and especially, human health.

While Sen proposes a broader conception of development, he does not go quite far enough in reframing an understanding of development that develops sustainability. He continues to promote a neo-liberal agenda that reinforces the market imperative of the dominant development paradigm. But the idea that economic freedom is the key to achieving one's capabilities is implausible.[50] While market practices have existed throughout history, the modern market system – in which people satisfy their material needs by treating land, labour, and money as commodities – is an invention of the past three centuries. As Polanyi's argued, 'reciprocity' and 'redistribution' were two alternative forms of economic organisation that operated on a logic quite contrary to that of market exchange,[51] with highly significant implications for development and developing sustainability.

To be sure, a new paradigm of development cannot avoid 'the advances in technology, communication, production and transport'[52] inherent to globalisation. But neo-liberal globalisation must be distinguished from social democratic globalisation. On the one hand, pragmatic neo-liberals accept the inexorability and, usually, the desirability of global free markets. They seek merely to mitigate their worst effects, but without challenging the interests of the rich and of corporate capital. On the other hand, social democrats champion the building of integrated (and socially embedded) markets for goods, capital, technology, and skills. They believe that the structures and inequalities of capitalism require democratic reform, including a reduction of inequities in incomes and power between rich and poor.

A social democratic pattern of globalisation requires two types of enforceable international agreements: one set to regulate international competition among firms and states, so as 'to yield socially and environmentally desirable outcomes'; and another set to redistribute some of the economic gains from globalisation towards those who are vulnerable and most in need.[53]

In seeking to develop such a global mindset, participants in the Copenhagen seminars on social progress have suggested that building a moral community focused on the common good will require a synthesis built around three substantive goals (democracy, a humanist political culture, and an economy oriented to meeting human needs in the widest sense) and two procedural goals (development of a coalition of social forces with a global agenda, and building a structure for multilateral governance).[54]

A REPORT CARD FOR DOCUMENTING DEVELOPMENT – A NEW MARKER OF DEVELOPMENT

In the spirit of the Copenhagen seminars, we shall now propose the need to design a report card on which indices of an expanded concept of development could be documented at regular intervals for every country (on a 10-point scale for each item). Some examples of such indices are listed below. Each index will not apply equally to every country, but the overall score will indicate the extent to which development has occurred.

- Amount of development aid given (e.g., 1 point for each 0.1% of GNP donated)
- Nature of aid given and whether or not it is linked to the purchase of weapons
- Extent to which the need for debt relief is accepted and implemented
- Proportion of GNP spent on the military (lower score for high expenditure)
- The extent to which promises made for aid are put into practice
- Number of people per million population in prison (lower score for high rates)
- Extent to which international humanitarian law and the universal declaration of human rights are supported
- Environmental pollution index
- Water conservation measures

- Acceptance and implementation of fair trade rules
- Adequacy of governance and protection of the rule of law
- Trends in the wealth gap between top and bottom population deciles in the country
- The extent to which participatory democracy is being instituted
- The calibre of democracy and the rule of law
- Appropriate use of development aid
- Improved literacy rates
- Falling infant mortality rates
- Empowerment of women
- Involving communities in decision-making processes
- Farming and manufacturing productivity
- Levels of corruption within the state

This list is only tentative and suggestive and not by any means exhaustive. However, the indices do go beyond those listed in the Human Development Report. Additional indices should be considered and careful thought given to structuring a detailed and appropriately weighted scoring system. The scoring system should evaluate every country according to the nature of the contributions it could (and should) be making at any particular time to human development and sustainable life, locally and abroad. Such scores should be widely advertised and used constructively to promote rectification of whatever development deficiencies may characterise a country, including so-called developed countries.

CONCLUSION

The state of the world calls for new ways of thinking and acting.[55] Among many shifts in metaphors that could encourage such progress is a shift from the idea of sustainable development to developing sustainability. Like the participants at the Copenhagen seminars, and many others, we share the view that the dominant development paradigm (that is based on individual rights and the acquisition/consumption of increased quantities of goods and services) does not itself create a harmonious world community nor develop sustainability. In its place, a new paradigm of development has been proposed to facilitate progress towards the goals of sustainability. It promises to promote and respect rights, as well as to secure and protect basic needs.

NOTES

[1] Sustainable development was first coined in the 1987 report of the World Commission on Environment and Development, titled *Our Common Future: The Bruntland Report*, named after the Chair of the Commission. The Bruntland Commission defined sustainable development as: 'Development that meets the needs of the present, without compromising the ability of future generations to meet their own needs'. Put another way, sustainable applied to environmental issues – the needs of future generations – and development, to economic and standards of living issues – the needs of the present generation. It was the subject of the UN Conference on Environment and Development in 1992, also known as the Rio Earth Summit. The primary objective of this global effort was to rethink economic development and come to an understanding of 'development' that would support economic growth, socio-economic development and environmental sustainability. At Rio, world leaders drafted multilateral treaties on climate change and biodiversity and adopted the *Rio Declaration*, containing 27 principles on environment and development, and *Agenda 21*, a programme of work addressing environmental and developmental challenges into the 21st century. 'Agenda 21' (paper presented at the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, June 3–14, 1992). http://www.iisd.org/rio+5/agenda/agenda21.htm.

[2] For more on this idea see: N. Low and B. Gleeson, *Justice, Society and Nature: An Exploration of Political Ecology* (Oxford: Routledge, 1998).

[3] J.G. Frazier, 'Sustainable Development: Modern Elixir or Sack Dress?' *Environmental Conservation* 24 (1997): 182–193.

[4] United Nations Development Programme, *Globalization with a Human Face: Human Development Report 1999* (New York: Oxford University Press, 1999), p. 127; see other indicators, pp. 127–158. Colin Butler notes that these figures are conservative because they incorrectly assume that national incomes are distributed equally. C. Butler, 'Inequality, Global Change and the Sustainability of Civilisation', *Global Change and Human Health* 1 (2000): 156–172.

[5] United Nations Development Programme, *Millennium Development Goals: A Compact among Nations to End Human Poverty, Human Development Report 2003* (New York: Oxford University Press, 2003), pp. 67–84.

[6] United Nations Committee on Information, 'Press Release DPI/2277', United Nations, 2002, http://www.un.org/ga/coi/315SPDC2003annex.pdf.

[7] O. Aginam, 'From Rio to Johannesburg: The Pessimism of Sustainable Development and the Optimism of Sustainable Livelihoods: Two Cases from Nigeria' (paper presented at the conference, 'After Johannesburg: New Strategies for Sustainable Livelihoods', Toronto, Canada, September 27–28, 2002). http://www.yorku.ca/fes/strategies/aginam.pdf.

[8] World Summit on Sustainable Development, Johannesburg Summit 2002, *World Leaders to Announce Initiatives to Improve Living Conditions and Environment at UN Summit on Sustainable Development* (United Nations Department of Public Information, 2002) Press Release DPI/2277, p. 1.

[9] The Energy and Resources Institute, *Consensus sans Commitment: TERI's Review and Critique of the World Summit on Sustainable Development*, 2002, http://www.teriin.org/wssd/consensus.pdf; Corporate Europe Observatory, 'World Summit on Sustainable Development: A Little More Conservation, A Little Less Action',

2002, http://www.globalpolicy.org/reform/business/2002/sdtalk.htm; Friends of the Earth International, 'Big Business Rules? Corporate Accountability and the Johannesburg Summit', 2002, http://www.globalpolicy.org/reform/business/2002/focbusiness.htm.

[10] S.R. Benatar, 'Global Disparities in Health and Human Rights', *American Journal of Public Health* 88 (1998): 295–300.

[11] For more on this idea see: I. Bakker and S. Gill, *Power, Production and Social Reproduction: Human in/Security in the Global Political Economy* (Basingstoke: Palgrave Macmillan, 2003).

[12] For more on this idea see: A.J. McMichael, *Planetary Overload. Global Environmental Change and the Health of The Human Species* (Cambridge: Cambridge University Press, 1993).

[13] For more on this idea see: A.J. McMichael, *Human Frontiers, Environments and Disease: Past Patterns, Uncertain Futures* (Cambridge: Cambridge University Press, 2001).

[14] J. Manoochehri, 'Post-Rio "Sustainable Consumption": Establishing Coherence and a Common Platform', *Development* 45 (2002): 51–57.

[15] Frazier, 'Sustainable Development: Modern Elixir or Sack Dress?', p. 186.

[16] United Nations Development Programme, *Millennium Development Goals: A Compact among Nations to End Human Poverty, Human Development Report 2003* (New York: Oxford University Press, 2003), p. 27.

[17] United Nations Development Programme, *Tajikistan, Human Development Report 1996*, http://www.undp.org/rbec/nhdr/1996/tajikistan/chapter1.htm.

[18] C. Stephens, S. Lewin, G. Leonardi, M.S.S. Chasco and R. Shaw, 'Health, Sustainability and Equity: Global Trade in the Brave New World', *Global Change and Human Health* 1 (2000): 44–58.

[19] R. Warner, 'Competitiveness Versus Sustainability: Canada, Free Trade and the Global Environment', *Studies in Political Economy* 68 (2002): 85-106.

[20] M. McGwire, 'The Paradigm that Lost its Way', *International Affairs* 77 (2001): 777–803.

[21] While it is not within the scope of this paper to discuss international infectious disease control, it is important to note that the emergence of SARS reinforced the fact that questions of health and disease quickly and insidiously transcend national borders. The purpose of our discussion is to show that considerations on the spread of infectious diseases are strategically linked to national security concerns.

[22] Central Intelligence Agency, *The Global Infectious Disease Threat And Its Implications For The United States* (NIE 99-17D) (Washington, D.C.: Central Intelligence Agency, 2000), http://www.cia.gov/cia/reports/nie/report/nie99-17d.html.

[23] Ibid

[24] P.E. Farmer, D. Walton and L. Tarter, 'Infections and Inequalities', *Global Change and Human Health* 1 (2000): 94–109.

[25] Interestingly, such research has allowed the U.S. to gain knowledge on reemerging diseases, such as tuberculosis, malaria, and pneumonia, which had been deemed either irrelevant or under control.

[26] C. Henry and P. Farmer, 'Risk Analysis: Infections and Inequalities in A Globalizing Era', *Development* 42 (1999): 31–34.

[27] *World Health Report 1999: Making a Difference* (Geneva: World Health Organization, 1999). http://www.who.int/whr2001/2001/archives/1999/en/pdf/whr99.pdf.

[28] Ibid.

[29] P.E. Farmer, D. Walton and L. Tarter, 'Infections and Inequalities', p. 97. The authors describe how health care providers who are forced to lower standards of care regard it as a violation of the social contract between patient and healer. Farmer discusses 'the use of sub-standard and frankly deleterious care among the destitute sick' in P.E. Farmer, *Infections and Inequalities: The Modern Plagues* (Berkeley: University of California Press, 1999).

[30] W.J. Clinton, 'Remarks by the President on Keeping America Secure for the 21st century' (presented at the *National Academy of Sciences*, Washington, D.C., January 22, 1999). http://clinton4.nara.gov/textonly/WH/New/html/19990122-7214.html.

[31] Available at http://www.ipsnews.net/interna.asp?idnews=15472 (Accessed August 2003).

[32] Available at http://www.commondreams.org/headlines02/0613-06.htm (Accessed August 2003).

[33] Foreign Policy and Center for Global Development, 'Ranking the Rich', *Foreign Policy*, May/June, 2003, http://www.foreignpolicy.com/story/story.php?storyID=13656&PHPSESSID=b555ccef1ffcb1780924615522921aaf.

[34] A. Acharya, *Human Security, Identity Politics, and Global Governance: From Freedom from Fear to Fear of Freedoms*, p. 2 (presented at the international conference, *Civil Society, Religion, and Global Governance: Paradigms of Power and Persuasion*, Canberra, Australia, September 2005). http://law.anu.edu.au/niss1/acharya.pdf.

[35] M. De Larrinaga, 'Re-defining Security, Critical Theory and Post-modernism: Sojourns into the Development of a Framework of Study' (Unpublished Paper, University of Ottawa, 1994), p. 1. As De Larrinaga explains, the term conventional is used in the sense of what Robert Cox refers to as 'problem-solving theory', which is to 'take the world as it finds it, with the prevailing social and power relationships and the institutions into which they are organised, as the given framework for action', R.W. Cox, 'Social forces, states and world orders: beyond international relations theory', in *Neorealism and its Critics*, ed. R. Keohane (New York: Columbia University Press, 1986), p. 208.

[36] G. Sen, 'Engendering Poverty Alleviation: Challenges and Opportunities', *Development and Change* 30 (1999): 685–692. As Sen explains in her paper, 'in recent years understandings of poverty and what constitutes well-being have been significantly broadened (...) In the 1970s, strategies for poverty eradication were part of a larger belief in the importance of "growth with redistribution" and of meeting basic minimum needs through focused governmental policies. The 1980s, an era of fiscal belt-tightening in both South and North, saw a shift in the approach of major multilateral and bilateral development agencies, away from redistribution and basic needs and towards structural adjustment and market-oriented economic reforms. Poverty, as such, was relatively low on the priority list during the 1980s. By the 1990s, a "new poverty agenda" had surfaced (its first major appearance being in the World Bank's World Development Report 1990) as a counterpart of the so-called "Washington Consensus" on structural reforms', pp. 685–686. The 'Washington Consensus' captures the neo-liberal orthodoxy (often referred to as hyper-liberalisation) of the 1980s, which was widely criticised in light of its devastating social and human impact.

[37] Sen, 'Engendering Poverty Alleviation: Challenges and Opportunities', pp. 685–692.

[38] Several forms of 'non-economic poverty' also need to be considered. *Intellectual impoverishment* is evident from selective use of our intellect to address scientific problems of interest to us while neglecting to address rational ways of applying scientific knowledge for the common good. Overemphasis on the benefits of high technology throws doubts on the extent to which cognitive ability guides the application of knowledge. Pursuit of the 'technological imperative' is characteristic of a mechanistic approach to life that fails to do justice to the quest for human well being. *An impoverished sense of empathy* is revealed by the inadequacy of our ability to feel empathy for fellow humans living under abominable circumstances and to express this in practice. Shortcomings in the human rights approach can be interpreted as an *impoverished sense of sincerity* regarding the widely acclaimed aspirations expressed in the Universal Declaration of Human Rights (UDHR). Finally, we need to consider *lack of political will* as yet another form of poverty that threatens future peaceful life on our planet.

[39] S. Gill, 'New Constitutionalism, Democratisation and Global Political Economy', *Pacifica Review* 10 (1998): 23–38.

[40] H. Weber, 'The Imposition of a Global Development Architecture: The Example of Microcredit', *Review of International Studies* 28 (2002): 537–555. In her article, Weber discusses the implications of what she identifies as 'an emerging "global development architecture" that entails new patterns of inter-linkages between the WTO, IMF, World Bank, Regional Development Banks, and Bilateral and Multilateral Development Agencies (...) [She argues] that microcredit (1) facilitates financial sector liberalization and the global trade in financial services, (2) functions as a political safety-net, containing or dampening resistance at the community level to liberalization policies and economic austerity measures', p. 537.

[41] H. Weber, see for example, OECD, World Bank, *Attacking Poverty: World Development Report 2000/2001*, *Development Cooperation 2000 Report* (Oxford: Oxford University Press, 2000), p. 538.; D. Ben-David, H. Nordstrom and L.A. Winters, *Trade, Income Disparity and Poverty* (Geneva: WTO Publications, International Monetary Fund, 1999); Japan Ministry of Foreign Affairs, *International Monetary Fund (2000) The Global Poverty Report*, July 2000, http://www.mofa.go.jp/policy/oda/poverty/report007.html.

[42] T. Blackwell and J. Seabrook, *Revolt Against Change: Towards a Conserving Radicalism* (London: Vintage, 1993), p. 96.

[43] A.J. McMichael and C. Butler, 'Climate Change, Health, and Development Goals', *Lancet* 364 (2004): 2004–2006.

[44] M. M'Gonigle and J. Dempsey, 'Ecological Innovation in an Age of Bureaucratic Closure: The Case of the Global Forest', *Studies in Political Economy* 70 (2003): 97–124.

[45] A. Robertson, 'Critical Reflections on the Politics of Need: Implications for Public Health', *Social Science and Medicine* 47 (2001): 1419–1431.

[46] P. Gomberg, 'The Fallacy of Philanthropy', *Canadian Journal of Philosophy* 32 (2002): 29–66.

[47] For more on this idea see: R. Chambers, *Rural Development: Putting the Last First* (England: Longman, 1983).

[48] K. Helmore and N. Singh, *Sustainable Livelihoods: Building on the Wealth of the Poor* (Bloomfield: Kumarian Press Inc, 2001), pp. 1–128.
[49] For more on this idea see: A.K. Sen, *Inequality Re-examined* (New York: Russell Sage Foundation, 1992).
[50] R. Sandbrook, *Civilising Globalization: A Survival Guide* (Albany: State University of New York Press, 2003), pp. 1–11.
[51] K. Polayni, *The Great Transformation: The Political and Economic Origins of our Time* (Boston: Beacon Press, 1957 (reprinted in 2001), Cited in R. Sandbrook, 'Globalisation and the Limits of Neo-Liberal Development Doctrine', *Third World Quarterly* 21(6) (2000) 1071–1180.
[52] R. Sandbrook, *Closing the Circle: Democratisation and Development in Africa* (London: Zed Books, 2000) pp. 31–147.
[53] Ibid
[54] Royal Danish Ministry for Foreign Affairs, *Building a Global Community: Globalization and the Common Good* (Copenhagen: Royal Danish Ministry for Foreign Affairs, 2000), pp. 14–30.
[55] S.R. Benatar, 'Streams of Global Change', in *Ethics, Equity and Health for All*, eds. Z. Bankowski, J.H. Bryant and J. Gallagher (Geneva: CIOMS, 1997), pp. 75–85.

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Cécile M. Bensimon
Joint Centre for Bioethics
and the Institute of Medical Science
University of Toronto
Canada
E-mail: cecile.bensimon@utoronto.ca

Solomon R. Benatar
Bioethics Centre
Department of Medicine
University of Cape Town
South Africa
E-mail: sbenatar@ustgsh1.uct.ac.za

KEY ETHICAL DIMENSIONS OF THE RENEWAL PROCESS AT THE GLOBAL LEVEL: STREAMS OF GLOBAL CHANGE

Solomon R. Benatar*

Prior to addressing my assigned topic, "Streams of global change", I should like to suggest that as we approach the end of the second millennium it is appropriate, indeed necessary, to reflect briefly on some adverse aspects of life associated with 20th century " progress", which will have to be courageously and imaginatively faced if we wish to make major contributions to global health and peace in the 21st century.

Widening disparities in health, wealth and human rights

Population growth

The problems of exponential population growth and of approaches to its control have been widely debated for many years. Less widely discussed has been the interpretation of population sizes in terms of their consumption-equivalent in different countries and continents. This exercise reveals that, for example, while the United States of America contains 5% of the world's population it consumes 20% of the world's resources, and China, which contains 20% of the world's population, uses 10% of the world's resources.[1] This fact serves, not to negate the need to control population growth through education, empowerment and improved living conditions for the poor, but rather to illustrate the need to educate some of the most privileged people in the world to understand that their life-styles are adversely affecting the rights of others, especially future generations, to a safe environment. I imagine that it will be equally, if not more, difficult to educate the rich as it will be to educate the poor about their respective roles in preserving the environment!

Continuing exploitation and marginalization of the poor/weak

The now well-described, growing core-periphery divergence is not only a measure of the superior performance of the capitalist world but also an indication of its exploitative powers.[2] While capitalism has created new socioeconomic environments in which material conditions have improved steadily and markedly where capitalism has flourished, the accumulation/material-progress link is not a simple one — as wealth and misery are generated simultaneously. From their earliest days

* Professor, Department of Medicine, University of Cape Town Medical School and Groote Schuur Hospital, Observatory, Cape, South Africa

capitalist economies have taken advantage of differences in international costs, especially labour costs, as a primary source of capital. Keynes estimated that the treasure brought home on Sir Francis Drake's Golden Hind, at existing rates of interest, was equal to the entire wealth of Britain before World War I, and that the largest single source of capital accumulation in the modern world was amassed by the petroleum industry, until 20 years ago, by buying oil in the underdeveloped world for a pittance.[2] The economic power of major financial institutions over the economy of indebted nations now overwhelms the ability of many national governments to provide the legal, monetary or protective functions necessary for a well-working national economy. The trillion-dollar-a-day market for foreign exchange effectively places the valuation of any nation's currency at the pleasure of the "market", rather than at the discretion of its monetary authorities, thus disrupting the relationship between the economy and the state. Teeple has suggested that the "Road to Serfdom"will now be determined by economic totalitarianism rather than the political totalitarianism feared by Hayek.[3]

The arms trade and its effects.

The impact of militarization has been well described by others.[4,5] I merely list here the nuclear stockpile, land-mines, wars, torture, sexual abuse and refugeeism as some of the side-effects of the arms trade and of war, which impoverish the lives of so many.[6]

Social suffering

"Social suffering"is a term coined to describe the collective and individual human suffering associated with life conditions shaped by political, economic and cultural forces. The term is not widely used by the mass media or in academic journals. Unlike physical suffering or formally recognized mental illness, social suffering is largely unrecorded, quantititively or qualitatively.Yet social suffering is the major part of human misfortune in the world, and more than ever requires the scholarly attention that might facilitate the cross-cultural discourses crucial for peaceful development and improved well-being in an increasingly interdependent world.[7]

Commodification of medicine

The conversion of medical care into a legitimate market commodity in rich countries[8] has set a poor example for poorer nations endeavouring to provide basic health care as a right for all their citizens.[9]

Threat of infectious diseases

Despite many advances in determining the causes of many diseases and the development of effective treatments, infectious diseases remain a major global problem. Not only is there recrudescence of diseases such as tuberculosis, malaria (which affects 500 million people a year and kills 2 million), dengue and other insect-borne diseases, but also many new infectious diseases have emerged, including HIV/AIDS (which has infected 24 million adults and caused 4 million deaths), Ebola and other haemorrhagic fevers, and many others.[10]

Environmental degradation

The environmental degradation associated with escalating industrialization and population growth will be described in some detail by Dr Last and is mentioned here only for completenes; it includes nuclear waste, pollution of air and water, overuse of slowly renewable resources (forests, fisheries, fossil fuels), and global warming and its adverse effects on the ozone layer.

The international drug trade and the rise of fundamentalism and isolationism

These too may be considered, at least in part, as reactions to the economic and cultural imperialism characteristic of the 20th century.

TOWARDS SOME SOLUTIONS — STREAMS OF GLOBAL CHANGE

How can we begin to understand these adverse aspects of life that are associated with the wondrous developments that have taken place since the Enlightenment? Even more challenging — how can ethical and effective responses be developed?

Before attempting to synoptically describe some streams of global change, as I see them, using catch-phrases, sound bites, slogans or metaphors, I acknowledge the limitations of my ability to interpret and describe major trends in the evolution of ideas. My presentation will reflect (i) my perspective as a physicain trained in the Western tradition, who has lived mostly in sub-Saharan Africa and who has tried to understand the world intellectually and existentially from both Western and African perspectives;[11,12] and (ii) my reading of a wide range of books and articles by distinguished thinkers, whose ideas I shall attempt to present to you — with due humility. I see some of these streams of change as torrents, others as mere trickles, flowing in various directions and with different directions and force in different countries. I appreciate that we may all have different perceptions of these forces, and that I shall learn from reactions to my presentation.

Understanding history

"An integrated systems approach"

Braudel's book *A History of Civilisations*[13] illustrates how our ability to understand history is broadened by an approach that embraces knowledge of a wide range of geographic, social and political factors and their interaction. I suggest that understanding health and disease similarly requires a broad and integrated approach and that this justifies an attempt to describe some streams of global change to illustrate their potential influence on health and health care at a global level.

Shifting economic paradigms

From "laissez-faire capitalism and authoritarian socialism" to "globalization"

Over the past 500 years, economic paradigms have evolved from mercantilism through *laissez-faire* capitalism and socialism to welfare-statism and, more recently, globalization of the economy. During the second half of the 20th century the evolution towards a global economy has continued to enrich some nations at the expense of others, to the point of intolerability. Welfarism is being rejected but the rich core is now being threatened by the effects of its own policies. Problems that threaten capitalism arise from its own dynamics.[2,3] Neo-liberal policies mark the transition between two eras, from a world of national capital and nation states to a world of international capital and supranational organizations. These embody a shift from expansion of social reforms to the dismantling of reforms and the supersession of national economies. Neo-liberal policies constitute the triumph of capital but also accelerate its adverse consequences — a seriously degraded nature, increasing impoverishment of the working class, and growing political autocracy with reduction of legitimacy.[2,3]

In response, new paradigms of thought and new forms of resistance are emerging. For example, economic forces favouring continuing exploitation are being countered by endeavours to discredit and reverse debt perpetuation and to encourage socially and ecologically sound economic policies more favourable to sustainable development world-wide. The new forms of resistance challenging the legitimacy of a highly individualistic form of liberalism and an associated economic order include multiculturalism, feminism, black consciousness and religious fundamentalism. In describing 21st century capitalism Heilbroner has suggested that there will be no easy solutions to such profound problems and no linear scheme of progress into the future. Capitalism will continue, he believes — as there was no concept of progress before capitalism, only stoicism, resignation and visions of an after-life as a consolatory fantasy. Because no other social order seems to be within

our grasp, he predicts that a spectrum of capitalisms will prevail, with modifications that, it is hoped, will include a framework embracing greater human solidarity and social justice.[2] An alternative suggested by Teeple is that a new tyranny may arise, that of economic totalitarianism, which, in Hayekian terms, will replace political totalitarianism as the "Road to Serfdom".[3]

New directions in political philosophy

From "liberalism/capitalism and communism/socialism" to "social democracies/neo-liberalism and communitarianism"
From "rights" to "rights and responsibilities"

The thrust of capitalism as an economic system emphasizing free trade supported by capitalism as a political order within the Western political philosophy of liberal individualism constitutes a powerful global force. Balancing socialist perspectives has contributed to the formation of welfare states within social democracies and helped to ensure equitable access to health care and welfare in most European and British Commonwealth countries. The New Deal in the US was a less effective social equalizer, perhaps because of limitation of the commitment to human rights, to civil and political rights within a highly individualistic form of liberalism, which pitted citizens against each other in competition for access to health care and social welfare. The erosion of civic society is, however, becoming a cause for concern. The rise to ascendency of patient autonomy over physician beneficence reflects the influence of liberal individualism on the physician/patient relationship, but this is clearly not a solution to the problem of improving health at national or global levels. The need for equity in access to health care and for social justice within and between nations is increasingly being recognized. The rights of individuals are gradually being balanced by a growing focus on responsibilities — of individuals to themselves and to society at large, as well as of societies to their citizens, and of powerful nations to citizens of other countries.[14,15]

Changing conception of the self and community

From the "anomic self" to the "embedded self"

Since the collapse of communism, the communitarian challenges to narrow interpretations of liberal individualism are becoming a more acceptable force for change, even if only within a broader conception of liberalism.[16,17] A central aspect of this debate relates to the conception of the self, the meaning of being an independent self-determining individual. For strong individualists the conception of the self emphasizes individual rights, personal freedom and society structured on the basis of free association of individuals. A contesting view is that of individuals arising from and shaped by their societies, with their

freedom to choose embedded in social attachments; and their rights balanced by responsibilities to themselves, to others and society, including future generations.

Changing relationships of science, technology and philosophy to nature

From "dominion over" to "stewardship"

Science and philosophy, in their quest for understanding foundational, universal and essential aspects of life and disease, have become increasingly abstracted from the specific situations in which the application of such knowledge must take place. This trend, which has been seen to have a dominating power over nature and human life, has unfortunately been associated with misunderstandings from specific situations of the nature of the scientific and philosophic quests and with consequent growth of anti-intellectual movements.[18]

As a result of new ways of thinking, the forces that drove science and technology (largely for military and exploration purposes for many decades) earlier in this century are now changing. Concern about nuclear war and other social pressures are increasingly exerting their influence — for example, ethical concern about the need to preserve our environment, about genetic engineering, and through challenging "post-modern" perspectives on philosophy.

Shifts in power relations

From "knowledge and power over" to "wisdom and power with"
From "military might" to "moral example"

The message from the transformation of South Africa from a pariah nation, in which apartheid was upheld by military strength, towards a democracy based on moral foundations is that moral visions are more powerful long-term forces than military might, and that we become more powerful as we share rather than compete with one another.[6] Progress towards more egalitarian relationships between men and women is another example of the way in which power-sharing offers greater opportunities for satisfaction and success than oppression and exploitation. Such approaches also offer potentially peaceful solutions to accumulation and use of nuclear and other weapons of mass destruction.[19]

Cultural relations in an interdependent world

From "imperialism" to "multiculturalism"

Imperialistic, universalistic and essentialist approaches to philosophy, ethics and social policy are gradually being transformed as they come under the growing influences of multiculturalism, feminism, non-racialism and other reactionary responses to the failures of the past. It

is hoped that the "thin veneer" of civilization described by Vaclav Havel as sweeping the world under the influence of market forces propagating music, soft drinks, popular dance and clothing fads will be temporary and succeeded by more meaningful global values, such as empathy and respect for other cultures, within a deeper understanding of human rights coupled with responsibilities.[20]

International relations in an interdependent world

From "realism" to "pluralism and solidarism"

The age-old tendency to base relationships between states on "realism" (power and force) is being superseded by the need for " pluralism" (international law), and for a greater degree of "solidarity" (justice) between all people in a complexly interdependent world.[21] Classical realism (Hobbes, Machiavelli) was based on the survival of particular states and led to sweeping justification of imperialism. Modern 20th century realism (Carr, Niebuhr, Morganthau) claims that it remains prudent to be concerned about national interest rather than universal interest. But the world is moving away from the Westphalian system towards a form of complex interdependence between nations, as there are some liberal values that are good for international society as a whole (e.g., democracy, human rights, welfare and transnational institutions). States thus become willing to obey international law because they believe it is in their interests to conform. Realism and complex interdependence are simple models at the ends of a spectrum, and the real world is somewhere between the two. The evolution of a hybrid world-order reflects the tension between the ends of the spectrum. Justice remains elusive, as justice and order are often at odds with each other.[21] But as an unjust world is also an unstable one, there is an emerging awareness of the need to empathize with sections of humanity that are geographically or culturally distant from us, although this is not yet sufficiently reflected in foreign policies.

Peace movements

From "acceptability of weapons of mass destruction" to "illegality"

Just as slavery was regarded as acceptable in many societies for many generations, and it took 50 years for the anti-slavery campaign to establish widespread acknowledgment of slavery as immoral and illegal, so peace movements in the world today are working towards deeper understandings of those aspects of modern life that are immoral and should become illegal — for example, the trade in weapons and the debt trade.[5, 22]

New perspectives on health care

From "disease and death" to "health, suffering and dignity"

Health, disease, illness, suffering and health-care systems are best understood from a broad perspective that illuminates their social construction in differing ways of life. Like history, health is a house of many mansions. The many powerful social forces that influence human well-being and approaches to health care have intersected and balanced in a variety of ways in different places and at different times. This is evident at the macro-level in the wide range of health-care systems around the world, even in adjacent countries exposed to similar trajectories of progress within similar value systems.[23] It is also evident at the micro-level in different spectra of diseases, the responses to these, and the range of emphases placed on acute and chronic illnesses and on different aspects of medical care.[10,24]

Globalization of the economy is intensifying the profit motive in medicine and disempowering patients and doctors through managed-care systems, but also promoting a deeper understanding of the need for social justice in the design and delivery of health care.[23,25,26] Changes in political philosophy are also challenging highly individualistic approaches to the delivery of health care, especially in poorer countries, but even in rich countries. The changing conception of the self is leading patients to see themselves as suffering from diseases embedded in community and to reject some forms of medical treatment. In countries like South Africa, with limited resources, patients are forming supportive social structures to facilitate coping with such diseases as AIDS. An embedded self can more effectively contribute to dealing with diseases with origins in our collectivity. The failure of the rhetoric of rights language to achieve even basic rights for so many people in the world is leading to a re-emphasis on responsibilities in the quest for greater equity.[15] Anti-medicine movements, initially ignored by physicians, are now associated with valid challenges to some aspects of technologically dominated medicine, and with growing acceptance of the primary-health-care approach and a more holistic perspective on life and death.

Shifts in power relations are becoming obvious in the physician/patient relationship. Professionals are also becoming introspective about their role in society, and medical education is under scrutiny. Greater respect for cultural beliefs being incorporated into medical education and practice, and the recrudescence of infectious diseases, are leading to more attention to diseases that were previously neglected — e.g., tuberculosis and malaria.

Broader conceptions of professional ethics

From "interpersonal ethics" to "institutional/national/international ethics"

Long controlled within traditional frameworks of interpersonal relationships as defined by professionals themselves, professional practices are now being profoundly modified through the intellectual influence and involvement of philosophers, lawyers, anthropologists and social scientists in bioethics and health care.[27] Even more important is the slow but sure movement towards broadening ethical debate and responsibility to include institutional ethics and the ethics of international relations.

CONCLUSIONS

As the world changes slowly, common forces reshape health care in all countries. All countries are facing fiscal constraints in health care: some because they are spending too much trying to apply all that can be done to all who need or want whatever is technically available, others because their economies are eroding under powerful global forces, including structural adjustment programs linked to trade in debt, which is being described as analagous to, but worse than, the slave trade! Another common force is the rising influence of the management sciences in health care, with health-care bureaucrats earning more than most highly skilled scientists or medical practitioners have earned or could earn! Money, as the "bottom line" in medicine, is displacing an ethos of care that was embedded in medical practice over many centuries.[28]

Science and technology have radically changed the face of death. Life-support systems, organ transplantation and chemotherapy have displaced the idea of life as finite and of death as inevitable. Preservation of life in grotesque states of non-cognitive existence has become the norm in some countries, whose citizens appear to be unconcerned about by the lack of access to basic health-care for millions of their own fellow citizens, or about the millions of people dying prematurely in other countries through lack of access to even the most basic human rights.

Physician-assisted suicide, active euthanasia, a swing towards primary health care, complementary medicine and traditional healing are among the wide range of different responses to such "progress"! The limits of medicine are, however, being recognized, and new relationships are being forged between doctors, patients and society, as we ask what it means to be ill and to seek help from our community and those we empower to provide help. The sociology of illness and of the health-care professions is changing. Knowledge and power need to be supplemented by wisdom and humility in the quest for appropriate uses of resources and technology.

The range of ways in which social forces have played out, and will continue to do so, is evident in many continents. In North America the Canadian government's health-insurance system is profoundly different from the predominantly private system in the US. In Europe the UK national health service differs from French and German social insurance models and from the Swiss private system.[23] The chaos in health and health-care provision in many poor countries reflects the profound impact of colonial, neo-colonial and ongoing exploitational forces, recovery from which, if possible, will be painful and prolonged.

South Africa with its exemplary shift from pariah status to a much admired fledgling democracy offers a glimmer of hope for the possibility of implementing paradigm shifts in thinking and action that could chart pathways of peaceful change towards a more equitable world.[29] As with the study of "total history", health, disease, suffering and ways in which health care can be provided are now being better understood through multidisciplinary study of the contextual framework in which life is lived and the human predicament is perceived. The metaphor of knowledge and power over others is also being recognized as inadequate in an interdependent world, and is being replaced by the idea that empowerment and sharing of power with others could become a new metaphor for the 21st century. However, the impact of global streams of change will take time to become widely manifest because: (i) inertia is sustained by failure of widespread recognition of the requirement for such change if peaceful progress is to be fostered; (ii) even those who recognize the validity of changing paradigms work knowingly or unknowingly to protect the *status quo* for their own benefit; and (iii) even when work begins on corrective processes, the legacy of the 20th century,[30] like the legacy of apartheid,[31] will take much hard work and time to overcome.

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Editors-in-Chief

Neil J. Smelser

Center for Advanced Study in the Behavioral Sciences, Stanford, CA, USA

Paul B. Baltes

Max Planck Institute for Human Development, Berlin, Germany

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R. Klein

Health in Developing Countries: Cultural Concerns

Human health and wellbeing worldwide are profoundly affected by complex interactions between economic, social, and political forces as well as by behavioral patterns and the application of technology (Wilkinson 1996). When considering health in countries around the world, use of the terms 'developed' and 'developing' countries implies a linearity of progress towards a condition that has been achieved by some countries but not others. It is clear that such a simplistic approach equating development with economic status in terms of average per capita gross national product (GNP) or the level of industrialization is both inaccurate and unhelpful. So-called developed countries may lack what many would consider very important aspects of development; for example, a sensitivity to the impact of consumption on ecology, or concern for the adverse effects of opulent and aggressive lifestyles on billions of people in other countries, or more obviously in relation to health, the achievement of universal access to health care. Similarly, some so-called developing countries are more developed than may be apparent from their economic status; for example in Kerala, India, the degree of social solidarity and health status achieved exceeds that expected from economic status alone—revealing the impact of human capital resources such as female literacy and empowerment.

A more sophisticated model of development (such as that used in the United Nations Human Development Report 1991) emphasizing achievements in health, education, female literacy, gender equality, and political liberty, more accurately reflects the real human development required. However, it should be acknowledged that even such development indices are incomplete, as they do not measure some important aspects of human flourishing. When comparing development and health in countries around the world, it is also necessary to appreciate that consumption patterns and the ways of life in industrialized countries cannot become the norm for the whole world. For example, while the world's population has grown fivefold in the past 150 years, human consumption has increased 30-fold. The USA, with 5 percent of the world's population, accounts for 24 percent of annual global energy consumption compared to China with 20 percent of the world's population using 10 percent. Within health care, even a nation that spends $4,000 per person per year on health care cannot afford to provide access for all citizens to all that modern medicine can offer (Iglehart 1999). Modern consumption patterns and health care practices are thus neither universalizable nor sustainable. Such considerations reveal the inadequacy of the terms 'developed' and 'developing' countries.

1. *A Polarized World*

While the twentieth century is considered by many to be the most successful in world history, with spectacular achievements in science, technology, and health care, the above considerations make it necessary to focus on the down side of progress—as reflected in widening disparities in economic and health status, the extent of expenditure on weapons of mass destruction, and the social construction of human rights abuses. Improvements in human health globally in the twenty-first century and achieving real development of all people throughout the world will be dependent on acknowledging such adverse features of modern life, and on developing new paradigms of thinking that will promote widespread human flourishing.

1.1 *Economic Disparities*

At the beginning of the twentieth century the wealthiest 20 percent of the world's population were nine times richer than the poorest 20 percent. This ratio has grown progressively—to 30 times by 1960, 60 times by 1990, and to over 70 times by 1997. The extent of absolute poverty has also increased. Today almost half the world's population lives on less than US$2 per person per day and more than a billion people live on less than US$1 per day. Tens of millions of people, including many children, die every year of starvation—in a world with enough food to feed all.

1.2 *Disparities in Health and Disease*

At the end of the twentieth century patterns of diseases and of longevity also differ markedly across the world. Of the approximately 52 million people who die each year, 17.5 million die of infectious and parasitic diseases (16 million of these—many in their youth—in

Table 1
Causes of death in 1997 by main causes and by level of development (The World Health Report 1997)

	Developed world (12 million deaths)	Developing world (45 million deaths)	World
Infectious and parasitic diseases	1 percent	43 percent	33 percent
Perinatal and maternal causes	1 percent	10 percent	8 percent
Cancers	21 percent	9 percent	12 percent
Diseases of the circulatory system	46 percent	24 percent	29 percent
Diseases of the respiratory system	8 percent	5 percent	6 percent
Other and unknown causes	23 percent	9 percent	12 percent

the developing world). 10 million die of diseases of the circulatory system (4.5 million of these in the developing world), and 6 million die of malignant diseases (3.5 million of these in the developing world) (see Table 1).

Among the poorest quintile of people in the world, 55 percent die of communicable diseases, as compared with 5 percent of the richest. The World Health Organization (WHO) estimated that in 1998, 11 million children and adults of working age died of six infectious diseases that could have been prevented at the cost of US$20 per life saved. Poor countries bear over 80 percent of the global burden of disease in disability adjusted life years (DALYs). This burden is likely to increase as the epidemiological transition progresses, with added disability and suffering from noncommunicable causes of disability such as vascular disease, malignant neoplasms (especially of the lung associated with smoking), neuropsychiatric disease, accidents, and trauma.

Life expectancy at birth ranges from well over 70 years in highly industrialized countries to below 50 years in many poor countries. Wide disparities in life expectancy are also observed between rich and poor in rich countries. In sub-Saharan Africa gains in longevity achieved during the first half of the twentieth century are rapidly being reversed by the HIV/AIDS pandemic.

1.3 Mental Health

Improvements in physical health over the past 50 years have not been matched by improvements in mental health – even in developed countries. Mental illness accounts for 8 percent of the global burden of disease (measured in DALYs), and a further 34 percent of the global burden of disease is accounted for by behavior related problems such as violence, diarrhoeal diseases, AIDS and other sexually transmitted diseases, and motor vehicle accidents and other nonintentional injuries (Desjarlais et al. 1995). The inadequacy of the knowledge base about mental disease (compiled almost exclusively in North America and Europe) to explain psychiatric diseases in other parts of the world poses formidable challenges for progress.

1.4 Militarization and the Social Construction of Human Rights Abuses

Industrialized countries spend on average 5.3 percent of GNP on the military but only 0.3 percent on economic aid to developing countries (Sivard 1996). The arms trade and its link to economic aid has contributed significantly to the escalating number of wars, conflict, and widespread torture since the Second World War which have rendered over 25 million people to refugee status and displacement – with profound disruptive effects on life and health. Global military expenditure in 1990 amounted to US$1 trillion (Sivard 1996). The annual budget of the WHO is equivalent to 2.5 hours of global military expenditure. While money is always available to make war, it is less readily available to promote peace. Military expenditure has decreased in recent years, but released resources have not been channeled towards effective human development processes.

2. Relationship Between Economics and Health

It is now well established that there is a definite relationship between wealth/poverty and health/disease, although this relationship is complex and not linear. For example, one of the wealthiest nations in the world (the USA) has worse health statistics (infant mortality and longevity) than some other highly industrialized countries, and a particularly poor state

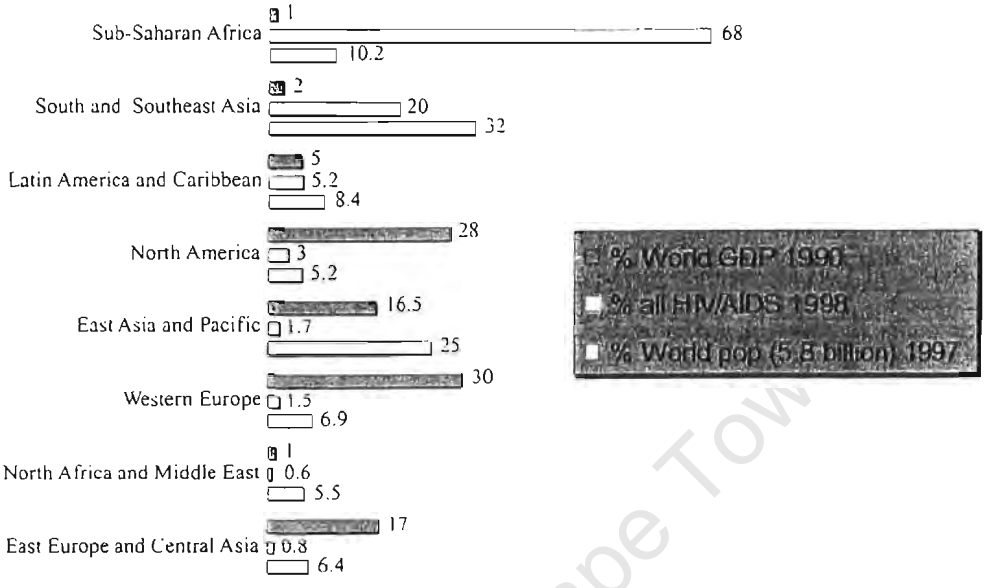


Figure 1
Distribution of economic resources (top bar), the burden of HIV/AIDS (middle bar) and world population (lower bar) in the world

Table 2
Health and other statistics in the 40 poorest countries in the world (WHO 1995)

Annual per capita GNP (US$)[a]	168	282	404	570
Life expectancy at birth (years)[a]	47	51	56	60
Infant mortality rate per 1,000 live births[a]	126	112	90	70
Under 5 year mortality rate	158	169	132	109
Population access to safe water[a]	37%	53%	53%	63%
Population access to sanitation[a]	29%	26%	39%	48%
Population per physician (1970)	33,925	39,381	23,009	15,956
Adult literacy rate (1992)	42%	44%	46%	63%
Average annual population growth[a]	2.7%	2.8%	2.6%	2.3%

[a] 1991 data.

(Kerala) in India has achieved lower infant mortality rates and greater longevity than many wealthier nations (Wilkinson 1996). Both absolute and relative wealth affect health. Among the developed countries it is not the richest societies that have the best health, but rather those with the smallest income differentials between rich and poor (Wilkinson 1996). Despite the nonlinearity of the relationship between wealth and health, its existence underscores the need to see health and disease as intimately linked to social and economic conditions (Fig. 1).

Poverty (defined as lack of economic resources, lack of education, lack of access to basic life resources such as food water and sanitation, and lack of control over the reproductive process) directly accounts for almost one-third of the global burden of disease. Poverty leads to poor health, which in turn aggravates poverty. Of the 40 poorest countries in the world, 11 have annual per capita GNPs ranging from US$80 (Mozambique) to US$210 (Sierra Leone), 10 from US$220 (Bangladesh) to US$340 (Nigeria), 9 from US$370 (China) to US$450 (Nicaragua), and 10 from US$500 (Sri Lanka) to US$600 (Zimbabwe) (WHO 1995). The relationship between income and some health indicators for these groups are shown in Table 2. Despite the difficulty in making accurate intercountry comparisons, it is clear that improvements in economic status are associated with better health statistics, and that

economic growth is necessary to improve the living conditions conducive to good health, independent of benefits that may arise directly from health care.

3. Health Care Expenditure

Since the 1960s, major advances in medicine and technology have been associated with escalating expenditure on their application in health care—most of this in highly industrialized countries. Annual per capita expenditure on health care ranges from $4,000 in the US to less than $5 in the poorest countries in Africa. Half the world's population lives in countries that cannot afford annual per capita health expenditures of more than $5–10, and many people do not have access to even basic drugs. The WHO has estimated that in 1990 the annual cost of providing a basic package of public health and essential clinical services in a low-income country was at least $12. In most such countries health care expenditure is typically less than $6. Even though some parasitic diseases (for example, onchocerciasis, schistosomasis, and lymphatic filariasis) could be controlled by mass treatment campaigns using inexpensive drugs, the infrastructure required to provide such coverage is inadequate. Effective treatment of diseases such as tuberculosis and leprosy, and HIV/AIDS requires more complex infrastructures than can be afforded on current health care budgets in poor countries.

In the 1990s, 89 percent of annual world expenditure on health care was spent on 16 percent of the world's population who bear 7 percent of the global burden of disease (in DALYs) and less than 10 percent of medical research expenditure was on health problems of the developing world. These are examples of global injustice that we should surely find intolerable if we have a real commitment to universal human rights and human dignity. Vaccine development programs and drug donation programs for poor countries, admirably promoted and supported by pharmaceutical companies, are necessary but insufficient responses to such injustices. Modest increments in economic status combined with a provision of a basic health care package have the potential to improve health in poor countries significantly. However, it should be noted that health is not merely a resource issue even in rich countries—as exemplified by comparative health statistics around the world (Wilkinson 1996).

4. The Global Political Economy and Health

The world at the end of the twentieth century is thus characterized by widening disparities in economic and health status (within and between countries), and by suffering, conflict, and alienation associated with pervasive social forces (Wilkinson 1996, Sivard 1996, Benatar 1998). Erosion of the economy of many poor countries, under the impact of globalization and the 'debt trade,' has obstructed the introduction of effective forms of modern medicine into many poor countries and thus prevented achievement of widespread access to even basic health care for billions of people (Falk 1999). Third world debt requires special mention. The ways in which such debt have been created, the fact that third world debt is a small component of total world debt and can never be repaid, and that in sub-Saharan Africa four times as much is spent on debt repayment each year than on health and education combined, makes insistence on repayment unconscionable (Pettifor 1996).

The emergence of new diseases such as AIDS, that afflict predominantly those marginalized by poverty (80 percent of HIV-positive persons live in the poorest countries in the world), has been attributed to the social and environmental niches created by the nature of the global political economy and its ideology (Lee and Zwi 1996). Failure to appreciate such associations will result not only in failure to control such diseases as HIV/AIDS (as with tuberculosis in the past, Benatar 1995), but more importantly, will probably favor the emergence of new infectious diseases in the future. The changing spatial dimensions of human relations resulting from urbanization, migration, travel, ethnic conflict, and displacement of people and refugees, facilitates the spread of such diseases from which no one should feel immune.

5. Access to Health Care, and the Nature of Health Care Systems

Today many countries consider access to at least a minimum package of health care as a basic human right that nation-states should be committed to providing for their citizens. Some form of socialized and equitable health care is provided in all Western European nations and in Canada.

Medical care, delivered as a marketable commodity—albeit with considerable state assistance for the poor and the aged—is the example that has been set by one of the wealthiest nations in the world. However, this results in many citizens having inadequate access to health care. In considering how to overcome this, while recognizing that private/public alliances cannot be avoided and indeed may be beneficial, Buchanan has provided cogent arguments for the nine elements he considers essential for a just health care system. He argues further that achieving a just health care system as a cooperative between the public and private sectors requires an organization, such as the state, to act as a coordinator and guarantor of equitable access to care and fair distribution of costs. Such a balance between private and public medicine with appropriate coordination could over-

come the deficiencies of either system when one dominates (Buchanan 1995; see also Benatar 1996).

The effects of intensive privatization, aided and abetted by the structural adjustment programs promoted by the International Monetary Fund (IMF) and the World Bank, have been much more marked in poor countries, with severe adverse effects on health. Acknowledging the need for, and the right to, universal access to a basic health care package and achieving this goal pose challenges for the future. The WHO's renewal strategy for health-for-all places emphasis on equity, solidarity, and appropriate technical, political, and economic strategies that could promote health and sustainable health care systems as central to development. Here too an appropriate balance needs to be struck between public and privately funded medicine. How this balance can be struck and how health can be coordinated within an effective strategic alliance between many parties remain hotly debated subjects.

6. *Traditional Healers*

Despite the pervasiveness of Western influences, traditional healers have survived and play an increasing role in some countries. For example, while there are about 25,000 Western trained medical practitioners in South Africa, and Western medicine has a powerful foothold in this middle-income country, over 200,000 traditional healers carry out a thriving trade. Increasing contact and collaboration between Western medicine and traditional healers is being encouraged and the potential impact of their contributions to health, in particular through development of a primary health care approach, in many countries in Africa in the future should not be underestimated (Van Rensburg and Benatar 2000).

7. *Prospects for the Future*

As we stand at the threshold of a new era in which exponential increments in genetic information will be applied to medical practice, we need to contemplate whether such new power will be used for the benefit of all humankind or whether it will be reserved for the privileged. Acquiring a deeper understanding of the forces promoting health and diseases in developing countries needs to be coupled to a commitment to address these if health and human flourishing are to be achieved on a wider scale (Benatar 1999).

See also: African Studies: Health; Economies: Overview; Health Economics; Health Policy; Infant and Child Mortality in the Less Developed World; Poverty and Gender in Developing Nations; Reproductive Rights in Developing Nations; Third World

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S. R. Benatar

Health Insurance: Economic and Risk Aspects

Over the course of a year, individuals are at risk for a variety of unfortunate and unpredictable events, e.g., property damage due to fire or hurricane, property loss due to burglary, or physical and mental pain and suffering due to adverse health events. In most cases, affected individuals can purchase goods or services to replace the loss or to alleviate the adverse effects of an untoward event. In some cases, it is possible to reduce the probability that an adverse event will occur. In many instances, through the purchase of insurance, it is also possible to reduce financial loss associated with an adverse event. In general, people dislike risk and are willing to trade a small amount of money, in the form of an insurance premium, for protection against a potentially large loss in income. Depending on what kind of health insurance system, particularly whether it is a private or public system, the payment can be

24

IMPLICATIONS FOR HEALTH AND HEALTH CARE: EXPANDING THE DISCOURSE ON ETHICS AND HEALTH

Solomon R. Benatar [1]

Despite spectacular achievements in science, technology and health care in the 20th Century, together with unprecedented economic growth, the beginning of the 21st Century is characterised by global instability associated with increasingly widening disparities in wealth and health. These disparities, recently described as 'a perfect crime',[2] pose strategic and moral challenges for powerful nations. Following an outline of some facts about the world and the underlying values driving progress, this chapter provides some recommendations for the paradigm shifts that hold potential to promote more sustainable progress.

An Unstable and Unsustainable World

The global economy

Globalisation is the currently popular term used to characterise the increasing interconnectedness between money, business, people and popular culture across the globe. The driving forces are neo-liberal economic policies and free market forces, which are assumed to be closely associated with the propagation of democracy and human rights. Globalisation is, however, a complex and ambiguous concept with social and ecological manifestations that reflect a long, interwoven economic and political history in which peoples, economies, cultures and political processes have been subject to increasingly pervasive transnational influences. Compression of time and space through new communication technology has sped up the process of globalisation in recent decade by uniting many across the globe. It has, however, also created new and wider divides.

[1] Dr. Solomon R Benatar, MBChB, FFA (SA), FRCP, FRSSAf., Professor of Medicine, Director Bioethics Centre, University of Cape Town.

[2] J.K. Galbraith, "A Perfect Crime : Global Inequality" (2002) 131 *Daedalus* 11 25.

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Positive and widely appreciated manifestations of progress associated with globalisation include advances in science and technology; increased life-expectancy; enhanced economic growth; greater freedom and prosperity; better speed and efficiency of communications and transport; and popularisation of the concept of human rights.

However, the negative aspects of globalisation need to be considered as well. In 1900 the wealthiest 20% of the world's population were 9 times richer than the poorest 20%. This ratio has grown progressively - to 30 times by 1960, 60 times by 1990 and to over 70 times by 1997.[3] It can also be argued that poverty has increased: today, almost half the world's population lives on less than US $2 per person per day and more than a billion people live on less than US $1 per day.[4] Developing country (including middle income countries) debt grew from $0.5 trillion in 1980 to $1.9 trillion in 1994 and to $2.2 trillion in 1997.[5] Although the developing world's debt accounts for a small proportion of total world debt, it has reached substantial levels in comparison to income levels. Most of the countries that were required by the World Bank to pursue structural adjustment programs are in greater debt than ever before, and it also seems that the adverse effects of progress are being felt most severely by 80% of the world's population.[6]

The development of a complex web of material, institutional and ideological forces and the presence of powerful multinational corporations have had profound implications on the accumulation of capital and the way in which resources are controlled. In 1973, global market exchanges amounted to $15 billion daily and 70% of all money that exchanged hands on a daily basis was payment for work, while speculative financial transactions accounted for 30%. By 1998, daily global market transactions had escalated to $1.5 trillion daily of which about 5% was payment for work while speculative transactions accounted for 95%.[7]

It has recently been argued that the shift in the locus of economic power from the nation state to global corporations is also altering the balance of power in the world.[8] Boundaries between states and between foreign and domestic

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[3] World Bank, Human Development Report 1999 *Globalization with a Human Face, Human Development Indicators* (Washington: World Bank, 1999). See also D. Roduk, *Has Globalization Gone Too Far?* (Washington: Institute for International Economics, 1997).

[4] *Ibid.*

[5] A. R. Chowdhury, Foreign Debt and Growth in Developing Countries, available online: < http://www.wider.unu.edu/conference/conference-2001-2/parallel%20papers/4_1_Abdur.pdf >

[6] R. Labonte, T. Schrecker, D. Sanders, W. Meeus, *Fatal Indifference: the G8 and Global Health* (Ottawa: University of Cape Town Press and International Development Research Centre, 2004)

[7] W. Ellwood, *No-Nonsense Guide to Globalization* (London: Verso Press, 2003).

[8] M. Khor, "A Comment on Attempted Linkages Between Trade and Non Trade Issues in the WTO" in J. Bhagwati and M. Hirsch, eds., *The Next Trade Negotiating Round: Examining the Agenda for Seattle* (New York: Columbia University Press, 1999) at 53. See also D. Korten, *When Corporations Rule the World* (Bloomfield: Kumarian Press, 1995).

policies seem to be becoming more blurred, affecting small states' control over their economies, and their ability to provide for their citizens. These processes have led some authors to argue that economic disparities have become so marked and their adverse effects so apparent that a very significant degree of incompatibility has arisen between neo-liberal economic policies - namely, the facilitation of globalisation -and the goals of democracy.

War, displacement of people and economic aid for development

New patterns of war and ethnic conflicts have resulted in the displacement and migration of millions of people, and the arms trade itself, (with its link to economic aid) has contributed significantly to an escalation in wars, conflicts, and torture since World War II.[9] These disruptions have forced over 25 million people to become refugees, resulting in profound effects on their lives and health. [10] Still, while global military expenditure in 1990 amounted to US $1 trillion, the annual budget of the World Health Organization (WHO) was equivalent to merely 2.5 hours of that amount.[11]

World health and health care expenditure

Health and well being are profoundly affected by complex interactions between economic, social, and political forces as well as by behavioural patterns and modern medical practices. The balance of these forces and the resulting health services that are provided vary greatly, especially between wealthy and poor countries. Life expectancy, one measure of health status, ranges from over 75 years (and rising) in wealthy countries to 40 years (and falling) in Africa. Among the poorest quintile of people in the world, 55% die of communicable diseases, as compared with 5% of the richest quintile. [12] The WHO estimated that in 1998, 11 million children and adults of working age died of six types of infectious diseases that could have been prevented for $20 per life saved. [13]

Poor countries bear over 80 percent of the global burden of disease as measured in disability adjusted life years (DALYs). [14] This burden is increasing as the epidemiological transition progresses, with added disability and suffering from non-communicable diseases. Poverty (defined as lack of economic resources, lack of education, lack of access to basic life resources such as food, water and sanitation, and lack of control over reproductive health) directly

[9] R. Sivard, *World Military and Social Expenditure 16th Ed*, Washington DC: World Priorities Press 1996
[10] See Human Rights Watch, available online: < http://www.hrw.org/campaigns/refugees >.
[11] C. W. Kiefer, Militarism and world health, *Social Science and Medicine*. 1992; 31: 719-24
[12] WHO, Healthy Life Expectancy, *The World Health Report 1998* (Geneva: WHO, 1998), available online: <http://www.who.int/inf-pr-1998/en/pr98-WHA4.html>.
[13] *Ibid.*
[14] *Ibid.*

accounts for almost one third of the global burden of disease.[15] Poverty leads to poor health, which in turn aggravates poverty. Tens of millions of people, including many children, die every year of starvation - in a world with enough food to feed all.

Since the 1960s, major advances in medicine and technology have been associated with escalating expenditures on health care – but mostly in industrialised countries. In the late 1990s annual per capita expenditure on health care ranged from $4000 in the US down to less than $10 in the poorest countries in Africa.[16] It is now well established that there is a definite relationship between economic status and health and life expectancy. Both absolute and relative wealth affect health: among the developed countries, it is not the richest societies that have the best health, but rather those with the smallest income differentials between rich and poor.[17] This relationship between wealth and health underscores the need to see health and disease as intimately linked to social and economic conditions.

Half of the world's population lives in countries that cannot afford annual per capita health expenditures of more than $5-10, and many people do not have access to essential basic drugs.[18] Furthermore, even though some parasitic diseases (for example onchocerciasis, schistosomasis and lymphatic filariasis) could be controlled by mass treatment campaigns using inexpensive drugs, the infrastructure required to provide such coverage is inadequate. [19] As a result, treatment of diseases such as tuberculosis, leprosy, and HIV/AIDS, which requires a more complex infrastructure, cannot be afforded on current health care budgets in poor countries.

When comparing health services and expectations for health care around the world, it is necessary to appreciate that economic conditions, consumption patterns, and the way of life in industrialised countries may not be the best norm for the whole world. For example, the USA, with 5% of the world's population, accounts for over 20% of global energy use, and 50% of annual global expenditure on health care (over $4000 per person per year) - yet there is no universal access to health care for all US citizens.[20] Such ways of life, consumption patterns and health care practices are probably not sustainable in most countries, and even the USA.

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[15] *Ibid*

[16] *World Health Report 2000 Health Systems: improving performance*

[17] R. G. Wilkinson, *Unhealthy Societies: The Affliction of Inequality.* Routledge, London 1996

[18] B. Pecoul, P. Chirac, P. Trouiller, J. Pinel, "Access to Essential Drugs in Poor Countries -- A Lost Battle?" (1999) *JAMA* 281 at 361-67

[19] *Ibid*

[20] J. Iglehart, "American Health Services: Expenditure" (1999) *New England Journal of Medicine* 340 at 70-76

The threat of infectious diseases

Growing inequities in wealth and health and the associated urbanisation, migration, travel, ethnic conflict, displacement of people, ecological degradation, and poor conditions of life for millions of people have resulted in global instability, characterised by such new security threats as the emergence and spread of new diseases, multi-drug resistant infections, and the possibility of biological warfare.[21] The spread of infectious diseases over the past 25 years, characterised by the emergence of HIV/AIDS and the re-emergence of tuberculosis and malaria in multi-drug resistant forms provides a striking example of new threats to all. Moreover, it is clear that such pandemics cannot be dealt with through a narrow biomedical approach. A more complex systems approach is essential for sustainable development and improved global health.[22]

Ecological degradation

Population growth and the excessive consumption of earth's limited resources are having adverse ecological effects that are among our major causes of concern at the beginning of this century. During the past 100 years the world's population has increased from 1.6 billion to more than 6 billion, and the annual consumption of energy has increased 30 fold. While population growth in poor countries has been the main focus of concern for industrialised countries, consumption patterns in rich countries now pose risks of equal or greater magnitude. "Environmental capital" is being consumed more rapidly than it can be regenerated by nature and certain ecological niches are favouring the emergence of new infectious diseases. The environment has become an abused and severely compromised 'commons.' Loss of biodiversity, global warming, damage to the ozone layer, soil erosion, pollution of the air and the sea have all been allowed to escalate without sufficient attention to their implications for the future of life on our planet. Future generations will pay the price in terms of disease, impaired quality of life and reduced longevity. [23]

Dominant Values Driving the Modern World

It is widely believed that advances in scientific knowledge, free market economic growth, and the propagation of the concept of human rights will provide solutions to problems within an unstable and complex system. These

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[21] S. R. Benatar, "The Coming Catastrophe in International Health: An Analogy with Lung Cancer" (2001) *International Journal (Canadian Institute of International Affairs)* 56: 611-631

[22] S. R. Benatar, "The HIV/AIDS Pandemic: A Sign of Instability in a Complex Global System" (2002) *Journal of Medicine & Philosophy* 27(2):163-177.

[23] A. J. McMichael, *Planetary Overload: Global Environmental Change and the Health of the Human Species* (Cambridge: Cambridge University Press, 1993). See also T. McMichael, *Human Frontiers, Environment and Disease: Past Patterns, Uncertain Futures* (Cambridge: Cambridge University Press, 2001).

ideas are sustained by promoting a high degree of individualism, a narrow perspective on human rights (limited to civil and political rights), and a market that drives production and consumption of private goods while devaluing public goods. In summary, the dominant concept of security is based on geo-political realism in international relations. Progressively widening disparities are threats to the self-interest of all through political terrorism, infectious diseases and other biological threats including those that accompany environmental degradation.

New Paradigms for Solutions to Global Health

The description presented above of the growing injustice leading to global instability serves as a background against which to consider what values should be promoted and how an expanded discourse on ethics could serve as a vital step towards altering the required redistribution of resources for the improvement of population health. The challenge for the 21st century is the betterment of human health and human lives worldwide. Old ways of thinking about progress and improving global health are becoming obsolete. New conceptions of sustainable development will have to be coupled to an expanded discourse on ethics that goes beyond a narrow conception of human rights, interpersonal ethics and health to include the ethics of public health and of international relations that play such important roles in determining the health of whole populations.[24]

Values that will have to be fostered to achieve such goals and improve global health and equity in the future include greater concern for the common good with a commitment to a broader perspective on human rights (inclusive of social, economic, cultural and environmental rights, and access to health care) [25] and a sense of civic responsibility reflecting solidarity with others. Individual freedoms are insufficient, and must be coupled to greater equity and solidarity for human flourishing. All nations have responsibilities that are common and differentiated in working towards the goal of global solidarity (for example developing and testing new drugs and vaccines and making these available to all in need). Security should increasingly be sought through co-operation and moral power in addition to economic and military power. Changes also need to be made to global economic policy and international trade relations in order to reduce inequity and eliminate profound poverty. Redistribution of resources, over-population and over-consumption all need to be addressed. Public participation is needed to shape the setting of health care priorities and resource allocation through processes that are accountable and reasonable.[26] Good

[24] S.R. Benatar, A.S. Daar & P. A. Singer, "Global Health Ethics: the Rationale for Mutual Caring" 79 (2003) *International Affairs* 7-138.

[25] *United Nations Commission on Economic, Social and Cultural Rights*, U.N. Doc. E/C.12/2000/4 (2000)

[26] N. Daniels & J Sabin, "Accountability for Reasonableness" (1998) *Health Affairs* 17:50-64

governance of nations, transnational corporations and health care systems should be fostered – the problems with the alternatives are illustrated by failures and successes in dealing with the HIV/AIDS pandemic. The principle of precaution should also be exercised in relation to means of advancing health (for example in relation to creating transgenic animals). Deeper insights are also needed to better understand the inter-relationship of health, well being and social justice.

An ecological approach to justice and to population health requires a shift from a predominantly anthropocentric view of the world to an eco-centric worldview that includes concern for nature and for all forms of life. A long-term perspective on life and a concern for rights that includes the well being of future generations is essential to this viewpoint. The age-old concept of stewardship of nature here replaces the idea of the subjugation of nature. Such a moral agenda could promote the human potential required to deal with threats from poverty, conflict and demographic and environmental changes. Failure to acknowledge and act on this reflects a state of moral insensitivity at the least and moral depravity at worst.

Conclusions

New infectious diseases such as HIV/AIDS, the recrudescence of tuberculosis and malaria in multi resistant forms, the growing epidemic of non-communicable diseases, ecological degradation, escalating ethnic conflict and persistent poverty and hunger in the midst of plenty, are signs of an increasingly unstable world at the end of a period of major progress. At this time in history, when the dark side of progress becomes clear, old ways of thinking about progress and of improving health are less useful, in particular when these are narrowly defined in economic and individualistic terms. It is unlikely that relying solely on advances in scientific knowledge, free-market forces, a narrow interpretation of human rights and interpersonal ethics will provide sufficient solutions to problems within an unstable complex system. Imaginative and creative new practical approaches, associated with the wise application of scientific and social knowledge, using systems theory and supported by a broader ethics framework are required to ameliorate the adverse effects of rampant market forces. Averting the danger of setting back the clock on progress requires the amplification of the economic and military power of the G8 countries through a moral vision that is extended from 'interpersonal morality' to 'civic morality' and to an 'ethics of international relations,' with dimensions intimately linked to political, military, cultural and economic issues.[27]

[27] The author wishes to clarify that the views he offers are not intended to imply that the wealthy, productive and fortunate in the world should bear the whole burden of the blame for the complex series of historical developments that polarise the world. Such inequities that devalue human life can be attributed both to

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corrupt leadership in developing countries and to the policies of wealthy nations in relentless pursuit of their own economic interests. See T. Pogge, *World Poverty and Human Rights* (Cambridge: Polity Press, 2002).

AFRICA — HISTORY Some of the earliest evidence of medical practice comes from Africa. The Egyptians were well known, over 5000 years ago, for their advanced knowledge of medicine. Relics from the time of ancient Egypt testify to considerable achievements in medicine. Greek scholars wrote of what they learned from the writings and oral traditions of Africans, with reference particularly to IMHOTEP — an engineer, architect, scribe, priest, and physician (3000 BCE) (p 412) — as the 'historical father of medicine'. He instructed many Greeks in the art of medicine, possibly built the first hospital, and recorded his observations and knowledge about surgery, anatomy, pathology, diagnosis, and experimental scientific observation. An important development in Egyptian medicine was the evolution of physicians into specialists.

Two renowned documents reveal the achievements of early Egyptian medicine: the Code of HAMMURABI — possibly the first codified set of guidelines regarding responsibilities of physicians — and the EBERS PAPYRUS — a type of medical textbook summarizing extant knowledge about several disease categories and offering advice on diagnosis, prognosis, and treatment, including over 800 prescriptions. Medicine and religion were, however, closely intertwined; physicians were also religious leaders. Around 300 BC Alexandria became the center of the intellectual world, where Alexandrian physicians contributed to laying the scientific basis of modern medicine. The Alexandrian school of medicine indeed built on and advanced the ancient theoretical contributions of ARISTOTLE. (p 64)

University of Cape Town

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 15

Pre-modern Africa

For centuries medicine in Africa was confined to ethnomedicine as offered within the ethnopolitical contexts of clans, tribes, and later kingdoms and empires. The evolution of these ethnomedical traditions reflected political and other changes in these early societies, and they remain the most common source of healthcare in rural Africa. Because ill-health, disease, and misfortune were amongst natural factors believed to be caused by ancestral spirits, sorcerers, witches, or the violation of taboos, medical practice had a strong magico-religious nature. Activities pertaining to PUBLIC HEALTH included rain-making and rain-control, identification and control of sorcery, control of INFECTIOUS DISEASES, public sanitation services, and health education, with control exerted by the ruling élites (kings, chiefs, and religious leaders). An extensive pharmacopeia of medicinal plant and animal materials was developed, and transfered from generation to generation.

Missionary medicine and religious influences

Later, medicine in many countries was affected by the spread of Islam, introduced to Africa by the Arabs in the 7th century. The Arabs' intense interest in medicine is reflected in the famous teaching hospitals they built (and the high prestige they bestowed on private physicians), which served as links between Greek medicine and Renaissance medicine. There are many examples of the influence of Islam, resulting in mixed African–Islamic medical systems, and the conversion of magico-religious African medical beliefs and practices to scientific principles fundamental to western medicine. (Even in present-day Islamic Africa there are strong Arabic influences on medicine.)

Although western countries became engaged in Africa long before the arrival of missionaries and colonialists (the Portuguese as early as the mid-15th century), there is little evidence that these early European footholds introduced western medicine to Africa. The exception was 17th century South Africa, where from the beginning the Dutch East India Company deployed ship's doctors, surgeons, and BARBER-SURGEONS (from 1652), and even established hospitals (the first in 1656) to serve mainly sailors but also officials at the Cape refreshment station. As South Africa, Algeria, Kenya, and Zimbabwe were more heavily populated by European settlers than other African countries, Europeans had a more striking influence on medical services there than elsewhere. Early settlers relied heavily on folk medicine and remedies. Western medicine in Africa was predominantly pioneered by Christian missionary societies during the last quarter of the 19th century and early 20th century, mostly well before health services provided by colonial governments.



The countries making up the continent of Africa in 1999.

Hundreds of mission hospitals and dispensaries were established and, alongside these, the training of African medical aides. Until 1914, missions in Kenya provided the only western medical services available to the African population.

The religious work of missions was closely linked to medical work. Mission hospitals and mission doctors served as important points of entry of western medicine into African countries, and were the main centers of medical knowledge and practice. The nature of the missions (for example, Protestant or Catholic) and the country of origin of the missionaries (Britain, France, Germany, Switzerland, Belgium, with smaller numbers from Italy, Spain, and Portugal) also influenced the medical practice and the orientation of practitioners. Among these missionaries was Albert SCHWEITZER (p 504), of the Paris Missionary Society, who practiced at Lambaréné, Gabon, during the earlier half of the 20th century. He marked a turning point in missionary thinking that elevated healing to an essential element of the missionary mandate.

Most African countries still rely heavily on missionary hospitals and medical services. Somewhat Africanized church-related health services continue to provide 25–50% of available hospital and health services in most African countries; many, as in colonial times, with grants-in-aid continuing. African populations often prefer church-related healthcare, generally believing it to be superior to that offered by government health departments.

AFRICAN PIONEERS



Godfrey Martin **HUGGINS** (1883–1971). British/Rhodesian surgeon and politician. Huggins practiced medicine in London before emigrating to Salisbury, Southern Rhodesia (now Zimbabwe). He practiced surgery there and also took active interest in politics. After his election to the Legislative Council in 1923, he became Prime Minister of Southern Rhodesia 1933–53, when the country became a self-governing colony. He helped bring about the Federation of Rhodesia and Nyasaland and was its first Prime Minister in 1953.

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(continued)



Mungo **PARK** (1771–1806). British physician and explorer. Park trained in Edinburgh and in 1791 became a surgeon in the mercantile marine. His first exploration of the Niger was from 1794–7, when he returned to England and published *Travels in the interior districts of Africa* (1799). In 1801 he set up in practice in Peebles, but in 1805 organized another expedition to find the source of the Niger. He was killed with all his companions by natives at Boussa.



Sir Leander Starr **JAMESON** (1853–1917). British physician and statesman. In 1878 Jameson went out to Kimberley to practice, and there he became a close friend of Cecil Rhodes. In 1889 he was sent to win the concession of Mashonaland from Lobengula, the chief of the Matabele, and succeeded by curing his gout. In 1895 he carried out his ill-conceived raid across the Transvaal border ('the Jameson raid'), was defeated, and taken prisoner. He was in Ladysmith for the siege in 1899. Later he entered the South African parliament and in 1904 became prime minister of Cape Colony.

Colonial Africa

The European colonization of Africa took place predominantly during the latter 19th and early 20th centuries. State-provided healthcare was restricted during colonial times and only after World War I did colonial governments accept some (usually minimal) responsibility for the medical needs of indigenous populations. Exposure to tropical diseases gave an impetus to medical research and to the spread of western medicine in Africa. Western medical practitioners used modern scientific techniques to support imperial control and protect the interests of the rulers, frequently to the detriment of the ruled. This included the use of western medications — for example, quinine — to facilitate colonial penetration into otherwise inaccessible areas.

Prominent among the factors shaping medicine in Africa were the relationships of domination–exploitation between imperial powers and their colonies. Important characteristics of the mother countries were gradually transferred to their colonies and protectorates. Thus medicine in many African countries was shaped by medicine in Britain, Belgium, the Netherlands, France, Portugal, Italy, and Germany. Simultaneously, colonial influences engrained structural distortions on the emerging public health systems in the colonies. These included racial disparities through reliance on the importation of personnel and the centralized systems of the colonial era featuring strongly in doctor-oriented, hospital-centered, urban-concentrated, and curatively-biased policies and systems. The result was a distribution of medical services favoring upper class and urban citizens. Also recognizable are the crystallization of unequal social relationships and the creation of segregated structures in which 'colonists'/colonizers were geographically separated, more favored, and healthwise more protected than their African counterparts. In most British colonies, the colonial medical system shaped sanitation conditions and stratified healthcare into segregated facilities for Europeans, Asians, and 'Natives' — in that order. In South Africa this 'apartheid in medicine' grew to the fullest extremes of inequality.

Benefits to medicine

The benefits brought to healthcare in Africa should not be underestimated. Most notable were the introduction of western allopathic medicine to the continent, and the strong tradition of management and administration so typical of the British colonial regimes, which established advanced legislation, administrative structures, and controlling bodies for medicine in several of their colonies. These colonial powers took serious steps to control epidemics, provided the first establishments (hospitals, health posts) of modern western medicine in the colonies, and generously funded and manned several of these.

The liberation of African nations from colonial domination in the mid-20th century set in motion new trends in medicine. Colonial distortions in medicine were countered by radical breaks from the colonial mold. New cadres of health staff emerged, such as village medical helpers, community health workers, clinical nurses, and traditional birth attendants. Progressive Africanization of medicine and professionalization of traditional healing emerged, but the mass emigration of health workers (both state and missionary) from these countries left a great need for trained medical staff. Gradually the vacuum was filled by expatriate doctors from other, especially African, countries, and by graduates from newly established local medical schools, as well as by phasing in less medically or doctor-dependent models of care, such as primary health care and nurse-based health services.

Colonial powers remained varyingly influential in sustaining western medicine in the post-colonial period. In some cases these were largely ousted, and several countries (Tanzania, Angola) leaned towards and drew on the Soviet Union, China, North Korea, and Eastern Bloc countries. Other countries, such as those in the Commonwealth, retained strong ties with the erstwhile European mother countries. Post-colonial and post-independence African governments largely continued to give legitimacy to western medicine; they also reproduced and perpetuated many of its distortions, among others the inherited 'lopsided medical infrastructure'. Post-colonial African rulers also diverged in important ways from colonial patterns, in that they expanded health services to rural areas and accommodated traditional medicine to a larger extent.

Like the rest of the world, Africa has had a long history of disruptive political events — from the 11th century until well into the 20th — which have dislocated masses of people, with devastating effects on health and health systems. The European colonial legacy left serious voids and instabilities which threatened the emerging independent nations in the 1960s. In many cases, conflicts were initiated by withdrawals of colonial powers. In others, independence triggered fierce battles among contending internal factions with a sequence of coups and counter-coups, military regimes, or ensuing undemocratic, authoritarian one-party states. Many of these countries have been dominated by ruinous civil wars, fed by the Cold War, regional rivalries, and internal problems resulting in the establishment of a range of socialist/collectivist political power structures. These have shaped and reformed national health systems towards centralized

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systems, jeopardizing the already inadequate private healthcare sectors in these countries.

Effects of instability

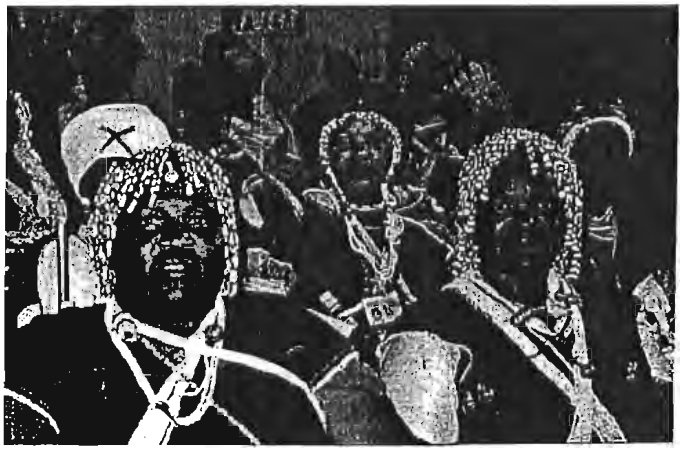
Such political instability has disrupted medical training and working conditions of health professionals, many of whom have become exiles. Political disruptions, and resultant dislocation of masses of people, have severely affected the ability of countries to provide medical care. For example, a small country such as Malawi in recent times has absorbed about one million Mozambican refugees. Massive migration and dislocation of millions of people, due to natural disasters, as well as man-made catastrophes have profoundly disrupted both health and the functioning of health systems. In Rwanda, the ethnic massacre in 1994 claimed the lives of one million people within three months.

Since the missionary and colonial eras of Africa's history, African ethnomedicine has been profoundly exposed to western allopathic medicine. As a result, a variegated medical pluralism has evolved. The meeting and mixing of Islam and Christianity with African traditionalism, have also led to new forms of medico-religious practices — syncretic faith healing and prophets within Christian countries, and Islamic divination procedures and other influences in Islamic countries. Another outcome of this contact was the emergence of a relationship between western allopathic and African ethnomedicine best described as one of superiority–inferiority, symbolizing the strengths of imperial and indigenous powers and the official superimposition of western values over African practices. In time, allopathic medicine enjoyed dominant official support over traditional medicine, which was relegated to an officially inferior and often covert position.

Despite these disadvantages traditional healers survived and today, in most African countries, they serve a much larger clientele than western forms of medicine. The two systems exist side by side and when western forms of treatment fail, people return to the more traditional forms. This survival of ethnomedicine may be partly explained by the strength of traditional beliefs, social organization, and customary practices in African societal and tribal life (with particular attention paid to spiritual ailments), but should also be seen in the light of the frequent unavailability and inaccessibility of western medicine in many rural and isolated areas. Here traditional medicine remains the only resort, with success stories playing an important part in its survival. Apart from this, the two systems are based on diverse foundations regarding etiology, diagnosis, and treatment; the magico-religious aura and spiritual nature of traditional medicine are the crux of differences between the two systems.

The relation between the two systems is also not singular; relationships are changing as new policies and legislation emerge. During the colonial period these policies and legislation towards traditional medicine took two forms: herbalists were not forbidden to practice their medicine, but divination, witchcraft, sorcery, ordeals, and oaths were outlawed and prosecuted as criminal offences (the Witchcraft Suppression Acts). In general, colonial governments and early Christian missionaries despised and therefore discouraged or suppressed the use of traditional medicine. Later, this rejection of traditional medicine was carried further by organized professions and councils in the western-scientific mold. In time, however, four broad varieties of relationships crystallized: exclusive (monopolistic) systems, recognizing only scientific medicine; tolerant systems, characterized by *laissez-faire* policies which virtually ignore traditional medicine, yet allow its existence; inclusive (parallel) systems, recognizing traditional health systems alongside scientific medicine; and integrated systems, tending to unite allopathic and traditional medicine in both training and practice. The first type of relationship prevails in the former French and Belgian colonies in Africa; the second was/is typical of the arrangement in former British colonies. Inclusive and integrated systems have not generally been encountered in Africa.

In practice, Africa's large and varied quota of traditional healers is competing with western doctors for scarce resources and a clientele. In most countries the number of African traditional healers far exceeds those of western doctors; in Malawi some 23 000 traditional healers were recently recorded, while in South Africa 150 000 to 200 000 (others suggest nearer to 350 000) are reported practicing. As traditional healers gain more recognition, they increasingly refrain from practicing covertly, and some are now even advertizing their



These traditional healers are still popular, particularly among rural communities in sub-Saharan Africa.

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 18

services. The publication of the *South African traditional healers' primary health care handbook*, by the South African Medical Research Council Traditional Medicines' Research Group (1997), reflects the trend towards a growing willingness to integrate diverse systems. HCJR, SRB

AFRICA — PRESENT AND FUTURE At present Africa comprises 53 independent states: 47 are part of the continent, six are island states. Today Africa has an estimated population of over 600 million. An average annual population growth rate of between 2.2% and 3.3% between 1950 and 1990 resulted in an explosive increase from 170 million to 500 million people. Most of this population is still non-urban. In the mid-1990s life expectancy averaged 53 years in Africa; in only nine African countries is life expectancy over 60 years; in many it is still well below 50 (for example, Zambia, Burundi, Guinea, Malawi, Mali, Niger, Somalia, Uganda) and even lower in Sierra Leone (35 years for women, 32 for men).

Although infant mortality rates have fallen spectacularly during the past century — from levels exceeding 200–300/1000 — they remain high. The highest rates are recorded in Rwanda (145), Mali (156), and Sierra Leone (200), and the lowest in Mauritius (17), Tunisia (41), South Africa, and Algeria (51). Under-5 mortality often exceeds 200/1000, reaching exceptional levels in Mozambique (275), Sierra Leone (284), Angola (292), and Niger (320). In sharp contrast are the low rates in Tunisia (37), Mauritius (23), and Seychelles (20). Only in Botswana, Cape Verde, Mauritius, Namibia, and South Africa, most of the Northern African countries, and possibly Seychelles, are both the infant and under-5 mortality rates below the developing world's averages of 64 and 95/1000, respectively (compared with the developed world's of 14 and 18/1000, respectively). Despite declines in income in the past years, Burkina Faso, Gambia, Senegal, and Zimbabwe have almost halved child mortality between 1980 and 1995. Maternal mortality is of equal concern. In sub-Saharan Africa, at 971/100 000 live births, this is over double the rate of 471/100 000 in the developing world as a whole. For the 1980–90 decade rates were highest in Ghana, Somalia, and Mali: 1000, 1100, and 2000/100 000, respectively.

Africa's burden of disease is high especially in the communicable and preventable categories. In earlier times SMALLPOX, and now TUBERCULOSIS, measles, MALARIA, HIV/AIDS, and many water-borne and other INFECTIOUS DISEASES devastatingly affect health. Tuberculosis is the leading infectious killer in Africa and is increasing, aggravated by the HIV epidemic. Of the world's 30 million people infected with HIV, 21 million live in sub-Saharan Africa, and of 12 million deaths, 83% occurred in Africa. Malaria, another serious problem, is endemic in many countries, with 300–500 million clinical cases (90% of these in Africa) and 1.5–2.7 million deaths each year — mostly in children. The health toll of SCHISTOSOMIASIS also remains high in Egypt and many other parts of Africa. However, the true burden of disease in Africa is difficult to evaluate and may be even greater than estimated.

Understandably such a disease burden profoundly impacts on health, taxing health systems and social services to their limits. However, there have been some limited successes. Of the national tuberculosis control programs in 34 countries, 27 have a central control unit, 11 providing completed short-course treatment for all patients. Regrettably, 19 provide complete treatment for only half of patients. Drug treatment for LEPROSY increased from 7% in 1987 to 27% in 1990 and to 63% in 1993, reducing the prevalence of the disease from 483 000 cases in 1990 to 159 000 in 1993. Vaccination programs have markedly reduced the incidence of neonatal tetanus in 12 African countries, and POLIOMYELITIS is decreasing in several countries. With the recent upsurge in malaria, and the development of widespread resistance to chloroquine, malaria control programs are being given high priority through a World Health Organization global malaria strategy, which includes 17 African countries.

Africa's health status and healthcare needs are conspicuously shaped by poverty, malnutrition, infectious diseases, armed conflict, drought, FAMINE, inadequate access to primary and secondary education, safe water, sanitation, and a range of socio-economic factors propagating inequitable distribution of resources. In turn, these same determinants are the main factors in shaping the nature and status of medicine on the continent.

Human development and social-economic well-being

On the Human Development Index (measuring human progress [on a 0 to 1 scale] as reflected in longevity, knowledge, and standard of living), African countries fare dismally. On recent gradings, only three African countries (Seychelles, Mauritius, and Libya) rank in the 'high category', and then only in the 52nd, 61st, and 64th positions, respectively. Thirteen African countries are in the 'medium category' (South Africa 90th), while most (35 of them) fall in the 'low category' — with the last 19 positions filled by African countries (the very last being Niger, Rwanda, and Sierra Leone [175th]). Compared with Seychelles' favorable score of 0.845, Sierra Leone has the most unfavorable score (0.176) on the scale — and the 'worst quality of life' and

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 19

'poorest health services in the world'. Nevertheless the Human Development Index has improved during 1990–4, from 0.200 to 0.380, though several African countries have recently shown decreases — Rwanda, Botswana, Zambia, Sierra Leone, Guinea, Burundi, Sudan, Zimbabwe, Togo, Congo, Cameroon, Gambia, and Kenya.

Poverty

Sub-Saharan Africa has the highest proportion of people in — and the fastest growth in — human poverty. The Human Poverty Index, which reflects the combined basic dimensions of poverty, is 40% for the whole of sub-Saharan Africa and exceeds 50% in seven countries in the world. Of these, six (Niger, Sierra Leone, Burkina Faso, Ethiopia, Mali, and Mozambique) are in Africa. Some 220 million people in the region are poor, and by 2000 an estimated half of the people in sub-Saharan Africa will live in such poverty. Women and children, and more so those in rural areas, are disproportionately poor. Economic indicators signal that Africa's annual per capita gross national product in 1996 ranged from a minimum of $80 in Mozambique to a maximum of $6280 in the Seychelles, with a mean of under $500. Africa's economic plight is further aggravated by debt-ridden economies supported by almost valueless currencies; most of the heavily indebted poor countries — 33 of 41 — are in sub-Saharan Africa. Its debt stands at $300 billion, about $370 for every man, woman, and child on the continent. Niger exemplifies Africa's plight: it has a per capita gross national product of $200; 92% of its population lives on $2 a day or less; the debt burden comprises 88% of the gross national product; and three times more money is spent on international debt repayments than on health and education. Rwanda, Burundi, Liberia, the two Congos, Sierra Leone, and Somalia grapple with similar mountainous debts in the aftermath of military conflicts.

National health systems vary in Africa with prevailing political–economic systems. They span the spectrum from predominantly socialist/collectivist (Angola, Mozambique, Tanzania), socialized/national health service (Kenya), to strongly inclined private/free market dispensations (South Africa). These influence the practice of medicine in Africa — the position of the doctor in society (whether public servants or entrepreneurs); the nature of medical practice (public facilities or private solo or partnership practices); the degree of regulation; and the prevailing financial system (free services or fee-for-service). The health systems of many African countries might, however, be best described as emerging systems — notably unplanned, undifferentiated, uncoordinated, and highly mixed.

Private medicine is generally weakly developed in Africa, although most countries have a private sector of varying size. Many African countries have a weak or progressively dwindling private medical sector, although recent economic reforms have stimulated privatization of medicine. Different models of accommodating the private/public split also prevail. In Nigeria, for example, public and private doctors function completely separately; public doctors do not run part-time private practices, nor do private doctors use public facilities. By contrast, in Malawi the trend is increasingly to allow public doctors to also run private practices for profit. In a few cases, for example, South Africa, private medicine and private doctors are strongly entrenched and the prevailing pattern. Generally, however, western-style medicine in Africa is provided by the state.

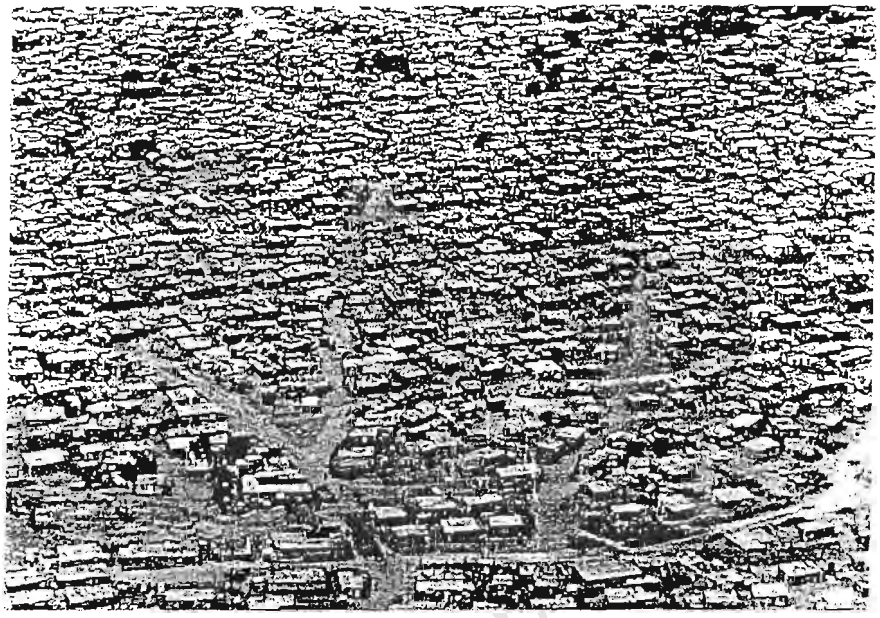
International health agencies

International influences in African medicine started during colonial times, with three kinds of agencies distributing the bulk of medical care in African countries: governments (through the army, navy, civilian, and development components), missions (particularly for rural Africans); and private companies (for employees and their relatives). Later came international agencies, such as the League of Nations and the International Labor Organization, and even later the United Nations, in particular the multi-lateral World Health Organization, United Nations Children's Fund, and United Nations Development Plan, the European Union, and the Commonwealth. With technical and financial assistance, the World Health Organization has focused on strengthening national healthcare systems, and encouraging integrated healthcare systems that promote services related to medical care, rehabilitation, family health, communicable disease control, environmental health — and with particular emphasis on private health care. Also bilaterals (e.g. Médicin sans Frontières) have played important parts in shaping healthcare and medicine. In addition, the World Bank and the International Monetary Fund have had significant indirect effects on medicine in Africa. Numerous health programs driven by these agencies rescued many African countries, but also created dependency and subscription to their interests and agendas. In the mid 1980s over 70% of Malawi's public sector investment program was donor-funded, and by the 1990s this was over 80%.

Given the part that western medicine should play in Africa, the supply of doctors in African countries is reason for concern. Doctor:population ratios vary greatly: Libya (1:962), Seychelles (1:1064), and South Africa (1:1500) are most favorably supplied, while Malawi (1:50 000), Chad, and Mozambique (both 1:33 333) are the least. Generally the provision in sub-Saharan countries is

University of Cape Town

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 20



The Crossroads squatter camp near Cape Town in South Africa.

poor to very poor — an average of 1:18 514. Although there have been improvements in the doctor:population ratios in the past years (1970–1988–91) in many African countries (1:97 000 to 1:33 333 in Burkina Faso, 1:86 100 to 1:33 333 in Ethiopia, 1:50 000 to 1: 7692 in Guinea, 1:30 400 to 1:2500 in Lesotho), this ratio has also deteriorated in several African countries. Most notable is the worsening in the doctor:population ratio in Uganda from 1:9200 to 1:25 000; Ghana from 1:14 894 to 1:22 970; Kenya from 1:8000 to 1:20 000; and Mozambique from 1:18 900 to 1:33 333.

Maldistribution

Featuring prominently in the African context of medicine but not unique to Africa is the regional and rural–urban maldistribution of the medical corps within countries. Sizeable proportions of rural populations have no access to doctor services. Although 85% of Kenya's population live in rural areas, less than 10% of its physicians are located there. African countries have devised various strategies to overcome these shortages and distortions, especially to attract or compel doctors to underserved rural areas or disadvantaged sectors. Many of these were/are to the detriment of the western medical doctor/medical profession in Africa. Among them are the introduction of various less expensive and less qualified medical clinical auxiliary staff categories; compulsory community service in disadvantaged areas by doctors after completion of training; various incentive schemes for doctors to serve in underserved areas and sectors; and the importation of foreign/expatriate doctors to serve the underserviced areas (Cuban doctors to South Africa being a recent example).

The general shortage of doctors in most African countries has led to the phenomenon of expatriate doctors — the large-scale importation of foreign doctors from abroad and other African countries. In some countries the number of expatriate doctors exceeds that of local doctors (Lesotho and Zambia); in others, the position is just the opposite (Nigeria). Such importation has varying and often detrimental effects on the local medical profession and practitioners.

Henrietta Stockdale, a remarkable person and nurse who started the first training school for nurses in South Africa, achieved professional status for nurses in South Africa in 1891 — the first country where this was achieved. Today nurses outnumber doctors by 10 to 1 in South Africa and play a prominent part in ambulatory and hospital-based healthcare. Together with the rapidly growing community healthcare workers they will increasingly dominate the scene, and will probably work more closely with primary care doctors and members of a transforming traditional healthcare system.

For most of the colonial period the medical profession as a profession scarcely existed in either anglophone or francophone Africa. Doctors were appointed as civil servants and *de facto* members of colonial governments, often under military discipline. Missionary doctors too had a divided allegiance to medicine — it was the appointees of

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 21

colonial authorities (and not independent professionals) who decided if a doctor's qualifications were acceptable in that colony. Although there were branches of the British Medical Association in the Cape and in Natal in the 1880s, there were too few doctors in most African countries to constitute local autonomous associations, and doctors were too cut off from the mother countries to be included in their professional structure. They were thus not recognized as members of an autonomous organization called a 'medical profession'. By contrast, African medical professionals during the colonial period relied on their professional status to overcome the racial discrimination against them. For them, from early times, professionalization was of paramount importance.

Professionalization

A self-conscious profession in most of Africa dates back mainly to the 1950s, when African doctors increased in numbers, when private practice outside government or mission hospitals became more common, when university medical schools and teaching hospitals were established — and the whole paraphernalia of a formal profession of medicine was gradually instituted and recognized by the government and the public. Professionalization became part of decolonization; it coincided with the Africanization of staff and curricula; it was to prove, proudly, that the independent states were not content with second best. None the less, the current state of professional medical associations in many African countries is still closely linked to the number of doctors, their employment status, degree of specialization, and the proportions of expatriate and local doctors. In most African countries these associations are still weakly developed. South Africa is an exception, the earliest medical association dating back to 1827 and the current and member-strong Medical Association of South Africa being established in 1926. Despite the weak position of the medical profession in Africa, it nevertheless became dominant as it systematically suppressed and eliminated many of its competitors and subordinated others. The amalgamation of a range of professional medical groups into the South African Medical Association in 1998 opens a new era of potential professional solidarity that might heal some of the wounds that existed between 'conservative' and 'progressive' medical associations in the apartheid era.

Medical regulating bodies and training

Most English speaking countries have general medical councils responsible for registration, accreditation, ethical standards, and supervision of medical practice. Their policies are more responsive to western European ethical norms and have focused little on social and cultural conditions peculiar to Africa. The factors shaping medical associations also influence the nature of medical councils and controlling bodies in Africa. Many, of quite recent origin (in Malawi since 1987 only), are weak and inefficient. Little attention has been devoted to modern approaches to bioethics and doctors remain paternalistic in their outlook. Fundamental principles such as privacy and confidentiality are generally accepted. The South African Medical Research Council has published guidelines for the ethics of medical research, the latest edition in 1993, and more vigorous teaching programs in medical ethics are being developed in South African medical schools.

Training and research

Modern medical training started in most African countries only during the 20th century, generally after independence in the 1960s and 1970s. Before the founding of local medical schools, African doctors were mainly trained in former European colonial countries with government or donor grants as well as in non-colonial countries such as Sweden, Canada, or the USA.

There are now about 92 medical schools in Africa, a ratio of 1 per 6 million people (compared with 1 per 2 million in the western world and 1 per 5 million in South Africa). The first medical schools were those of Cape Town (1912), University of the Witswatersrand (1920), and the University of Pretoria (1943). The first medical school in Uganda was founded in 1922, in the Sudan in 1924, in Nigeria in 1948, and in Zimbabwe, Zaire, Kenya, and Zambia only in 1963, 1966, 1967, and 1968, respectively. African countries thus differ greatly in their medical training facilities, self-sufficiency, number of medical schools, and output of doctors. Most smaller countries have one (Malawi, Mozambique, Zambia, Zimbabwe) or none (Botswana, Djibouti, Gabon, Mauritius, Lesotho, and Namibia), while others have several medical schools (South Africa has 8, Sudan 14, and Nigeria 15). The annual output of doctors in Mozambique is about 50; that of Nigerian and South African medical schools approaches 1000.

Many smaller African countries still rely on facilities in Europe, North America, and even Japan and China to train their medical practitioners. Several medical schools (in Nigeria, Kenya, Ghana, South Africa) also train doctors from other African countries, especially those without schools. Many doctors trained overseas do not return to their countries of origin, largely because of unfavorable salaries, conditions of service, and policies regarding medical practice. For many of these same factors a large number of trainees leave their countries of origin — sometimes permanently.

Disease in Africa poses a rich topic for research and has led to renowned campaigns in Africa,

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 22

such as the French VACCINATION of Senegalese against SMALLPOX in 1887. A laboratory was even established for manufacturing the vaccine. Some missionary doctors made important contributions to the scientific understanding of tropical diseases. During World War II the French conducted an enormous campaign against YELLOW FEVER, vaccinating eleven million Africans. Pioneering research in conquering yellow fever, river blindness, and sleeping sickness are further examples of research break-throughs in Africa. Several medical research institutions in Africa have become known for work in TROPICAL MEDICINE, often under difficult 'frontier' circumstances, and usually with the support of expatriate researchers from previous colonizing countries. The South African Institute for Medical Research in Johannesburg, the Blair Institute in Harare, the Kenyan Medical Research Institute in Nairobi, the Medical Research Council Research Unit in the Gambia and trials on tuberculosis in East Africa, several Pasteur Institutes in Africa, and research units in Makerere (Uganda) are examples. The African Medical and Research Foundation has worked for 40 years with local communities to alleviate the region's health problems and promote research on malaria, hydatid disease, sexual and reproductive health, laboratory services, and health information systems. Most of its research is applied or operational. The *Directory of potential institutions for testing malaria vaccines*, published by the African Malaria Vaccine Testing Network, lists the staffing and activities of infectious disease research institutes in 20 African countries.

Poverty is one of the most serious problems affecting Africa. Squatter settlement in South Africa.



Individuals such as Michael Gelfand in Harare, Eldryd Parry and David Warrell in Nigeria, Sir Ian McGregor and others from the Gambia, Anthony Butterworth in Kenya, and indeed many others are well known for their contributions to medical research. Brock's chapter on 'Some highlights of medical research in South Africa' in *A history of scientific endeavour in South Africa*, and a multi-authored book on *South African medical research* provide insights into the extensive research on medical problems in South Africa. The wide range includes infectious and parasitic diseases, nutritional deficiencies, occupational diseases, the porphyrias, iron overload, genetic disorders, organ transplantation (including the first heart transplant in 1967), and cardiovascular and liver diseases. In recent years other major themes and foci such as HIV/AIDS, reproductive health, women's health, mother and child health have started, given the widespread, acute, or devastating nature of these conditions in Africa.

New forms and methods of health research were introduced during the 1980s and 1990s. Essential National Health Research and Health Policy and Health Systems Research are examples. Essential National Health Research aims to establish and strengthen an appropriate health research base in each country; focus research resources on priority health needs; and bridge the research–policy gap. Health Policy and Health Systems Research is steered by the same principles. It focuses primarily on research as supportive in improving health by improving the efficiency of health policy and systems, as well the quality and accessibility of health services. The value of such research has also been shown to be more in line with actual health needs, improve the management of government health facilities, address inefficiencies and inequities, and to reduce waste, all by way of reformative measures resulting from health policy and systems research.

Funding of medical research varies from country to country and is also channelled differently. In South Africa medical research is largely funded by the state (through the Medical Research Council), pharmaceutical industry, and internationally linked non-governmental organizations, such as the Health Systems Trust.

Only a few medical journals in Africa have become widely recognized, arguably the best being the *South African Medical Journal* founded in 1893. The *Central African Journal of Medicine* and the *East Africa Medical Journal* also enjoyed high reputations in the past, but their status has not been sustained. This reflects the extent to which western science and medicine in South Africa have become more deeply entrenched and more successful than elsewhere.

OIMC-A2 (15-30) 7/30/01 6:36 PM Page 23

Transformation of medicine

Amid worsening economic conditions and as part of economic reforms, many African countries have recently embarked on either piecemeal or significant health reforms, particularly in public health and seeking greater efficiency and equity in health. Such reforms are closely linked to current economic structural adjustment programs. These spill over into the health sector as cost-cutting, curbing government expenditure on health, strides towards privatization, the introduction of user-charges and cost-recovery policies, changes in household economies, changes in health and health-seeking behavior. With dwindling economies the emerging healthcare systems are increasingly being directed towards primary healthcare; thus progressively shifting the professional nurse, auxiliary health carers, and semi-professionals to center stage as the main functionaries. Simultaneously the roles of private and solo-practicing doctors and of the medical profession are being reduced. Apart from long-standing shortages of medical doctors, African health systems are becoming less accommodating to and less concerned about advanced medical services and medical specialization.

The shift in emphasis towards primary healthcare, with a de-emphasis on hospitals, poses trends incompatible with the thrust of modern medical services and not sympathetic to the ways doctors approach healthcare. Financially, primary healthcare systems do not stimulate or sustain the high financial demands of private medical practice. Grim economic circumstances and unsatisfactory availability of drugs and medical equipment (mostly to be imported), poor maintenance of buildings, structure and process of care (patient overload, work ethic, neglect, abuse, poor attitudes), and the general decline in the quality of health services do not attract and retain doctors and other health professionals. Rather, these trends are eroding the lean doctor corps in African countries. The result is a dwindling number of medical professionals, with a concomitant shrinking role and declining importance of western medicine in African medical systems. Likewise, medical specialization and medical specialists are making way for general practitioners, generalists, nurses, and community health workers who fit the primary healthcare model better. This trend is also becoming evident in South Africa, where healthcare reform is being based on the primary care approach and the district based system.

What is the future of modern medicine in Africa? Will public medicine increasingly be modeled on the primary healthcare approach, with modern tertiary medical care available only to the wealthy in an exclusive but weakening private sector lacking in the renewal generated through contact with thriving medical schools? Will traditional medicine move towards a more advanced form of herbalism and become incorporated into modern medical practice? What will happen to medical schools in South Africa? The current trend of undermining the tertiary components of those medical schools which offer the prospect of retaining the best of modern medicine within the public sector seems to augur a move towards an almost exclusively primary healthcare approach in the public sector. The role and influence of nurses and other professions allied to medicine will also change. With women making up half or more of medical students in South Africa today the emphasis of healthcare systems may change even more than currently imagined. Clearly the type of modern medical care currently available in the industrialized nations cannot yet become the norm for most Africans. Sensible use of available resources, the development of practical and implementable healthcare policies, attention to more than merely biological aspects of health and disease, and ongoing concern for the care of individuals while instituting policies to improve population health may allow the participation of a wide variety of healthcare professionals and stimulate the development of new and innovative programs. SRB, HCJR

AGE, AGING See GERIATRIC MEDICINE

ALCHEMY The possibility of manipulating matter into substances of commercial value, such as silver and gold on the one hand, or of spiritually uplifting value, such as an elixir of life on the other, led to alchemy. It was, in turn, one of the roots of chemistry and biochemistry as well as chemotherapy. Alchemists derived much of their apparatus and manipulative techniques from the equipment used and developed by artisans, technologists, and pharmacists, whose heating, cooking, subliming, and distillation techniques were grist to the mill of chemists in the 16th century. Alchemy also provided chemistry with the idea of a symbolic language for practitioners of the art. Here, however, the use of a multiplicity of synonyms for the same thing served not merely to obscure matters for the uninitiated but (according to some historians) to increase greatly the degree of symbolic allusion — to the mystification of later readers and interpreters. For example, according to one Greek alchemical lexicon, mercury was 'seed of the dragon', 'talc of the dragon', 'dew', 'milk of the black cow', 'Scythian water', 'water of silver', 'water of the moon', 'river water', and 'divine water'. A Persian source lists over 80 synonyms for the philosopher's stone, a mysterious seed which supposedly precipitated an instant transmutation. Given that the same syn-

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PUBLIC HEALTH ETHICS

Stephanie Nixon, Ross Upshur, Ann Robertson, Solomon R. Benatar, Alison K. Thompson and Abdallah S. Daar*

I. INTRODUCTION

In 2003, Canada and the world were suddenly awakened by the emergence of a highly infectious agent called SARS that moved around the globe at an incredible pace. This disease was seen to be mobile, rapidly-spreading and potentially fatal, but little was known of the disease itself. Despite a paucity of hard data about the epidemiology and other aspects of SARS, decisions had to be made regarding efforts to contain the spread of the disease. But to what extent should people's individual freedoms have been limited for the collective good? In the absence of good diagnostic testing, effective treatment and only nebulous insight into this new disease, was it justified to quarantine all people exposed to the virus from family and friends? If so, what was owed, if anything, to those individuals to compensate for the burden they experienced? To what extent should health care providers have been forced to care for people with SARS when the little evidence available indicated that the risks of acquiring the disease, transmitting it to family and contacts, and perhaps

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even dying from it, were high? How should information relating to such an outbreak be communicated to a nervous public?

In the aftermath of the outbreak, what should have been the responsibility of the municipal, provincial or federal governments to financially assist businesses that experienced massive economic losses as a result of real or perceived threats of contagion? Furthermore, if, rather than an anomaly, the emergence of a highly infectious agent like SARS merely foreshadows a future trend on the planet, what should we be learning about the links between globalization and health? What can we learn from reflecting on the magnitude of response that was mounted against this global infectious disease that predominantly affected the rich world, compared to the kind of response that is being mounted against infectious diseases like HIV, TB and malaria which affect predominantly the developing world but kill over 10,000 times as many people every day as SARS did in all of 2003?

These are some examples of ethical questions that arise within the sphere of public health[1] which range from questions about how we should treat individuals to new ways we should be thinking about the health impacts of today's globalizing world. This chapter begins to explore this relatively unexplored terrain by mapping out the emergent field of public health ethics and the ways in which different frameworks can help us contend with the sorts of difficult questions posed above.

Public health ethics is a recent field of scholarly interest, unlike the more established field of bioethics. Since its inception midway through the last century, the field of bioethics has focused upon ethical issues pertaining to the practice of medicine and medical research. Consequently, bioethics (or clinical ethics), as a discipline, has focused almost exclusively upon individualistic concerns, primarily the development of notions of patient autonomy. While this is understandable, given the impetus for modern bioethics in the Nuremberg Trials, the Tuskegee Syphilis study and patient rights movements in the 1960s, Onora O'Neill has argued that bioethics has been "damagingly preoccupied" with not only the autonomy of individual patients but also with the requirements for justice within, but not between, states.[2] Until relatively recently, the development of a broader public health ethics discourse has been largely ignored. However, this is beginning to change as indicated by an enlarging discourse in public health ethics. This includes a number of papers in

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1 There are many other issues. We have, for example, not focused here on issues related to non-communicable diseases.

2 Onora O'Neill, "Public Health or Clinical Ethics: Thinking Beyond Borders" (2002) 16 Ethics & International Affairs 35.

this area[3] that have begun to articulate and develop the theoretical, conceptual and substantive parameters of a field of public health ethics, in the recognition that the theories, concepts and principles that underpin clinical bioethics cannot simply be transposed to public health ethics.

At the same time, there have been several recent efforts to develop specific curricula in public health ethics for graduate education at schools and departments of public health.[4] Other initiatives include: increased instruction on public health ethics amongst public health practitioners,[5] development of a draft Public Health Code of Ethics,[6] and the emergence of research symposia on public health ethics, such as the international meeting, *Public Health Ethics: Towards a Research Agenda,* held at the University of Toronto in May 2002.[7]

There are a number of reasons for the increasing interest in the field of public health ethics. In Canada in particular, there have been a number of recent public health "crises" that have indicated a need for an articulated public health ethics. The tainted blood scandal and the subsequent Krever Commission report were harbingers of future public health crises. In May 2000 in the town of Walkerton Ontario, a waterborne E. coli outbreak resulting from inadequate health protection

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3 Solomon R. Benatar, "Global Disparities in Health and Human Rights: A Critical Commentary" (1998) 88 American Journal of Public Health 295; Solomon R. Benatar, "Prospects for Global Health: Lessons from Tuberculosis" (1995) 50 Thorax 487; Daniel Callahan & Bruce Jennings, "Ethics and Public Health: Forging a Strong Relationship" (2002) 92 American Journal of Public Health 169; James F. Childress *et al.*, "Public Health Ethics: Mapping the Terrain" (2002) 30 Journal of Law, Medicine & Ethics 170; Lawrence O. Gostin, "Public Health, Ethics, and Human Rights: A Tribute to the Late Jonathan Mann" (2001) 29 J.L. Med. & Ethics 121; Nancy E. Kass, "An Ethics Framework for Public Health" (2001) 91 American Journal of Public Health 1776; R.E.G. Upshur, "Principles for the Justification of Public Health Intervention" (2002) 93 Canadian Journal of Public Health 101; See also D. Wikler & R. Cash, "Ethical Issues in Global Public Health" (2003) in Robert Beaglehole, ed., *Global Public Health: A New Era* (Oxford: Oxford University Press, 2003) at 226.

4 Association of Schools of Public Health, *Ethics and Public Health: Model Curriculum* (2001-2003), online: Association of Schools of Public Health <http://www.asph.org/document.cfm?page=782>; At the University of Toronto Department of Public Health Sciences, a course on public health ethics was begun in 2003.

5 Steven S. Coughlin *et al.*, "Ethics Instruction at Schools of Public Health in the United States. Association of Schools of Public Health Education Committee" (1999) 89 American Journal of Public Health 768; Steven S. Coughlin *et al.*, *Case Studies in Public Health Ethics* (Washington, D.C.: American Public Health Association, 1997); Anthony S. Kessel, "Public Health Ethics: Teaching Survey and Critical Review" (2003) 56 Social Science & Medicine 1439.

6 Public Health Leadership Society, *Principles of the Ethical Practice of Public Health* (New Orleans, LA.: Public Health Leadership Society, 2002), online: American Public Health Association <http://www.apha.org/codeofethics>.

7 A. Thompson *et al.*, "Public Health Ethics: Towards a Research Agenda" (2003) 9 Acta Bioethica 157.

measures was responsible for seven deaths and the infection of almost half the town's population. As noted, the recent SARS outbreak in Canada not only highlighted the lack of preparation of public health authorities for major infectious disease threats, it also raised fundamental ethical issues about the appropriate scope and limitation of individual liberty by public health authorities for the control of disease. As a result, a major commission has recently made recommendations for sweeping changes to the governance, legal structure and training and practice of public health in Canada.[8]

At a more global level, the variable means by which public health exercised its authority in response to SARS underscores the need for sustained international dialogue on the ethical aspects of disease control and their relation not only to diverse (culturally-based) ethical norms but also to more universal human rights standards. In addition, the emerging field of genomics also raises profound ethical issues for public health, both nationally and internationally, related to potential population-based genetic screening programs and population-based genetic data banks. Also more globally, there are a number of public health concerns, such as the emergence of new infectious disease pandemics (SARS, re-emergence of multi-drug resistant TB, hepatitis C), the threat (perceived or actual) of bioterrorism, and the alarming increase in global health inequities, which call for a broad normative discourse. It is clear from these, and other, instances that the existing frameworks and tools developed by bioethicists are not easily adapted to deal with ethical issues in public health, nor is it appropriate to attempt to do so, given the individualistic focus of much of clinical bioethics.

In this chapter, we provide an overview of the field of public health ethics. We commence with a brief historical overview of the field, provide an account of how public health ethics is distinguished from clinical ethics, examine the major theories animating the field, give an overview of current frameworks and their application, and extend the discourse to concerns with global public health ethics. We conclude with suggestions for future research.

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[8] Canada, National Advisory Committee on SARS and Public Health, *Learning from SARS: Renewal of Public Health in Canada* (A Report of the National Advisory Committee on SARS and Public Health, October 2003) (Ottawa: Health Canada, 2003), online: Public Health Agency of Canada <http://www.phac-aspc.gc.ca/publicat/sars-sras/naylor/index.html>.

II. THE HISTORICAL ROOTS OF PUBLIC HEALTH ETHICS

The historical roots of public health ethics lie in the historical roots of public health itself. While a fuller discussion of the historical roots of contemporary public health is beyond the scope of this chapter,[9] there are two general historical streams within public health that are of particular relevance to public health ethics. The first is an early historical stream which underscores the more authoritarian, even coercive, aspects of public health. Indeed, as one version recounts it, one of the origins of public health lies in the creation of a new kind of public official known as "health police"[10] to whom were delegated the authority to enforce quarantine and other kinds of restrictions on the movements of people during the waves of infectious epidemics that swept through European cities during the Middle Ages. Indeed, other than the police, the military and child protection agencies, public health is one of the few contemporary public institutions that has been delegated legal authority to enforce certain kinds of actions or behaviours (restaurant closures, individual quarantine, treatment in certain cases). As is well known, this authority is not without its more negative consequences which will be discussed more fully below.

A second historical stream in public health finds public health aligned with more progressive social reform movements. This was clearly the case during the last half of the 19th century when public health officials, particularly in the U.K., directed their attention and actions to tackling the worst consequences of a rampant industrial capitalism that had created a large population of urban poor. This was a period in public health's history, often referred to as the "Golden Age" of public health, during which much of what we associate with contemporary public health had its origins: public water and sewage systems ("mains and drains"), housing regulations and inspections, improvements in working conditions, maternal and child health services, along with "health visitors".[11] This tradition in public health is not without its own more questionable consequences in terms of the "management", however well-intended, of large sectors of society, predominantly the working class and the poor.[12]

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9 George Rosen, *A History of Public Health* (Baltimore: Johns Hopkins University Press, 1993).

10 Michel Foucault, "The Politics of Health in the Eighteenth Century" in Paul Rabinow, ed., *The Foucault Reader* (New York: Pantheon Books, 1984) at 273.

11 Simon Szreter, "The Importance of Social Intervention in Britain's Mortality Decline, C. 1850-1914. A Reinterpretation of the Role of Public Health" (1988) 1 Social History of Medicine 1.

12 David Armstrong, *The Political Anatomy of the Body* (Cambridge: Cambridge University Press, 1983).

Nevertheless, the point remains that public health has had a long association with social reform, social action, and social justice. Indeed, it has been argued that public health *is* social justice.[13]

Given the multiple and interwoven historical roots of public health, it should not be surprising that public health ethics emerges as extremely complex, full of uncertainties, ambiguities, paradoxes and even contradictions. To begin to explore this nascent field more fully, it may be useful to start with the mandate of public health.

Through its focus on societal rather than individual actions, public health seeks to improve the well-being of communities and populations through activities like immunization and ensuring safe water supply. Information to guide public health is obtained largely through epidemiological research exploring the physical, psychological, environmental and social conditions that underlie and give rise to health and disease.[14] These ideas are captured succinctly in the Institute of Medicine's definition of public health: "... what we, as a society, do collectively to assure the conditions for people to be healthy".[15]

Given this definition of public health, it could be argued that public health ethics is most closely related to the ethical tradition of utilitarianism. For example, Edwin Chadwick, who was the architect and enforcer of the poor laws and the hygienic movement in Britain in the 1830s and 1840s was profoundly influenced by the thinking of Jeremy Bentham, founder of utilitarianism.[16] Although controversial in his time, Chadwick's recognition that acute infectious diseases were fatal to many, and that the death of working men left their families disadvantaged, led to Peel's Commission on the Health of Towns. These reports were instrumental in the development of the hygienic movement in Great Britain and the justification for state involvement in public health with the goal of sanitary improvement leading to health improvement. It also established a tradition of public health paternalism and state intervention in health, a legacy that continues to the present. The control of communicable diseases entailed the use of state functions for promoting and protecting health which may include the curtailment of civil liberties for the aim of disease control.

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13 Dan E. Beauchamp, "Public Health as Social Justice" (1976) 13 Inquiry 3.

14 Nancy E. Kass, "An Ethics Framework for Public Health" (2001) 91 American Journal of Public Health 1776.

15 Institute of Medicine, *The Future of Public Health* (Washington, D.C.: National Academy Press, 1988) at 19.

16 Iqbal Sram & John Ashton, "Millennium Report to Sir Edwin Chadwick" (1998) 317 British Medical Journal 592.

Sheila Rothman has documented this in her illustration of the history of tuberculosis control in the early 20th century. She notes that public health authorities aggressively pursued restrictive interventions and government intrusion as a means of disease control. She quotes Hermann Biggs, of the New York City Department of Health:

> The cry has been raised again and again ... that for humanity's sake pulmonary consumption must not be pronounced a communicable disease, and the friends of patients often declare that they prefer to expose themselves to the chance of infection rather than have their dear ones banished, or treated as if they were plague-stricken; but this is all the sheerest nonsense. ...The government of the United States is democratic ... but the sanitary measures adopted are sometimes autocratic, and the functions performed by sanitary authorities paternal in character. We are prepared, when necessary, to introduce and enforce, and the people are ready to accept, measures which might seem radical and arbitrary, if they were not plainly designed for the public good, and evidently beneficent in their effects.[17]

Throughout most of the 20th century, as communicable diseases seemingly were controlled, there was a diminishing use of extraordinary public health measures such as detention and seizure of property and forcible removal of humans that characterized the control of typhoid, tuberculosis and cholera. The profile of public health actions and its ethical dimensions were not revisited until the HIV/AIDS pandemic in the 1980s and 1990s. As the pandemic originally disproportionately affected homosexual men, there was tremendous debate about the use of state powers to control the epidemic by such things as closing bathhouses. It was often thought at this phase that a double discrimination was in place and through the activism of communities an "AIDS exceptionalism" policy emerged which altered the way public health has managed that pandemic.[18]

However, in the last two decades subsequent to the emergence of HIV/AIDS as a significant human pathogen, the optimism concerning the control of communicable diseases has given way to the recognition that emerging and re-emerging infectious diseases will continuously be with us. In addition, other global chronic disease pandemics, such as those associated with tobacco and obesity, have led to a resurgent need to reflect on the legitimacy of certain kinds of interventions aimed at improving public health. Global pandemics, however, are not simply the result of diseases that have spread evenly around the world. Rather, in many cases

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[17] Sheila M. Rothman, "Seek and Hide: Public Health Departments and Persons with Tuberculosis, 1890-1940" (1993) 21 J.L. Med. & Ethics 289 at 291.

[18] Ronald Bayer, "Clinical Progress and the Future of HIV Exceptionalism" (1999) 159 Archives of Internal Medicine 1042.

they are the result of global inequities in wealth and power that have created the conditions for poverty and disease to flourish. It is thus relevant to consider not only the kinds of public health issues that affect developed societies, but also the burden of illness and death that disproportionately affects the poorest parts of the world, and important moral questions about how it came to be this way.

III. HOW IS PUBLIC HEALTH ETHICS DIFFERENT FROM CLINICAL ETHICS?

Traditional ethical concerns in health care issued from concerns raised by the care of individuals. Clinical ethics, and the sets of ethical frameworks created for reflection upon such issues, have focused on problems such as end of life care, micro level resource allocation, and problems inherent in the provider-patient relationship, to name but a few. It is an imperfect fit to attempt to use the framework of clinical ethics to deal with public health.[19] Public health practice and clinical practice are different in terms of context, mandate and range of activities. For instance, clinical ethics are rooted in the fiduciary responsibility of the clinician in his/her therapeutic contract with the patient which is legitimized by the informed consent of the patient. Conversely, public health practice assumes a population focus whereby the contract is with society as a whole and is legitimized by the policies and law of government. The approaches also differ in their patterns of practice. In clinical practice, the patient seeks out the clinician for a service and may accept or reject advice given. In public health, the patient is sought by the public health practitioner and may not be able to refuse the treatment being delivered.[20]

As such, different kinds of ethical issues arise in public health. As Gostin notes, "[t]o defend the common welfare, political communities assert their collective power to tax, inspect, license, regulate, and coerce".[21] These concepts underscore one of the primary ethical debates in public health: the tension from the predominant orientation in clinical bioethics in favour of civil liberties and individual autonomy versus the utilitarian, paternalistic and communitarian orientations that mark the field

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19 Richard Schabas, "Is Public Health Ethical?" (2002) 93 Canadian Journal of Public Health 98.

20 *Ibid.*

21 Lawrence O. Gostin, "Public Health Law in a New Century: Part 1: Law as a Tool to Advance the Community's Health" (2000) 283 Journal of the American Medical Association 2837 at 2840.

of public health.[22] Public health activities are generally understood to be teleological and consequentialist; that is, success is measured based on the outcome in the public's health. The means by which this end is achieved is subordinated to this ultimate goal.[23] As such, one challenge within public health ethics is an examination of the choice of such means and when and to what degree the coercion is appropriate. But what else characterizes the field of public health ethics?

IV. WHAT IS "PUBLIC HEALTH ETHICS"?

The field of public health ethics may be approached by examining the range of topics that fall within this field. To further map the field, the Kennedy Institute of Ethics generated a list of public health ethics articles under the following categories: general literature, epidemiology, health promotion and education, public health administration, philosophical and ethics issues, socio-economic and legal perspectives, individual versus societal rights, risk, the media and personal choice, and genetics and public health.[24] This kind of approach offers no coherent theoretical foundation underlying the subject, and may even be misleading with respect to the meaning of the categories, but it does offer a point of departure for thinking about the kinds of issues encountered in the field.

Recently, there have been several attempts to articulate more general constitutive features of public health ethics. For example, Gostin has advanced thinking[25] about the field by distinguishing between what he terms ethics *in* public health, ethics *of* public health and ethics *for* public health. He describes ethics *in* public health as concerns involving the public health enterprise, including tradeoffs between collective goods and individual interests. This is distinct from the ethics *of* public health, which is concerned with the ethical dimensions of professionalism and moral trust that society invests in professionals to act for the common good. Ethics *for* public health takes into account the value of healthy communities and the interests of populations, with particular emphasis on the oppressed.

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22 Daniel Callaghan & Bruce Jennings, "Ethics and Public Health: Forging a Strong Relationship" (2002) 92 American Journal of Public Health 169.

23 James F. Childress *et al.*, "Public Health Ethics: Mapping the Terrain" (2002) 30 J.L. Med. & Ethics 170.

24 Martina Darragh & Pat Milmoe McCarrick, "Public Health Ethics: Health by the Numbers" (1998) 8 Kennedy Institute of Ethics Journal 339.

25 Lawrence O. Gostin, "Public Health, Ethics and Human Rights: A Tribute to the Late Jonathan Mann" (2001) 29 J.L. Med. & Ethics 121.

Callahan and Jennings offer four broad categories[26] for describing the field: health promotion and disease prevention; risk reduction; epidemiology and other public health research; and structural and socio-economic disparities. They use this foundation to illustrate the various types of analyses required to respond to concerns within these diverse areas. For instance, they describe *professional ethics* as based on professional character and virtues and involving ethical principles regarding trust and legitimacy in the profession. *Applied ethics* involves reasoning from general ethical theories to inform the profession. *Advocacy ethics* is less theoretical but arguably the most pervasive in public health. This type of analysis has a strong orientation towards equality and social justice. Finally, *critical ethics* describes an approach that attempts to combine the strengths of each of the above. It is practically oriented toward real-life problems, but brings larger social values and historical trends to bear. Critical ethics understands dilemmas not only as the result of behaviours of disease organisms and individuals, but also from institutional arrangements and prevailing structures of cultural attitudes and social power.[27]

V. PHILOSOPHICAL ISSUES

It has been noted that public health decisions often involve conflicting and contrary ethical principles. One of the most difficult issues is, of course, the need to balance what is best for the population with protection for the individual. Roberts and Reich have noted that ethical arguments in public health can be grouped into three main categories, each representing a major theme in contemporary public health discourse: utilitarianism, liberalism and communitarianism.[28] As indicated earlier, public health has strong utilitarian roots. This is manifested in techniques like cost benefit analysis, quality adjusted life years or disability adjusted life years, as a means of ranking programs and adjudicating decisions. There are some concerns about the ability of these metrics to reflect adequately more than merely prevailing prejudgments. As well, there are concerns about how such evidence and data is collected in the first place, and what normative values go into such ranking decisions.[29] There are also

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[26] Daniel Callaghan & Bruce Jennings "Ethics and Public Health: Forging a Strong Relationship" (2002) 92 American Journal of Public Health 169.

[27] *Ibid.*

[28] Marc J. Roberts & Michael R. Reich, "Ethical Analysis in Public Health" (2002) 359 Lancet 1055. This section follows this analysis clearly.

[29] J. La Puma & E. Lawlor, "Quality-Adjusted Life-Years. Ethical Implications for Physicians and Policymakers" (1990) 263 Journal of the American Medical Association 2917. An example of this on a large scale would be the Oregon project. See *e.g.*, R. Steinbrook &

concerns expressed from deontological perspectives on the rights of minorities and protecting interests within a theory that has an overarching concern with a maximizing strategy. Although concerns may be expressed about the primacy or absoluteness of a utilitarian perspective, it is clear that in a discipline like public health with a strong commitment to the quantitative analysis of health events, utilitarianism will continue to be an influential theory.

Liberalism also underlies some of the major philosophical trends in public health thinking. Liberalism, a 19th century political doctrine strongly influenced by Kantian thinking, is concerned, *inter alia*, with issues of liberty and rights. The notion of rights underlies many theories of justice, such as egalitarianism and libertarianism. The work of philosopher John Rawls has been of tremendous influence in this regard, particularly in his concept of justice as fairness.[30] These ideas have been extended into health care by commentators like Amy Gutmann[31] and into priority setting in health care by Norman Daniels.[32] More recent interpretations of justice, such as those described by Amartya Sen, look towards maximizing justice by maximizing capabilities available to individuals, and are likely to prove to be an influential paradigm in the future.[33]

Communitarian perspectives also have a long tradition. The focus in communitarian ethics is on creating a good society in which individuals within that society exemplify virtues appropriate to that society. There are two distinct trends within communitarianism, one more relativistic that sees morality as inherently contextual to the community itself and, the other, more universalist that argues there are ideal norms for every society that can be approximated.

It is important to note that often in public health ethics debates, discussions and analyses cross these various philosophical domains with utilitarianism predominating in some analyses, and rights-based approaches or community-based approaches predominating in others. It has been argued that what is important in this regard is that there should be an explicit discussion of the issues and the will to move towards a coherent position. However, as Roberts and Reich conclude:

B. Lo, "The Oregon Medicaid Demonstration Project—Will It Provide Adequate Medical Care?" (1992) 326 New Eng. J. Med. 340.

30 John Rawls, *A Theory of Justice* (Cambridge, MA: Belknap Press of Harvard University Press, 1999).

31 A. Gutmann & D. Thompson, "Just Deliberation About Health Care" in Marion Danis, Carolyn M. Clancy, & Larry R. Churchill, eds., *Ethical Dimensions of Health Policy* (New York: Oxford University Press, 2002) at 77.

32 Norman Daniels, "Accountability for Reasonableness" (2000) 321 British Medical Journal 1300.

33 Amartya Sen, *Development as Freedom* (New York: Knopf, 1999).

> Yet public-health professionals have minimal training in ethical analysis. If health professionals are to develop coherent positions on these issues, and contribute to democratic deliberation about public policies, then they need enhanced skills in applied philosophy. Understanding alternative ethical arguments has become as important as knowing the advantages and disadvantages of different epidemiological techniques.[34]

VI. WHAT IS THE *PUBLIC* IN PUBLIC HEALTH ETHICS?

"Public" may refer to a public entity that acts on behalf of the people and gains its legitimacy through a political process. For public health, government has the primary responsibility to advance the public's health because its core mandate is to act on behalf of the people for the good of the people, albeit in partnership with other institutions and players in the private and non-governmental sectors.[35] The primacy of government in public health is essential since public health can only be achieved through collective action. Government-enacted statutes and regulations can be pivotal tools at various levels for creating the conditions for people to lead healthier and safer lives. [36]

For instance, at the individual level, public health authorities educate, create incentives, deter and punish. At a more macro level, law alters the informational, physical, social and economic environment in which people live and work. Gostin defines public health law as:

> ... the study of the legal powers and duties of the state to ensure the conditions for people to be healthy ... and the limitations on the power of the state to constrain the autonomy, privacy, liberty, proprietary, or other legally protected interests of individuals for protection and promotion of community health.[37]

These ideas raise at least three arguments for engaging issues of global scope. First, Mann *et al.*[38] remind us that "discussions of public health must always consider the societal context, including its economic and political dimensions". It would be naïve to analyze the role of government and law in public health ethics without considering the

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34 Marc J. Roberts & Michael R. Reich, "Ethical Analysis in Public Health" (2002) 359 Lancet 1055.

35 Lawrence O. Gostin, "Public Health Law in a New Century: Part I: Law as a Tool to Advance the Community's Health" (2000) 283 Journal of the American Medical Assocation 2837.

36 *Ibid.* at 2837.

37 *Ibid.*

38 Jonathan M. Mann *et al.*, eds., *Health and Human Rights: A Reader* (New York: Routledge, 1999) at 34.

undeniable influence of economic globalization and the individualistic orientation of neoliberalism.

Secondly, Gostin, in his introduction to public health law, articulates a view of health that is as true for developing countries as it is for the Western context in which it was written:

> The benefits of health to each individual are indisputable. Health is necessary for much of the joy, creativity, and productivity that each person derives from life. Perhaps not as obvious, however, health is also essential for communities. Without minimum levels of health, populations cannot fully engage in the social interactions of a community, participate in the political process, generate wealth and ensure economic prosperity, and provide for common defense and security.[39]

Thirdly, there are self-interested arguments to be made regarding the notions of defence and security as Gostin raises above. As Benatar, Daar and Singer point out, we live in "... an unstable world increasingly at risk of massive rebellion and violence from those who are excluded from the benefits of progress and who have nothing to lose from destroying what others thoughtlessly or selfishly enjoy".[40]

VII. FRAMEWORKS AND APPLICATIONS

In the last few years, several commentators have proposed operational frameworks and principles for the analysis of ethical issues in public health practice. Nancy Kass has articulated an ethics framework for public health. This framework provides six primary questions that need to be addressed in relation to the ethical dimensions of any proposed public health program:

- What are the public health goals of the proposed program?
- How effective is the program in achieving its stated goals?
- What are the known or potential burdens of the program?
- Can burdens be minimized? Are there alternative approaches?
- Is the program implemented fairly?
- How can the benefits and burdens of the program be fairly balanced?[41]

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[39] Lawrence O. Gostin, "Public Health Law in a New Century: Part I: Law as a Tool to Advance the Community's Health" (2000) 283 Journal of the American Medical Assocation 2837.

[40] Solomon R. Benatar *et al.*, "Global Health Ethics: The Rationale for Mutual Caring" (2003) 79 International Affairs 107 at 109.

[41] Nancy E. Kass, "An Ethics Framework for Public Health" (2001) 91 American Journal of Public Health 1776.

A second framework articulated by Childress *et al.* enumerates five considerations to be weighed when analyzing the ethical dimensions of public health action. These include effectiveness, proportionality, necessity, least infringement and public justification.[42] Upshur[43] proposed the following four principles to guide the justification of public health intervention: the harm principle; the principle of least restrictive or coercive means; the reciprocity principle; and the transparency principle.

These ideas have not yet been debated for their strengths and limitations. However, if the history of debate over principalism in clinical ethics is a guide, one may expect that these principles may be valued for advancing the ethics discourse among public health practitioners in both practice and training settings, but challenged in terms of their relationship to broader moral theory.[44] A different kind of framework has been developed by Benatar *et al.* that considers the ethical dimensions of public health at the international and global levels. In attempting to address the moral challenges posed by global health considerations, they have identified several values that need to be widely promoted:[45] respect for all life and universal ethical principles; human rights, responsibilities and needs; equity; freedom; democracy; environmental ethics; and solidarity. They have also suggested a way forward through five transformational approaches: developing a global state of mind; promoting long-term self-interest; striking a balance between optimism and pessimism about globalization and solidarity; strengthening capacity; and enhancing production of global public goods for health.

They propose that such progress could be initiated by expanding the discourse on ethics from interpersonal relationships, to the ethics of relationships between institutions and even to the ethics of relationships between nations. This will require promotion of deeper understanding of citizenship in an interdependent world, commitment to an extended range of human rights, and new ways of thinking about ourselves, our relationship to others and to the ecological system. In addition, "human rights" should be linked to a broader moral agenda embracing the duty to meet essential human needs and to achieve greater social justice within and between nations.

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42 James F. Childress *et al.*, "Public Health Ethics: Mapping the Terrain" (2002) 30 J.L. Med. & Ethics 170.

43 R.E.G. Upshur, "Principles for the Justification of Public Health Intervention" (2002) 93 Canadian Journal of Public Health 101.

44 T.L. Beauchamp, "Principlism and Its Alleged Competitors" (1995) 5 Kennedy Institute of Ethics Journal 181; K.D. Clouser & B. Gert, "A Critique of Principlism" (1990) 15 Journal of Medicine & Philosophy 219.

45 Solomon R. Benatar, Abdallah S. Daar and Peter A. Singer, "Global Health Ethics: the Rationale for Mutual Caring" (2003) International Affairs 107 at 109.

The above ideas are supported by Wildes' contention that bioethics, and by extension, public health ethics, should be viewed as social philosophy. He reminds us that industrialized countries have constructed multiple bureaucracies to enable, govern and regulate human life and that these structures help to define human life and often act as a form of social control. Because systems of medicine and health care delivery are one of these bureaucratic structures, medicine is a social institution and ethical issues in medicine and health care can only be addressed adequately if they are understood in the social context of the practice of medicine. Bioethics and public health ethics provide a lens through which one can examine secular societies and gain insight into how a society understands political authority and its appropriate exercise.[46]

Recent events have prompted refined reflection and the development of new applications for ethical review or analysis of public health issues. For example, Singer and colleagues have analyzed ethical dimensions of the SARS epidemic.[47] The important point of departure in this analysis was the lack of available evidence when initial decisions and policies were required. There was a need for decision makers to weigh individual freedoms against the common good and personal safety against the duty to treat the sick, in addition to risking economic loss to control the spread of a potentially serious epidemic. At the time decisions were needed to be made, there were no diagnostic tests or therapeutic agents available and the causative agent was still unclear (though now known to be a coronavirus), and many key epidemiological features of the coronavirus such as its duration of shedding, its communicability and how long immunity was conferred, indicated that one could not rely simply on science, but value analysis was clearly required.

The ethical analysis of this pandemic drew on elements of the above frameworks. The goal of the analysis was to use normative discourse to illuminate lessons learned, to highlight areas where improvements could be made, and to indicate areas where further research is required. In the lessons learned, five key areas and ten ethical values were identified. The analysis assessed the balance between public health interests and civil liberties with respect to quarantine decisions, the limits of privacy in personal information, the duty of health care workers to provide care, and the duty of institutions to support them, collateral damage, the restriction of care of others during the SARS outbreak, and the global implications. The ten key ethical values were: individual liberty, privacy, protection of the public from harm, protection of communities from undue

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[46] Kevin Wm. Wildes, "Bioethics as Social Philosophy" (2002) 19 Social Philosophy & Policy 113.

[47] Peter A. Singer *et al.*, "Ethics and SARS: Lessons from Toronto" (2003) 327 British Medical Journal 1342.

stigmatization, proportionality, duty to provide care, reciprocity, equity, transparency and solidarity.

A second recent trend relates to health information privacy and databases. In an infometric world, the rapidity with which health information can be collected, disseminated, analyzed, and linked to other factors is unprecedented. Controversies abound concerning the use of database linkage studies to examine broad determinants of health and their impact. The development of tools to enhance individual control over health information, further empirical work to determine what people view as highly sensitive data, development of stronger governance models (such as data ombudspersons), and enhancing professional codes of ethics regarding health privacy and confidentiality are required. While a more detailed discussion of these issues is beyond the scope of this chapter, it is clear that there is a need for further analysis. The frameworks noted above are relevant both to the process of clarifying values involved in these issues, and in setting an agenda for future research.

SARS and the issue of health information privacy are but two examples of where debates in public health ethics are required and likely to flourish. Communicable diseases, though central to the mandate of public health practice, by no means exhaust the universe for ethical reflection. Crucial ethical issues arise from the use of health promotion techniques, particularly the normative dimensions of obesity campaigns, tobacco control and physical activity. The discussion of the limits on the appropriate disclosure of information and truth-telling in public health practice require vigorous analysis. Further work on the issues raised by technological advances such as those in genetics, genomics, regenerative medicine, nanomedicine *etc.* present opportunities and challenges for public health ethics. As the preceding material seeks to establish, there is a robust future for the discipline of public health ethics.

VIII. APPLICATIONS AT A GLOBAL LEVEL

An account of current issues in public health ethics would be incomplete if it did not recognize the increasingly global nature of health and public health obligations. As the SARS pandemic illustrated, there is an intimate and irrevocable sense in which the health of humanity is linked. Reciprocal understanding, and solidarity and collaboration in action, are crucial. However, consideration of the global dimensions of public health, with attendant concern for issues in justice, equity and the distribution of wealth is incomplete without an analysis of the forces that shape and form the contemporary landscape.

Despite a six-fold increase in the global economy over the past 50 years, the gap between the richest 20 per cent and the poorest 20 per cent of the world's population has widened continuously from nine times at the beginning of the 20th century to over 80 times by 1997. About 1.2 billion people live on less than $300 per year. Many of these live under conditions of absolute poverty, a condition of life so limited by malnutrition, lack of access to safe water and basic health care, illiteracy, disease, squalid surroundings, high infant mortality, and low life expectancy as to be beneath any reasonable definition of human decency. Health and poverty are intimately related. Poverty impairs health and poor health sustains poverty. Growing inequalities in the burden of disease and in premature deaths are associated with the growing economic disparities described.[48] About one-third of all human deaths each year are poverty related. Moreover, disparities in wealth are no longer distributed along a "North-South" axis, but now apply within most countries, including the so-called highly developed.

Disparities in wealth and health are accompanied by distorted expenditure on health and medical research. Global expenditure on health amounted to over $2.2 trillion per year in the early 2000s with 87 per cent of this expenditure on a mere 16 per cent of the world's population who bear about 7 per cent of the global burden of disease expressed in disability adjusted life years ("DALY"s). Annual per capita expenditure on health care around the world ranges from less than $15 to over $5,000. Of about $70 billion spent annually on medical research, 90 per cent is devoted to those diseases that account for 10 per cent of the global burden of disease. Of 1,393 new drugs marketed from 1975 to 1999, only 16 were for tropical diseases or tuberculosis. These statistics suggest that medicine and health care as a universal moral endeavour is "off the rails".

During the second half of the 20th century, the evolution towards a globalized economy has perpetuated and aggravated centuries of exploitative processes that facilitate the enrichment of some people at the expense of others — within and between nations. Such exploitation (made possible by processes that devalue and dehumanize the "other") relegates them to lower standards of life. Over the past 50 years, covert erosion of the economies of many poor countries, under the impact of neo-liberal economic policies driving globalization, has further obstructed real development, and prevented achievement of widespread access to even basic health care for billions of people.[49] Average national per capita GNP has risen to above U.S. $25,000 in some countries and remained static or dropped to less than U.S. $200 in others — and similar gaps can be

[48] Solomon R. Benatar, "Global Disparities in Health and Human Rights: A Critical Commentary" (1998) 88 American Journal of Public Health 295.

[49] Richard Falk, *Predatory Globalization: A Critique* (Malden, Mass.: Polity Press, 1999).

observed within many societies. The debt owed to rich countries by the poor amounted to $2.2 trillion in 1997 — a debt developed and perpetuated through arms trading and ill conceived "development projects" that did more harm than good and usually benefited developed nations more than those they were allegedly "developing". Such debt can never be repaid and perpetuates economic slavery and human misery in more covert guises.[50] Foreign development aid has also been falling over recent years and is increasingly directed towards humanitarian aid rather than towards sustainable development.[51] Development aid to Africa in 2000 amounted to $21.2 billion, while Sub-Saharan African debt in 2002 was $275.6 billion.

It is against this background that many in wealthy countries (and many emerging middle-class people elsewhere) are increasingly suffering from diseases of affluence (obesity, diabetes and cardiovascular diseases), while new infectious diseases, exemplified by HIV and SARS, with the potential to spread throughout the whole world, have been emerging over the past 25 years. These signs of change in the global system result from complex processes that include population growth, rapid urbanization, inequitable economic growth with widening disparities in wealth and health, over- and under-consumption of food and energy, and war and ethnic conflict with resulting migration and displacement of millions of people. Additional forces include profound poverty traps, altered relationships with animals, ecological degradation, and a growing informal economy in which drugs, people and sex are traded across the world.[52] Sub-Saharan Africa has been most adversely affected.[53] In a sub-continent where there are 13 million displaced people, 14 million AIDS orphans, 475 million living on less than $2 per day and hunger affecting 40 million, this situation can be viewed as a modern version of the exploitation that characterized the era of slavery.

As Pogge has argued, because wealthy nations and their citizens are implicated in the generation and maintenance of social injustice and poverty, they need to face their responsibilities to alleviate the lives of those most adversely affected.[54] These are the challenges for public health

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50 Ronald Labonte *et al.*, *Fatal Indifference: The G8, Africa and Global Health* (Ottawa: Juta Academic, 2004); Ann Pettifor, *Debt, the Most Potent Form of Slavery: A Discussion of the Role of Western Lending Policies in Supporting the Economies of Poor Countries* (London: Christian Aid Society, Debt Crisis Network, 1996).

51 Carol Lancaster, *Transforming Foreign Aid: United States Assistance in the 21st Century* (Washington, D.C.: Institute for International Economics, 2000).

52 Solomon R. Benatar, "The Coming Catastrophe in International Health: An Analogy with Lung Cancer" (2002) LV1 Journal of the Canadian Institution of International Affairs 595.

53 Peter Schwab, *Africa: A Continent Self-Destructs* (New York: Palgrave, 2001).

54 Thomas W. Pogge, "Responsibilities for Poverty-Related Ill Health" (2002) 16 Ethics & International Affairs 71.

ethics. To understand the magnitude of the challenge we need to understand the dominant values that have shaped our world.

In order to make progress it is necessary to be able to reflect deeply on the upstream forces that shape human health and well-being, and to attempt to develop constructive solutions. Jonathan Glover's description of repeated genocide across the world during the 20th century reminds us of human's inhumanity to fellow humans, and of how difficult it will be to change dominant ways of thinking. He concludes that it is only our moral imagination — our ability to imagine ourselves in the shoes of others — that could enable us to significantly alter our outlook and actions.[55]

Peter Singer (of Princeton University), in an extension of his previous work on poverty alleviation, asks what a global ethic means in an interdependent world, in which all are linked through exposure to the same atmosphere, a global economy, international law, human rights and a global community. He does so through a critical and provocative examination of climate change, the World Trade Organization's role, the concept of human rights, the place for humanitarian interventions and shortcomings in foreign aid. He develops the thesis that "... how well we will come through the era of globalization (perhaps whether we come through it at all) will depend on how we respond ethically to the idea that we live in one world. For the rich nations not to take a global ethical viewpoint has long been seriously morally wrong. But now it is also, in the long term, a danger to their security".[56]

Booth, Dunne and Cox[57] remind us that 'choice lies at the heart of ethics', that human choices are neither always free nor always determined. History, power, context, and biology shape our choices, as do our powers of imagination and our capacity to choose rationally. Every choice also has a price. Politics and ethics are inseparable, like politics and power, and foreign policy should be understood as ethics in action — the challenge being to build a better world.

Crocker poses several questions about development ethics and globalization. What should be meant by development? In what direction and by what means should a society "develop"? Who is morally responsible for beneficial change? What are the obligations, if any, of rich societies to poor societies? How should globalization's impact and potential be

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55 Jonathan Glover, *Humanity: A Moral History of the Twentieth Century* (New Haven, CT.: Yale University Press, 2000).

56 Peter Singer, *One World: The Ethics of Globalization* (New Haven, CT.: Yale University Press, 2002).

57 Ken Booth, Tim Dunne & Michael Cox eds., *How Might We Live? Global Ethics in the New Century* (New York: Cambridge University Press, 2001).

assessed ethically?[58] Addressing these questions through the lens of public health ethics could shape new ways of looking at the world and promote deeper understanding of what it means to be a citizen in an increasingly interdependent world that could embrace renewed concepts of solidarity, and concern for others, even those very distant from our own daily lives. New paradigms of thinking could both promote deeper insights into how complex systems function and facilitate novel approaches to international finances.

IX. CONCLUSIONS

There is always a set of potential conflicts in public health and hence the need for balance between such things as collective and personal good; coercion and duty to care; scientific uncertainty and necessity for action. Future scholarship and research is required particularly on the conceptual and theoretical basis of public health ethics. Empirical case studies are required in order to evaluate the diversity of issues and practices specific to public health ethics. These should illuminate all dimensions of public health deliberation at local, national, and global levels.

For public health ethics to mature as a discipline requires capacity building with specific attention to curriculum development and funding for research and development. Currently, public health ethics is poorly represented on the course curricula of schools of public health, though this will change in the near future. Finally, the use of moral imagination and demonstration of courage in the changing an inequitable global landscape should transform public health ethics beyond a merely academic exercise.

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[58] David A. Crocker, "Development Ethics and Globalisation" (2002) 22 Philosophy & Public Policy Quarterly 13.

CE07.02 2/19/07 2:39 PM Page 1

An examination of ethical aspects of migration and recruitment of health care professionals from developing countries

Solomon R Benatar

Bioethics Centre, Department of Medicine, University of Cape Town, Observatory 7925, Western Cape, South Africa
E-mail: sbenatar@uct.ac.za

Introduction

It is arguable that the poor state of health in the world is one of the most serious moral challenges facing humanity in the 21st century. The widening gulf between the small proportion of the world's population who benefit from medical advances and whose life expectancy has been steadily increasing, and the bulk of the world's population, who have minimal access to basic health care and for many of whom life expectancy is now falling (after initial gains in the 20th century), has become a blight on our humanity.[1]

Of the estimated 60 million health care workers in the world, a third are in the Americas and only about 3% are in Africa, which bears 25% of the global burden of disease. The World Health Organization has estimated that there are almost 25 health care workers per 1000 population in the Americas and nine per 1000 in Europe, compared with four per 1000 in the Eastern Mediterranean and South East Asia and about two per 1000 in sub-Saharan Africa.[2]

These data, however, do not reveal the even greater differences in levels of training and expertise of health workers across the world. For example, sub-Saharan Africa has fewer than 13 physicians per 100,000 population, compared with 164 per 100,000 in the UK and over 279 per 100,000 in the US.[3]

The plight of sub-Saharan Africa is further illustrated by the facts that this sub-continent houses about 11% of the world's population, 70% of the world's HIV-infected adults, and 75% of patients with both HIV and *M. tuberculosis* infection.[4] It is also the poorest continent, with its people living on less than 1% of the annual global economy. Global health emergencies declared by the WHO, the Global Fund and through the Millennium Development Goals reflect acknowledgment of the challenges posed. Sadly, little has been done, and it is unlikely that in the absence of paradigm shifts in thinking and action any major progress will be made in narrowing global health disparities.

A few facts about migration of health workers

Migration is facilitated by globalization, growth of the economy based on use of sophisticated new knowledge, almost instantaneous communication, rapid travel and belief in free markets – processes that have escalated dramatically in the past 50 years.[5] The extent of the ongoing and escalating brain drain has been studied and documented in considerable detail in a wide range of publications, with particular attention being paid to Africa, which is hardest hit by the adverse effects of globalization, inclusive of medical migration.[3,5–17] Some illustrative facts follow.

In the early 2000s, international medical graduates accounted for 23–28% of physicians in the US, UK, Canada and Australia (the major recipient countries in the world).[14] Low-income countries supply 40-75% of these international graduates.[18] Most but not all migration is from poor to wealthy countries, and Australia and Canada also benefit from migration from the UK. In the US, 10% of the physician workforce was made up by foreign (international) graduates in the 1960s.[5] By 2000 this had increased to 23%, and of these 64% came from low- or middle-income countries.[15] In Canada's rural Saskatchewan, more than 50% of foreign doctors are immigrants and about 20% of doctors working there obtained their first degree in South Africa.[5] In Australia, 2.4% of the medical workforce were born in sub-Saharan Africa and 6% were born in Asia.[19] Up to 40% of Nigerian medical graduates have left their country 10 years after graduation, with almost 40% working in the US, UK and Ireland,[13] and almost 75% of Ghanaian medical graduates emigrate within 10 years of graduation.[6] Of 1200 physicians trained in Zimbabwe in the 1990s, only 360 were still practising in that country in 2001. Quoting recent research from the World Health Organization, Zaracostas reports that of 82,417 doctors trained in 11 sub-Saharan

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Solly Benatar is Professor of Medicine and Founding Director of the University of Cape Town's Bioethics Centre, an annual Visiting Professor in Public Health Sciences and Medicine at the University of Toronto (since 2000) and Director of a US NIH (Fogarty International Center) funded program for capacity building in International Research Ethics in southern Africa. After graduating from UCT in 1965 and spending time in family practice, he trained first in Anaesthetics and then in Internal Medicine in Cape Town and London. He was Chairman of UCT's Department of Internal Medicine and Chief Physician at Groote Schuur Hospital from 1980–1999, and President of the International Association of Bioethics from 2001–2003. He is an elected Foreign Associate Member of the US National Academy of Sciences' Institute of Medicine; and Honorary Foreign Member of the American Academy of Arts and Sciences. His academic interests have included respiratory medicine, academic freedom, medical ethics and the humanities in medicine, human rights, health care systems, health economics and global health – on which topics he has published many journal articles and book chapters.

CE07.02 2/19/07 2:39 PM Page 2

Africa countries, 18,566 (23%) work in eight wealthy recipient countries.[16]

In 2000/2001, 2093 nurses from South Africa, Zimbabwe, Nigeria, Ghana, Zambia and Kenya registered in the UK, and the number nearly doubled the following year. The number of nurses registering in the UK from outside the EU grew from fewer than 2000 in 1994/1995 to more than 15,000 in 2001/2002.[7] The majority (almost 70%) came from low or low- middle income countries.[20] In 2002, 7% of Canada's nurses were foreign graduates – 27% coming from the Philippines (and almost 25% from the UK).[18] Over the past four years, about 40,000 nurses have registered to work in the UK, most from the Philippines, South Africa, Australia and India.[17] South Africa lost 6028 nurses to the UK in the four years preceding April 2000, and continues to lose over 300 each month to various countries.[17]

Driving forces

The factors driving migration of health workers include 'push' and 'pull' forces, and these have all intensified in a rapidly globalizing world.[5] They range from the (micro) personal interests and desires of individuals seeking to improve their own lives intellectually, financially or in terms of physical and political security, through (meso) national recruiting drives by wealthy countries to supplement their workforces, and deteriorating conditions in developing countries that encourage emigration, to (macro) global market forces that contribute to erosion of professionalism and the commoditization of medical care that drives professionals to seek the highest returns for their labour.

Personal interests and deteriorating conditions in developing countries

Many who train in developing countries understandably see future development of their careers as requiring a period of ongoing study, research or clinical work abroad. In the past, many of those who travelled to acquire such additional training or to do research returned home to continue their careers. Many countries have benefited through such capacity building of their graduates and from the ongoing networking that has linked them into productive collaborative research relationships.

In recent decades, with deterioration of health services in developing countries (*vide infra*), many who travel to enrich their skills and experience do not wish to return, as they are able to avail themselves of better career opportunities elsewhere. A recent study of migration of health professionals in six African countries provided detailed information on why health workers intended to migrate, or actually migrated, and on what they considered might retain them in their home countries.[15] Those wishing to migrate for further training ranged from 43% of South Africans to 85% of Cameroonians. Better remuneration was the reason given by over 70% of Ugandans and 25% of South Africans. Other reasons for migration included escape from violence, trauma and poor living conditions, concern about HIV/AIDS, poor future prospects in their countries, inadequate health care facilities and heavy workloads. A close correlation was found between reasons for wanting to emigrate and emigration. Factors cited in this study that would motivate health workers to remain in their home countries included better salaries (77.5%), a healthy working environment (67.8%), better fringe benefits (66.4%), a more reasonable workload (58.7%), better professional education and training (52.6%) and better leadership in the health sector (24.9%).[15]

Regrettably, some who acquire additional training abroad and wish to return are unable to do so because of lack of employment opportunities in their home countries. It should be acknowledged, though, that for some countries, for example the Philippines, exporting nurses has turned into an 'industry' with significant advantages in terms of repatriated salaries. It is regrettable that a country should have to resort to such means to sustain itself economically and at such cost to many citizens, who then live alienated lives away from their roots and families.

Recruiting drives

Shortage of skilled personnel in developed countries (often the result of poor planning in the past, and financial and structural cutbacks in medical services) and powerful recruiting drives are major pull factors. In the US it is estimated that in 2000 there was a shortage of 110,000 nurses, and that this will increase to 275,000 by 2010 and to 808,000 by 2020.[21] In 2000, the UK Department of Health set and met a target of actively recruiting, through a range of methods, 20,000 new nurses by 2004, many from developing countries, and it then extended this target to 35,000 by 2008.[22]

Effects of globalization

Globalization has resulted in many impressive advances in health and wellbeing, although it should be acknowledged that these have accrued predominantly to a minority of the world's population. The dark side of globalization includes widening disparities in wealth and health, deterioration in health services and worsening health in association with HIV/AIDS and other infectious diseases for large majorities of people in developing countries.[1,23]

The structural adjustment policies of the IMF and World Bank that required governments to reduce expenditure on health care, education and other social services and encouraged privatization, even within health care, played a significant role in eroding health services.[23,24] These adjustment programmes, cuts in foreign aid budgets (especially by the US), discrimination against African trade, cold-war activities of the great powers, and increasing external control over the economies of small countries through debt[23,24] have all played a significant part in fanning the AIDS pandemic, increasing malnutrition and placing inordinate stress on already weak health services. Regrettably, even the World Health Organization was slow in acknowledging or discussing forces adversely affecting health.[25] Ongoing and coordinated international trends continue to lock incrementally into place new global rules and regulations based on neo-liberal economic policies that foster economic growth for wealthy countries and wealthy people.[26]

CE07.02 2/19/07 2:39 PM Page 3

Adverse effects of globalization can also be attributed to poor governance, corruption and inefficient use of resources in many developing countries. It is not surprising that health professionals in developing countries (who are part of the global elite) should seek to escape the poverty and deprived working conditions in the public heath sector in their increasingly impoverished, unstable and often corrupt countries. Those who cannot leave their home countries may nevertheless be lost to public health services through an internal brain drain into higher paid positions in NGOs and other aid organizations pursuing the Millennium Development Goals in developing countries.[27]

Implications of these facts and trends

The range of implications of professional migration for developing countries is worthy of detailed examination and this is reportedly being undertaken in the EQUINET project.[28] Of major importance is aggravation of the already poor ability of health care systems in developing countries to meet the needs of patients suffering from HIV/AIDS and to make significant progress towards achieving the Millennium Development Goals.[27] Of equal importance is the cost to developing countries (about $500 million annually) of losing the health care workers they have trained.

Some ethical considerations

In examining possible causes for medical migration, several interlinked possibilities are identifiable. Beginning at the micro level, individuals could be blamed for failing in their duty to render services to their home country and its people who heavily subsidized their education and training. Moving up the chain of responsibility, national governments, many of which are corrupt and inefficient, could be blamed for not making careers and working conditions at home more attractive to health care staff and for failing to develop adequate health services, thus reducing push factors.

Moving beyond the country from whence individuals leave, wealthy countries could be faulted for not training enough health care professionals for their own needs, and for continuing to extract valuable (human) resources from poor countries, without consideration of recompense to the source countries. The active recruitment of workers by developed countries reveals a tendency to foster their own self-interest regardless of the financial and human costs to developing countries that face disease burdens of tragic proportions. Such attitudes, reminiscent of the colonial mentality that enabled so much to be extracted unconscionably from developing countries to support economic growth in wealthy nations, reflect lack of insight into previous exploitative processes and ongoing insensitivity to the health and wellbeing of less fortunate people. Failure to plan adequately for the staffing of their own health services could be viewed as a sign of underdevelopment in 'developed' nations. Failure to direct money to the education and training of professionals for essential social services while spending considerable sums of money on military and space exploration reveals the priorities of many nations.[29,30]

Finally, moving to a more complex macro level of responsibility, fault could be found with a value system that has intensely promoted economic policies that tend to systematically enrich the wealthy while further impoverishing the poor.[23,24,26] However, moral blame should not be focused solely at any one of these levels, as all of these shortcomings are intimately linked in a complex, interdependent and grossly unjust world.

When health care professionals are blamed for not remaining in the countries where they were trained, they may with justification answer that working conditions, remuneration for their work, or opportunities for advancement are inadequate and that they move for personal or professional benefits. In addition they would probably, and with widespread support, refer to their right to freedom of movement. Similarly, wealthy countries would defend active recruitment of professionals from developing countries through reference to the right of individuals to be freely mobile – because freedom rights have the highest priority within the liberal tradition.

Arguably, some consideration should also be given by both individuals and recruiting countries to the idea that while freedom of movement is a very important right to be protected, there are (as with all rights) limits to the extent to which rights can be claimed when doing so impinges on the rights of others, or results in harms to third parties.

The moral language of rights could also be supplemented by the moral language of primary responsibilities independent of rights. If those who consider it their right to be educated and to be mobile have no sense of responsibility to use their privileged education for the benefit of their people, then it would become increasingly difficult for countries to continue to sustain health services and meet the rights of future generations to be educated as health workers. A nation's obligation to educate its citizens should be accompanied by citizens feeling some obligation to use that education for the benefit of their country and its people for at least a part of their professional career. Using one's freedom to be mobile may only be legitimate when the duty not to be a free rider has been met, especially if health professionals are considered part of the 'social capital' necessary to promote and sustain development and to improve life in their home country.

When the argument for freedom of movement is used glibly to allow wealthy nations to feel comfortable with recruiting foreigners, the question can be asked what ethical justification there is for applying this selectively, allowing some to migrate while others are denied entry. There is also scepticism about freedom of movement claims in the absence of a logically coherent explanation of how respect for this principle is compatible with allowing migration only to under-served areas – for example in Canada, where migrating doctors are selectively allowed into only Saskatchewan or other under-served rural areas.

While those nations that value individualism above all else would vigorously protest against impingement on civil liberties, such as freedom of movement, others who protest against lack of attention to social, economic and cultural rights may be more willing to consider the imposition of collective responsibilities for the benefit of the common good. Willingness to do so may also reflect concern that excessive focus on a 'thin' conception of moral behaviour, in which civil and political rights dominate,

CE07.02 2/19/07 2:39 PM Page 4

perpetuates privilege and access to resources for a minority at the expense of the majority.[31]

While promotion of human rights has been of great value in advancing human wellbeing, it is arguably not a sufficient approach to moral behaviour.[31,32] Moreover, the power and value of the thrust to achieve human rights more widely has been undermined by failure of the country that most aggressively promotes the idea of human rights to accept the broad range of rights articulated as universal, indivisible and inalienable in the Universal Declaration of Human Rights.[33] Recent willingness to undermine civil and political rights, when upholding respect for these may threaten parochial interests,[34] reduces the power that could be associated with a more consistent approach to human rights.

Extending the discourse about interpersonal ethics towards organizational or institutional ethics would allow critical examination of how powerful institutions function. Such scrutiny could, as has recently happened in the UK, lead to interested parties questioning the moral legitimacy of actively recruiting health professionals from poor countries, and in doing so acknowledging that the interests of NHS and UK patients can no longer be placed above the interests of people in countries from which professionals are recruited. Such moral sensitivity and appropriate action may hopefully extend to Canada and other countries.

Identification of exploitation or free-riding at this level also raises questions about the ethical values of countries that, in addition to overtly exploiting poor countries by actively recruiting their professionals, persist in long-standing patterns of covert exploitation – for example through trade rules that favour their own economies but impoverish-poor countries.[35] Examining the ethics of such political decisions at the level of international relations that adversely affect other nations could be constructive. For example, attention could be directed to the ethical probity of countries neutralizing development aid to poor countries through attempts to recoup much of this through expenditure on work done by their own nationals in delivering aid, or (even worse) through the sale of arms to unaccountable despots, who are known to be siphoning off some of the aid for personal gain and using the weapons to sustain their corrupt power.[30,36,37] A recent detailed account of failure of the G8 countries to alleviate poverty in developing countries sadly reveals either their moral blindness or lack of real interest in the plight of a large proportion of the world's population.[38]

Potential solutions from an ethical perspective

Even though medical migration, like other adverse effects of globalization, may be an intractable problem, it is worth considering what ethical solutions could be offered in response to these dilemmas and whether they could be effective. Beginning again at the micro level, we could either exhort health professionals to do their duty to their countries before migrating, or appeal to medical students in wealthy countries to reverse adverse trends as they take over leadership from their older colleagues in the health services. Here we would be appealing to their virtue and duties as citizens and to their roles as privileged members of their communities not to abandon or adversely affect those less privileged than themselves. Many modern medical students in wealthy countries are sensitive to such issues, spend their elective time working in developing countries and feel some commitment to reversing adverse health trends. Exhortation may dissuade some medical students in developing countries from migrating, but such admirable attitudes among current medical students would take a long time to make a significant effect on the brain drain. It may also be unreasonable to expect talented young people to remain in their home countries if there are limited opportunities for professional advancement, if their own lives are threatened (for example by HIV/AIDS or crime), or if conditions of work become abominable and their ability to render safe and effective health services is totally frustrated.

Governments in developing countries could insist on contracts with those entering higher education institutions in order to retain skills in the country, at least for some minimum time after qualification. To be fair, this should only be applied to those who have not yet embarked on their tertiary education. This would delay implementation and would also probably only have limited effect because it would not be possible to make such contracts binding for more than two or three years. Migration would thus only be delayed and not prevented. An alternative could be that those who migrate soon after graduating should pay back the subsidized costs of their education. It is unlikely that this could be enforced unless supported by the countries to which migrants moved.

Rather than using coercion, it would be preferable for developing countries to improve conditions under which their health professionals work, and to strengthen health services generally. However, such desirable efforts to retain staff are difficult to achieve in the context of the inadequate public resources available in developing countries that are, at least to some extent, due to the ability of wealthy nations to extract material and human resources from developing countries to meet their own ever-expanding needs. Many poor countries are in addition blameworthy for their poor governance, corruption, nepotism and inefficiency in public services

Moving to an even higher level of moral responsibility, it could be argued that wealthy nations should either stop active recruitment or at the least pay developing countries for the costs of educating the professionals they recruit. Given their resources and that it could be considered unethical for institutions or countries to be free-riders, this seems an eminently appropriate suggestion. Recognizing that massive recruitment has undesirable effects on vulnerable people, Commonwealth countries have, to their credit, made a statement aimed at reducing recruitment of foreign health workers.[39] However, there is a significant gap between formulating such codes and putting them into practice. Pressure from individual health care workers, with support from their professional organizations, could have some positive impact. However, such new practices would be difficult to implement or enforce within a global economic system that permits 'businesses' to exert covert damage, with no accountability, in the pursuit of profit. Such damage, through what economists call 'externalities,' accounts for the ability of

CE07.02 2/19/07 2:39 PM Page 5

some – the powerful – to exploit others. Consider, for example, how industries can avoid paying for the damage they do to people and the environment in the course of profit-making businesses.[40] When (if ever) the world moves towards a more moral political economy, and businesses and countries begin to make payment for such externalities, progress could be made towards reducing disparities and meeting the basic human rights and needs of many more people.

Although it is evident in the field of health care that some developing countries have benefited greatly from their graduates spending time abroad, it is also clear that in recent decades developing countries have lost so much through various forms of exploitation, including recruitment of health workers, that restitution should be made for such past harms. How to calculate the magnitude of such restitution would be contentious, but this does not detract from the validity of the claim.

Capacity building is one potential restitutive mechanism. This could take several forms. First, wealthy countries could enhance their own capacity to staff their health services by increasing funding for their own educational institutions. There is no lack of resources for health care in wealthy countries, only a need to rearrange priorities. This enhanced capacity could be shared with developing countries by seconding health workers to poor countries specifically to assist with training and education that could be of benefit locally. Medical schools could be built by wealthy nations in developing countries to educate many health professionals at lesser cost than in their own countries – and in this way contribute to developing the sustainability of threatened health services.

Recognition of the need for capacity building has led the US National Institutes of Health's Fogarty International Center to fund an ambitious capacity building programme in research ethics in developing countries.[41] The idea that international collaborative medical research should have a capacity building component is gaining ground through this programme and it has been argued that capacity building should be extended to improvements in clinical practice through research.[42]

Finally, and most provocatively, it is necessary to move to ethical considerations at the highest level of moral responsibility and examine upstream ideologies and forces that perpetuate and aggravate disparities in wealth and health. This is a crucial step towards transforming our mindset about improving health care and health in an interdependent world that is threatened by widening disparities in wealth and health and by the recrudescence of infectious diseases.[43,44] If the global economy, driven by wealthy countries and their interaction with despotic leaders, could be modified to facilitate rather than obstruct real development, as is currently the case, then push factors could be reduced.[45] Achieving such ambitious goals will require both a comprehensive global political theory, as proposed by several cosmopolitan theorists,[46,47] and concerted thrusts to achieve a paradigm shift towards a moral global political economy that enhances fairer distribution of resources.[48] While efforts at each of these levels will be extremely difficult to implement, it would seem preferable to have a long-term multi-pronged approach than to rely solely on exhortation or coercion at any single level for short-term gain.

Conclusions

Reversing medical migration and effecting restitution for past damage will be tough and complex agendas to pursue, and considerable effort will be needed to render effective several strategies that have been suggested.[5] But some macro-system agendas have been successfully addressed in the past – for example the abolition of slavery, resistance to Nazi policies and the battle against apartheid. The quests to alleviate poverty and to improve health at a global level are complex macro agendas, but their complexity does not mean that we should shy away from them as high-level long-term goals, while doing whatever we can at lower levels in the short-term to alleviate the problem.

Because wealthy nations, and by association their citizens, are deeply implicated in the generation and maintenance of forces that perpetuate social injustice, poverty and poor health, they need to face their responsibilities to improve the lives of those most adversely affected by their actions.[24,36] Reducing recruitment of health care professionals and taking action to rectify previous exploitative practices should become an essential aspect of promoting development. Reliance solely on relatively small amounts of foreign development aid is inadequate, and philanthropy cannot be seen as a long-term solution to poverty and widening disparities in health. Facing upstream causes of poverty and ill health, exposing unethical practices and formulating new approaches to how the global economy should operate are all essential.[24,26,44,49]

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Acknowledgments

The manuscripts included in this thesis are the products of my own work. Collaborative work with colleagues is acknowledged by combined authorship. I am grateful to have benefited from interactions over many with scholars from a wide range of disciplines and in many institutions that include the US National Academies of Science's Institute of Medicine, the American Academy of Arts and Sciences, The International Association of Bioethics, The Hastings Center and many universities, most notably the University of Toronto, Harvard University, Georgetown University, Yale University and University College London/Royal Free Medical School.

I should also like to acknowledge the support and intellectual stimulation provided by many colleagues at the University of Cape Town over many decades.

My wife and family have enduringly supported me during many years of postgraduate studies and subsequent professional and academic work and responsibilities, for which I am deeply grateful.

UNIVERSITY OF OXFORD

PROFESSOR SIR DAVID WEATHERALL FRS
REGIUS PROFESSOR OF MEDICINE EMERITUS
Tel: Oxford (01865) 222360
Fax: Oxford (01865) 222424
Email. liz.rose@imm.ox.ac.uk

WEATHERALL INSTITUTE OF MOLECULAR MEDICINE
JOHN RADCLIFFE HOSPITAL
HEADINGTON
OXFORD OX3 9DS

Mrs. A. Winckler,
Manager: Postgraduate Administration,
Faculty of Health Sciences,
Room N2.10, Wernher & Beit Bldg North,
University of Cape Town,
Anzio Road,
OBSERVATORY 7925.

8th May, 2007

Dear Mrs. Winckler,

Report on the examination of the work of Solomon R. Benatar submitted for the award of DSc (Med) in Health, Ethics and Society Submitted to the Faculty of Health Sciences, University of Cape Town

Thank you for forwarding the material submitted by Professor Benatar as evidence for the award of DSc (Med). This is to confirm that the material that I have seen included a full *curriculum vitae*, an account of Professor Benetar's work, and 91 bound reprints of a representative spectrum of his writing.

In some ways this is an unusual collection of work submitted for a Doctorate of Science in that it covers such an enormous field of different aspects of both clinical science and public health and bioethics. Clearly it has been presented late in Professor Benatar's career and reflects a remarkable output of work over many years.

The first set of papers covers the candidate's work in his particular clinical field of interest, that is respiratory medicine. This section contains a number of interesting original observations and a large number of critical reviews, all of which have been published in international journals of good standing.

The remainder of the work that has been presented in evidence seems to follow Professor Benatar's developing interests during his period as Professor of Medicine in Cape Town. It starts with an extremely interesting series of articles about the provision of health care and its difficulties and their reorganisation in South Africa over many years. There follows a series of outspoken and what must at the time have been extremely valuable articles on the problems of academic boycott. These sections reflect the excellent work carried out by the applicant during the difficult transition period in medical practice in South Africa.

There then follows a series of extensive papers dealing with medical ethics, first as they relate to particular problems in South Africa and in medical education as it relates to ethics, and, later, moving from the local scene to the global problems of bioethics and the disparity of medical care throughout the developing world. Both the subjects and authorship of these later papers are a clear reflection of the candidate's increasing influence and recognition in the fields of global public health and bioethics. All the papers that have been proffered are well written and have

appeared in internationally recognised journals and many of them, although they cover fields which have been widely aired in the international literature over recent years, offer interesting and original conclusions towards the better provision of healthcare in the developing world and the increasingly complex ethical issues that are involved.

In assessing this remarkable output of papers over many years there are two major issues that your committee ought to consider. First, although they cover a large and diffuse field of international public health, when combined with the original work in the applicant's field, and the enormous influence that many of them must have had, particularly towards improving medicine in South Africa, there seems little doubt that, taken together, they reflect a completely adequate case for the DSc (Med) degree. But it is important to realise that they go a bit further than this. They reflect the work of somebody who has made the enormous contributions to the improvement of healthcare and medical education in South Africa over many years and who has been able to write on the ethical and social issues of both research and the provision of care in the developing countries with first hand knowledge of the particular problems of Africa. Overall, this has been a remarkable achievement.

In short, I have no reservations whatever about the candidate's case for receiving the degree of DSc (Med) from your University and it has been a privilege and pleasure to examine the material that was presented in evidence.

Yours sincerely,

D.J. Weatherall

From the Chancellor
Professor Sir Kenneth Calman, KCB, MD, FRCS, DL, FRSE

UNIVERSITY
of
GLASGOW

8th August 2007

Dr Adri Winckler
Faculty of Health Sciences
University of Cape Town
Anzio Road
Observatory
7925 Cape Town
South Africa

Dear Dr Winkler,

It is a pleasure to write in support of the award of the degree of D.Sc. to Professor Solomon Benatar. Professor Benatar has an international reputation and his carefully presented thesis provides ample testimony to his expertise.

My own sphere of special interests is not in respiratory and general medicine, but I have reviewed the publications submitted. This is a long standing interest of Professor Benatar and the publications cover a wide field of activity and all are in first class journals.

The publications on health services present a view of the complexity of issues and provide special insight into the changing nature of health services in South Africa. These are very important publications and will be of long term and historical interest, well beyond South Africa. Several of the papers cover HIV infection in South Africa and these are of special importance.

Complementary to this are his writings on academic freedom and the academic boycott covering the short period 1990-91. These are of particular interest as they raise important issues relevant to all academics in any country. They are powerful articles and 15 years on are well worth re-reading.

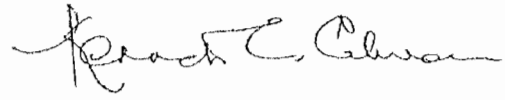
Professor Benatar's writings on medical ethics began in the late 1980's and cover a wide range of interests. He has published internationally in a wide range of journals of repute. His series of book chapters in this field are especially impressive, and demonstrate his breadth of interests and his contributions have been very significant. The contributions on war, prisoner health and the ethics of detention deserve wider reading and are relevant in many countries.

THE UNIVERSITY OF GLASGOW
Glasgow G12 8QQ
Direct Lines: 0141-330 5995/4250 *Fax:* 0141-330 4947
Email: Chancellor@gla.ac.uk

Finally his publications and book chapters on global health show his international standing even more clearly. The range is considerable and his experiences in Africa lend power to his ideas and thoughts. If I might single out one article for particular comment it would be "Global health ethics: the rationale for mutual caring." co-authored with Daar and Singer. This is an authoritative article which presents the ethical issues which face global health in a clear and effective way.

All together this is an impressive series of publications demonstrating the internationally significant nature of Professor Benatar's contribution. I strongly support his award of a D.Sc.

Yours Sincerely,



Kenneth C Calman

JOHNS HOPKINS
UNIVERSITY

Phoebe R. Berman Bioethics Institute
Bloomberg School of Public Health

Department of Health Policy and Management

624 N. Broadway, Hampton House 348
Baltimore, MD 21205-1996
410-955-0310 / Fax 410-614-9567
nkass@jhsph.edu

Nancy E. Kass, ScD
Phoebe R. Berman Professor of Bioethics and Public Health

Christopher L. Vaughan, PhD
Deputy Dean: Research and Postgraduate Affairs
Hyman Goldberg Professor of Biomedical Engineering
Director: MRC/UCT Medical Imaging Research Unit
Office of Deputy Dean
University of Cape Town
Observatory Cape 7925
South Africa

June 25, 2007

Dear Dr. Vaughan and members of the Committee:

It is my honor to serve as external examiner for Professor Solomon R. Benatar for the possible award of a DSc(Med) in Health, Ethics and Society degree. I can hardly think of anyone more deserving of such a degree as Prof. Benatar. He has made prolific scholarly contributions throughout his career. I am most familiar with the impact of his work in the field of bioethics where he surely has changed thinking on the field, particularly in areas of global ethics and social justice.

First, I shall comment simply on the volume and breadth exhibited in Prof. Benatar's work. Prof. Benatar has submitted for review 92 of his 231 peer review articles and book chapters. This is an extraordinary volume of contributions, particularly given that so many of them are single author or first author pieces. The volume alone speaks to his productivity, which is unusual; also important is that his productivity has not lessened over the years but, rather, has been consistent and, if anything, continuing only to grow. The breadth demonstrates the evolution of Prof. Benatar's interests, from clinical medicine to broader social issues affecting health. What is important about this breadth, however (and of relevance to my own appointments and promotions committee at Johns Hopkins) is that the breadth, if one can say this, is sequentially focused, rather than scattered. That is, in different eras of Prof. Benatar's career, certain issues were animating his scholarship. These areas, though, as above, have a clear evolutionary path. It is not hard to understand how one could move from examining questions of respiratory health, to ones of how health care services are organized and structured, to ones of

medical ethics in the clinic, to questions of global health, and then, finally, to much broader questions of social justice and global responsibilities in health and in research. The breadth, then, is to his credit. Each area has a bolus of scholarship worthy of significant reputation on its own, and yet, together, they mark the evolution of an extraordinarily substantial set of contributions over Prof. Benatar's important career.

While Prof. Benatar has made contributions in many areas, I will now comment briefly on his scholarship in bioethics and global health. Perhaps emerging from his commitments to furthering fairness and, in his own words, "human flourishing" in the wake of apartheid, Prof. Benatar has increasingly focused on questions of ethics, social justice, and health throughout his career. Prof. Benatar has written both using narrative data and, most frequently, using simply the conceptual analysis of his own intellect, to examine questions such as what rich countries owe poor countries through research collaborations, what doctors' duties are in contexts of enormous human rights abuses, as well as what future challenges in global health and social policy may be. Throughout all of this work, Prof. Benatar's analysis is original. He has pushed global thinking on these issues and his work as then been discussed and used for future commentary by others. Prof. Benatar is not shy about voicing what may be challenging or controversial views and, to his credit, this quality has pushed fields further along in their own evolution.

Clearly, Prof. Benatar's scholarly contributions have been recognized by others. He has been elected fellow of many societies and professional organizations including, in the field of bioethics, the Hastings Center, arguably the premier independent ethics center in the United States, and one which elects no more than 1-2 international fellows per year.

Prof. Benatar has an extraordinary portfolio of written scholarship as well as having an impressive track record of collaborations, international invitations, and project completions. His work is substantial indeed, and moreover is original and with important impact. I recommend him without hesitation for the Doctor of Science in Medicine degree.

Sincerely Yours,

Nancy Kass, ScD
Phoebe R. Berman Professor
of Bioethics and Public Health

CURRICULUM VITAE

Solomon R Benatar

Uni

Personal Details
Born - Selukwe Rhodesia, 6 February 1942.
Married - Evelyn Mary (nee Goldberg).
Sons - David, Michael, Brian.

Addresses
Work
Department of Medicine, University of Cape Town, Observatory, 7925, Cape, South Africa
Phone 27-21-406-6115 Fax 27-21- 448-6815 e mail sbenatar@uctgsh1.uct.ac.za
Home
22B Pavilion Place, Beach Road, Sea Point 8005, Cape, South Africa
Phone 27-(0)21-434 8861

Current Positions

Professor of Medicine University of Cape Town (1980-)
Director UCT Bioethics Centre (1992-)
Chief Physician Groote Schuur Hospital (1980-)
Visiting Professor in Medical Ethics University College/Royal Free Medical School London (1997-)
South African Representative - The Novartis Foundation Scientific Advisory Panel (1998-)
Visiting Professor in Public Health Sciences and Medicine, University of Toronto (2000 -)
Director IRENSA – A US NIH Fogarty International Center Capacity Building program (2003-2010)

Previous Positions

Professor and Chairman, Department of Medicine, University of Cape Town and Groote Schuur Hospital (1980-1999)
Head Department of Medicine Groote Schuur Hospital (1980-1999).
President International Association of Bioethics (2001-2003)

Education and Training

Prince Edward School, Salisbury, Rhodesia.
University of Cape Town.
General Practice, Port Elizabeth.
Anaesthetic Registrar, Groote Schuur Hospital.
Medical Registrar, Groote Schuur Hospital.
Research Fellow, Northwick Park Hospital (British MRC), London.
Research Fellow & Honorary Registrar Brompton Hospital/Cardiothoracic Institute, London.
Consultant Physician, Groote Schuur Hospital.

Degrees and Diplomas

MBChB UCT 1965
FFA (SA) 1971
MRCP (UK) 1972
FRCP (London) 1981
FACP (Hon) 1993
FRS SAfr 1997
FCP (SA) Hon 2001

Awards/Honours

Malvern Trust Scholarship (Rhodesia) 1960- 965.
African Oxygen Gold Medal (College of Medicine of S A) 1971.
Smith and Nephew Award (S A Orthopaedic Association) 1971.
ICI Clinical Research Fellowship 1971.
Hamilton Maynard Memorial Medal (S A Medical Journal) 1977.
Ad Hominem Associate Professor UCT 1980.
International Visiting Scholar (Hastings Center, New York) 1987.
Elected Foreign Associate Member, U.S. National Academy of Sciences' Institute of Medicine, 1989.
Hans Snyckers Memorial Award 1990 (For creative contributions to Medicine in South Africa)
Elected Honorary Fellow American College of Physicians 1993.
Elected Founder Member South African Academy of Science 1994
Ernest Oppenheimer Travelling Fellowship 1994/95
Fellow Program in Ethics and the Professions, Harvard University 1994/95
Visiting Professor Harvard Medical School 1994/95
Elected Life Fellow University of Cape Town 1994
Elected Honorary Foreign Member American Academy of Arts and Sciences 1996.
Elected Fellow Royal Society of South Africa 1997
Elected Honorary Fellow South African Thoracic Society 2001
Elected Honorary Fellow College of Physicians of South Africa 2001
Elected Honorary Member Alpha Omega Alpha Honor Medical Society, California 2002.
Elected Fellow of the Hastings Center, New York 2004
Elected Fellow Imperial College London 2005
Paul B Beeson Visiting Professor Yale University School of Medicine 2005
Golden Jubilee Award Colleges of Medicine of South Africa 2005
Fogarty International Center Principal Investigator Grant for a Capacity Building Program in Research Ethics in Southern Africa: 2001- 2002 US $100,000; 2003-2006 US $750,000; 2007-2010 US $950,000
Medal for 50 years of Courageous Living with Diabetes. Joslin Diabetes Center, Boston

Professional Activities

Current

Member Advisory Board Global Physicians and Lawyers for Human Rights (2000-)
Member Board of Directors Lung Institute University off Cape Town (1999-)
Trustee Groote Schuur Hospital Trust (2000-)
Ethics Advisor to the HIV Prevention Trials Network (HPTN) - Family Health International USA (2001-)
Ethics Advisor to Medecins Sans Frontieres (2001-)
Member Drugs for Neglected Diseases Group. Medecins Sans Frontieres (2003-)
Ethics Advisor to the Nelson Mandela Foundation (2003 -)
Member International Medical Advisory Panel, International Planned Parenthood Federation (2004-)
Member Scientific Advisory Committee of Centre for AIDS Programme of Research in SA (2001-)
Member Strategic Advisory Board Joint Study Committee on Clinical Research Ethics (JSCCRE) (2006-)
Honorary/Guest member
National Academy of Sciences' Committee on Human Rights (1989-)
Institute of Medicine's Committee on Health and Human Rights (1989-)
Member Institute of Medicine Committee on Methodological Challenges in HIV Prevention Trials 2007

Various University Committees - including Academic Freedom Committee
Ethics Committees - UCT Faculty of Medicine Research Ethics Committee (1980-)
- UCT Research Ethics Committee (1990-) Chairman (1997-)
Member Canadian Institutes of Health Research Standing Committee on Ethics (2006-)
Member South African National Biotechnology Advisory Committee (2006-)
Advisor Benevolent Organisation for Development, Health and Insight (http://www.bodhi.net.au) (2007-)

Editorial activities:

Editorial Advisory Boards

Theoretical Medicine and Bioethics
Journal of Bioethical Inquiry

Editorial Board Member

Public Library of Science Medicine
Clinical Ethics
HIV Medicine
BioMed Central: Philosophy, Ethics and Humanities in Medicine
Pubic Health Ethics

Journal Reviewer Activity – Anaesthesiology; American Journal of Respiratory & Critical Care Medicine; JAMA; Social Science & Medicine; Culture Medicine & Psychiatry; Lancet; British Medical Journal; New England Journal of Medicine; Theoretical Medicine & Bioethics; Medical Education; Journal of Law Medicine & Ethics; Bioethics; SA Journal of Philosophy; International Affairs; SA Journal of Law; Hastings Center Report; Milbank Quarterly; American Journal of Public Health, Health Policy. African Journal of AIDS Research, Critical Care Medicine, Bulletin of the WHO, BioMed Central, Theoria, Anthropology Today. Comparative Political Studies.

Manuscript Reviewer for: Kluwer Press, Oxford U Press, Cambridge U Press, Princeton U. Press,

Previous Professional Activities

College of Medicine of South Africa.
Honorary Registrar (1978-1980)
Elected Council Member (1980-1998)
Chairman, Finance and General Purposes Committee (1986-1992)
Chairman, Faculty of Medicine (1980-1989)
Vice-President, (1989-1992); Senior Vice-President (1992-1995)
Trustee: SAMST. Provided Scholarships for Black medical/paramedical students. (1980-1992)
Previous Editorial Boards
South African Medical Journal, S A Journal of Continuing Medical Education.
Medicine International. Respiratory Medicine. Modern Medicine.
Respiratory Medicine
International Library of Law, Ethics and Medicine
Previous memberships
Elected member Board of Directors International Association of Bioethics (1999-)
UCT Council - Senate elected member (1990-1993), (1993-1996)
Research Ethics Committees - S.A. Medical Research Council (1991-1999)
Member Board of Directors International Association of Bioethics (2001-)
President International Association of Bioethics 2001-2003
Chairman South African Interim National Health Research Ethics Committee (2001-)
Member Council Academy of Science of South Africa (2004-2006)
Member, Institute of Medicine Global Health Committee: ART in Resource-constrained settings. 2003/4
Review Member Institute of Medicine Committee PEPFAR Implementation: Progress & Promise. 2005

Visiting Lecturer/Professor/Guest Lectures/Seminars

Mayo Clinic 1973, 1995.
University of San Francisco Medical School 1973, 1983.
Meakins Christie Laboratories, McGill University, Montreal 1973.
Brompton Hospital, London, 1978, 1985, 1994.
Royal Northern Hospital London 1978.
University of Natal 1979, 1985, 1986, 1988.
University of the Orange Free State 1980, 1983, 2004, 2005.
Respiratory Medicine Unit, University of Edinburgh 1981.
Kings College Hospital, London 1981.
Malawi Medical Association 1982.
Zimbabwe Medical Association 1982.
University of Witwatersrand Research Day 1982.
Mount Scopus Hospital Tel-Hashomer Hospital,Israel 1983.
Respiratory Division, University of Toronto, 1984.
Universities of Tel-Aviv, Haifa, Jerusalem, 1984.
University College Hospital, London, 1985, 1994, 1996.
London Chest Hospital 1985.
University of Pretoria, 1985, 2005
Medical University of Southern Africa, 1985.
Geriatric Association of Southern Africa, 1985.
Radiology Society of South Africa, Johannesburg, 1987.
Yale University School of Medicine, 1987, 1995, 2005
Beth Israel Hospital, New York, 1987, 1989, 1993, 1995.
National Institutes of Health, Bethesda, USA, 1987, 1999
Monash University, Melbourne, Australia, 1988.
University of Melbourne, Melbourne, Australia, 1988.
US National Academy of Sciences' Institute of Medicine, 1989.
Australia and New Zealand Intensive Care Society 1990.
Greenlane Hospital, Auckland, New Zealand, 1990.
New Chinese University of Hong Kong, 1990.
Commonwealth Medical Association - Medical Ethics and Human Rights Symposium 1991, 1998.
Department of Medicine, Tufts University Medical School, Boston, 1991, 1994/5, 1999.
Department of Anesthesiology, Virginia Medical College, Richmond, 1991.
Royal Society of Canada, Ottowa 1991 and Toronto 1999.
Department of Medicine, University of Nairobi, 1992.
Department of Medicine, Case Western Reserve University, Cleveland, 1992.
University of Witten/Herdecke, Germany, 1993.
University of Malawi, 1993.
University of Queensland, Australia, 1993.
University of West Indies, Jamaica, 1994.
Department of Medical Anthropology Brunel University 1994.
Harvard Medical School 1994/5, 2003.
McGill University Medical School 1995, 2003.
Center for Medicine, Ethics and Law. McGill University 1995, 2003.
Boston University Medical School 1995, 2005
Georgetown University Medical Center 1995.
Centre for Bioethics and Faculty of Medicine, University of Toronto 1995.
University of British Columbia Medical School 1995.
Center for Bioethics Stanford University 1995.
UNAIDS Training workshop in Research Ethics Geneva & Rio e Janeiro 1999
Seminar on Health Research Ethics in Southern Africa, Tanzania 1999
Imperial College London - Annual Course on Medical Ethics 1997, 1998, 1999.
Royal Colleges of Physician and Surgeons of Edinburgh/Colleges of Medicine of SA. 1999.

London School of Hygiene and Tropical Medicine 1999.
CIOMS Geneva 1999, 2002.
Lucas i Grifols Foundation and Institute Bioetica - Barcelona 1999.
Kennedy Institute of Ethics - Georgetown University Washington DC 1999.
McMaster University - Hamilton, Ontario, Canada 1999, 2002.
Foundation for Medical Excellence Portland, Oregon, 1999.
Fogarty International Center, National Institutes of Health, Washington DC, 1999.
Faculties of Medicine and Law University of Edmonton and University of Calgary 1999.
International course on 'Ethics in international health research' Durban S A, 2000.
Tuskegee University National Center for Bioethics in Research and Health Care. Alabama, 2001.
Morehouse Medical School, Atlanta USA, 2001
Centers for Disease Control, Atlanta, USA, 2001
Department of Geriatric Medicine, University of Newcastle UK, 2001
Royal Society of Hygiene and Tropical Medicine - London, 2001
Basque University, Spain, 2002
New York University School of Medicine – Visiting Master Scholar Program 2001
Mount Sinai School of Medicine 2001
Princeton University 2001
University of Alberta 2002
University of Bahia, Salvador, Brazil, 2002
Duke University, North Carolina, USA 2003
University of Ottawa, Ottawa, Canada 2003
Creighton University, Omaha Nebraska USA 2004
Edinburgh University UK 2004
University of Toronto – annually since 2000

Selected Invited Conference Presentations

Australia and New Zealand Intensive Care Society 1990.
Royal Society of Canada, Ottowa 1991 and Toronto 1999.
IPPNW World Conference Washington 1996
3rd International Association of Bioethics World Conference San Francisco 1996
Colloquium on Transdisciplinarity, Royaumont Abbey Paris 1998
4th International Association of Bioethics World Conference Tokyo 1998
5th International Association of Bioethics World Conference London 2000
Conference on Health Research Ethics in Southern Africa, Tanzania 1999
Joint Conference Royal Colleges of Physician & Surgeons of Edinburgh/Colleges of Medicine of SA. 1999.
International Burns Conference Cape Town 1999.
XV International Meeting of International Association of Epidemiologists, Florence, Italy, 1999.
Fogarty International Center, National Institutes of Health, Washington DC, 1999.
Scientific Meeting of the Swiss Society of Public Health, Bern, Switzerland, 2000.
5th World Conference on AIDS, Durban, South Africa, 2000.
American Lung Association/IUATLD Annual Conference, Chicago 2001
Symposium on the Ethics of Ageing Research. Newcastle, UK, 2001.
Royal Society of Hygiene and Tropical Medicine - London, 2001
5th International Conference on Medical Regulation, Toronto 2002
G6B Summit Conference Calgary 2002
European Forum for Philosophy, York, UK, 2002
6th World Congress on Bioethics, Brasilia, Brazil 2002
Drugs for Neglected Diseases Initiative, Medecins Sans Frontieres, Rio de Janeiro, 2002
American Society of Tropical Medicine & Hygiene, Denver, 2002
South African AIDS Conference Durban 2002
World Medical Association Conference Helsinki September 2003
35th World Congress on Lung Health, Pasteur Institute, Paris 2003
Microbicides 2004 Conference, London 2004

Forum Dialogues Barcelona, Spain 2004
Royal College of Physicians of Edinburgh 2004
Conference in honour of Edmund Pellegrino, Centre for Clinical Ethics, Georgetown University 2005
Global Health: A Bridge to the Future Boston University 2005
International Microbicides Conference Cape Town 2006
International Blood Transfusion Congress Cape Town 2006
Actuarial Society Congress Cape Town 2006
8th World Bioethics Congress Beijing 2006
International Union Against Tuberculosis and Lung Diseases World TB Congress Paris 2006

Named Lectures

Godfrey Gale Lecture. 1980 (University of Toronto)
William Waddell Lecture. 1981 (Eastern Cape Branch MASA)
Basil Dormer Memorial Lecture. 1988 (S.A. National Tuberculosis Association)
First Arthur Landau Memorial Lecture. 1989 (College of Medicine of South Africa)
A J Orenstein Lecture 1990. (S A Chamber of Mines and Adler Museum of History of Medicine)
Leo Shamroth Memorial Lecture. 1992 (Baragwanath Hospital, University of Witwatersrand)
William Waddell Lecture. 1992 (Eastern Cape Branch MASA)
Weinbren Memorial Lecture. 1993. (50th Anniversary, SA Association Anaesthetists)
15th Brompton Lecture London. 1994 (150th Anniversary of Royal Brompton Hospital)
"Change and coping with change"
Astra Lecture. 1995 (Center for Medicine, Ethics and Law. McGill University)
Rosenstadt Lecture. 1995 (University of Toronto)
Third Adam Linton Lecture. 1995 (Ontario Medical Association, Toronto)
Yules Lecture. 1995 (Tufts University Medical School, Boston)
Lilly Lecture. 1997. (Royal College of Physicians London)
"Millennial challenges for medicine and modernity"
Oxford Amnesty Lecture 1998 (8th Annual Oxford Amnesty Lecture Series, Oxford)
"Human Rights and genetic engineering: a perspective from African."
Isaac Frank Memorial Lecture 1999 (Kennedy Institute of Ethics Georgetown University)
"Justice and health care: a global perspective"
Michael T Newhouse Lecture. 1999. (McMaster University, Canada)
"Prospects for global health: lessons from tuberculosis"
Ralph Crawshaw Lecture 1999 (Foundation for Medical Excellence Portland Oregon)
"Globalisation, health and the medical profession"
Sherman Lecture 1999 (Tufts University Medical School Boston)
"Globalisation, health and the medical profession"
Bernard Pimstone Memorial Lecture 1999 (University of Cape Town)
"Changes, Challenges and Choices in Medicine revisited"
O'Byrne Lecture 1999, (Faculties of Law University of Edmonton and University of Calgary)
"Globalisation, health and bioethics"
McLaughlin-Gallie Lectures 2000, (Royal College of Physicians and Surgeons of Canada)
"What does it mean to be a professional?"
"Globalization and Health"
"Research Ethics in Developing Countries"
Pittsfield Lecture 2001, (International Union against Tuberculosis and Lung Disease, Chicago)
"Tuberculosis: an example of the paradox between scientific progress and global health"
B T Le Roux Lecture 2001 (South African Thoracic Society, Bloemfontein)
"Globalisation and Respiratory Health: some macro-ethical considerations"
Cuthbert Crichton Lecture 2001 (University of Cape Town)
"Health and Ethics in a Globalising World"
First Gaisford Harrison Memorial Lecture 2004 (University of Cape Town)
"Ethics of Research: Relevance to Anaesthesia. Looking back to see into the future"

Francois P Retief Lecture 2005 (University of the Orange Free State)
"Trends in Bioethics"
Paul B Beeson Lecture 2005 (Yale University School of Medicine)
"Global disparities in health: what do bioethics and human rights have to offer?"
Harold Wolpe Lecture 2006 (Wolpe Trust Cape Town)
"Ethics in the Professions and Society'"
Asher Dubb Memorial Lecture Baragwanath Hospital 2006
"Professions, Ethics and Society"
Henry Dubovsky Memorial Lecture, University of Free State 2006
"The Tuberculosis Triangle"
Dennis Davey Lecture, University of Cape Town 2006
"Money and Medicine: Threats to Professionalism and Health"

Invited Keynote/Plenary Address 1996

British Association of Cancer United Patients (BACUP) UK
"Informed consent can be needlessly cruel"

Invited Keynote/Plenary Addresses 1999

Royal Society of Canada – Symposium on Human Rights Education, Toronto.
"Human rights education: from rhetoric to understanding"
International Epidemiological Association – 4th International Conference, Florence, Italy.
"Social suffering: challenges for epidemiologists"
London School of Hygiene & Tropical Medicine: 100th Anniversary meeting:
"Poverty, Inequity and Health: ethical imperatives"
International Burns conference, Cape Town.
"Life-transforming and disfiguring injuries: coping and caring"
Joint Conference: RCP London, RCS Edinburgh, College of Medicine of South Africa, Cape Town.
"Globalisation and Health"
Fogarty International Center Conference – Global Research Ethics, NIH, Bethesda, USA.
"Justice and medical research: a global perspective"

Invited Keynote/Plenary Addresses 2001

Third National Undergraduate Bioethics Conference, Notre Dame University, 2001
(1) International Bioethics," (2) "Ethical Imperialism"
Medecins Sans Frontiers, Holland
"Justice and medical ethics"
British HIV Association Annual Conference, Hove UK 2001
"Global considerations in HIV Vaccine Trials"
New York University School of Medicine
"Health Ethics in a Globalising World"

Invited Keynote/Plenary Addresses 2002

International Conference on Healthcare Ethics - Abu Dhabi
"Ethical considerations in resource allocation at the population level"
HIV Prevention Trials Network Annual Meeting Washington DC
"Ethical considerations in HIV prevention trials"
Europe-developing country partnership programme for research into diseases of poverty .Barcelona.
"Research ethics in developing countries and the cultural context"
Annual Global Health Research Conference – U Toronto. The global context of medical research.'
"Research Ethics in developing countries"

Public Heath Ethics International Symposium– U Toronto.
"Summary Address."
Law and Sustainable Justice Conference – Montreal
"International Sustainable Development: Implications for Health & Health Care"
Harvard/University of Toronto Health Management Course. "Understanding the New World of Health Care." Rotman Business School. Toronto *"Health care in a global context."*
International Conference on Medical Regulation – Toronto
"Professionalism in a globalising world"
G 8 Peoples' Counter summit Conference – Calgary
"Expanding the Discourse on Ethics: towards reducing disparities in global health"
University of Alberta, Edmonton
"Global health: from micro to macro ethical considerations"
European Forum for Philosophy – York, UK
"Medicine and Justice"
University of Bahia, Salvador, Brazil
"Globalisation and health"
World Congress on Bioethics - Brasilia
Presidential Address: "Bioethics: Power and Injustice"
American Society of Tropical Medicine and Hygiene - Denver
"Globalisation and health: expanding the discourse on ethics."
Medecins Sans Frontieres, "Drugs for neglected diseases initiative (DNDI) Rio de Janeiro,
"Changing the global rules: a new moral paradigm."

Invited Keynote/Plenary Addresses 2003

Board of Directors, Associated Medical Services, Toronto
"Future Directions in Bioethics"
Duke University Center for International Studies
"Globalisation & health: making progress through expanded discourses on ethics & human rights"

Invited Keynote/Plenary Addresses 2004

Microbicides 2004 Conference, London UK
'Standard of Care: meeting the challenge.'
Creighton University 125th Anniversary Conference
"Global Disparities in Health and Health Care."
Centre for Addiction & Mental Health, Toronto
"Thinking Globally Acting Locally: Ethical Issues in International & Cross-Cultural Research."
2nd International Conference on Global Health Research, Toronto
"Responsibility to Global Health: Canadian and International."
Forum Barcelona 2004. Health & Development: Challenges for the 21st Century
"Ethical Challenges in the Development of New Interventions"
Vienna School of Clinical Research
"Challenges and boundaries of bioethics in clinical research - standards vs pragmatism"
Royal College of Physicians of Edinburgh
"HIV AIDS: The North-South Divide - demographics and ethics."
Royal Society of South Africa
"Global Health Ethics"

Invited Keynote/Plenary Addresses 2005

International Conference on Trauma and Global Health University of Toronto
"Trauma and its socio-political context"

Research Day, Joint Centre for Bioethics, University of Toronto
"Social relations, ethics and international research"
Toronto Law Faculty. Regulation of Research Review: A Comparative International Workshop
"The concept of an international duty of care"
COPICON Conference South Africa
"Ethical considerations in ARV roll-out in resource constrained settings
Yale University School of Medicine, Medicine and the Arts Program
"Professionalism in a globalizing world"
Georgetown University Conference in honour of life and work of Edmund Pellegrino
"Global health in an interdependent world"
PHIDSA Conference Cape Town
"The ethics of research in the military"
Boston University Global Health: A bridge to the future
"What do we mean by health and what will it mean in 2050?"

Invited Keynote/Plenary Addresses 2006

8th World Congress on Tuberculosis, Paris France
"Clinical trials: Ethical Issues in High-burden Countries"
Imperial College Awards Ceremony. London
"Global Health: Diagnosis, Prognosis and Management"
Nursing Odyssey International Conference, Bloemfontein SA
"Caring professionalism in a changing world"

Commencement/Graduation Addresses

University of the Witswatersrand Medical School, Johannesburg. 1988.

Wayne State University School of Medicine, Detroit, USA. 1989.

University of Cape Town Faculties of Medicine and Music. 1996.

University

PUBLICATIONS

Articles in peer-review journals

Respiratory and General Internal Medicine

Benatar S.R. (1970). Succinylcholine: Prolonged Apnoea and some dangers. S. Afr Med J. 44, 999- 1002.

Benatar S.R, Ferguson A.D, Goldschmidt R.B. (1972) Fat embolism: Some clinical observations and a review of controversial aspects. Quart J Med. 41, 85-98.

Benatar S.R, Hewlett A.M, Nunn J. F. (1973) The use of isoshunt lines for control of oxygen therapy. Brit J Anaes. (1973) 45, 711-718

Collins J.V, Cochrane G.M, Davis J, Benatar S.R, Clarke T.J.H. (1973). Some aspects of pulmonary function after rapid saline infusion in normal subjects. Clin Sci Molec Med. 45, 407-410

Benatar S.R, Konig P. Maximum expiratory flow and lung volume changes associated with exercise induced asthma in children and the effect of breathing a low density gas mixture. (1974) Clin Sci Molec Med. 46, 317-329.

Cochrane G.M, Benatar S.R, Davis J, Collins J.V, Clark T.J.H. Correlation between tests of small airway function. (1974). Thorax. 29, 172-178.

Cochrane G.M, Prieto F, Hickey B, Benatar S.R, Clark T.J.H. (1974). Early diagnosis of airway obstruction. Thorax. 29, 389-393.

Benatar S.R, Clark T.J.H. (1974). Pulmonary function in a case of endobronchial sarcoidosis. Amer Rev Resp Dis. 110, 490-496 .

Benatar S.R, Cochrane G.M, Clark T.J.H. (1975). Clinical relevance of the flow rate response to low density gas breathing in asthmatics. Amer Rev Resp Dis. 111, 126-134.

Bellamy D, Newsom-Davis J.M, Hickey B.P, Benatar S.R, Clark T.J.H. A case of primary alveolar hypoventilation associated with mild proximal myopathy. (1975) Amer Rev Resp Dis. 112, 867-873.

Helman C.A, Keeton G.R, Benatar S.R . (1977). Lymphoid interstitial pneumonia with associated chronic active hepatitis and renal tubular acidosis. Amer Rev Resp Dis., 115, 161- 164.

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Benatar S.R Sarcoidosis in South Africa. (1977). A comparative study in Coloureds, Blacks and Whites. S Afr Med J. 52, 602-606.

Benatar S.R. Pulmonary complications in the immunocompromised patient. (1977). S Afr Med J. 52; 1019-1024.

Potgieter P.D, Benatar S.R. (1978). Lung biopsy. A review of 3 years' experience. S Afr Med J. 53, 81-85.

Fitzcharles M.A, Benatar S.R. (1978). Goodpasture's Syndrome: Case report of a survivor. S Afr Med J. 53, 63-66.

Hayhurst M, Braude A, Benatar S.R. (1978). Anaphylactic-like reaction to Hydrocortisone. S Afr Med J. 53, 259-260.

Benatar S.R. (1978). Pulmonary function in normal children aged 11-15 years. S Afr Med J. 53, 543-546.

Westerman D.E, Bateman E.D, Alexander M.G, Benatar S.R. (1978). The magnitude of the asthma problem in Cape Town. S Afr Med J. 53, 574-577.

Elliot M.S, Immelman E.J, Jeffery P, Benatar S.R, et al. (1978). Skin necrosis after Warfarin therapy. S Afr Med J. 54, 609-610.

Benatar S.R. (1978). Exercise-induced asthma. S Afr Med J. (Editorial) 53, 425-426.

Benatar S.R. (1978). Simple measurements in asthma: their role in everyday practice. S Afr Med J. (Editorial) 54, 511-512..

Craven S.R, Benatar S R. (1979). Histoplasmosis in the Cape Province. S Afr Med J. 55: 89-92.

Benatar S.R, Rose A.G, Uys C.J, Keeton G.R. (1979). Pulmonary fibrosis and pulmonary hypertension. S Afr Med J. 55, 587-592.

Benatar S.R. (1979). Smoking and chronic respiratory symptoms in 11-15 year old children. S Afr Med J. 56, 301-304.

Benatar S.R. (1979). Current Concepts in asthma therapy. S Afr Med J. 56; 627-630.

Benatar S.R. (1979). Recent developments in Sarcoidosis. S Afr Med J. (Editorial) 55, 69-70.

Benatar S.R. (1979). Pulmonary Surfactant. S Afr Med J. (Editorial) 56, 161-162.

Westerman D.E, Benatar S.R, Potgieter P.D, Ferguson A.D. (1979) Identification of the high risk asthmatic: experience with 39 patients ventilated for Status Asthmaticus. Amer J Med. 66, 565-572 .

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Elliot M.S, Immelman E.J, Jeffery P, Benatar S.R, et al. (1979). A comparative randomised trial of heparin versus streptokinase in the treatment of acute proximal venous thrombosis: An interim report of a prospective trial. Brit J Surg. 66, 838-843.

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Croft C, Benatar S.R. (1980). Lymphomatoid granulomatosis with fulminant course. S Afr Med J. 58: 736-738.

Prout S, Benatar S.R. (1980). Disseminated tuberculosis: a study of 62 cases. S Afr Med J. 57, 613-615.

Jeffery P.C, Immelman C.J, Benatar S.R. (1980). Deep venous thrombosis and pulmonary embolism: an assessment of accuracy of clinical diagnosis. S Afr Med J. 57: 643-646.

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Benatar S.R. (1981).Anaesthesia for the asthmatic. S Afr Med J. 59; 409-412..

Benatar S.R. (1981). Deaths from asthma. S Afr Med J. (Editorial) 59: 775-776.

Willcox P.A, Benatar S.R, Potgieter P.D, Ferguson A.D, Bateman E.D. (1981). Fibreoptic bronchoscopy: Groote Schuur Hospital experience. S Afr Med J. 60, 651-654.

Willcox P.A, Benatar S.R, Potgieter P.D. (1982). Use of the flexible fibreoptic bronchoscope in the diagnosis of sputum negative pulmonary tuberculosis. Thorax. 37, 598- 601.

Terblanche J, Benatar S.R, Immelman E.J. (1982). Prophylaxis against fatal post-operative pulmonary embolism. (Editorial). Surgery. 91, 534-536.

Bank L, Benatar S.R. (1982). Subacute cor pulmonale in hypersensitivity pneumonitis. S Afr Med J. 62: 768-769.

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Ranchod A, Keeton G.R, Benatar S.R. (1982). The effect of beta blockers on ventilatory function in chronic bronchitis. S Afr Med J. 61, 423-424.

Willcox P.A, Maze S.S, Sandler M, Benatar S.R. (1982). Pulmonary fibrosis following long-term Furadantin therapy. S Afr Med J. 61: 714 –717.

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Westerman D.E, Benatar S.R. (1983).Ventilatory responses to carbon dioxide in asthmatics with previous carbon dioxide retention during severe asthma. S Afr Med J. 63: 839-842.

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Yach D, Myers J, Bradshaw D, Benatar S.R. (1985). A respiratory epidemiolgical survey of grain mill workers in Cape Town. Amer Rev of Resp Dis. 131, 505-510..

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Ainslie G.M, Benatar S.R. S.A.C.E.: Sensitivity and specificity in diagnosis: correlations with disease activity, duration, extrathoracic involvement, radiographic type and therapy. (1985) Quarterly J Med. 55, 253-270.

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Epstein S, Sayed R, Bourne D, Benatar S.R. (1987). Variations in mortality 1978-1982 in the Asian, 'Coloured' and White populations in South Africa: Respiratory Diseases. S Afr Med J. 72: 559-563.

Willcox P.A, Bateman E.D, Potgieter P.D, Benatar S.R. Value of fibre-optic bronchoscopy in the diagnosis of pulmonary shadows in renal transplant patients. (1990) Respiratory Medicine. 84: 297-302.

Maartens G, Willcox P.A, Benatar S.R. (1990). Miliary tuberculosis: rapid diagnosis, haematological abnormalities and outcome in 109 treated patients. Am. J. Med. 89: 291-296.

Chapman P.J, Bateman E.D, Benatar S.R Primary pulmonary hypertension and thromboembolic pulmonary hypertension: similarities and differences. (1990). Respiratory Medicine. 84: 485-488.

Chapman P.J, Bateman E.D, Benatar S.R. Prognostic and therapeutic considerations in clinical primary pulmonary hypertension. (1990). Respiratory Medicine. 84: 489-494.

Willcox P.A, Benatar S.R. (1990). Ventilatory responses to carbon dioxide in four ethnic groups. S Afr Med J. 77: 349-351.

Odell J.A, Benatar S.R. Pleuro-pulmonary amoebiasis. (1991). Seminars in Respiratory Medicine. 12: 1-7.

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Marais A.D, Benatar S.R. (1995). Planning rational management of chronic diseases - lessons from a lipid clinic. S Afr Med J. 85:340-341.

Health Services

Benatar S.R. (1983). Some economic and philosophical dilemmas facing medicine in South Africa. S Afr Med J. 64: 769-771.

Benatar S.R. (1986). Medicine and Health Care in South Africa. New Engl J Med. 315: 527-532.

Meiring P de V, Benatar S.R. (1986). The establishment of Geriatric Medicine at the University of Cape Town. S Afr Med J. 69, 565-569.

Benatar S.R. (1986). Failure of tuberculosis control in South Africa: need for a unitary national health service. S Afr Med J. 70, 247-8.

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Benatar S.R. (1987). Privatization and medicine. (Editorial). S Afr Med. J 72: 655-656.

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Van Rensburg H.C.J, Benatar S.R. (1993). The legacy of apartheid in health and health care. S Afr J Sociology. 24: 99-111.

Benatar S.R. (1994). Health care reform in South Africa. (Editorial) S Afr Med J. 84:318-9

Benatar S.R, van Rensburg H.C.J. (1995). Health care services in a new South Africa. Hastings Center Report. 25: 16-21.

Marais A.D, Benatar S.R. (1995). Planning rational management of chronic diseases - lessons from a lipid clinic. S Afr Med J. 85:340-341.

Benatar S.R. (1997). Health care reform in the new South Africa. N Engl J Med. 336: 891-95.

Benatar S.R. (1997). An old health care system gives place to new. The Lancet..349: 1537-8.

Benatar S.R. (1998). Tuberculosis control and social development. S Afr Med J. 88: 377-378.

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Benatar S R. (2004) Health care reform and the crisis of HIV and AIDS in South Africa
N Engl J Med; 351: 81-92.
Burch V C, Benatar S R (2006) Rational planning for health care based on observed needs.
S Afr Med J 96: 796-802.

Academic Freedom & Academic Boycott

Benatar S R. (1990). An alternative to academic boycott.
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Benatar S.R. (1990). Academic freedom in South Africa.
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JAMA. 266: 501-504.
Benatar S.R. (1990). Social, Cultural and Religious constraints to freedom of scholarship and science.
Global Bioethics 6: 85-95.
Benatar S.R. (1991). Freedom of speech, academic freedom &challenges to Universities in S. Africa. s
S A Journal of Science. 87: 4-8.
Benatar S R. (1991). Academic boycott: political strategy or moral imperative? Selective support as a justifiable alternative. S Afr Med J. 79: 660-64.

Medical Ethics

Benatar S.R. (1988). Ethical responsibilities of health professionals in caring for detainees and prisoners.
S Afr Med J. 74: 453-456.
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S Afr Med J. 73 :449-452.
Benatar S.R. (1988). Ethics, medicine and health in South Africa.
Hastings Centre Report. August. International Supplement 3-8.
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Medicine and Law. 7: 423-426.
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S Afr Med J. 75: 362-364.
Benatar S.R. (1990). Detention without trial, Hunger Strikes and Medical Ethics.
Law, Medicine and Health Care. 18: 140-145.
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S Afr Med J. 81: 489-490.
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Henley L, Benatar SR, Robertson BA & Ensink K. (1995) Informed consent - a survey of doctors' practices in South Africa. South African Medical Journal 85: 1273-1276.
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