RESTRUCTURING ACADEMIC HEALTH SERVICES IN THE WESTERN CAPE: A CRITICAL EVALUATION WITH EMPHASIS ON A RANGE OF FINANCIAL MODELS DEVELOPED TO ASSIST THE PROCESS

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Dissertation submitted for the degree of Master of Medicine in Community Health, University of Cape Town

Summary

Various financial models were developed in the process of planning for the restructuring of academic health services in the Western Cape. In an attempt to inform and assist this process, these models are described, critically analysed and in certain cases further developed. Since most of these models are dynamic and have been developed within computer spreadsheet applications, the relevant files are included here on computer disk and form an integral part of this submission. The background to restructuring is first explored, the models are examined, and then the implications for policy, resource allocation and academic health services are discussed.

DECLARATION

I, Zacharias Johannes de Beer, hereby declare that the work on which this thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other University.

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ABBREVIATIONS

ACP-IC (UCT)	Academic Complex Planning-Information Committee (University of Cape Town)
ANC	African National Congress
APG	Academic Priority Group
DPHP	Draft Provincial Health Plan
FMS	Financial Management System
GSH	Groote Schuur Hospital
MAP	Management Accounting Process
OBB	Optimal Bed Based
RCH	Red Cross Children's Hospital
SAMJ	South African Medical Journal
SMT	Strategic Management Team
TBH	Tygerberg Hospital
UCT	University of Cape Town
US	University of Stellenbosch
MOU	Midwife Obstetric Unit
OPD	Out-patient Department

SPREADSHEET FILES ON COMPUTER DISK

WU-GSHR.XLS	Work Units Model GSH Region
WU-TBHR.XLS	Work Units Model TBH Region
WU-RCHR.XLS	Work Units Model RCH Region
WU-SUMR.XLS	Work Units Model - Regional Summary
WU-GSHI.XLS	Work Units Model GSH Inner Core
WU-TBHI.XLS	Work Units Model TBH Inner Core
WU-RCHI.XLS	Work Units Model RCH Inner Core
WU-SUMI.XLS	Work Units Model - Inner Core Summary
NEWMODEL.XLS	Optimal Bed Based Model
BEDCOST.XLS	Appendix I (Tables 1-6)
HOSPDB.XLS	Appendices II-V

Please note: *All spreadsheet files are "Excel" files.*

BACKGROUND

The central focus of this dissertation is the examination of a range of financial models which were developed in 1994/95 to facilitate the process of restructuring academic health services in the Western Cape. Historically resources in academic health care in this province have been concentrated within three major hospitals and their regions.[i] The hospitals are associated with two universities and their respective medical faculties. These are Groote Schuur Hospital (GSH) and Red Cross War Memorial Children's Hospital (RCH) - both associated with the University of Cape Town (UCT) - and Tygerberg Hospital (TBH) which is associated with the University of Stellenbosch (US). These entities naturally feature prominently in the financial models and their development. However the process of restructuring academic health services is not confined to the Western Cape. It is a national phenomenon: the challenges facing Gauteng[1] are similar to those facing the Western Cape inasmuch as both provinces have been relatively financially "over-resourced" compared with other provinces[2] and between them contain five of South Africa's eight medical schools (three in Gauteng and two in the Western Cape).[3]

The forces which are driving and shaping health care restructuring have their roots in the political transformation which South Africa has undergone over the last decade. The elections of 1994 were historic in that they were the first truly democratic elections to be held in this country. Their occurrence was perhaps more remarkable and surprising in that this heralded peaceful political change in a country previously widely perceived to be heading irrevocably toward a violent and bloody confrontation between the racially divided proponents and opponents of apartheid. Heribert Adam has characterised this process as a "negotiated revolution".[4] The peaceful nature of this change is generally acknowledged to have been a great achievement as evidenced by the joint award of the Nobel Peace Prize to Nelson Mandela and FW de Klerk in Oslo on December 10th 1993. However it also meant that many of the civil structures, systems and institutions existing within the old apartheid regime passed into the new dispensation little altered in the process. During 1994 the ANC published the Reconstruction and Development Programme[5] and the ANC Health Plan.[6] These documents set out the respective development and health policies the ANC intended to pursue to effect widespread change within a society still bearing many of the hallmarks of apartheid. As the implementation of these policies has begun, enormous challenges have been posed, (and continue to be posed), in the quest for transformation, in what some regard as an unhelpful,[3] even "neoliberal"[7,8] economic environment.

The historical development of the South African health care system, particularly with regard to academic and hospital medicine, as well as the interface between the public and private sectors, forms an important element in the context within which health care restructuring is taking place, and has recently been well described by Benatar.[3] The private sector developed strongly in the 1960s and 1970s during a period of vigorous economic growth. Approximately 40% of the country's doctors provided care to 20% of the population (mostly white and medically insured), in a private

[i] Each of the three major hospitals – GSH, TBH and RCH are part of a larger region. This is explained and discussed later in this section.

sector consuming nearly one third of the 5% of gross national product[ii] (GNP) devoted to health care. Many private sector doctors held part-time appointments in academic hospitals. During this period the public sector was strong. It employed 60% of the country's doctors and consumed 70% of health care resources (half of this going to academic institutions) in providing care to 80% of the population, albeit unevenly. The public sector was responsible for the training of health care professionals and enjoyed the respect of private practitioners, being the provider of last resort - both for those with complex disorders, and for those unable to pay.

During the 1980s the private sector continued to flourish and came to employ 60% of doctors while still only offering care to one fifth of the population. The private sector now consumed some 60% of health care resources which as a proportion of GNP had increased to 8%. Increasing salary disparities between the private and public sectors contributed to the drain of skilled personnel from the latter into the former. The private sector was now far less supportive of academic medicine[3] and the problems which were increasingly evident within the public sector and academic medicine have been regarded as a consequence, at least in part, of the expansion of the private sector.[3,9,10]

The relative strength of the public sector and academic medicine during the first two decades of Nationalist Party rule does not imply that the South African health care system, either then or later, was appropriate for the needs of its people (including those of the "homelands"). The public health sector was very much a child of British colonialism in the first instance and subsequently of its perverse extension – apartheid. Historically, emphasis has been placed on hospital-based, specialised and curative care. This is true both for the provision of care and for the education and training of health care professionals. This phenomenon is largely explained by the fact that health care in South Africa was developed by people of European descent to cater, in the main, for the needs of the white population. It was therefore modelled on the British system of training and health care provision[3] and was subsequently also heavily influenced by developments in the United States of America. One consequence of this was that services became concentrated in the urban, more privileged areas. Until very recently the aim in the public sector was to emulate, in terms of research, training and the provision of care, the standards and norms found in Western Europe and North America. In the apartheid era there were as many as fourteen different departments of health. Moreover different components and functions of health were controlled at national, provincial and local government levels. This resulted in fragmentation, duplication, lack of co-ordination and waste. The provision of training and employment opportunities has historically been racially inequitable.

As was mentioned above, public sector academic hospitals were already beginning to suffer during the 1980s. While the expansion of the private health sector was undoubtedly one reason for this, other factors also contributed. The apartheid state had become a massive owner of the country's economically productive assets, (an irony in view of its professed hatred for socialist systems). The prolonged economic

[ii] GNP measures the value of goods and services owned by SA entities irrespective of location. GDP measures the total value of goods and services produced within the country irrespective of the origin of ownership. In SA GDP in 1994 was US$122 billion and 1994 GNP was US$125 billion (Source: Africa Institute 1996 and World Development Report 1996).

recession of the 1980s, (in a sanctions-bound economy), made it increasingly difficult to fund a vast public sector expenditure bill, and the public health sector could not escape the resulting funding squeeze. During its final days the apartheid regime increasingly embraced the policies of its opponents; in 1992 the then Director-General of Health of the Department of Health and Population Development, in an article in the South African Medical Journal essentially formally embraced the policy of Primary Health Care (PHC).[11] From about that time budgets at both provincial and national levels reflected the desire to shift resources away from tertiary care towards primary care. Out-dated, ineffective, unrepresentative and centralised governance, management and control of public sector hospitals meant that increasingly inadequate use was being made of the resources available. This fact was implicitly recognised in a policy framework developed for the Department of Health by the Hospital Strategy Project.[12] Emigration of highly trained health care personnel, particularly during the last decade of National Party rule, has also damaged public sector academic health services.[3]

In 1994 the ANC published its National Health Plan in which it explicitly stated that it would base its health policy on the PHC approach[13] as formulated and adopted in 1978 at a conference in Alma Ata in Kazakhstan, in what was then a part of the old Soviet Union. Given the grossly inadequate nature of primary and community health care services[2] and a comparatively well resourced public hospital sector on the one hand, and an unwillingness on the part of the Department of Finance and the Government to contemplate fiscal indiscipline or dedicated health financing mechanisms[14] on the other, it became clear that in order to fulfil its pledge to deliver health care based on the PHC approach, a redistribution of existing resources within the health sector, particularly the public health sector, would be necessary. Moreover, since the Department of Health's approach to provincial resource allocation is largely based on population indices[15], the historically "over-resourced" provinces of Gauteng and the Western Cape, home to most of the public sector academic hospitals, have become the major targets for budgetary reductions.

As Kale[16] has simply put it: "Restructuring South Africa's health care involves providing care to the majority who have so far been deprived of it without destroying the excellent tertiary health care facilities and the high standards of academic medicine that exist in the country." In 1992/3 South Africa spent approximately R30 billion, equivalent to 8.5%[17] of Gross Domestic Product[ii] (GDP) on health care, which is more than the target set by the World Health Organisation (5% by the year 2000).[18] However, as alluded to previously, less than 40% of this was spent on public health services in the provision of care for only one fifth of the population.[17] Three quarters of public sector health expenditure was allocated to "acute hospitals" – 44% going to academic and other tertiary hospitals – while only 11% was spent on non-hospital primary health care services.[17] These figures highlight the uneven deployment of health care funds and explain, given the PHC approach and national resource constraints, why the Minister of Health wishes to shift resources from public sector academic hospitals into primary health care.

While many senior academics and administrators associated with public sector academic hospitals are sympathetic and supportive of greater equity and the development of primary health care, they are also alarmed at the potential damage which may result from financial cuts. Professor Solly Benatar (UCT and GSH):

"Their (the Western Cape) budgets, reduced by about 15% over recent years, will now be cut by a further 50% over the next 5 years, to expand primary services and bring per caput public health expenditure into line with that of other provinces. The danger in slashing the budgets of established institutions is that they become incapable of the clinical and development activities for which they exist."[2] Professor Johan van Wyk (US and TBH): "Less funds means less care of patients, which in turn means less quality training, and probably less training altogether."[19] Professor JP de V van Niekerk (UCT): "There is a threat to the educational institutions as funds may be diverted from medical colleges to finance primary health care.....The danger is that the medical schools could have severe damage done to them. As medical schools generate the personnel needed for primary health care, taking funds away from them is seen as a serious threat by me and my colleagues."[16] Professor Ralph Kirsch (UCT and GSH): "Some of us in the larger hospitals will suffer and there is a danger we may get destroyed",[16] and: "In the Western Cape cuts of as much as 25% are on the cards. While both central and provincial health departments are grappling with this problem a lack of the clearcut political will required to address the plight of the teaching hospitals may leave these irrevocably damaged and thus have far reaching long-term effects on the nation's health care."[3] Professor John Terblanche (UCT and GSH), commenting on a possible failure to secure bridging funding for the Western Cape: "I would be very pessimistic of the future of health care in South Africa."[20] Professor Forder (UCT): "There will almost certainly be rationalisation of many of the tertiary teaching hospitals, with inevitable cut-backs in their budgets. This in turn could carry the risk of damage to the fabric of these institutions, which might be impossible to repair."[21] Of course not all academics are concerned about the effects of financial cuts. Professor William Pick (Department of Community Health, University of Witwatersrand) was reportedly "not perturbed by any proposed cuts": "A 5% cut in the budget of academic institutions really means that we need to improve our management, work efficiently, and save 5%."[16]

There has been an ongoing exchange of views in the South African Medical Journal (SAMJ) surrounding restructuring and the funding squeeze in the Western Cape. This was sparked by a mini-editorial entitled "The Western Cape bites the bullet",[22] in which Daniel Ncayiyana writes: "For decades the Western Cape has enjoyed the extraordinary luxury of two tertiary academic hospitals located a stone's throw from each other.....To stave off criticism, both wrapped themselves in the fashionable blanket of primary health care, which they provided at double what it would cost at a community hospital. To keep these health rand guzzlers in business, the province resorted to robbing Peter to pay Paul by engaging in deficit spending and in relative underfunding of peripheral facilities." These harsh words were written by way of introduction to a report in the same journal outlining proposals to restructure Western Cape Health Services.[23] These proposals emerged from the Academic Priorities Group[iii] (APG), for whom some of the models discussed below were developed. In terms of the proposals, the medical faculties of US and UCT would be uncoupled from their respective teaching hospitals to create a common teaching platform, with TBH becoming the main secondary hospital and the site of most undergraduate tuition for both universities, and GSH and RCH becoming purely tertiary institutions

[iii] The APG was appointed by the MEC for Health and Social Services in the Western Cape, Ebrahim Rasool, to investigate options for academic health services (chiefly downsizing and rationalisation). It was chaired by Professor Kay de Villiers, and included among others, academics, administrators and provincial health officials.

responsible for most post-graduate training. The proposals were received with "cautious optimism" by JP de V van Niekerk (Dean of UCT), but not surprisingly, less enthusiastically by the then Acting Dean of US, Professor Wynand van der Merwe.[23]

The mini-editorial quoted from above provoked an angry response and five letters reflecting this sentiment were published in the May edition of the SAMJ.[24,25,26,27,28] The first of these,[24] written on behalf of the Specialist Association of the Tygerberg Academic Complex, has this to say to Ncayiyana: "We suggest that you bite your tongue, Sir!". Four of these letters came from doctors working at TBH, and one of them,[25] commenting on Ncayiyana's assertion that the proposals had already been agreed upon, pointed out that the recommendations of the National Committee on Academic Health Service Complexes, chaired by Professor Jack Moodley, and reported on in the same edition,[29] were still under consideration. The storm of protest was sufficient to elicit a near-apology from Ncayiyana.[30] In a balanced reply[31] to Ncayiyana's editorial in the June edition of the SAMJ, Kane-Berman draws a vital distinction between the major academic hospitals (GSH, TBH and RCH), and the larger "academic regions" of which they are but part. This distinction has frequently not been appreciated, even by some closely involved with the restructuring process. The regions comprise not only the hospitals, but also a range of other facilities, colleges and services, and these are listed in the letter.[31] Since the "regions" are the administrative and financial units of the academic health services, it is essential not to assume (as some have done), that the resources allocated to them go solely to the three major academic hospitals. This distinction is incorporated into some of the models discussed below, where "core" or "inner core" refers to the hospital alone, and "region" refers to the larger entity including the core. Kane-Berman also pointed out that the three academic health service regions spend about half the provincial health budget (rather than the 70% claimed by Ncayiyana), and insisted that the regions were participating "creatively and constructively" in the process of resource redistribution. She writes: "Tygerberg, Groote Schuur and Red Cross Children's hospitals are not "super-specialist institutions", nor are they "health rand guzzlers". They are in fact components of the cost-effective and efficient, comprehensive academic health service in the Western Cape, which provides national, supraregional and provincial health care, teaching and research at all levels of care. In comparison with other countries, the extent and standards of service, teaching and research for each rand spent are remarkable. These institutions should be preserved and protected as valuable national assets."

If the title of the original mini-editorial was a rather bizarre mixture of cliché and metaphor, a further letter from Ruttman and others[32] in the September edition was even more strangely titled: Restructuring of Health Services – the bullet bites back. The title aside, this letter refers to the Draft Provincial Health Plan[33] (DPHP) and questions the validity of classifying hospitals and/or beds according to levels of care, (something which is assumed as valid in many of the models discussed below), as well as raising the issue of the National Increment for Teaching, Education and Research (NITER) and how this should be allocated. The Western Cape "bullet" makes a further appearance in the November 1996 edition of the SAMJ in an alarming report[20] quoting Western Cape MEC for Health and Social Services, as saying that cuts would lead to the loss of 1600 posts and 500 beds at the academic hospitals (GSH, TBH and RCH) by March 1997.

Groote Schuur Hospital is the oldest of the three major hospitals in the Western Cape (Somerset Hospital is the oldest in the country). Built on the northern end of the Groote Schuur Estate bequeathed by Cecil John Rhodes, it was officially opened on 31st January 1938.[34] Rhodes had originally expressed the wish that the land be used for a "National Teaching University", and this was given effect when the University of Cape Town was established on a portion of the estate in 1918. Subsequently the University of Cape Town (Medical School) Act No. 33 of 1920 authorised the building of a "hospital for the sick", for which purposes the University agreed in 1926 to lease a part of the estate, next to the newly built Medical School, to the Cape Hospital Board for a "peppercorn rental" of £1 per annum. GSH was built as an 850 bed hospital although it only became fully functional during World War II. The "new" GSH was built in the latter part of the 1980s, more than doubling the bed capacity. While there may have been good reasons for a new and expanded GSH, many felt that the money could have been better spent elsewhere; in "progressive health circles" in the early 1990s the new GSH was often rather scathingly referred to as "the disease palace on the hill". The association between the University and the hospital was clearly present from the outset, and is central to the concept of an academic health service. This relationship set a precedent in the establishment of subsequent academic health service complexes in South Africa. Internationally GSH is best known for the first heart transplant. Certainly it has enjoyed a reputation for excellence, however in recent times it has been criticised as too expensive and remote from the true health care needs of ordinary South Africans.

Red Cross Children's Hospital is the only remaining free-standing children's hospital in southern Africa.[35] It was established in 1956 as a memorial to all South Africans who had fought and died in World War II, and has some 350 beds. Intended originally as a specialist in-patient facility, it has come to provide a range of ambulatory, primary, secondary and outreach facilities. The current vision is to transfer much of its service load to district level, and to become a truly specialist facility.[35] Like GSH, RCH has been associated with UCT and has enjoyed a reputation for excellence, although it has also attracted criticism by those who have wanted to see greater emphasis given to community paediatrics. A remarkable statistic, (although it may now be out of date), is that over 50% of the nursing staff have been with the hospital for over 20 years (personal communication – Superintendent's Office, undated). From a purely organisational perspective, this is a wonderful asset, and one which would be very difficult to replace once lost.

TBH, with some 1800 beds, probably carries a greater secondary load than GSH, but is in other respects similar in terms of perceived excellence. As de V van Niekerk has pointed out[3], "medical schools were divided by language and colour". The history of the University of Stellenbosch Medical Faculty and Tygerberg Hospital bears this out. The following quotes are from documents provided by the Superintendent's Office, TBH (anonymous and undated).

"Die onstaan van die Tygerberg Hospitaal hang nou saam met die ontwikkeling van die Fakulteit van Geneeskunde van die Universiteit van Stellenbosch....Historiese en kulturele oorwegings is in ag geneem en die mening was dat, aangesien Stellenbosch al so veel gedoen het om die Afrikaner sy regmatige plek in die beroepslewe te laat inneem, die stigting van so 'n fakulteit nie agterweë kon bly nie."

"Dit (TBH) is egter 'n belegging in die gesondheid van die volk, wat ongeëwenaard is in die geskiedenis van die wetenskap in hierdie land."

"Dit was ook die doel om 'n kompleks op te rig waarin beide die verskillende bevolkingsgroepe met 'n minimum van duplisering en personeel bedien kan word."

In 1953 when a young graduate of UCT Medical School was about to take his place as a Member of Parliament, he was advised by the then Principal of UCT that one of his most important tasks was to ensure that Stellenbosch never got a medical school (personal communication – Z J de Beer, September 1997). As it was, TBH admitted its first inpatient in 1972, although the hospital was not officially opened until 1st October 1976. The linguistic and political divide between UCT and US, apparent all those years ago, has persisted, and although now attenuated, has still been clearly discernible in some of the working groups tasked with restructuring Western Cape academic health services.

As the dialogue and process surrounding restructuring has unfolded, it has become clear that although many of the concerns and interests of academics and administrators throughout the Western Cape academic health services are aligned, there has been an underlying conflict between the two universities and their respective teaching hospitals. This is seldom voiced or made explicit, but it arises from the inescapable conclusion that at the end of the day there will be less to go around. Bluntly put, the question is: who gets what and how much? These are "turf issues".

In 1994, following a directive from the Minister of Health, Zuma, the nine provincial governments appointed Strategic Management Teams (SMTs), tasked with managing the transformation process. The intention behind this directive was to mix political and technical inputs, thereby legitimising transformation recommendations.[7] The specific mandates of the SMTs were to become "think tanks" for policy formulation, to advise on health administration integration, and to assist with the creation of the district health system. In the Western Cape, however, much of the attention of the SMT naturally fell onto the academic health services.

In July 1994 the minister for Health and Social Services in the Western Cape, Ebrahim Rasool, established his Strategic Management Team (SMT) and charged it with the task of drafting a health plan for the Province. He subsequently appointed an "Academic Priority Group (APG) Task Force" to address the need for rationalisation of academic health functions in the Western Cape. During the work of the SMT, the APG, their sub-structures and various other groups it became clear that it was impossible to meaningfully plan the down-sizing of the academic hospitals, and a shifting of resources from tertiary towards primary levels of care, without the development of some sort of framework or model within which the implications of resource allocation decisions could be considered. Accordingly a number of models were suggested and developed.

THE MODELS

INTRODUCTION TO THE MODELS

To a lesser or greater degree, all the financial models discussed below have a narrow technical focus, and do not easily lend themselves to critical academic examination, particularly in a health related discipline. Moreover they were developed by their respective authors as ***working documents*** with all the associated time constraints, and are presented here "warts and all". Nevertheless an effort is made to describe them carefully so that they can be understood, and so that their critical evaluation and suggestions for further development are also understood. Footnotes are provided in the text where this is thought to be helpful. The understanding of those models which have been provided on computer disk is greatly enhanced by exploring them within a spreadsheet application. Indeed, it is submitted that to the extent that the computer spreadsheet files are the work of this author, they represent an original and significant component of this dissertation.

The cost data used in these models is 1994/95 rands. Insofar as global targets have been addressed the challenge was to reduce expenditure on the academic hospital regions from approximately R1000 million to levels considerably below this in the short to medium term.

This section of the dissertation was and is offered as a ***practical*** contribution to the process of planning and achieving changes in academic health services in the Western Cape. The models and approaches described and discussed below have been developed by a small number of individuals working either alone or in small groups. Most of the work has been done using computer applications and some of it maybe difficult to understand. However the output of this work has been tabled at a high level within provincial and academic health circles, and has been used to make important and potentially far-reaching decisions. The main intention of this exercise is as follows:

1. To make these models and approaches understandable and accessible:

   Each model or approach is carefully described. Those models which have been developed within computer spreadsheet programmes are included with this document on computer disk. As stated above the models are much easier to understand when examined on computer, particularly in conjunction with their description in the text. Moreover the variables within the models, (and indeed the models themselves), can be altered within the spreadsheet applications to the extent that this is useful. The spreadsheet files included on computer disk are as provided by their respective authors, and queries relating to these files should be addressed to them.

2. To critically examine each model or approach:

Each model or approach is critically analysed and discussed. Recommendations are made where considered appropriate. In certain instances concrete steps have been taken to develop a model or approach further where this was thought to be useful.

Each model is introduced and separately examined below. The inputs to each model and the steps involved in its construction are described. Each model is then critically evaluated.

THE WORK UNITS MODEL

Introduction

This model was developed within a work-group of the Financial Sub-committee, Academic Priorities Group (APG). This work-group contained academics, administrators and financial experts with members from both the north and south academic complexes (US/TBH and UCT/GSH/RCH respectively). As such it was probably the most representative group in which any of the models were developed. While there were undoubtedly disagreements and tensions within the group, it was at least possible for these to be played out prior to the output being tabled at a higher level. The major architect of the model was Professor David Power, Department of Paediatrics and Child Health, University of Cape Town.

The model is applied to each of the three academic hospitals both as "regional entities" and as "core entities".[iv] This means that essentially 6 models are available for the purposes of making projections.

Model input

The following information provides input to the model:

- Estimated total expenditure and estimated total salary expenditure for each of the three academic hospitals using FMS[v] (the state Financial Management System) figures for the 1994/95 financial year
- Numbers of filled posts within the following categories:
  Chief Specialist
  Principal Specialist

[iv] For an explanation of "region entities" and "core entities", please refer to page 9.

[v] FMS is a management accounting system used by the state. While detailed explanation is not possible here, the following points have relevance. FMS accounts on a ***cash flow*** basis rather than on the internationally more accepted basis of ***accrual***. This makes it potentially very much more difficult to relate work activities to the costs and revenues with which they are associated. FMS accounts within expenditure categories rather than organisational units. This means, for example, that the system could tell you how much is being spent in a particular hospital on salaries, pharmaceuticals, telephones etc., but it could not tell you how much is being spent in the Departments of Medicine, Radiology or the Kitchen etc., nor could it break these costs down within these departments. The view of the Ernst & Young management consultants who were contracted by GSH, is that while FMS may have its uses at a higher level within the province or state, it cannot provide the management accounting information which is necessary to properly run an organisational unit such as a ward, a department or even a hospital. This is also the view of this author.

Senior Specialist
Specialist
Medical Officer / Registrar
Professional - remainder[vi]
Nurse
Auxiliary (Unclassified)[vii]
Technical
Administrative
General

- Average current salary costs for each of the above categories
- 1993/94 provincial statistics[36] for the following:
  Out-patient visits
  In-patient days (IPD)
  Average length of stay (LOS)
  Occupancy
  (Bed numbers are then derived as follows: IPD/(365 x Occupancy)
- Various adjustment and correction factors (alluded to below)

Model construction

1. Work Units are calculated

Work Units are derived from the numbers of in-patient days and the number of out-patient visits. Each in-patient day is counted as one work unit. Clearly an out-patient visit should count for less than an in-patient day, the question is how much less? A previous convention was to equate 3 out-patient visits with one in-patient day. However this was felt to accord too high a value to out-patient visits, based partly on a study on the costs of the general out-patient service at RCH.[37] (Subsequently Rex has used what he calls the "accepted conversion rate of six out-patient visits per in-patient day".[38]) Accordingly the following out-patient factors were used:

Table I: Number of out-patient visits rated equal to one in-patient day

Type of Visit	GSH Region	GSH Core	TBH Region	TBH Core	RCH Region	RCH Core
Specialist	6	5	8	8	8	8
General	12	10	10	16	18	18

Using these values the number of work units expended in 1993/94 using each of the 6 models is calculated according to the formula:

In-patient days + Specialist OP visits / Specialist OP factor + General OP visits / General OP factor

Note: The out-patient factors can be varied within the model.

[vi] This refers to professional staff not included in other categories.
[vii] These staff categories -"auxiliary" and "unclassified" – used at different institutions were similar but not identical.

2. Work Unit to Staff ratios are set up

The Work Units calculated in each of the 6 models is divided by the number of staff in each category listed above. This is intended to provide an indirect measure of the average amount of work that can be performed by a given staff member within each category. This ratio or measure is the central feature of the Work Units Model, and is used to predict the staffing and cost implications of various scenarios.

An important assumption underlying the Work Units Model is that the current deployment of resources at GSH, TBH and RCH is sufficient, in general, for the provision of Level III[viii] care to existing patient numbers. That is, it is assumed that if all patients currently being serviced at these institutions are in need of Level III care, that this can be achieved using the currently deployed resources. It could be argued that since the patient load at all three institutions is demonstrably some mix of Level III and lower levels of care, that additional resources would be required were all patients in need of Level III care. However it was felt by David Power and others that given national resource constraints and the declared policy objective of developing Primary Health Care that it would be inappropriate and unrealistic to expect a greater concentration of resources in the tertiary sector, notwithstanding the fact that the absolute size of this sector would have to be reduced.

The calculated Work Unit to Staff ratios clearly differ between GSH, TBH and RCH. In an effort not to favour GSH or TBH unfairly, uniform sets of ratios were derived for GSH and TBH. The uniform GSH/TBH ratios are in fact not entirely uniform due to lack of comparability of certain staff categories at these institutions (Professional - remainder, Auxiliary and Technical). These uniform ratios are approximate means of the GSH and TBH figures. These uniform ratios, together with the calculated ratios for RCH, are then considered to be those required to staff a Level III facility.

An entirely fresh set of ratios were then created for GSH/TBH and RCH which were considered appropriate for staffing a Level II facility. These ratios were not derived, but were simply chosen[ix] such that higher Work Unit to Staff ratios were used for

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[viii] In the restructuring debate terms such as Level II or III, and secondary or tertiary have been widely used without any universally accepted agreement on their meaning. The terms have also been applied to beds, implying that particular beds be designated for the provision of particular levels of care. Where these are mixed in a given institution, this gives rise to the so-called ***"layered cake"*** concept. The following are just one set of definitions which have been abstracted from the South African Health Review 1996:

Acute hospital care is provided in three categories of institutions:

Level I patients require treatment which may adequately and appropriately be provided at a **district hospital** (the first level of referral) by a generalist with access to basic diagnostic and therapeutic facilities.
Level II patients require the use of equipment and facilities found at a **regional or secondary hospital** (which represents the second level of referral) and the expertise and care associated with the general specialties.
Level III patients require the expertise and care associated with the sub-specialties and less common specialties, or require access to scarce, expensive and specialised therapeutic and diagnostic equipment found only at a **central or tertiary hospital** (the third level of referral).

[ix] This may be criticised as arbitrary, but little objective basis existed for determining these ratios, and the model accommodates their alteration.

medical and technical staff while the ratios for nursing, administrative and general staff were largely left unchanged. Clearly these ratios can be altered within the model.

The model therefore essentially provides two sets of Work Units to Staff ratios, one for Level III care and the other for Level II care. The Level III ratios represent the status quo at GSH, TBH and RCH, while the Level II ratios are created to describe a lower level of care. These ratios are then used to predict required staff numbers depending on the desired size of the facility, and the desired percentage composition of Level III and Level II care.

3. The ratios are used to predict staff requirements

For any facility (GSH, TBH, RCH) the model allows the number of beds at Level II and/or Level III to be chosen and varied. In-patient days (work unit equivalents) can then be calculated as follows:

annual in-patient days = number of beds x 365 x % occupancy

The figure for occupancy can be varied within the model, although David Power used the 1993/94 provincial occupancy statistics[36] for predictive purposes.

The model allows the number of annual out-patient visits simply to be chosen. However in practice David Power chose numbers of visits which generally varied in direct proportion to the number of chosen beds, using the 1993/94 provincial statistics as a reference to determine the relative relationship between bed numbers and out-patient visits. The exception to this was at RCH where a large number of Level II out-patient visits are assumed to fall away even if bed numbers are not reduced.[x]

Having chosen the number of out-patient visits, the number of equivalent work units can be calculated by applying the appropriate out-patient factors described in (1) above.

By adding the work units derived from out-patient visits to those derived from in-patient days the total number of work units at Level II and/or Level III at the facility being modelled can be calculated.

The Work Units Model incorporates a sophistication which recognises that when a hospital bed is closed something less than its full operating cost may be saved, at least in the short term. The reason for this is that the resources which support the existence of that bed may not be reduced by a commensurate amount. The model employs "residual value" factors (30% for in-patient beds, 20% for out-patient visits) to account for this phenomenon. These factors (which may be varied within the model) lead to a refinement of the total work unit numbers referred to in the above paragraph.

The numbers of work units finally derived for Level II and/or Level III are then divided by the respective work unit to staff ratios to predict the numbers of workers required in each category to staff the facility being modelled.

[x] This is under the assumption that a disproportionately large amount of Level II out-patient work has been done at RCH, much of which should in the future be done at district or primary level.

4. Annual operating costs are predicted

Once staff requirements are predicted it is a relatively simple matter to project total operating costs.

The average basic annual salary (plus 40% for bonus, overtime etc.)[xi] for each staff category is multiplied by the number of staff required in that category. These figures are all aggregated to project a total staff cost for the scenario being modelled. The model then employs a technical correction factor at each of the three hospitals to adjust for the difference between projected and observed staff costs.

It is generally held and observed that approximately 70% of hospital operating costs are staff costs. The observed percentages at each of the three institutions (ranging from 66% to 71%) were used to calculate the "on-cost" or non-salary expenditure. This is then added to the staff costs to project total annual operating expenditure.

Strengths of model

1. The model is simple and robust. The principle on which the model is based is logical and easy to understand. Different service options are easily and readily tested.
2. The model is based on reality. The development of ratios of input (staff) to output (work units) which attempt to describe the current situation at GSH, TBH and RCH as a base from which to make projections anchors the model in reality. This means that the financial implications of modelled scenarios are likely to be reasonably close to the mark if public sector academic hospitals continue to function within broadly the same organisational and policy environment as at present.
3. The model makes good use of available information. There is a dearth of useful information for planning and management purposes in the public health sector. An examination of published statistics[36] shows that there is little useful additional output data beyond that which is incorporated in this model. With respect to input, the state Financial Management System (FMS) is notoriously poor at accounting at an operational level where and on what public sector health resources are being consumed. This deficiency was being addressed at GSH with the implementation of the Management Accounting Process[xii] (MAP), but no such systems existed at TBH or RCH. However it was possible to obtain data on total salary and total hospital expenditure from FMS, as well as average salary information from the state salary system (PERSAL). This latter information provided the input to the Work Units Model. It should be noted that David Power would have been unable to separate the GSH Region from its core without information provided by this

[xi] This is the historically observed percentage by which the basic salary must be inflated to arrive at the actual salary costs.

[xii] MAP was a project launched in 1994 to design and implement a cost accounting and budgeting system at GSH. The project team included management consultants from Ernst & Young and employees of GSH (including for a time this author). The aim of the project was to supplement what was perceived as inadequate FMS data with a system to provide useful accrual based cost data which could effectively be used for management and budgeting purposes. An important parallel aim was to develop a more business-minded approach and culture in the organisation, particularly among senior academics.

author which was abstracted from MAP. This problem, of not being able to separate GSH expenditure from the expenditure of its region had been recognised by Kane-Berman many years before.[39] The model does not favour GSH or TBH or their associated universities. The use of mean uniform ratios for GSH/TBH allows any combination of Level III and/or Level II care to be modelled at either institution in a fair and comparable fashion. This observation is borne out by the major conclusions of the APG Finance Sub-committee Costing Working Party Report, that the important financial implications arise from the size and mix of the Level II/Level III service to be offered, and not from the site at which these services are to be offered.[40] This neutrality in the model is an important asset, in that it is more likely to be acceptable to representatives from both GSH/UCT and TBH/US. The position of RCH is complicated by the fact that it is the only children's hospital in the country, and the fact that it is impossible to separate the paediatric component at TBH from the main body of the hospital because of the absence of meaningful accounting information. For these reasons RCH is treated in a "stand alone" fashion within the model.

4. The model accounts for the residual value of service reductions. This facility recognises that the closure of a given percentage of an institution's beds does not normally result in a similar percentage saving in operating costs due to the persistence of support services. The model uses a linear function to reflect this phenomenon, however a logarithmic function might be more appropriate and could easily be incorporated.

Weaknesses of model

1. The most important weakness of this model is the way in which staff categories have been formulated. (Note: This categorisation was furnished by the Medical Superintendents of the 3 hospitals.) In this regard the following comments are offered:
   - Of the 11 categories no less than 5 are for medical staff comprising only about 8% of total staff. Four of the 11 categories are for specialists making up little more than 2% of the total staff complement at any given institution. In contrast all nurses are lumped into a single category despite the fact that they make up a massive 40% or more of total staff at any given hospital. No separate category is recognised for management. Complex and highly heterogeneous support staff are hidden within large amorphous categories such as General and Technical. An examination of the different types of posts at GSH and the categories they are put into within the Work Units Model (Appendix II) bears witness to these observations.
   - The potential consequence of this skewed categorisation of staff is that any attempt to use these staff categories for the purposes of planning may lead to erroneous predictions. Technologists, pharmacists, managers, engineers etc. all have highly specific skills which need to be represented differently within different levels of care. Attention needs to be given to this fact if this model is to be used for "layering" and/or down-sizing, as this has both financial and human resource implications.
   - The doctor-centred nature of this categorisation is likely to be perceived (rightly or wrongly) as politically incorrect which may lead unnecessarily to the rejection of the model.

- The staff categories provided by GSH and TBH are in some respects different which leads to a lack of comparability in some of the data.
- A solution to the problems resulting from the formulation of these staff categories is offered below (under "Further Comments and Suggestions").

2. The fact that this model is based on reality is in one sense a strength (alluded to above), but in another sense it is a weakness. Public sector academic hospitals in South Africa are beset with problems. They lack leadership, vision and strategic direction. They are highly bureaucratic and operate within a tangled web of policies, procedures rules and regulations. Authority is dispersed, and responsibility and accountability are seldom enforced or accepted. Anachronistic hierarchical staffing structures persist. These institutions are (almost literally) crying out for transformation. They need to be freed from excessive regulation. Organisational structures need to be flattened, and authority and responsibility pushed downwards and outwards. The whole way in which people work, and the processes which are performed need to be re-evaluated in a dynamic and flexible way. By using the *modus operandi* of the past as a basis for predicting staff requirements in the future there is a danger of entrenching out-moded organisational functions and structures. Conversely, if organisational transformation can be successfully effected, "real" work unit to staff ratios will rise significantly.
3. Level II staffing ratios are subjectively defined.
4. That which is assumed to be Level III care is in fact a mixture of Level III and Level II care.
5. The input and output measures in this model are not matched in terms of timing. Activity data is from 1993/94. Total expenditure and salary expenditure are estimates based on the 1994/95 financial year. The data on filled posts and average salaries is from early to mid-1995. This situation was to some extent a necessary consequence of the unavailability of information. However it is important to bear in mind that work that was done in a given year, is being measured against resources that were deployed a year, or even 2 years later.
6. No attempt is made to measure quality in this model. This may seem an unfair criticism as there are no readily available measures of quality in the academic hospitals. However it is important to realise that the numbers of in-patient days and numbers of out-patient visits say nothing about the quality of services being rendered.
7. No objective evidence (apart from a reference to a study on the costs of the general out-patient department at RCH[37]) is furnished to support the numbers used as "out-patient factors" to calculate work units from out-patient visits. It has since become possible using MAP data at GSH to meaningfully compare the resources required to fund an in-patient day and an out-patient visit, both globally and for every department. It is recommended that such an exercise be carried out in order to derive more valid "out-patient factors".
8. It is not clear that the volume and nature of out-patient visits will vary in a simple way with the size of the institution. However to the extent that such variations can be predicted, this can be built into the model.
9. The correction factors used to adjust projected salary costs are problematic. These correction factors are derived from the observed difference between actual salary costs (from FMS) and salary costs predicted by the model. In each scenario modelled, predicted salary costs are adjusted by the appropriate correction factor. Problems with these correction factors are:

- There are individuals employed on the establishment of all 3 hospitals who spend some or all of their time working outside their respective institutions. Thus FMS will tend to overstate the true salary costs of running the institutions themselves.
- The correction factors are sufficiently large (ranging from -7.5% to 10%) to make significant differences in predicted salary expenditure. Possible reasons for this include differences between theoretical and actual salary category means, and variations in the true "add on" costs which are estimated at 40%. At GSH actual individual month-on-month salary costs were captured through a PERSAL-MAP computer interface. Examination of this database would facilitate the solution of both these problems at GSH. A more laborious solution would be to sample actual individual salary data at all institutions. The problem of inaccurate category means can be addressed by the solution to salary category formulation alluded to in (1) above and discussed under "Further Comments and Suggestions" below.

10. The manner in which "on-cost" or non-salary costs are predicted. The model employs the observed relationship between salary and non-salary costs (from FMS) at each institution to predict non-salary costs in each modelled scenario. However the observed variation in the relationships between salary and non-salary costs at the three institutions is surely a consequence mainly of how well staffed one hospital is compared to another. It is no surprise that GSH (well known to have been better staffed than TBH) salary costs comprise 71% of total operating costs compared with 67% at TBH. The aim is to model scenarios in which appropriate levels of human resources are matched with appropriate levels of other resources. It would therefore be better to use a standard "on-cost" (say 30% of total) or a mean of the "on-cost" at all 3 hospitals.

Further comments and suggestions

The Work Units Model has been examined and criticised in some detail. However it must be pointed out that it was developed under pressure of time with a paucity of information in order to look at the "big picture". In this context it has been successful. Nevertheless it is possible that this model (and others) will be used in the future for more detailed scenario planning, as well as for monitoring and evaluating change as this takes place. In this event the criticisms offered above may prove useful.

In particular the way in which staff categories have been formulated within this model has been criticised. A solution to the problems associated with this formulation is now offered. Not only are suggestions made in this regard, but concrete steps have been taken to put this solution into effect.

Staff and staff categories (and other useful information)

It is possible to obtain print-outs from the PERSAL system for any given institution which show the description of each type of post, together with the number of individuals currently filling each type of post. Each type of post (or "postclass" as it is called) is identified by a number and by a description. Print-outs were obtained for the following institutions:

1. GSH
2. TBH
3. Frere Hospital

4. Livingstone Hospital
5. RCH
6. Conradie/Jooste Hospitals
7. Somerset Hospital
8. Southern Peninsula Hospitals Group (SPHG) - this includes Victoria Hospital
9. Paarl Hospital
10. Eben Donges Hospital
11. George Hospital

An examination of these print-outs shows that there were approximately 150 different postclasses filled by varying numbers of individuals at these hospitals. Using information from these print-outs, together with data from the 1993/94 provincial statistics[36], a database has been manually constructed (Appendix III). For each institution the following information is given:

From the 1993/4 provincial statistics:
1. Actual beds
2. In-patient days
3. Length of stay
4. Occupancy
5. Head counts
6. Visits
7. Emergencies
8. Home visits

Derived ratios:
1. Visits/head counts - a measure of the mean number of out-patient visits per person per year
2. Emergencies/visits - an indication of the proportion of visits considered to be emergencies
3. Staff/bed - a measure of staffing levels
4. Work Units - a measure of work output calculated in the same way as in the Work Units Model except that an out-patient factor of 15 is used for all out-patient visits and a home visit factor of 5 is used at those institutions which undertake home visits. (These factors are easily changed).

From PERSAL:
The postclass description and number of every type of filled post together with the number of individuals in each postclass (on the date shown).

Calculated measures:
1. The percentage of individuals in each postclass (as a percentage of the total number of individuals employed at each hospital)
2. Work units/person - this measure is calculated for every different postclass by dividing the 1993/94 work units for that institution by the number of filled posts within each postclass. *It is this measure which allows the problems related to the formulation of staff categories within the Work Units Model to be avoided.* The measure allows every postclass to be treated as a separate staff category for the purposes of calculating work unit to staff ratios. Using these building blocks different postclasses may be aggregated into categories in different ways and to

varying degrees (or not at all) inasmuch as this is useful for particular modelling, planning or evaluation purposes (see below).

Category formulation:
The addition of one or more "category" fields to the database allows the data to be sorted and aggregated in different ways. As an example the different postclasses have been categorised as follows:

1. Administration (ADM)
2. General (GEN)
3. Management (MAN)
4. Medical Officers (MOF)
5. Nursing Assistants (NAS)
6. Nurse Managers (NMA)
7. Professional Nurses (NPR)
8. Staff Nurses (NST)
9. Professions allied to Medicine (PAM)
10. Pharmacists (PHA)
11. Registrars (REG)
12. Specialists (SPE)
13. Support Staff (SUP)
14. Technical Staff (TEC)

It is submitted that this categorisation is more rational, appropriate and accurate than the one used in the Work Units Model given the purpose for which the model was developed. However it is only an example, and different categories may be developed for different purposes. By collapsing the database into the above categories, the information contained within the database can be summarised (Appendix IV).

This database was constructed as a pilot project. It is hoped that the information contained in the database is of a nature that would assist policy makers, planners and managers in the health services. However the database had to be manually created and clearly the information relating to the number of filled posts will change with the passage of time. Computerised Information Systems (CIS) at the Provincial Administration of the Western Cape was therefore approached with a view to obtaining certain data as a computer download. After relevant discussions permission was obtained to write a programme within "MAGIC" which would access data from PERSAL in order to make this possible. (MAGIC is a computer application which is used to extract and manipulate information from databases.) A programme has therefore been written[xiii] which for any given institution(s) can generate a file containing the following information:
1. Each postclass number and description
2. The number of filled posts within each postclass
3. The average salary of each postclass

Data within the file will be delimited so that it can be readily imported into any computer spreadsheet programme. It is hoped that information in this form will be

[xiii] The programme was written by Mr. George Smit (Tel: Cape Town 483 3507) whose help is gratefully acknowledged and from whom further information may be obtained.

useful to planners and managers. It could be combined with other information (such as provincial health activity statistics), and changes or additions can always be made to the programme in the future. It should be stressed that data can be obtained for any public sector facility, so that it has potential to be used for Level I hospitals, clinics and even non-health care public sector entities.

THE OPTIMAL BED BASED (OBB) MODEL

Introduction

This model was originally designed by Dr. Ann Brand, then Senior Medical Superintendent at GSH. It was also presented and discussed within the work-group of the Financial Sub-committee, Academic Priorities Group (APG) and forms part of the report of this group.[41] The model was also incorporated into the University of Cape Town Response to the Draft Provincial Health Plan.[42]

Model input

The following information provides input to the model:

- The mean salary (plus 40% for "add-ons") for each of the following staff categories:
  - Chief Specialist
  - Principal Specialist
  - Specialist
  - Registrar
  - Medical Officer/Intern
  - Professional Nurse
  - Staff Nurse
  - Nurse Auxiliaries
  - Paramedical Staff
  - Technical Staff
- The proposed number of beds at Level II and/or Level III
- Proposed or ideal ratio of beds to staff for each of the above categories
- Adjustment factors for "support" and equipment
- Assumptions and factors related to activity or output

Model construction

1. The proposed numbers of staff in each of the above categories at Level II and Level III is calculated

This is a simple calculation based on the number of proposed beds at each level and the ideal ratios for each of the staff categories. The model is constructed such that total numbers of specialists and nurses are represented in the following proportions.

Table II: Allocation of specialists

	Level 3	Level 2
Chief Specialist	5%	5%
Principal Specialist	20%	20%
Specialist	75%	75%

Table III: Allocation of nurses

	Level 3	Level 2
Professional Nurse	48%	43%
Staff Nurse	27%	18%
Nurse Auxiliary	25%	39%

2. Total salary costs for staff in the above categories are calculated

This is once again a simple calculation - the product of mean salary costs and the numbers of staff in each category. These amounts are then all aggregated.

3. A 30% "on-cost" is added

As discussed in the section on the Work Units Model, it is generally observed that salary costs comprise approximately 70% of total costs, so the rationale employed is to add on non-salary costs such that this relationship is satisfied. The correct formula to obtain total costs given salary costs is:

[(30/70) x salary costs] + salary costs

Unfortunately the formula used in this model to obtain total costs is:

salary costs x 1.3

This latter formula, which is wrong, underestimates total costs by 9% (70 x 1.3 = 91%) and implies that salary costs comprise 76.9% of total costs (70/91 = 0.769).

Although this error is easily corrected within the model, it is important it be recognised.

4. Support and equipment costs are added to give total costs

Thus far the model has calculated salary costs for the staff within the categories shown above, and added an "on-cost" for non-salary expenditure. However inspection of these staff categories reveals that "support" costs (both salary and non-salary) have not been taken into account. To allow for this further amounts are added for "support". The actual figures used are derived from examination of MAP data and the Financial Analysis performed by MAP/Ernst & Young in November 1994.[43] The model allows these amounts to be adjusted.

Equipment costs are factored into the model as an additional 5% of total costs.

The addition of support and equipment costs gives total projected costs for the "new" GSH and TBH.

5. Expected work outputs are calculated given predicted staff numbers and certain assumptions

Given assumptions with respect to occupancy and length of stay, (which may be varied), numbers of in-patients and in-patient days can be calculated.

Based on work done by Dr. D Smith (Medical Superintendent, GSH) in the early 1970s, factors are introduced which relate numbers of out-patient visits and operations (major and minor) to numbers and grades of medical staff. Using these factors the model predicts levels of activity given the modelled staffing levels.

Comments

The OBB Model is similar to the Work Units Model inasmuch as ratios are developed (beds to staff rather than work units to staff) which are used to predict staff requirements and then costs. It is simple and the different ratios and factors within the model are easily varied. However the OBB Model differs from the Work Units Model in one important respect. Whereas the Work Units Model is based on reality, the OBB model is based on proposed, or "optimal", bed to staff ratios. Using only information supplied within the OBB Model the following table has been compiled which shows GSH actual, and proposed Level III/Level II bed to staff ratios.

Table IV: Number of beds per staff member

Staff Category	GSH Actual	Proposed L3	Proposed L2
Chief Specialist	770	140	400
Principal Specialist	39	35	100
Specialist	7.70	9.33	27
Registrar	4.89	5	10
Medical Officer/Intern	8.66	10	20
Professional Nurse	1.055	1.167	1.860
Staff Nurse	2.723	2.074	4.444
Nurse Auxiliary	1.196	2.240	2.051
Paramedic	5.1	4.5	8
Technical	4.04	4	5.5

Since GSH is reckoned to be some mix of Level III and Level II care one might expect actual GSH bed to staff ratios to fall somewhere between those proposed for Level III and those proposed for Level II. However inspection of Table IV reveals that this is not always so. Specialists, Registrars, Medical Officers/Interns, Professional Nurses and Nurse Auxiliaries will all be expected to service more beds at both Level III and at Level II than is currently the case at GSH. It is therefore evident that significant changes are being proposed in staffing levels - mostly to spread resources more thinly. At the same time the creation of a largely tertiary service at GSH is being suggested. While it may be highly desirable that work processes and

functions be radically revised in order to produce more effective and efficient hospital work-forces, this cannot simply be wished into existence. Until it can be shown how such changes can be successfully implemented given the current framework of the public health service, the proposals of the OBB Model may not be realistic.

To some degree the criticisms directed at the way in which staff categories were formulated within the Work Units Model apply also to the OBB Model. However the OBB Model is slightly less doctor-centred, breaks nursing staff into 3 categories and recognises Paramedics (Professions Allied to Medicine) as a separate staff category. Unfortunately management is not recognised as a staff category. General and support staff are not factored into the model proper, and the costs associated with them are added on afterwards. It is possible that this makes the estimation of these costs less reliable, particularly when other variables in the model are changed.

The error in the formula used to calculate "on-cost" is easily corrected. However it results in a sizeable underestimation of costs, and it is disturbing that two documents[41,42] containing these underestimates were tabled at a high level without the error being discovered.

This model explicitly tests the option contained within Chapter 13 of the DPHP[33] to convert GSH into primarily a Level III hospital, and TBH into an exclusively Level II hospital. Moreover it has been included with UCT's response to the DPHP, which is supportive of this option. The OBB Model may therefore be construed as being supportive of this option. However it could just as easily have been used to model the reverse scenario (TBH mostly Level III, GSH all Level II). The real question is whether this model is realistic in its predictions, rather than at which hospitals those predictions are modelled.

One advantage of this model is that it makes provision for certain staff ratios which need to be maintained for training purposes - for example the Interim National Medical and Dental Council requires that the Registrar to Specialist ratio does not exceed 2.

Another positive aspect of this model is that it incorporates some additional measures of output based on the work of Dr. D Smith. Clearly in-patient days and out-patient visits on their own are a very crude measure of output. Further work in this area would be welcome.

Finally it should be remembered that this model (like the Work Units Model) was prepared in difficult circumstances in a short period of time.

THE ACP-IC (UCT) SUBMISSION

Introduction

Annexure C of the UCT response[42] to the DPHP contains an estimate of the cost of tertiary care at GSH and TBH. This work emanated from the Academic Complex

Planning-Information Committee (ACP-IC) and was largely prepared by Professor Steve Louw. A copy of this estimate is appended (Appendix V).

This author was initially approached by the ACP-IC (UCT) group for suggestions as how to find a way of costing levels of care at GSH in a short space of time. The following simple approach was suggested:

1. Estimate the approximate proportions of Level III and Level II care in all clinical departments.
2. Find some way of allocating GSH costs using these proportions.

It was suggested that some form of standardised method be adopted to estimate proportions of different levels of care. Given the time constraints a suggested mechanism was to form some sort of "consensus group" containing representatives from major clinical areas, management, nursing etc., who could together agree on the figures. The rationale for this approach was that all clinical departments are cost centres represented within the MAP system. It was therefore possible to obtain the operational costs of these clinical departments. Using the cost accounting expertise within the MAP office it would then have been possible to meaningfully allocate these costs, together with all other hospital costs, in order to come up with estimates of Level III and Level II care, both within these departments, and in aggregate at GSH.

Perhaps unfortunately, these suggestions were only partially followed by the ACP-IC (UCT) group.

Discussion of the ACP-IC (UCT) submission

Sources of data

GSH cost centre data was obtained from the Management Accounting Process (MAP).[xiv]

TBH cost centre data is described as being obtained from Chapter 9 of the DPHP.[33] Although this data is reproduced in the DPHP, the actual source of the data is the Financial Analysis of the Academic Hospitals[43] which was tabled as a supplementary report to the main report[44] prepared by the Academic Priority Group Task Force and presented to Minister E Rasool by Professor Kay de Villiers at Mon Villa in November 1994. It is therefore misleading to refer to "DPHP Cost Centres" as is done throughout this submission. Moreover the Financial Analysis referred to above was carried out over a very short period of time, and as noted in the report, the information "should only be used as a tool in determining areas for further investigation" and "no decisions be made to alter existing structures within the Academic Hospitals without further detailed investigation". This is particularly true for the TBH data; no system such as MAP existed within TBH and it was necessary to make some broad assumptions and adjustments in order to assimilate TBH cost data into cost centres. Unfortunately the cautions referred to in the report were not acknowledged.

[xiv] MAP is not the "Ernst and Young Management Accounting Procedure" as described in this submission, but a joint project between GSH and Ernst & Young.

Methods of determining percentages of tertiary care

It is stated that "each cost centre was individually considered in consultation with Heads of Divisions and hospital administration at GSH. A proportion of each cost centre's budget was apportioned as "tertiary" or "secondary"." However it is not clear *how* this process was carried out, nor is it clear if the process was consistent from one cost centre to another.

For TBH the "proportion of expenditure on tertiary work performed at TBH was adjusted relative to the estimates for GSH, taking into consideration factors such as number of specialists per Division; number of patients admitted, number of out-patients, operations or deliveries". Once again it is not made clear precisely *how* these factors were taken into consideration.

Different methods have been employed to determine the percentages of tertiary care at GSH and TBH. Quite apart from the validity of the methods used, this inconsistency in the way in which the percentages are derived renders the figures incomparable. These figures are:

Table V: Deemed % of tertiary care at TBH, as a % of tertiary care at GSH

	Deemed % of that done at GSH
Medicine	50%
Surgery	60%
Obstetrics, Gynaecology, Neonatology	60%
Radiotherapy	100%
Anaesthetics	60%
Radiology	70%
Laboratory	70%
Nursing	70%
Professions Allied to Medicine	70%

While most objective observers would probably agree that the percentage of tertiary care at GSH exceeds that of TBH, the relative percentages shown above are most unlikely to find acceptance with representatives from TBH or the University of Stellenbosch Medical School.

Application of percentages to derive the cost of the tertiary component

An estimation is made of the tertiary component of the services provided by various cost centres. If this estimate was for example 50%, then 50% was applied to the cost of the cost centre to derive the cost of the tertiary component. This assumption however ignores the fact that the tertiary component will cost more than the secondary component. Consequently a percentage of greater than 50% in the example above should be used to derive a more accurate reflection of the tertiary component cost.

Exclusion of costs

This submission estimates the total cost of tertiary care at GSH and TBH to be approximately R280 million. However no financial provision is made for the management and support of these services. Since GSH and TBH together spent approximately R920 million in 1994/95, R640 million is unaccounted for in this analysis. It is simply not apparent from this submission how a single and integrated tertiary service at GSH will be financed given the requirement to reduce overall expenditure and still provide an acceptable level of secondary care.

Concluding remarks

Given the observations above, the conclusion of the ACP-IC (UCT) group that "based on the findings of this investigation, it appears financially feasible to merge the current TBH and GSH tertiary services and accommodate these in GSH" is unsustainable. That is not to say that it is not financially feasible to amalgamate all tertiary services at GSH. It may be. But this cannot be concluded from the ACP-IC (UCT) submission.

Notwithstanding the misgivings expressed above with regard to the deemed percentages of tertiary care, these percentages have been used in the following section to estimate "the cost per bed" at GSH. In doing so spreadsheets have been developed which explicitly take account of the costs excluded from the ACP-IC (UCT) submission. A further spreadsheet has been prepared which does the same thing for TBH (Appendix I, Table 6).

ESTIMATION OF THE COST OF TERTIARY AND SECONDARY LEVEL BEDS

Introduction

These costing estimates were prepared in the MAP office. They are the work of this author and of Mr. Mike Kane of Ernst & Young. The estimates were included with the UCT response[42] to the DPHP, although without the authors' permission.

As part of the costing exercise being conducted for the academic hospitals an exercise was carried out to determine an estimate for the cost of a tertiary and a secondary bed. The accuracy of such an estimate was constrained by the availability of meaningful cost and patient data. Cost estimates were therefore calculated but these estimates should be interpreted in the light of the assumptions and constraints noted below. These estimates should be compared with other cost data which have been prepared for the academic hospitals.

Sources of data

The following sources of data were used:

- Cost centre costs, support costs and global costs as provided by the MAP system at GSH

- An exercise based on 1993 GSH patients which divides patients into tertiary and non-tertiary cases and calculates the relevant proportion of costs incurred by the two types of case. This exercise was conducted by Dr. Isaacs (Biometrician, GSH) and was based on the use of co-morbidity analysis and diagnosis related groups to arrive at weighted costs

- A preliminary analysis of Tygerberg Hospital cost centre costs conducted for the SMT[43]

- Estimates of the tertiary and non tertiary components of each cost centre as estimated by the ACP-IC (UCT) group.

Calculation of cost estimates

These calculations start at a simple level and then go through a number of revisions or iterations to try and refine the cost estimates by introducing additional variables and information.

Please note that all Tables referred to in this section are to be found in Appendix I.

First estimate

Cost estimates can be derived by taking the projected 1994/95 expenditure for GSH, adjusting this figure to take account of certain assumptions[xv] (such as not funding the Midwife Obstetric Units - MOUs) and then comparing this with the number of beds. Table 1 reflects the data used for this exercise.

GSH: (from Table1, Appendix I)	R '000s
Expected 1994/95 expenditure	500 000
Deduct services not to be funded by GSH (e.g. MOU's, General out-patient department)	52 000
Deduct support and global costs attributable to removal of services (52 000/500 000 x 120 000)	12 000
Total	436 000
Number of beds	1438
Cost per bed	**303**

[xv] The assumptions all relate to the removal of those services which would not be offered in a tertiary hospital.

This cost of R303 000 per bed obviously represents a mixture of level III and level II beds.

A similar exercise can be conducted for Tygerberg (TBH).

TBH: (from Table 6, Appendix I)	R '000s
Expected 1994/95 expenditure	420 080
Deduct services not to be funded by TBH (e.g. Community Health, Paediatrics)[xvi]	24 757
Deduct support and global costs attributable to removal of services	8 198
Total	387 125
Number of beds	1 815
Cost per bed	**213**

This cost per bed obviously represents a mixture of level III and level II beds.

Second estimate

A number of GSH cost centres are deemed to be 100% tertiary. These are Cardiac Clinic, Cardiothoracic Surgery, Liver Clinic, Neurology and Neonatology. The direct cost of each cost centre has been taken from the MAP accounts and a support cost and global cost has been added based on the number of beds. The source of this information is reflected in Table 1. (All figures are in thousands of rand):

Table VI: Tertiary bed cost: second estimate

Cost centre	Direct cost	Support	Global	Total cost	No of beds
Cardiac Clinic	10 770	2 630	403	13 803	29
Cardiothoracic	16 766	5 351	820	22 937	59
Liver Clinic	2 558	362	56	2 976	4
Neurology	2 616	2 177	333	5 126	24
Neonatology	5 322	6 530	1001	12 853	72
			Total	57 695	188
			Average	306/bed	

This cost of R306 000 per bed should probably be inflated by a small amount as there are certain tertiary cost centres which do not have beds as such, and to obtain a realistic overall cost per bed for a tertiary institution the cost of these cost centres should be allocated to beds. Examples of such cost centres are Radiology, Clinical Immunology and Medical Physics. The cost of these cost centres are not significant

[xvi] The same rationale applies as in the note above. In addition the paediatric service is assumed to be relocated elsewhere.

when compared to most other cost centres and as a rough estimate another 10% could be added to the average of R306 000 per bed to arrive at a cost of R336 000 per bed.

Third estimate

The above estimate only looks at pure tertiary cost centres. An exercise was conducted to estimate the tertiary cost of all cost centres at GSH. Table 2 reflects the results of this exercise. The cost 1994/95 column reflects the adjusted MAP cost for the particular cost centre. The % tertiary column represents the existing tertiary component of each cost centres services as derived by the ACP-IC (UCT) group.

There is not necessarily a direct relationship between the percentage tertiary component and the percentage cost of each cost centre. The tertiary component presumably consumes more cost than the secondary component. This is borne out by an evaluation of 1993 GSH cases by Dr. S Isaacs (Biometrician, GSH) as depicted in Table 3. This shows the tertiary and non-tertiary cases for various cost centres and calculates the relevant proportion of costs incurred by the two types of case. Using this information as a base, rough adjustments have been made to the tertiary percentage as derived by ACP-IC (UCT) to arrive at the "Adjusted %" column in Table 2. Based on these percentages a tertiary cost was calculated for the whole hospital. As per Table 2 the total cost comes to R223 718 000.

The number of tertiary beds was derived by taking the total number of beds for each cost centre and applying the ACP-IC (UCT) tertiary component percentage to the total number of beds for that cost centre. It could be argued this method is not a correct basis for allocating beds but in the absence of other information it has been used and is unlikely to be significantly wrong.

The tertiary component cost of R223 718 000 should be increased to account for support and global costs. The basis for allocating these costs in this estimate is the number of tertiary beds.

	R '000s
Tertiary component cost (from Table 2, Appendix I)	223 718
Add support costs (815/1438 x 120 991)	68 573
Add global costs (815/1438 x 37 521)	21 265
Total	313 556
Number of beds	815
Cost per bed	**385**

This cost per bed of R385 000 should be compared with the R336 000 calculated in the second estimate above. The approximate mid-point of this range is R360 000 per bed.

A similar exercise can be conducted for the cost of a secondary level bed. With the same information used above the secondary level cost and the secondary level beds can be estimated. Table 4 reflects this information.

	R '000s
Secondary component cost (from Table 4, Appendix I)	65 347
Add support costs (623/1438 x 120991)	52 418
Add global costs (623/1438 x 37 521)	16 256
Total	134 021
Number of beds	623
Cost per bed	**215**

The cost per secondary bed of R215 000 at GSH compares with the TBH cost of R213 000 per bed overall.

Fourth estimate

The estimates derived above assume a division of cost centres (or departments) into those which are deemed to deliver a service (at secondary and/or tertiary level), and those which are deemed to support these services (so-called support cost centres). The actual division used in the above estimates, (as well as the percentage secondary/tertiary split), are those arrived at by the ACP-IC (UCT) group. This can be ascertained from inspection of Table 4. However, they are not necessarily correct. In particular, laboratory and imaging departments are considered to provide a direct service. It may be more correct to treat such departments as supporting the clinical service delivered by the true "coal face" clinical departments.

Accordingly, a revised division of cost centres into service departments and support departments is suggested. This may be ascertained by inspection of Table 5. The original percentage secondary/tertiary splits suggested by ACP-IC (UCT) have been left unchanged where these are applicable.

The overall effect of this approach is to increase total support costs, and to decrease secondary/tertiary service costs. This can be seen by comparing the totals in Table 4 with those in Table 5. The revised figures in Table 5 are then used to arrive at bed costs in exactly the same way as in Estimate 3 above.

Cost per tertiary bed

	R '000s
Tertiary component cost (from Table 5, Appendix I)	163 103
Add support costs (815/1438 x 195 608)	110 863
Add global costs (815/1438 x 37 521)	21 266
Total	295 232

Number of beds	815
Cost per bed	**362**

Cost per secondary bed

	R '000s
Secondary component cost (from Table 5, Appendix I)	51 344
Add support costs (623/1438 x 195 608)	84 746
Add global costs (623/1438 x 37 521)	16 256
Total	152 346
Number of beds	623
Cost per bed	**245**

Fifth estimate

Estimate 4 allocates support costs between secondary and tertiary beds under the assumption that every bed, whether secondary or tertiary, pulls with it the same quantum of support costs. This assumption, however, is unlikely to be justified. Although certain support costs (e.g. cleaning) will vary little between a tertiary and secondary bed, many other more important support costs (such as laboratory services, imaging etc.) will be significantly higher for a typical tertiary bed than for a typical secondary bed. For this reason it is suggested that support costs be allocated to secondary/tertiary beds on the basis of proportionate secondary/tertiary expenditure, rather than on the basis of proportionate secondary/tertiary beds.

Cost per tertiary bed

	R '000s
Tertiary component cost (from Table 5, Appendix I)	163 103
Add support costs (163 103/214 447 x 195 608)	148 775
Add global costs (815/1438 x 37 521)	21 266
Total	333 144
Number of beds	815
Cost per bed	**409**

Cost per secondary bed

	R '000s
Secondary component cost (from Table 5, Appendix I)	51 344
Add support costs (51 344/214 447 x 195 608)	46 833

Add global costs (623/1438 x 37 521)	16 256
Total	114 433
Number of beds	623
Cost per bed	**184**

Summary and conclusion

The results of all estimates are summarised in the tables below.

Table VII: GSH and TBH - Cost per Bed (R '000s)

	GSH overall	TBH overall
Estimate 1	303	213

Table VIII: GSH - Cost per Bed (R '000s)

	Tertiary Bed	Secondary Bed
Estimate 2	336	
Estimate 3	385	215
Estimate 4	362	245
Estimate 5	409	184

This investigation was carried out over a short space of time. The estimates were built on a number of assumptions that need to be tested further. The cost data itself also had constraints the limits of which could only be tested once the full MAP data became available. The estimates therefore should be assessed after taking account of the above constraints. A cost of R370 000 per bed represents the mid-range of the estimates for the cost of a tertiary level bed determined above. An approximation of R215 000 as a secondary bed cost can be made from the limited estimates carried out above.

MODELS: GENERAL REMARKS

Each model has been discussed in detail above. This section deals with certain general considerations.

There is a temptation to assume that "rational decision making models" must of necessity be objective. However, they may obscure or excuse value judgements (either innocently or deliberately), and should therefore be used and interpreted with caution.[45]

All the models dealt with above have strengths and weaknesses to differing degrees and in different ways. This suggests that no one model should be used to the exclusion of the others. A combination of approaches, together with a willingness to develop

these models further, or even to introduce completely new approaches is likely to be most useful for the purposes of planning and implementation.

To date the planning for restructuring health services in the Western Cape has mostly been at a high level. Before extensive implementation of change can take place planning should occur on a much more detailed level. The models described above, or developments thereof, can be valuable tools in this process.

All the models in one way or another relate input (staff, money) to output (work units, beds). Data from the state salary system, PERSAL, can provide reasonable information with respect to staff inputs. However FMS financial data is generally poor in determining where and on what resources are being consumed. Systems such as MAP need to be urgently developed in public sector academic hospitals in order to provide more meaningful information on the deployment of resources. Leyenaar, originally the Ernst & Young Project Director for MAP, in a recent article in the SAMJ,[46] outlines a generic approach based on the GSH MAP system, in which he stresses the need for good quality, appropriate and timeous management information in hospitals. Information on measures of output (provincial statistics[36]) is crude and includes no measures of quality. Dyer,[47] (writing about PHC programmes) has pointed out that although one might ideally wish to measure health status or outcome, it is generally more practical to focus on activities or processes. There is much information of this nature which could be collected in public sector hospitals. It is generally recognised that public health information systems need to be drastically improved, and it is encouraging that the Department of Health has embarked on a plan for a National Health Information System for South Africa (NHIS/SA).[48]

Whether information systems are good or bad, health service managers are increasingly faced with huge volumes of data which they are expected to assimilate and respond to. It is therefore essential that they find ways of identifying and deriving a manageable and limited set of information which can be used to make necessary decisions. Furthermore it is vital that the choice of such a set of information, or "performance indicators", be informed by valid strategic goals and objectives.[49] This is particularly true in the academic health services because of the scale and pace of change.

In planning for such change it is useful to think in terms of inputs, processes and outputs or outcomes,[39] as alluded to above. Clearly the approach should be determined by individual circumstances, but there are examples in the literature of restructuring strategies which can assist the process.[50,51]

DISCUSSION

POLICY

There are clearly a range of issues, many unresolved, which have the potential to influence the nature of academic health services in South Africa as we approach the new millennium. The country is surprisingly politically stable, given the stormy

nature of our recent history, and has enjoyed real, if moderate, per capita economic growth since 1993. However, health care restructuring could fail miserably if the economy falters.[16] There is no national consensus on economic policy, or on how to translate economic policies into meaningful delivery of health and social services. The demise of communism has encouraged a widespread belief in much of the world that liberal democracy and free markets constitute the "best way of organising human societies", as epitomised by Fukuyama's writings on "the end of history".[52] The Congress of South African Trade Unions (COSATU) would not support this view, and have publicly differed with the government over its orthodox economic policy, GEAR (growth, employment and redistribution). Bond, Pillay and Sanders,[8] in a scathing attack on GEAR, refer to Trevor Manuel as "a black ANC leader and former community activist who once characterised himself as a socialist". They describe GEAR as a deeply flawed macroeconomic strategy, and refer to an "ever-deepening commitment to neoliberal economic philosophy" doing "serious, even irreparable harm to this country's political transformation".

While the greater economic fortunes of the country will undoubtedly impact on health services, there is also an unresolved debate regarding the distribution of existing health care resources. The inequitable distribution of these resources has been well documented, particularly with respect to hospitals, hospital beds and clinics.[9,53] Any consideration of this issue must take account of the private sector. As has already been pointed out, this sector consumes some 60% of health care resources in the provision of care to only 20% of the population.[17] Perhaps the ideal (some may say idealistic) solution to this problem would be the assimilation of all health facilities and providers into a single national health service, and this has been advocated.[54,55] For those who believe that access to health services is a basic human right, and that the available resources should be fairly shared among all, the creation of a unitary health service makes good sense. Certainly this approach has the potential to ease the mounting pressures facing the public health sector, including of course the academic health services.

The creation of a national health service was doubtless easier in the heady days of Nye Bevan immediately after the second world war, when socialism was young and in the ascendant. To some extent the Gluckman Commission[56] needs to be viewed in this historical context. It may now be impractical, and even undesirable to draw the private health sector wholly within a unitary service. Broomberg has previously argued for a national policy on private hospitals[10] in order to maximise their contribution to the health sector as a whole, and going further, has suggested the partial integration of private hospitals into the public health service through a "centrally financed system".[57] These articles were published before the ANC came to power. Since then he co-chaired the "Committee of Inquiry into a National Health Insurance System",[58] the findings of which were controversial, and the recommendations have not yet been implemented. However a discussion document proposing revisions to the Medical Schemes Act has been released by the Department of Health, in which the issue of national health insurance in the provision of an essential minimum hospital package is revisited, and may be incorporated into legislation later this year. This document has attracted a lot of attention in the press, not all of it balanced, but Söderlund and van den Heever have provided a welcome review of the issues in a recent editorial in the SAMJ.[59] As was pointed out earlier, the Department of Finance has until now been seemingly unwilling to contemplate

dedicated health care financing mechanisms outside of general tax revenue, which has caused extreme concern among those who have advocated such mechanisms.[14,60] However, many economists dislike dedicated financing mechanisms for two reasons. Firstly, it means that the government relinquishes, to a degree, the control it normally exercises over state revenue and expenditure, which is the primary fiscal tool available for managing the economy. Secondly they create precedents for other interests (such as education), to also pursue earmarked revenue sources. Trevor Manuel has been reported in the press as having "not yet taken a position" on this issue; it will be interesting to watch developments.

RESOURCE ALLOCATION

The pursuit of equity in health care has not just involved an attempt to bring private sector resources into the public domain, but has taken place within the public sector itself. Provincial resource allocation is being guided primarily by population driven indices.[15] This issue has caused much debate in South Africa but is not new internationally. The Resource Allocation Working Party (RAWP) model developed in England, and its equivalents in Scotland and Wales, were used to allocate health care resources in the United Kingdom. This provoked a prolonged debate in the British medical literature, beginning in the late 1970s and persisting throughout the 1980s. The majority of the published articles were critical of RAWP, particularly with respect to the measurement of need. Between 1989 and 1991 a series of four papers emerged from the Department of Community Health, UCT, examining the British experience and advocating the adoption of a similar resource allocation mechanism in South Africa.[61,62,63,64]

Not all commentators support the principles embodied in population based resource allocation formulae. Grant[65] has argued that this approach confuses egalitarianism with humanitarianism, and does not necessarily help the poor. Forder has expressed the concern that this type of approach may conceal political motives: "in addressing the so-called lop-sided funding, it is vital that the good in the "old" health structures be preserved and not destroyed because of possible political agendas which stipulate that there can be nothing worthwhile in the previous system of medical care. This is especially so of our large academic hospital."[21]

Given that population based resource allocation adjustments are set to continue it is heartening to note that the Department of Health has recognised that these should occur gradually[15], not only to avoid irreparable damage to the losers, but also to allow the winners to develop the capacity to spend their additional resources effectively. The importance of this gradualism, (the rule of thumb is to alter allocations by no more than 2.5% per annum), was first appreciated using the RAWP model in the United Kingdom and has also been highlighted locally by both Kane-Berman[31] and Rex.[38]

ACADEMIC HEALTH SERVICES

The academic health services in South Africa have been judged to be consuming a disproportionate and inappropriate share of the funds available to the public health sector. This is partly why the notion of "academic health complexes", which have as essential ingredients one or more teaching hospitals and a medical school or health science faculty, seem to have become less acceptable to national and provincial health policy makers. In the early 1990s increased independence for academic health complexes was being suggested as a means of empowering management to increase efficiency and effectiveness. This view is now being resisted. Cara Jeppe writes: "it is imperative that our academic health centres remain within and wholly accountable to the national health system and gain no degree of management autonomy. It should be their immediate task to train tens of thousands of doctors and nurses with the political will to implement the National Health Plan, particularly at the district level, as was done in Cuba after the triumph of their revolution."[66]

If academic health complexes are viewed in South Africa as one of the major causes of resource constraints within the public health services, it is ironic that they have been viewed elsewhere as a solution to health service problems arising from difficult financial circumstances. In an article[67] entitled "The academic health centre: an idea whose time has come", Sinclair, writing in Canada, argues that such centres, because of the synergies that can be achieved, are greater than the sum of their parts, and can therefore deliver their "products" (clinical service, teaching and research) more effectively and efficiently than would otherwise be possible. He also argues strongly in favour of "regionalization", or what we have called rationalisation in South Africa, which allows different institutions to focus on their particular strengths, while avoiding duplication. In Canada this includes increasing collaboration with all manner of community organisations. This positive approach, which focuses on solutions rather than problems, contrasts with the more negative and defensive view taken with respect to academic health complexes in South Africa. There may be valuable lessons to be learnt by examining the experiences and approaches which have been adopted elsewhere in the world.

It is generally accepted that hospitals such as GSH, TBH and RXH should be providing Level III care. At the same time it has been recognised that many patients who are serviced at these and other tertiary hospitals could be properly cared for at lower levels of care,[68,69] with the implication that this would be more cost-effective. This has led to much debate around levels of care, including the suggestion that differing levels of care could be offered within the same facility (the so-called "layered cake" proposal). This option has not yet been properly implemented and it remains to be seen how well it would work in practice. An additional complication in this debate arises because of the differing locations in which academic health service activity takes place. Myers and Pelteret[70] have suggested a method of mapping services in terms of both level of care as well as location, which reveals the complexity of this issue as well as encouraging new and innovative ways of thinking about academic health services and the linkages between them.

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Appendix I

TABLE 1. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	Support	Exclusions	Total Beds
Administration Secretariat	68	68		
Anaesthetics	10 764			
Anatomical Pathology	6 891			
Animal House	916	916		
Biomedical Engineering	1 262	1 262		
Cardiac Clinic	10 770			29
Cardio-Thoracic Surgery	16 766			59
Carinus Nursing College	10 353	10 353		
Catering	5 860	5 860		
Central Processing Department	4 588	4 588		
Chemical Pathology	9 438			
Clinical Engineering	4 645	4 645		
Clinical Immunology	363			
Clinical Pharmacology	1 746			
Clinical Science	1 736			
Community Health	2 338		2 338	
Creche - Nursery Schools	1 212	1 212		
Dermatology	2 717			25
Dietetics	984			
Emergency Unit	5 729			33
Endocrine and Diabetes	1 873			4
ENT	5 264			48
Enviromental Hygiene Services	17 819	17 819		
Family Practice Unit	722		722	
Finance	1 659	1 659		
General Medicine	20 996			190
General Surgery	25 164			124
Geriatric Unit	153			3
GIT Clinic	6 296			63
Gynaecology	11 323			97
Haematology	12 333			14
Hospital Engineering	8 289	8 289		
Hospital Fees	2 772	2 772		
Human Genetics	1 379			
Human Resources	3 207	3 207		
Hypertension Clinic	264			
Ischaemic Heart Disease	90			
Lipid Clinic	113			
Liver Clinic	2 558			4
Logopaedics	891			
Management Suites	4 908	4 908		
Materials Handling	7 578	7 578		
Medical Graphics	1 214	1 214		

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TABLE 1. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	Support	Exclusions	Total Beds
Medical Informatics	2 163	2 163		
Medical Microbiology	5 137			
Medical Physics	2 244			
Medico-legal	142	142		
Neonatology	5 322			72
Neurology	2 616			24
Neurosurgery	6 732			94
Nuclear Medicine	2 565			
Nursing Administration	12 769	12 769		
Obstetrics	11 405			108
Occupational Health	863	863		
Occupational Therapy	1 544			
OPD (General)	883		883	
Ophthalmology	6 847			49
Orthopaedics	13 039			108
Other Hospitals	44 330		44 330	
Paediatrics	4 152		4 152	52
PCU	1 211	1 211		
Pharmacy	6 255	6 255		
Physiotherapy	2 465			
Plastic Surgery	3 684			23
Psychiatry	4 890			27
Public Relations	216	216		
Radiology	16 026			
Radiotherapy	13 292			82
Renal Unit	8 664			15
Respiratory Clinic	8 353			20
Rheumatic Disease Unit	686			5
Rochester House	718	718		
School of Radiography	2 093	2 093		
Services	15 885	15 885		
Social Work	2 035			
Supplies	2 270	2 270		
Trauma Unit	8 842			27
UCT School of Nursing	56	56		
Urology	3 834			39
Virology	2 242			
Cost CentreTotal	462 481	120 991	52 425	1 438
Global and Other Expenses	37 521			
TOTAL EXPENDITURE	**500002**			

Appendix I

TABLE 2. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	% Tertiary	Adjusted %	Tertiary Cost	Support Cost	Excluded Cost	Tertiary Beds	Total Beds
Administration Secretariat	68				68			
Anaesthetics	10 764	55%	77%	8 326				
Anatomical Pathology	6 891	40%	60%	4 135				
Animal House	916				916			
Biomedical Engineering	1 262				1 262			
Cardiac Clinic	10 770	100%	100%	10 770			29	29
Cardio-Thoracic Surgery	16 766	100%	100%	16 766			59	59
Carinus Nursing College	10 353				10 353			
Catering	5 860				5 860			
Central Processing Department	4 588				4 588			
Chemical Pathology	9 438	80%	90%	8 494				
Clinical Engineering	4 645				4 645			
Clinical Immunology	363	100%	100%	363				
Clinical Pharmacology	1 746	100%	100%	1 746				
Clinical Science	1 736	100%	100%	1 736				
Community Health	2 338					2 338		
Creche - Nursery Schools	1 212				1 212			
Dermatology	2 717	35%	53%	1 426			9	25
Dietetics	984	25%	38%	369				
Emergency Unit	5 729	25%	38%	2 148			8	33
Endocrine and Diabetes	1 873	76%	88%	1 648			3	4
ENT	5 264	50%	75%	3 948			24	48
Enviromental Hygiene Services	17 819				17 819			
Family Practice Unit	722					722		
Finance	1 659				1 659			
General Medicine	20 996	40%	60%	12 598			76	190
General Surgery	25 164	50%	75%	18 873			62	124
Geriatric Unit	153	15%	23%	34			0	3
GIT Clinic	6 296	70%	85%	5 352			44	63
Gynaecology	11 323	50%	75%	8 492			49	97
Haematology	12 333	45%	68%	8 325			6	14
Hospital Engineering	8 289				8 289			
Hospital Fees	2 772				2 772			
Human Genetics	1 379	100%	100%	1 379				
Human Resources	3 207				3 207			
Hypertension Clinic	264	100%	100%	264				
Ischaemic Heart Disease	90	50%	75%	68				
Lipid Clinic	113	100%	100%	113				
Liver Clinic	2 558	100%	100%	2 558			4	4
Logopaedics	891	75%	88%	780				
Management Suites	4 908				4 908			
Materials Handling	7 578				7 578			
Medical Graphics	1 214				1 214			

Appendix I

TABLE 2. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	% Tertiary	Adjusted %	Tertiary Cost	Support Cost	Excluded Cost	Tertiary Beds	Total Beds
Medical Informatics	2 163				2 163			
Medical Microbiology	5 137	60%	80%	4 110				
Medical Physics	2 244	100%	100%	2 244				
Medico-legal	142				142			
Neonatology	5 322	100%	100%	5 322			72	72
Neurology	2 616	100%	100%	2 616			24	24
Neurosurgery	6 732	70%	85%	5 722			66	94
Nuclear Medicine	2 565	90%	95%	2 437				
Nursing Administration	12 769				12 769			
Obstetrics	11 405	50%	75%	8 554			54	108
Occupational Health	863				863			
Occupational Therapy	1 544	65%	83%	1 274				
OPD (General)	883					883		
Ophthalmology	6 847	50%	75%	5 135			25	49
Orthopaedics	13 039	55%	78%	10 105			59	108
Other Hospitals	44 330					44 330		
Paediatrics	4 152					4 152		52
PCU	1 211				1 211			
Pharmacy	6 255				6 255			
Physiotherapy	2 465	72%	86%	2 120				
Plastic Surgery	3 684	40%	60%	2 210			9	23
Psychiatry	4 890	20%	30%	1 467			5	27
Public Relations	216				216			
Radiology	16 026	70%	85%	13 622				
Radiotherapy	13 292	100%	100%	13 292			82	82
Renal Unit	8 664	70%	85%	7 364			11	15
Respiratory Clinic	8 353	70%	85%	7 100			14	20
Rheumatic Disease Unit	686	80%	90%	617			4	5
Rochester House	718				718			
School of Radiography	2 093				2 093			
Services	15 885				15 885			
Social Work	2 035	50%	75%	1 526				
Supplies	2 270				2 270			
Trauma Unit	8 842	20%	30%	2 653			5	27
UCT School of Nursing	56				56			
Urology	3 834	30%	45%	1 725			12	39
Virology	2 242	50%	75%	1 682				
Cost CentreTotal	462 481			223 608	120 991	52 425	815	1 438
Global and Other Expenses	37 521							
TOTAL EXPENDITURE	500 002							

TABLE 3. GSH 1994/95 COSTS (R000s)

Percentage of Tertiary Patients and Cost (1993 GSH) Source: Dr S Isaacs (Biometrician GSH)		
Discipline	**% Tertiary Cases**	**% Cost**
Cardiac Clinic	47	77
Cardiothoracic	62	88
Dermatology	40	77
Emergency	47	77
Endocrine	37	73
ENT	13	47
General Medicine	47	75
General Surgery	42	74
Geriatrics	83	95
GIT	42	74
Gynaecology	12	45
Haematology	38	67
Neonatology	not available	
Neurology	40	73
Neurosurgery	not available	
Obstetrics	not available	
Ophthalmology	17	59
Orthopaedics	33	60
Paediatrics	16	40
Plastic Surgery	15	41
Psychiatry	21	50
Radiology	not available	
Radiotherapy	89	97
Renal	43	70
Respiratory	45	74
Rheumatology	34	70
Trauma	not available	
Urology	26	62
Average	40	71

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TABLE 4. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	Secondary Cost	Support Cost	Excluded Cost	Secondary Beds	Total Beds
Administration Secretariat	68		68			
Anaesthetics	10 764	2 438				
Anatomical Pathology	6 891	2 756				
Animal House	916		916			
Biomedical Engineering	1 262		1 262			
Cardiac Clinic	10 770					29
Cardio-Thoracic Surgery	16 766					59
Carinus Nursing College	10 353		10 353			
Catering	5 860		5 860			
Central Processing Department	4 588		4 588			
Chemical Pathology	9 438	944				
Clinical Engineering	4 645		4 645			
Clinical Immunology	363					
Clinical Pharmacology	1 746					
Clinical Science	1 736					
Community Health	2 338			2 338		
Creche - Nursery Schools	1 212		1 212			
Dermatology	2 717	1 291			16	25
Dietetics	984	615				
Emergency Unit	5 729	3 581			25	33
Endocrine and Diabetes	1 873	225			1	4
ENT	5 264	1 316			24	48
Enviromental Hygiene Services	17 819		17 819			
Family Practice Unit	722			722		
Finance	1 659		1 659			
General Medicine	20 996	8 398			114	190
General Surgery	25 164	6 291			62	124
Geriatric Unit	153	119			3	3
GIT Clinic	6 296	944			19	63
Gynaecology	11 323	2 831			48	97
Haematology	12 333	4 008			8	14
Hospital Engineering	8 289		8 289			
Hospital Fees	2 772		2 772			
Human Genetics	1 379					
Human Resources Development	3 207		3 207			
Hypertension Clinic	264					
Ischaemic Heart Disease Research	90	23				
Lipid Clinic	113					
Liver Clinic	2 558					4
Logopaedics	891	111				
Management Suites	4 908		4 908			
Materials Handling	7 578		7 578			
Medical Graphics	1 214		1 214			

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TABLE 4. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	Secondary Cost	Support Cost	Excluded Cost	Secondary Beds	Total Beds
Medical Informatics	2 163		2 163			
Medical Microbiology	5 137	1 027				
Medical Physics	2 244					
Medico-legal	142		142			
Neonatology	5 322					72
Neurology	2 616					24
Neurosurgery	6 732	1 010			28	94
Nuclear Medicine	2 565	128				
Nursing Administration	12 769		12 769			
Obstetrics	11 405	2 851			54	108
Occupational Health	863		863			
Occupational Therapy	1 544	270				
OPD (General)	883			883		
Ophthalmology	6 847	1 712			24	49
Orthopaedics	13 039	2 934			49	108
Other Hospitals	44 330			44 330		
Paediatrics	4 152			4 152	52	52
PCU	1 211		1 211			
Pharmacy	6 255		6 255			
Physiotherapy	2 465	345				
Plastic Surgery	3 684	1 474			14	23
Psychiatry	4 890	3 423			22	27
Public Relations	216		216			
Radiology	16 026	2 404				
Radiotherapy	13 292					82
Renal Unit	8 664	1 300			4	15
Respiratory Clinic	8 353	1 253			6	20
Rheumatic Disease Unit	686	69			1	5
Rochester House	718		718			
School of Radiography	2 093		2 093			
Services	15 885		15 885			
Social Work	2 035	509				
Supplies	2 270		2 270			
Trauma Unit	8 842	6 189			22	27
UCT School of Nursing	56		56			
Urology	3 834	2 109			27	39
Virology	2 242	561				
Cost CentreTotal	462 481	65 457	120 991	52 425	623	1 438
Global and Other Expenses	37 521					
TOTAL EXPENDITURE	500 002					

Appendix I

TABLE 5. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	% Tertiary	Adjusted %	Tertiary Cost	Secondary Cost	Tertiary Beds	Secondary Beds	Total beds	Support Costs	Excluded Costs
Administration Secretariat	68								68	
Anaesthetics	10 764								10 764	
Anatomical Pathology	6 891								6 891	
Animal House	916								916	
Biomedical Engineering	1 262								1 262	
Cardiac Clinic	10 770	100%	100%	10 770		29		29		
Cardio-Thoracic Surgery	16 766	100%	100%	16 766		59		59		
Carinus Nursing College	10 353								10 353	
Catering	5 860								5 860	
Central Processing Department	4 588								4 588	
Chemical Pathology	9 438								9 438	
Clinical Engineering	4 645								4 645	
Clinical Immunology	363								363	
Clinical Pharmacology	1 746								1 746	
Clinical Science	1 736								1 736	
Community Health	2 338									2 338
Creche - Nursery Schools	1 212								1 212	
Dermatology	2 717	35%	53%	1 426	1 291	9	16	25		
Dietetics	984								984	
Emergency Unit	5 729	25%	38%	2 148	3 581	8	25	33		
Endocrine and Diabetes	1 873	76%	88%	1 648	225	3	1	4		
ENT	5 264	50%	75%	3 948	1 316	24	24	48		
Enviromental Hygiene Services	17 819								17 819	
Family Practice Unit	722									722
Finance	1 659								1 659	
General Medicine	20 996	40%	60%	12 598	8 398	76	114	190		
General Surgery	25 164	50%	75%	18 873	6 291	62	62	124		
Geriatric Unit	153	15%	23%	34	119	0	3	3		
GIT Clinic	6 296	70%	85%	5 352	944	44	19	63		
Gynaecology	11 323	50%	75%	8 492	2 831	49	49	97		
Haematology - Laboratories	6 167								6 167	
Haematology - Other	6 165	45%	68%	4 161	2 004	6	8	14		
Hospital Engineering	8 289								8 289	
Hospital Fees	2 772								2 772	
Human Genetics	1 379								1 379	
Human Resources	3 207								3 207	
Hypertension Clinic	264	100%	100%	264						
Ischaemic Heart Disease	90	50%	75%	68	23					
Lipid Clinic	113	100%	100%	113						
Liver Clinic	2 558	100%	100%	2 558		4		4		
Logopaedics	891								891	
Management Suites	4 908								4 908	
Materials Handling	7 578								7 578	
Medical Graphics	1 214								1 214	
Medical Informatics	2 163								2 163	
Medical Microbiology	5 137								5 137	
Medical Physics	2 244								2 244	
Medico-legal	142								142	
Neonatology	5 322	100%	100%	5 322		72		72		
Neurology	2 616	100%	100%	2 616		24		24		

Appendix I

TABLE 5. GSH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	% Tertiary	Adjusted %	Tertiary Cost	Secondary Cost	Tertiary Beds	Secondary Beds	Total beds	Support Costs	Excluded Costs
Neurosurgery	6 732	70%	85%	5 722	1 010	66	28	94		
Nuclear Medicine	2 565								2 565	
Nursing Administration	12 769								12 769	
Obstetrics	11 405	50%	75%	8 554	2 851	54	54	108		
Occupational Health	863								863	
Occupational Therapy	1 544								1 544	
OPD (General)	883									883
Ophthalmology	6 847	50%	75%	5 135	1 712	25	25	49		
Orthopaedics	13 039	55%	78%	10 105	2 934	59	49	108		
Other Hospitals	44 330									44 330
Paediatrics	4 152						52	52		4 152
PCU	1 211								1 211	
Pharmacy	6 255								6 255	
Physiotherapy	2 465								2 465	
Plastic Surgery	3 684	40%	60%	2 210	1 474	9	14	23		
Psychiatry	4 890	20%	30%	1 467	3 423	5	22	27		
Public Relations	216								216	
Radiology	16 026								16 026	
Radiotherapy	13 292	100%	100%	13 292		82		82		
Renal Unit	8 664	70%	85%	7 364	1 300	11	5	15		
Respiratory Clinic	8 353	70%	85%	7 100	1 253	14	6	20		
Rheumatic Diseases Unit	686	80%	90%	617	69	4	1	5		
Rochester House	718								718	
School of Radiography	2 093								2 093	
Services	15 885								15 885	
Social Work	2 035								2 035	
Supplies	2 270								2 270	
Trauma Unit	8 842	20%	30%	2 653	6 189	5	22	27		
UCT School of Nursing	56								56	
Urology	3 834	30%	45%	1 725	2 109	12	27	39		
Virology	2 242								2 242	
Cost CentreTotal	462 480			163 103	51 344	815	623	1 438	195 608	52 425
Global and Other Expenses	37 521									
				Tertiary plus Secondary Costs						
TOTAL EXPENDITURE	500 001			214 447						

Appendix I

TABLE 6. TBH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	% Tertiary	Adjusted %	Tertiary Cost	Secondary Cost	Exclusions	Support
Admissions	14 427						14 427
Anaesthetics	8 651	33%	49%	4 256	4 395		
Anatomical Pathology	5 325	28%	42%	2 237	3 089		
Anatomy and Cell Biology	462	44%	66%	305	157		
Animal Unit	246						246
Cardiac Clinic	5 157	50%	75%	3 868	1 289		
Cardio-Thoracic Surgery	5 253	60%	80%	4 202	1 051		
Catering	12 756						12 756
Central Processing Department	6 197						6 197
Chemical Pathology	8 428	56%	78%	6 574	1 854		
Clinical Engineering	1 294						1 294
Clinical Pharmacology	2 164	50%	75%	1 623	541		
Community Health	3 501					3 501	
Creche - Nursery Schools	678						678
Dermatology	1 071	18%	26%	281	790		
Dietetics	1 759	18%	26%	462	1 297		
Emergency Unit	6 250	13%	19%	1 172	5 078		
Endocrine and Diabetes	206	38%	57%	118	89		
ENT	2 478	30%	45%	1 115	1 363		
Enviromental Hygiene Services	13 311						13 311
Family Planning	663					663	
Garden and Grounds	539						539
General Medicine	16 642	20%	30%	4 993	11 650		
General Surgery	16 738	30%	45%	7 532	9 206		
GIT Clinic	626	35%	53%	329	297		
Haematology	4 828	23%	34%	1 629	3 198		
Hospital Engineering	11 993						11 993
Hospital Fees	2 654						2 654
Logopaedics	263	53%	76%	201	62		
Management Suites	1 123						1 123
Materials Handling	3 858						3 858
Medical Biochemistry & Physiology	1 968	70%	85%	1 673	295		
Medical Graphics	365						365
Medical Informatics	1 212						1 212
Medical Microbiology	5 766	42%	63%	3 633	2 134		
Medical Physics	1 198	50%	75%	898	299		
Medical Records & Transcription	4 638						4 638
Mortuary	50						50
Neonatology	4 659	60%	80%	3 727	932		
Neurology	624	50%	75%	468	156		
Neurosurgery	6 071	42%	63%	3 825	2 246		
Nuclear Medicine	2 873	63%	82%	2 341	531		
Nursing Administration	2 347						2 347

TABLE 6. TBH 1994/95 COSTS (R000s)

Cost Centre	Cost 1994/95	% Tertiary	Adjusted %	Tertiary Cost	Secondary Cost	Exclusions	Support
Obstetrics and Gynaecology	27 309	30%	45%	12 289	15 020		
Occupational Therapy	1 745	46%	68%	1 191	554		
Oncology	4 941	50%	75%	3 706	1 235		
OPD (General)	731					731	
Ophthalmology	3 490	30%	45%	1 571	1 920		
Orthopaedics	8 092	33%	50%	4 006	4 087		
PA Transport	2 025						2 025
Paediatric Medicine	12 016					12 016	
Paediatric Surgery	7 847					7 847	
Patient Transport	222						222
Pharmacy	37 889						37 889
Physiotherapy	1 749	50%	75%	1 315	434		
Plastic Surgery	838	24%	36%	302	536		
Portering	5 968						5 968
Psychiatry	1 193	10%	15%	179	1 014		
Public Relations	159						159
Radiology	8 516	49%	74%	6 259	2 257		
Radiotherapy	8 522	100%	100%	8 522			
Registry	71						71
Renal Unit	5 279	35%	53%	2 772	2 508		
Respiratory Clinic	6 833	35%	53%	3 588	3 246		
Schools & Colleges	2 234						2 234
Security & Parking	1 564						1 564
Services Other	123						123
Social Work	1 704	35%	53%	895	810		
Staff Office and Personnel	5 011						5 011
Staff Residencies	3 652						3 652
Supplies	1 113						1 113
Telephone	1 386						1 386
Theatre	9 750	30%	45%	4 387	5 362		
Toxicology	854	70%	85%	726	128		
Trauma Unit	3 830	12%	18%	689	3 141		
Urology	2 763	18%	27%	746	2 017		
Virology	3 877	35%	53%	2 035	1 841		
Cost Centre Total	374 606			112 637	98 109	24 757	139 104
Global Expenses	45 474						
TOTAL EXPENDITURE	420 080						

GROOTE SCHUUR HOSPITAL				
POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(2/6/95)	% OF TOTAL
29212	ADMINISTRATION CLERK	ADMINISTRATION	646	8.33%
28959	ADMINISTRATIVE OFFICER	ADMINISTRATION	28	0.36%
28967	ASD: ADMINISTRATION	ADMINISTRATION	6	0.08%
29168	CHIEF ADMINISTRATION CLERK	ADMINISTRATION	19	0.24%
28971	DD: ADMINISTRATION	ADMINISTRATION	1	0.01%
3846	DD: INFORMATION TECHNOLOGY	ADMINISTRATION	1	0.01%
10540	DD: MEDICAL TECHNOLOGY	ADMINISTRATION	1	0.01%
3730	PROGRAMMER	ADMINISTRATION	8	0.10%
11558	REGISTRY CLERK	ADMINISTRATION	64	0.83%
28963	SENIOR ADMINISTRATIVE OFFICER	ADMINISTRATION	13	0.17%
		ADMINISTRATION Total	787	10.15%
30169	CLEANER I	AUXILIARY (UNCLASSIFIED)	722	9.31%
30170	CLEANER II	AUXILIARY (UNCLASSIFIED)	75	0.97%
30190	FOOD SERVICES AID I	AUXILIARY (UNCLASSIFIED)	133	1.71%
30191	FOOD SERVICES AID II	AUXILIARY (UNCLASSIFIED)	17	0.22%
30178	GENERAL STORES ASSISTANT I	AUXILIARY (UNCLASSIFIED)	9	0.12%
30179	GENERAL STORES ASSISTANT II	AUXILIARY (UNCLASSIFIED)	88	1.13%
30181	GROUNDSMAN I	AUXILIARY (UNCLASSIFIED)	13	0.17%
30182	GROUNDSMAN II	AUXILIARY (UNCLASSIFIED)	2	0.03%
30184	LABOURER I	AUXILIARY (UNCLASSIFIED)	3	0.04%
30185	LABOURER II	AUXILIARY (UNCLASSIFIED)	4	0.05%
30199	LINEN STORES ASSISTANT I	AUXILIARY (UNCLASSIFIED)	2	0.03%
30200	LINEN STORES ASSISTANT II	AUXILIARY (UNCLASSIFIED)	4	0.05%
30204	MESSENGER	AUXILIARY (UNCLASSIFIED)	35	0.45%
18618	SENIOR MESSENGER	AUXILIARY (UNCLASSIFIED)	28	0.36%
30187	TRADESMAN AID I	AUXILIARY (UNCLASSIFIED)	2	0.03%
30188	TRADESMAN AID II	AUXILIARY (UNCLASSIFIED)	47	0.61%
		AUXILIARY (UNCLASSIFIED) Total	1184	15.27%
30121	CHIEF DIRECTOR	CHIEF SPECIALIST	1	0.01%
2776	CHIEF MEDICAL/DENTAL SUPERINTENDENT	CHIEF SPECIALIST	1	0.01%
2513	CHIEF SPECIALIST/PROFESSOR	CHIEF SPECIALIST	1	0.01%
		CHIEF SPECIALIST Total	3	0.04%
10092	ARTISAN (A GROUP)	GENERAL	62	0.80%
10123	ARTISAN (B GROUP)	GENERAL	1	0.01%
10199	ARTISAN FOREMAN	GENERAL	5	0.06%
10220	ARTISAN SUPERINTENDENT	GENERAL	1	0.01%
30212	CHIEF SPECIALISED AUXILIARY SERVICES OFFICER	GENERAL	6	0.08%
961	DATA TYPIST	GENERAL	8	0.10%
2765	DICTAPHONE TYPIST	GENERAL	26	0.34%
21009	DRIVER	GENERAL	51	0.66%
8825	FOOD SERVICES MANAGER	GENERAL	9	0.12%
8828	FOOD SERVICES MANAGER, CHIEF	GENERAL	1	0.01%
8827	FOOD SERVICES MANAGER, PRINCIPAL	GENERAL	1	0.01%
3449	FOOD SERVICES SUPERVISOR	GENERAL	48	0.62%
28043	GENERAL FOREMAN	GENERAL	29	0.37%
30340	HOUSEKEEPING SUPERVISOR	GENERAL	158	2.04%
825	LINEN SUPERVISOR	GENERAL	4	0.05%
91866	LINEN SUPERVISOR, PRINCIPAL	GENERAL	1	0.01%
90272	LINEN SUPERVISOR, SENIOR	GENERAL	3	0.04%
28075	OPERATOR*	GENERAL	29	0.37%
914	OPERATOR, SENIOR	GENERAL	1	0.01%
28079	OPERATOR, SENIOR*	GENERAL	4	0.05%
90271	PORTER	GENERAL	158	2.04%
90231	PORTER, SENIOR	GENERAL	16	0.21%
28051	PRINCIPAL GENERAL FOREMAN	GENERAL	3	0.04%
960	PRINCIPAL PORTER	GENERAL	8	0.10%
874	SEAMSTRESS	GENERAL	8	0.10%
876	SEAMSTRESS, SENIOR	GENERAL	2	0.03%
2764	SECRETARY	GENERAL	1	0.01%
1361	SECURITY OFFICER GRADE I	GENERAL	48	0.62%
2299	SECURITY OFFICER, PRINCIPAL	GENERAL	1	0.01%
1362	SECURITY OFFICER, SENIOR	GENERAL	6	0.08%
24066	SECURITYGUARD GRADE I	GENERAL	36	0.46%
10230	SENIOR ARTISAN SUPERINTENDENT	GENERAL	1	0.01%
28047	SENIOR GENERAL FOREMAN	GENERAL	33	0.43%
30343	SENIOR HOUSEKEEPING SUPERVISOR	GENERAL	16	0.21%
30206	SPECIALISED AUXILIARY SERVICES OFFICER	GENERAL	199	2.57%
29701	SPECIALISED AUXILIARY SERVICES, ASSISTANT	GENERAL	63	0.81%
11382	STOREKEEPER	GENERAL	42	0.54%
28030	TELEKOM OPERATOR	GENERAL	23	0.30%
28038	TELEKOM OPERATOR, PRINCIPAL	GENERAL	1	0.01%
28034	TELEKOM OPERATOR, SENIOR	GENERAL	4	0.05%
1320	TYPIST	GENERAL	64	0.83%

1319	TYPIST, CHIEF	GENERAL	2	0.03%
		GENERAL Total	1183	15.25%
1113	MEDICAL OFFICER	MEDICAL OFFICER	145	1.87%
23825	MEDICAL OFFICER, CHIEF	MEDICAL OFFICER	2	0.03%
1114	MEDICAL OFFICER, PRINCIPAL	MEDICAL OFFICER	5	0.06%
851	MEDICAL/DENTAL SUPERINTENDENT	MEDICAL OFFICER	2	0.03%
852	MEDICAL/DENTAL SUPERINTENDENT, SENIOR	MEDICAL OFFICER	2	0.03%
478	REGISTRAR	MEDICAL OFFICER	305	3.93%
		MEDICAL OFFICER Total	461	5.94%
6289	DIRECTOR: NURSING SERVICES, DEPUTY	NURSING	1	0.01%
6206	NURSING ASSISTANT	NURSING	1113	14.35%
6218	NURSING ASSISTANT, SENIOR	NURSING	147	1.90%
6278	NURSING SERVICE MANAGER	NURSING	15	0.19%
6287	NURSING SERVICE MANAGER, CHIEF	NURSING	1	0.01%
6259	NURSING SERVICE MANAGER, SENIOR	NURSING	6	0.08%
6242	PROFESSIONAL NURSE	NURSING	1001	12.91%
6266	PROFESSIONAL NURSE, CHIEF	NURSING	86	1.11%
6254	PROFESSIONAL NURSE, SENIOR	NURSING	301	3.88%
6226	STAFF NURSE	NURSING	417	5.38%
6234	STAFF NURSE, SENIOR	NURSING	142	1.83%
		NURSING Total	3230	41.65%
23880	PRINCIPAL SPECIALIST	PRINCIPAL SPECIALIST	29	0.37%
		PRINCIPAL SPECIALIST Total	29	0.37%
4416	BIOMETRICIAN	PROFESSIONAL REMAINDER	5	0.06%
9305	DIRECTOR: MEDICAL NATURAL SCIENCE, ASSISTANT	PROFESSIONAL REMAINDER	12	0.15%
6441	ENGINEER	PROFESSIONAL REMAINDER	5	0.06%
18483	ENGINEER, DEPUTY CHIEF	PROFESSIONAL REMAINDER	1	0.01%
28783	MEDICAL NATURAL SCIENTIST	PROFESSIONAL REMAINDER	23	0.30%
9459	MEDICAL PHYSICIST	PROFESSIONAL REMAINDER	7	0.09%
9461	MEDICAL PHYSICIST, CONTROL	PROFESSIONAL REMAINDER	1	0.01%
2280	PHARMACIST	PROFESSIONAL REMAINDER	31	0.40%
5	PRINCIPAL PHARMACIST	PROFESSIONAL REMAINDER	1	0.01%
4	SENIOR PHARMACIST	PROFESSIONAL REMAINDER	3	0.04%
		PROFESSIONAL REMAINDER Total	89	1.15%
2514	SENIOR SPECIALIST	SENIOR SPECIALIST	40	0.52%
		SENIOR SPECIALIST Total	40	0.52%
1781	SPECIALIST	SPECIALIST	105	1.35%
		SPECIALIST Total	105	1.35%
8521	ANIMAL HOUSE TECHNICIAN	TECHNICAL	1	0.01%
8523	ANIMAL HOUSE TECHNICIAN, CHIEF	TECHNICAL	1	0.01%
30237	CHIEF HEALTH THERAPIST	TECHNICAL	28	0.36%
6583	CHIROPODIST	TECHNICAL	1	0.01%
91669	CLINICAL PHOTOGRAPHER	TECHNICAL	5	0.06%
10556	CLINICAL TECHNOLOGIST	TECHNICAL	24	0.31%
10558	CLINICAL TECHNOLOGIST, CHIEF	TECHNICAL	5	0.06%
29293	CLINICAL TECHNOLOGIST, CONTROL	TECHNICAL	4	0.05%
30239	CONTROL HEALTH THERAPIST	TECHNICAL	6	0.08%
9514	DIETICIAN	TECHNICAL	10	0.13%
9516	DIETICIAN, PRINCIPAL	TECHNICAL	2	0.03%
10345	DIRECTOR: SOCIAL SERVICES, ASSISTANT	TECHNICAL	1	0.01%
30233	HEALTH THERAPIST	TECHNICAL	158	2.04%
7812	INDUSTRIAL TECHNICIAN	TECHNICAL	24	0.31%
7836	INDUSTRIAL TECHNICIAN, CHIEF	TECHNICAL	13	0.17%
7837	INDUSTRIAL TECHNICIAN, CONTROL	TECHNICAL	4	0.05%
10967	LIASON OFFICER	TECHNICAL	3	0.04%
8585	MEDICAL TECHNICAL OFFICER	TECHNICAL	56	0.72%
8588	MEDICAL TECHNICAL OFFICER, CHIEF	TECHNICAL	5	0.06%
10536	MEDICAL TECHNOLOGIST	TECHNICAL	159	2.05%
29309	MEDICAL TECHNOLOGIST, CHIEF	TECHNICAL	17	0.22%
29317	MEDICAL TECHNOLOGIST, CONTROL	TECHNICAL	7	0.09%
10342	SOCIAL WORKER	TECHNICAL	29	0.37%
30231	STUDENT HEALTH THERAPIST	TECHNICAL	82	1.06%
		TECHNICAL Total	645	8.32%
		Grand Total	7756	100.00%

HOSPITAL DATABASE

	CPA REPORT 1993/94	GSH	TBH	FRERE	LIVINGSTONE
	ACTUAL BEDS	1 802	1 815	938	1 176
	IN PATIENT DAYS	473 743	501 498	221 681	291 306
	LENGTH OF STAY	6.59	6.29	7.22	7.17
	OCCUPANCY	91%	76%	65%	68%
OUT-PATIENT FACTOR	HEAD COUNTS	558 436	477 084	198 370	236 831
15 VISITS	VISITS	852 633	681 436	256 167	404 566
	EMERGENCIES	75 330	112 230	98 313	146 405
5 HOME VISITS (DOCTORS/NURSES)	HOME VISITS	531		14 895	18264
	VISITS/HEAD COUNTS	1.53	1.43	1.29	1.71
	EMERGENCIES/VISITS	9%	16%	38%	36%
	STAFF/BED	4.30	3.43	2.44	1.83
	WORK UNITS	530 691	546 927	241 738	321 930

	POST CLASS (NUMBER/DESCRIPTION)	STAFF CATEGORY	POSTS(2/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(13/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON
29212	ADMINISTRATION CLERK	ADM	646	8.33%	822	552	8.86%	991	153	6.71%	1 580	124	5.76%	2 596
28959	ADMINISTRATIVE OFFICER	ADM	28	0.36%	18 953	18	0.29%	30 385	6	0.26%	40 290	5	0.23%	64 386
29168	CHIEF ADMINISTRATION CLERK	ADM	19	0.24%	27 931	15	0.24%	36 462	8	0.35%	30 217	11	0.51%	29 266
961	DATA TYPIST	ADM	8	0.10%	66 336	11	0.18%	49 721						
2765	DICTAPHONE TYPIST	ADM	26	0.34%	20 411									
11558	REGISTRY CLERK	ADM	64	0.83%	8 292	39	0.63%	14 024	3	0.13%	80 579	24	1.12%	13 414
11560	REGISTRY CLERK, CHIEF	ADM				1	0.02%	546 927				1	0.05%	321 930
2764	SECRETARY	ADM	1	0.01%	530 691	2	0.03%	273 464						
28963	SENIOR ADMINISTRATIVE OFFICER	ADM	13	0.17%	40 822	9	0.14%	60 770	2	0.09%	120 869	4	0.19%	80 482
1320	TYPIST	ADM	64	0.83%	8 292	93	1.49%	5 881	23	1.01%	10 510	7	0.33%	45 990
1319	TYPIST, CHIEF	ADM	2	0.03%	265 346	1	0.02%	546 927	1	0.04%	241 738			
		ADM Total	871	11.23%	609	741	11.89%	738	196	8.60%	1 233	176	8.18%	1 829
10092	ARTISAN (A GROUP)	GEN	62	0.80%	8 560	41	0.66%	13 340	31	1.36%	7 798	17	0.79%	18 937
10123	ARTISAN (B GROUP)	GEN	1	0.01%	530 691				2	0.09%	120 869			
10199	ARTISAN FOREMAN	GEN	5	0.06%	106 138	5	0.08%	109 385	3	0.13%	80 579	3	0.14%	107 310
10220	ARTISAN SUPERINTENDENT	GEN	1	0.01%	530 691									
30169	CLEANER I	GEN	722	9.31%	735	129	2.07%	4 240	266	11.67%	909	248	11.53%	1 298
30170	CLEANER II	GEN	75	0.97%	7 076	21	0.34%	26 044	45	1.97%	5 372	47	2.19%	6 850
30190	FOOD SERVICES AID I	GEN	133	1.71%	3 990	107	1.72%	5 111	36	1.58%	6 715	19	0.88%	16 944
30191	FOOD SERVICES AID II	GEN	17	0.22%	31 217	43	0.69%	12 719	11	0.48%	21 976	10	0.46%	32 193
28043	GENERAL FOREMAN	GEN	29	0.37%	18 300	6	0.10%	91 155	2	0.09%	120 869	1	0.05%	321 930
30178	GENERAL STORES ASSISTANT I	GEN	9	0.12%	58 966	5	0.08%	109 385						
30179	GENERAL STORES ASSISTANT II	GEN	88	1.13%	6 031	62	1.00%	8 821	26	1.14%	9 298	8	0.37%	40 241
30181	GROUNDSMAN I	GEN	13	0.17%	40 822				17	0.75%	14 220	36	1.67%	8 942
30182	GROUNDSMAN II	GEN	2	0.03%	265 346	21	0.34%	26 044	10	0.44%	24 174	2	0.09%	160 965
30193	HOUSEHOLD AID I	GEN				656	10.53%	834	32	1.40%	7 554			
30194	HOUSEHOLD AID II	GEN												
30184	LABOURER I	GEN	3	0.04%	176 897				3	0.13%	80 579			
30185	LABOURER II	GEN	4	0.05%	132 673	12	0.19%	45 577	1	0.04%	241 738			
30196	LAUNDRY ASSISTANT I	GEN							22	0.96%	10 988	41	1.91%	7 852
30197	LAUNDRY ASSISTANT II	GEN							17	0.75%	14 220	30	1.39%	10 731
30199	LINEN STORES ASSISTANT I	GEN	2	0.03%	265 346	10	0.16%	54 693						
30200	LINEN STORES ASSISTANT II	GEN	4	0.05%	132 673							6	0.28%	53 655
30204	MESSENGER	GEN	35	0.45%	15 163	18	0.29%	30 385	6	0.26%	40 290	1	0.05%	321 930
90271	PORTER	GEN	158	2.04%	3 359	199	3.19%	2 748	56	2.46%	4 317	55	2.56%	5 853
90231	PORTER, SENIOR	GEN	16	0.21%	33 168	18	0.29%	30 385	5	0.22%	48 348	4	0.19%	80 482
28051	PRINCIPAL GENERAL FOREMAN	GEN	3	0.04%	176 897	1	0.02%	546 927						
960	PRINCIPAL PORTER	GEN	8	0.10%	66 336	2	0.03%	273 464	1	0.04%	241 738	3	0.14%	107 310
10230	SENIOR ARTISAN SUPERINTENDENT	GEN	1	0.01%	530 691									
28047	SENIOR GENERAL FOREMAN	GEN	33	0.43%	16 082	30	0.48%	18 231	6	0.26%	40 290	4	0.19%	80 482
18618	SENIOR MESSENGER	GEN	28	0.36%	18 953	1	0.02%	546 927						
30187	TRADESMAN AID I	GEN	2	0.03%	265 346	5	0.08%	109 385	2	0.09%	120 869	25	1.16%	12 877
30188	TRADESMAN AID II	GEN	47	0.61%	11 291	74	1.19%	7 391	40	1.75%	6 043			
		GEN Total	1501	19.35%	354	1466	23.53%	373	640	28.07%	378	560	26.03%	575
28967	ASD: ADMINISTRATION	MAN	6	0.08%	88 449	6	0.10%	91 155	1	0.04%	241 738	2	0.09%	160 965
3845	ASD: INFORMATION TECHNOLOGY	MAN												
30121	CHIEF DIRECTOR	MAN	1	0.01%	530 691									

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(2/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(13/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/8/95)	% OF TOTAL	WU/PERSON
												1	0.05%	321 930
2776	CHIEF MEDICAL/DENTAL SUPERINTENDENT	MAN	1	0.01%	530 691	1	0.02%	546 927						
28971	DD: ADMINISTRATION	MAN	1	0.01%	530 691	1	0.02%	546 927	1	0.04%	241 738			
3846	DD: INFORMATION TECNOLOGY	MAN	1	0.01%	530 691									
10540	DD: MEDICAL TECHNOLOGY	MAN	1	0.01%	530 691	3	0.05%	182 309						
30120	DIRECTOR	MAN												
851	MEDICAL/DENTAL SUPERINTENDENT	MAN	2	0.03%	265 346	3	0.05%	182 309	1	0.04%	241 738	1	0.05%	321 930
852	MEDICAL/DENTAL SUPERINTENDENT, SENIOR	MAN	2	0.03%	265 346	1	0.02%	546 927				1	0.05%	321 930
		MAN Total	15	0.19%	35 379	15	0.24%	36 462	3	0.13%	80 579	5	0.23%	64 386
1113	MEDICAL OFFICER	MOF	145	1.87%	3 660	142	2.28%	3 852	77	3.38%	3 139	133	6.18%	2 421
23825	MEDICAL OFFICER, CHIEF	MOF	2	0.03%	265 346	2	0.03%	273 464	1	0.04%	241 738			
1114	MEDICAL OFFICER, PRINCIPAL	MOF	5	0.06%	106 138	17	0.27%	32 172						
		MOF Total	152	1.96%	3 491	161	2.58%	3 397	78	3.42%	3 099	133	6.18%	2 421
6206	NURSING ASSISTANT	NAS	1113	14.35%	477	991	15.90%	552	253	11.10%	955	209	9.72%	1 540
6218	NURSING ASSISTANT, SENIOR	NAS	147	1.90%	3 610	13	0.21%	42 071	64	2.81%	3 777	85	3.95%	3 787
		NAS Total	1260	16.25%	421	1004	16.11%	545	317	13.90%	763	294	13.67%	1 095
6289	DIRECTOR: NURSING SERVICES, DEPUTY	NMA	1	0.01%	530 691									
6278	NURSING SERVICE MANAGER	NMA	15	0.19%	35 379	15	0.24%	36 462	4	0.18%	60 434	3	0.14%	107 310
6287	NURSING SERVICE MANAGER, CHIEF	NMA	1	0.01%	530 691	1	0.02%	546 927	1	0.04%	241 738	1	0.05%	321 930
6259	NURSING SERVICE MANAGER, SENIOR	NMA	6	0.08%	88 449	2	0.03%	273 464	1	0.04%	241 738	1	0.05%	321 930
6266	PROFESSIONAL NURSE, CHIEF	NMA	86	1.11%	6 171	53	0.85%	10 319	17	0.75%	14 220	16	0.74%	20 121
		NMA Total	109	1.41%	4 869	71	1.14%	7 703	23	1.01%	10 510	21	0.98%	15 330
6242	PROFESSIONAL NURSE	NPR	1001	12.91%	530	675	10.83%	810	361	15.83%	670	335	15.57%	961
6254	PROFESSIONAL NURSE, SENIOR	NPR	301	3.88%	1 763	200	3.21%	2 735	132	5.79%	1 831	145	6.74%	2 220
		NPR Total	1302	16.79%	408	875	14.04%	625	493	21.62%	490	480	22.32%	671
6226	STAFF NURSE	NST	417	5.38%	1 273	419	6.72%	1 305	168	7.37%	1 439	136	6.32%	2 367
6234	STAFF NURSE, SENIOR	NST	142	1.83%	3 737	11	0.18%	49 721	49	2.15%	4 933	46	2.14%	6 998
		NST Total	559	7.21%	949	430	6.90%	1 272	217	9.52%	1 114	182	8.46%	1 769
30237	CHIEF HEALTH THERAPIST	PAM	28	0.36%	18 953	9	0.14%	60 770	2	0.09%	120 869			
6583	CHIROPODIST	PAM	1	0.01%	530 691									
30239	CONTROL HEALTH THERAPIST	PAM	6	0.08%	88 449	6	0.10%	91 155	1	0.04%	241 738	2	0.09%	160 965
9514	DIETICIAN	PAM	10	0.13%	53 069	15	0.24%	36 462	2	0.09%	120 869	1	0.05%	321 930
9516	DIETICIAN, PRINCIPAL	PAM	2	0.03%	265 346	3	0.05%	182 309	1	0.04%	241 738			
10345	DIRECTOR: SOCIAL SERVICES, ASSISTANT	PAM	1	0.01%	530 691	1	0.02%	546 927						
30233	HEALTH THERAPIST	PAM	158	2.04%	3 359	148	2.38%	3 695	31	1.36%	7 798	35	1.63%	9 198
6580	OPTOMETRIST	PAM												
10342	SOCIAL WORKER	PAM	29	0.37%	18 300	25	0.40%	21 877	5	0.22%	48 348	5	0.23%	64 386
10344	SOCIAL WORKER, CHIEF	PAM				2	0.03%	273 464	1	0.04%	241 738	1	0.05%	321 930
30231	STUDENT HEALTH THERAPIST	PAM	82	1.06%	6 472	85	1.36%	6 434	21	0.92%	11 511	19	0.88%	16 944
		PAM Total	317	4.09%	1 674	294	4.72%	1 860	64	2.81%	3 777	63	2.93%	5 110
3565	CHIEF PHARMACIST	PHA				1	0.02%	546 927						
2280	PHARMACIST	PHA	31	0.40%	17 119	20	0.32%	27 346	13	0.57%	18 595	15	0.70%	21 462
5	PRINCIPAL PHARMACIST	PHA	1	0.01%	530 691	1	0.02%	546 927	1	0.04%	241 738	1	0.05%	321 930
4	SENIOR PHARMACIST	PHA	3	0.04%	176 897	4	0.06%	136 732	4	0.18%	60 434	5	0.23%	64 386
		PHA Total	35	0.45%	15 163	26	0.42%	21 036	18	0.79%	13 430	21	0.98%	15 330
478	REGISTRAR	REG	305	3.93%	1 740	214	3.43%	2 556						
		REG Total	305	3.93%	1 740	214	3.43%	2 556						
2513	CHIEF SPECIALIST/PROFESSOR	SPE	1	0.01%	530 691									
18891	CLINICAL PHARMACOLOGIST	SPE												
23880	PRINCIPAL SPECIALIST	SPE	29	0.37%	18 300	20	0.32%	27 346	6	0.26%	40 290	4	0.19%	80 482
2514	SENIOR SPECIALIST	SPE	40	0.52%	13 267	24	0.39%	22 789	3	0.13%	80 579	8	0.37%	40 241
1781	SPECIALIST	SPE	105	1.35%	5 054	97	1.56%	5 638	9	0.39%	26 860	12	0.56%	26 827
		SPE Total	175	2.26%	3 033	141	2.26%	3 879	18	0.79%	13 430	24	1.12%	13 414
4416	BIOMETRICIAN	SUP	5	0.06%	106 138							2	0.09%	160 965
30212	CHIEF SPECIALISED AUXILIARY SERVICES OFFICER	SUP	6	0.08%	88 449									
91669	CLINICAL PHOTOGRAPHER	SUP	5	0.06%	106 138									
28155	COMMUNICATION OFFICER	SUP				1	0.02%	546 927						
3768	CONTROL PROGRAMMER	SUP												
21009	DRIVER	SUP	51	0.66%	10 406	49	0.79%	11 162	17	0.75%	14 220	19	0.88%	16 944
6441	ENGINEER	SUP	5	0.06%	106 138	1	0.02%	546 927						
18483	ENGINEER, DEPUTY CHIEF	SUP	1	0.01%	530 691	1	0.02%	546 927						
8825	FOOD SERVICES MANAGER	SUP	9	0.12%	58 966	13	0.21%	42 071	1	0.04%	241 738	1	0.05%	321 930
8828	FOOD SERVICES MANAGER, CHIEF	SUP	1	0.01%	530 691									
8827	FOOD SERVICES MANAGER, PRINCIPAL	SUP	1	0.01%	530 691	1	0.02%	546 927				1	0.05%	321 930
3449	FOOD SERVICES SUPERVISOR	SUP	48	0.62%	11 056	32	0.51%	17 091	12	0.53%	20 145	10	0.46%	32 193
1749	FOOD SERVICES SUPERVISOR, PRINCIPAL	SUP							1	0.04%	241 738	2	0.09%	160 965
30340	HOUSEKEEPING SUPERVISOR	SUP	158	2.04%	3 359	144	2.31%	3 798	51	2.24%	4 740	38	1.77%	8 472
7812	INDUSTRIAL TECHNICIAN	SUP	24	0.31%	22 112	21	0.34%	26 044	4	0.18%	60 434			

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(2/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(13/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON
7836	INDUSTRIAL TECHNICIAN, CHIEF	SUP	13	0.17%	40 822	12	0.19%	45 577	2	0.09%	120 869			
7837	INDUSTRIAL TECHNICIAN, CONTROL	SUP	4	0.05%	132 673	3	0.05%	182 309	2	0.09%	120 869	1	0.05%	321 930
29555	LAUNDRY MANAGER, CONTROL	SUP										1	0.05%	321 930
29527	LAUNDRY SUPERVISOR	SUP							3	0.13%	80 579	12	0.56%	26 827
29531	LAUNDRY SUPERVISOR, SENIOR	SUP							2	0.09%	120 869	4	0.19%	80 482
10967	LIASON OFFICER	SUP	3	0.04%	176 897									
825	LINEN SUPERVISOR	SUP	4	0.05%	132 673	1	0.02%	546 927	3	0.13%	80 579	10	0.46%	32 193
91886	LINEN SUPERVISOR, PRINCIPAL	SUP	1	0.01%	530 691									
90272	LINEN SUPERVISOR, SENIOR	SUP	3	0.04%	176 897	2	0.03%	273 464				1	0.05%	321 930
29693	NETWORK CONTROLLER	SUP												
28075	OPERATOR*	SUP	29	0.37%	18 300	27	0.43%	20 257	7	0.31%	34 534	11	0.51%	29 266
914	OPERATOR, SENIOR	SUP	1	0.01%	530 691	5	0.08%	109 385						
28079	OPERATOR, SENIOR*	SUP	4	0.05%	132 673				1	0.04%	241 738			
30344	PRINCIPAL HOUSEKEEPING SUPERVISOR	SUP				2	0.03%	273 464						
29547	PRINCIPAL LAUNDRY MANAGER	SUP										1	0.05%	321 930
3730	PROGRAMMER	SUP	8	0.10%	66 336	8	0.13%	68 366						
874	SEAMSTRESS	SUP	8	0.10%	66 336	1	0.02%	546 927	6	0.26%	40 290	6	0.28%	53 655
876	SEAMSTRESS, SENIOR	SUP	2	0.03%	265 346	1	0.02%	546 927				1	0.05%	321 930
1361	SECURITY OFFICER GRADE I	SUP	48	0.62%	11 056	23	0.37%	23 779	3	0.13%	80 579	25	1.16%	12 877
24070	SECURITY OFFICER, CHIEF	SUP				1	0.02%	546 927						
2299	SECURITY OFFICER, PRINCIPAL	SUP	1	0.01%	530 691									
1362	SECURITY OFFICER, SENIOR	SUP	6	0.08%	88 449	4	0.06%	136 732	1	0.04%	241 738			
24066	SECURITYGUARD GRADE I	SUP	36	0.46%	14 741	10	0.16%	54 693	23	1.01%	10 510			
30343	SENIOR HOUSEKEEPING SUPERVISOR	SUP	16	0.21%	33 168	26	0.42%	21 036	5	0.22%	48 348	5	0.23%	64 386
30206	SPECIALISED AUXILIARY SERVICES OFFICER	SUP	199	2.57%	2 667	52	0.83%	10 518	33	1.45%	7 325	29	1.35%	11 101
29701	SPECIALISED AUXILIARY SERVICES, ASSISTANT	SUP	63	0.81%	8 424									
11382	STOREKEEPER	SUP	42	0.54%	12 636	25	0.40%	21 877	13	0.57%	18 595	7	0.33%	45 990
11398	STOREKEEPER, CHIEF	SUP				1	0.02%	546 927	1	0.04%	241 738			
28030	TELEKOM OPERATOR	SUP	23	0.30%	23 074	26	0.42%	21 036	5	0.22%	48 348	5	0.23%	64 386
28038	TELEKOM OPERATOR, PRINCIPAL	SUP	1	0.01%	530 691									
28034	TELEKOM OPERATOR, SENIOR	SUP	4	0.05%	132 673	1	0.02%	546 927	1	0.04%	241 738			
		SUP Total	833	10.74%	637	494	7.93%	1 107	197	8.64%	1 227	192	8.93%	1 677
8521	ANIMAL HOUSE TECHNICIAN	TEC	1	0.01%	530 691	1	0.02%	546 927						
8523	ANIMAL HOUSE TECHNICIAN, CHIEF	TEC	1	0.01%	530 691	1	0.02%	546 927						
10556	CLINICAL TECHNOLOGIST	TEC	24	0.31%	22 112	37	0.59%	14 782						
10558	CLINICAL TECHNOLOGIST, CHIEF	TEC	5	0.06%	106 138									
29285	CLINICAL TECHNOLOGIST, CHIEF	TEC				9	0.14%	60 770						
29293	CLINICAL TECHNOLOGIST, CONTROL	TEC	4	0.05%	132 673	7	0.11%	78 132						
9305	DIRECTOR: MEDICAL NATURAL SCIENCE, ASSISTANT	TEC	12	0.15%	44 224	17	0.27%	32 172						
28783	MEDICAL NATURAL SCIENTIST	TEC	23	0.30%	23 074	27	0.43%	20 257						
9459	MEDICAL PHYSICIST	TEC	7	0.09%	75 813	4	0.06%	136 732	1	0.04%	241 738			
28687	MEDICAL PHYSICIST, CHIEF	TEC												
9461	MEDICAL PHYSICIST, CONTROL	TEC	1	0.01%	530 691	2	0.03%	273 464						
8585	MEDICAL TECHNICAL OFFICER	TEC	56	0.72%	9 477	15	0.24%	36 462						
8588	MEDICAL TECHNICAL OFFICER, CHIEF	TEC	5	0.06%	106 138	1	0.02%	546 927						
10536	MEDICAL TECHNOLOGIST	TEC	159	2.05%	3 338	145	2.33%	3 772						
29309	MEDICAL TECHNOLOGIST, CHIEF	TEC	17	0.22%	31 217	24	0.39%	22 789						
29317	MEDICAL TECHNOLOGIST, CONTROL	TEC	7	0.09%	75 813	9	0.14%	60 770						
10576	MEDICAL ORTHOTIST AND PROSTHETIST	TEC							6	0.26%	40 290			
10578	CHIEF MEDICAL ORTHOTIST AND PROSTHETIST	TEC							1	0.04%	241 738			
10599	MEDICAL ORTHOTIST AND PROSTHETIST	TEC							6	0.26%	40 290			
29257	PRINCIPAL MEDICAL ORTHOTIST AND PROSTHETIST	TEC							2	0.09%	120 869			
		TEC Total	322	4.15%	1 648	299	4.80%	1 829	16	0.70%	15 109			
		Grand Total	7756	100.00%	68	6231	100.00%	88	2280	100.00%	106	2151	100.00%	150

HOSPITAL DATABASE

			RXCH			CON/JOOSTE			SOMERSET			SPHG		
		CPA REPORT 1993/94												
		ACTUAL BEDS	353			757			449			313		
		IN PATIENT DAYS	108 684			202 950			99 464			72 125		
		LENGTH OF STAY	4.7			13.6			5.42			6.06		
		OCCUPANCY	84%			74%			61%			63%		
	OUT-PATIENT FACTOR	HEAD COUNTS	169 837			73 228			116 531			62 881		
15	VISITS	VISITS	220 471			203 610			144 043			118 404		
		EMERGENCIES	82 256			31 015			26 435			46 751		
5	HOME VISITS (DOCTORS/NURSES)	HOME VISITS												
		VISITS/HEAD COUNTS	1.30			2.78			1.24			1.88		
		EMERGENCIES/VISITS	28%			15%			18%			39%		
		STAFF/BED	4.31			1.68			2.21			2.35		
		WORK UNITS	123 382			216 524			109 067			80 019		
	POST CLASS (NUMBER/DESCRIPTION)	STAFF CATEGORY	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
29212	ADMINISTRATION CLERK	ADM	98	6.45%	1 259	69	5.43%	3 138	81	8.15%	1 347	55	7.47%	1 455
28959	ADMINISTRATIVE OFFICER	ADM	4	0.26%	30 846	4	0.31%	54 131	5	0.50%	21 813	2	0.27%	40 009
29168	CHIEF ADMINISTRATION CLERK	ADM	11	0.72%	11 217	3	0.24%	72 175	4	0.40%	27 267	3	0.41%	26 673
961	DATA TYPIST	ADM	9	0.59%	13 709									
2765	DICTAPHONE TYPIST	ADM												
11558	REGISTRY CLERK	ADM	17	1.12%	7 258	2	0.16%	108 262	3	0.30%	36 356	2	0.27%	40 009
11560	REGISTRY CLERK, CHIEF	ADM							1	0.10%	109 067			
2764	SECRETARY	ADM												
28963	SENIOR ADMINISTRATIVE OFFICER	ADM	2	0.13%	61 691	4	0.31%	54 131	3	0.30%	36 356	3	0.41%	26 673
1320	TYPIST	ADM	29	1.91%	4 255	4	0.31%	54 131	1	0.10%	109 067	6	0.82%	13 336
1319	TYPIST, CHIEF	ADM												
		ADM Total	170	11.18%	726	86	6.77%	2 518	98	9.86%	1 113	71	9.65%	1 127
10092	ARTISAN (A GROUP)	GEN	10	0.66%	12 338	18	1.42%	12 029	12	1.21%	9 089			
10123	ARTISAN (B GROUP)	GEN										1	0.14%	80 019
10199	ARTISAN FOREMAN	GEN												
10220	ARTISAN SUPERINTENDENT	GEN				1	0.08%	216 524	1	0.10%	109 067			
30169	CLEANER I	GEN	151	9.93%	817	66	5.19%	3 281	109	10.97%	1 001	104	14.13%	769
30170	CLEANER II	GEN	6	0.39%	20 564				13	1.31%	8 390	5	0.68%	16 004
30190	FOOD SERVICES AID I	GEN	11	0.72%	11 217	25	1.97%	8 661	21	2.11%	5 194	14	1.90%	5 716
30191	FOOD SERVICES AID II	GEN	6	0.39%	20 564	10	0.79%	21 652	7	0.70%	15 581	9	1.22%	8 891
28043	GENERAL FOREMAN	GEN				6	0.47%	36 087	4	0.40%	27 267	3	0.41%	26 673
30178	GENERAL STORES ASSISTANT I	GEN	2	0.13%	61 691							1	0.14%	80 019
30179	GENERAL STORES ASSISTANT II	GEN	4	0.26%	30 846	9	0.71%	24 058	8	0.80%	13 633	1	0.14%	80 019
30181	GROUNDSMAN I	GEN	6	0.39%	20 564	11	0.87%	19 684	6	0.60%	18 178	3	0.41%	26 673
30182	GROUNDSMAN II	GEN	1	0.07%	123 382	5	0.39%	43 305	3	0.30%	36 356	1	0.14%	80 019
30193	HOUSEHOLD AID I	GEN				111	8.73%	1 951	8	0.80%	13 633	13	1.77%	6 155
30194	HOUSEHOLD AID II	GEN				5	0.39%	43 305	3	0.30%	36 356			
30184	LABOURER I	GEN												
30185	LABOURER II	GEN	1	0.07%	123 382									
30196	LAUNDRY ASSISTANT I	GEN												
30197	LAUNDRY ASSISTANT II	GEN							5	0.50%	21 813	4	0.54%	20 005
30199	LINEN STORES ASSISTANT I	GEN												
30200	LINEN STORES ASSISTANT II	GEN	4	0.26%	30 846	2	0.16%	108 262						
30204	MESSENGER	GEN	5	0.33%	24 676	8	0.63%	27 066	6	0.60%	18 178	2	0.27%	40 009
90271	PORTER	GEN	20	1.31%	4 255	25	1.97%	8 661	20	2.01%	5 453	21	2.85%	3 810
90231	PORTER, SENIOR	GEN	5	0.33%	24 676	4	0.31%	54 131	1	0.10%	109 067	1	0.14%	80 019
28051	PRINCIPAL GENERAL FOREMAN	GEN	4	0.26%	30 846									
960	PRINCIPAL PORTER	GEN	2	0.13%	61 691				1	0.10%	109 067	1	0.14%	80 019
10230	SENIOR ARTISAN SUPERINTENDENT	GEN	1	0.07%	123 382									
28047	SENIOR GENERAL FOREMAN	GEN	6	0.39%	20 564	5	0.39%	43 305	4	0.40%	27 267	1	0.14%	80 019
18618	SENIOR MESSENGER	GEN												
30187	TRADESMAN AID I	GEN	1	0.07%	123 382	15	1.18%	14 435	15	1.51%	7 271	5	0.68%	16 004
30188	TRADESMAN AID II	GEN	9	0.59%	13 709							2	0.27%	40 009
		GEN Total	264	17.37%	467	326	25.65%	664	247	24.85%	442	192	26.00%	417
28967	ASD: ADMINISTRATION	MAN												
3845	ASD: INFORMATION TECHNOLOGY	MAN												
30121	CHIEF DIRECTOR	MAN												

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
2778	CHIEF MEDICAL/DENTAL SUPERINTENDENT	MAN				1	0.08%	216 524				1	0.14%	80 019
28971	DD: ADMINISTRATION	MAN	1	0.07%	123 382	1	0.08%	216 524	1	0.10%	109 067	1	0.14%	80 019
3846	DD: INFORMATION TECNOLOGY	MAN												
10540	DD: MEDICAL TECHNOLOGY	MAN	1	0.07%	123 382									
30120	DIRECTOR	MAN												
851	MEDICAL/DENTAL SUPERINTENDENT	MAN	1	0.07%	123 382									
852	MEDICAL/DENTAL SUPERINTENDENT, SENIOR	MAN							1	0.10%	109 067			
		MAN Total	3	0.20%	41 127	2	0.16%	108 262	2	0.20%	54 533	2	0.27%	40 009
1113	MEDICAL OFFICER	MOF	30	1.97%	4 113	34	2.68%	6 368	30	3.02%	3 636	29	3.94%	2 759
23825	MEDICAL OFFICER, CHIEF	MOF							1	0.10%	109 067	1	0.14%	80 019
1114	MEDICAL OFFICER, PRINCIPAL	MOF	6	0.39%	20 564	1	0.08%	216 524	2	0.20%	54 533	4	0.54%	20 005
		MOF Total	36	2.37%	3 427	35	2.75%	6 186	33	3.32%	3 305	34	4.62%	2 353
6206	NURSING ASSISTANT	NAS	314	20.66%	393	184	14.48%	1 177	101	10.16%	1 080	84	11.41%	953
6218	NURSING ASSISTANT, SENIOR	NAS	28	1.84%	4 407	94	7.40%	2 303	48	4.83%	2 272	41	5.57%	1 952
		NAS Total	342	22.50%	361	278	21.87%	779	149	14.99%	732	125	16.98%	640
6289	DIRECTOR: NURSING SERVICES, DEPUTY	NMA												
6278	NURSING SERVICE MANAGER	NMA	3	0.20%	41 127	3	0.24%	72 175	3	0.30%	36 356			
6287	NURSING SERVICE MANAGER, CHIEF	NMA				1	0.08%	216 524	1	0.10%	109 067			
6259	NURSING SERVICE MANAGER, SENIOR	NMA	1	0.07%	123 382	1	0.08%	216 524				1	0.14%	80 019
6266	PROFESSIONAL NURSE, CHIEF	NMA	19	1.25%	6 494	16	1.26%	13 533	8	0.80%	13 633	9	1.22%	8 891
		NMA Total	23	1.51%	5 364	21	1.65%	10 311	12	1.21%	9 089	10	1.36%	8 002
6242	PROFESSIONAL NURSE	NPR	151	9.93%	817	116	9.13%	1 867	116	11.67%	940	72	9.78%	1 111
6254	PROFESSIONAL NURSE, SENIOR	NPR	63	4.14%	1 958	67	5.27%	3 232	68	6.84%	1 604	43	5.84%	1 861
		NPR Total	214	14.08%	577	183	14.40%	1 183	184	18.51%	593	115	15.63%	696
6226	STAFF NURSE	NST	80	5.26%	1 542	99	7.79%	2 187	68	6.84%	1 604	47	6.39%	1 703
6234	STAFF NURSE, SENIOR	NST	34	2.24%	3 629	45	3.54%	4 812	37	3.72%	2 948	21	2.85%	3 810
		NST Total	114	7.50%	1 082	144	11.33%	1 504	105	10.56%	1 039	68	9.24%	1 177
30237	CHIEF HEALTH THERAPIST	PAM	3	0.20%	41 127	4	0.31%	54 131	1	0.10%	109 067	2	0.27%	40 009
6583	CHIROPODIST	PAM												
30239	CONTROL HEALTH THERAPIST	PAM	2	0.13%	61 691	1	0.08%	216 524						
9514	DIETICIAN	PAM	1	0.07%	123 382	1	0.08%	216 524	2	0.20%	54 533	1	0.14%	80 019
9516	DIETICIAN, PRINCIPAL	PAM				1	0.08%	216 524						
10345	DIRECTOR: SOCIAL SERVICES, ASSISTANT	PAM				1	0.08%	216 524						
30233	HEALTH THERAPIST	PAM	34	2.24%	3 629	39	3.07%	5 552	16	1.61%	6 817	21	2.85%	3 810
6580	OPTOMETRIST	PAM												
10342	SOCIAL WORKER	PAM	14	0.92%	8 813	9	0.71%	24 058	3	0.30%	36 356	2	0.27%	40 009
10344	SOCIAL WORKER, CHIEF	PAM	1	0.07%	123 382	2	0.16%	108 262	1	0.10%	109 067			
30231	STUDENT HEALTH THERAPIST	PAM												
		PAM Total	55	3.62%	2 243	58	4.58%	3 733	23	2.31%	4 742	26	3.53%	3 078
3565	CHIEF PHARMACIST	PHA												
2280	PHARMACIST	PHA	9	0.59%	13 709	5	0.39%	43 305	8	0.80%	13 633	5	0.68%	16 004
5	PRINCIPAL PHARMACIST	PHA	1	0.07%	123 382	1	0.08%	216 524	1	0.10%	109 067			
4	SENIOR PHARMACIST	PHA	1	0.07%	123 382	1	0.08%	216 524	2	0.20%	54 533			
		PHA Total	11	0.72%	11 217	7	0.55%	30 932	11	1.11%	9 915	5	0.68%	16 004
478	REGISTRAR	REG	11	0.72%	11 217									
		REG Total	11	0.72%	11 217									
2513	CHIEF SPECIALIST/PROFESSOR	SPE												
18891	CLINICAL PHARMACOLOGIST	SPE												
23880	PRINCIPAL SPECIALIST	SPE	10	0.66%	12 338	2	0.16%	108 262	4	0.40%	27 267			
2514	SENIOR SPECIALIST	SPE	7	0.46%	17 626	1	0.08%	216 524	3	0.30%	36 356	2	0.27%	40 009
1781	SPECIALIST	SPE	34	2.24%	3 629	4	0.31%	54 131	10	1.01%	10 907	1	0.14%	80 019
		SPE Total	51	3.36%	2 419	7	0.55%	30 932	17	1.71%	6 416	3	0.41%	26 673
4416	BIOMETRICIAN	SUP												
30212	CHIEF SPECIALISED AUXILIARY SERVICES OFFICER	SUP				1	0.08%	216 524	1	0.10%	109 067			
91669	CLINICAL PHOTOGRAPHER	SUP	1	0.07%	123 382									
28155	COMMUNICATION OFFICER	SUP	1	0.07%	123 382									
3768	CONTROL PROGRAMMER	SUP	1	0.07%	123 382									
21009	DRIVER	SUP	5	0.33%	24 676	5	0.39%	43 305	6	0.60%	18 178	4	0.54%	20 005
6441	ENGINEER	SUP	1	0.07%	123 382									
18483	ENGINEER, DEPUTY CHIEF	SUP												
8825	FOOD SERVICES MANAGER	SUP	1	0.07%	123 382	1	0.08%	216 524	1	0.10%	109 067	1	0.14%	80 019
8828	FOOD SERVICES MANAGER, CHIEF	SUP												
8827	FOOD SERVICES MANAGER, PRINCIPAL	SUP				1	0.08%	216 524						
3449	FOOD SERVICES SUPERVISOR	SUP	7	0.46%	17 626	8	0.63%	27 066	6	0.60%	18 178	6	0.82%	13 336
1749	FOOD SERVICES SUPERVISOR, PRINCIPAL	SUP	1	0.07%	123 382	1	0.08%	216 524	1	0.10%	109 067	1	0.14%	80 019
30340	HOUSEKEEPING SUPERVISOR	SUP	28	1.84%	4 407	47	3.70%	4 607	39	3.92%	2 797	26	3.53%	3 078
7812	INDUSTRIAL TECHNICIAN	SUP	1	0.07%	123 382	1	0.08%	216 524						

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
7836	INDUSTRIAL TECHNICIAN, CHIEF	SUP	2	0.13%	61 691	1	0.08%	216 524						
7837	INDUSTRIAL TECHNICIAN, CONTROL	SUP	1	0.07%	123 382									
29555	LAUNDRY MANAGER, CONTROL	SUP												
29527	LAUNDRY SUPERVISOR	SUP												
29531	LAUNDRY SUPERVISOR, SENIOR	SUP												
10967	LIASON OFFICER	SUP												
825	LINEN SUPERVISOR	SUP	4	0.26%	30 846	2	0.16%	108 262	6	0.60%	18 178	2	0.27%	40 009
91866	LINEN SUPERVISOR, PRINCIPAL	SUP							1	0.10%	109 067			
90272	LINEN SUPERVISOR, SENIOR	SUP	1	0.07%	123 382	1	0.08%	216 524	1	0.10%	109 067			
29693	NETWORK CONTROLLER	SUP	1	0.07%	123 382									
28075	OPERATOR*	SUP	10	0.66%	12 338	5	0.39%	43 305	8	0.80%	13 633	11	1.49%	7 274
914	OPERATOR, SENIOR	SUP												
28079	OPERATOR, SENIOR*	SUP												
30344	PRINCIPAL HOUSEKEEPING SUPERVISOR	SUP							1	0.10%	109 067			
29547	PRINCIPAL LAUNDRY MANAGER	SUP												
3730	PROGRAMMER	SUP	4	0.26%	30 846									
874	SEAMSTRESS	SUP	2	0.13%	61 691	2	0.16%	108 262	2	0.20%	54 533	1	0.14%	80 019
876	SEAMSTRESS, SENIOR	SUP												
1361	SECURITY OFFICER GRADE I	SUP	7	0.46%	17 626	1	0.08%	216 524	2	0.20%	54 533			
24070	SECURITY OFFICER, CHIEF	SUP												
2299	SECURITY OFFICER, PRINCIPAL	SUP												
1362	SECURITY OFFICER, SENIOR	SUP	1	0.07%	123 382									
24066	SECURITYGUARD GRADE I	SUP	1	0.07%	123 382	6	0.47%	36 087	5	0.50%	21 813			
30343	SENIOR HOUSEKEEPING SUPERVISOR	SUP	6	0.39%	20 564	5	0.39%	43 305	2	0.20%	54 533	2	0.27%	40 009
30206	SPECIALISED AUXILIARY SERVICES OFFICER	SUP	38	2.50%	3 247	19	1.49%	11 396	18	1.81%	6 059	15	2.04%	5 335
29701	SPECIALISED AUXILIARY SERVICES, ASSISTANT	SUP												
11382	STOREKEEPER	SUP	10	0.66%	12 338	10	0.79%	21 652	7	0.70%	15 581	8	1.09%	10 002
11398	STOREKEEPER, CHIEF	SUP	1	0.07%	123 382	1	0.08%	216 524	1	0.10%	109 067	1	0.14%	80 019
28030	TELEKOM OPERATOR	SUP	7	0.46%	17 626	5	0.39%	43 305	5	0.50%	21 813	7	0.95%	11 431
28038	TELEKOM OPERATOR, PRINCIPAL	SUP												
28034	TELEKOM OPERATOR, SENIOR	SUP	1	0.07%	123 382	1	0.08%	216 524						
		SUP Total	144	9.47%	857	124	9.76%	1 748	113	11.37%	965	85	11.55%	941
8521	ANIMAL HOUSE TECHNICIAN	TEC												
8523	ANIMAL HOUSE TECHNICIAN, CHIEF	TEC												
10556	CLINICAL TECHNOLOGIST	TEC	8	0.53%	15 423									
10558	CLINICAL TECHNOLOGIST, CHIEF	TEC	1	0.07%	123 382									
29285	CLINICAL TECHNOLOGIST, CHIEF	TEC												
29293	CLINICAL TECHNOLOGIST, CONTROL	TEC												
9305	DIRECTOR: MEDICAL NATURAL SCIENCE, ASSISTANT	TEC	1	0.07%	123 382									
28783	MEDICAL NATURAL SCIENTIST	TEC	5	0.33%	24 676									
9459	MEDICAL PHYSICIST	TEC												
28687	MEDICAL PHYSICIST, CHIEF	TEC												
9461	MEDICAL PHYSICIST, CONTROL	TEC												
8585	MEDICAL TECHNICAL OFFICER	TEC	3	0.20%	41 127									
8588	MEDICAL TECHNICAL OFFICER, CHIEF	TEC												
10536	MEDICAL TECHNOLOGIST	TEC	49	3.22%	2 518									
29309	MEDICAL TECHNOLOGIST, CHIEF	TEC	10	0.66%	12 338									
29317	MEDICAL TECHNOLOGIST, CONTROL	TEC	5	0.33%	24 676									
10576	MEDICAL ORTHOTIST AND PROSTHETIST	TEC												
10578	CHIEF MEDICAL ORTHOTIST AND PROSTHETIST	TEC												
10599	MEDICAL ORTHOTIST AND PROSTHETIST	TEC												
29257	PRINCIPAL MEDICAL ORTHOTIST AND PROSTHETIST	TEC												
		TEC Total	82	5.39%	1 505									
		Grand Total	1520	100.00%	81	1271	100.00%	170	994	100.00%	110	736	100.00%	109

HOSPITAL DATABASE

CPA REPORT 1993/94	PAARL	EBEN DONGES	GEORGE
ACTUAL BEDS	298	318	247
IN PATIENT DAYS	80 303	98 771	57 549
LENGTH OF STAY	3.91	5.23	4.14
OCCUPANCY	74%	85%	64%
HEAD COUNTS	13 154	67 153	47 965
VISITS	13 154	144 786	52 624
EMERGENCIES	33 625	48 222	27 581
HOME VISITS	2 005	4 169	872
VISITS/HEAD COUNTS	1.00	2.16	1.10
EMERGENCIES/VISITS	256%	33%	52%
STAFF/BED	2.46	1.70	2.11
WORK UNITS	81 581	109 257	61 232

OUT-PATIENT FACTOR	
15	VISITS
5	HOME VISITS (DOCTORS/NURSES)

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	PAARL POSTS(28/4/95)	PAARL % OF TOTAL	PAARL WU/PERSON	EBEN DONGES POSTS(28/4/95)	EBEN DONGES % OF TOTAL	EBEN DONGES WU/PERSON	GEORGE POSTS(28/4/95)	GEORGE % OF TOTAL	GEORGE WU/PERSON
29212	ADMINISTRATION CLERK	ADM	55	7.51%	1 483	42	7.76%	2 601	39	7.47%	1 570
28959	ADMINISTRATIVE OFFICER	ADM	3	0.41%	27 194	3	0.55%	36 419	2	0.38%	30 616
29168	CHIEF ADMINISTRATION CLERK	ADM	5	0.68%	16 316	2	0.37%	54 629	3	0.57%	20 411
961	DATA TYPIST	ADM									
2765	DICTAPHONE TYPIST	ADM									
11558	REGISTRY CLERK	ADM	4	0.55%	20 395	2	0.37%	54 629			
11560	REGISTRY CLERK, CHIEF	ADM									
2764	SECRETARY	ADM									
28963	SENIOR ADMINISTRATIVE OFFICER	ADM	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	61 232
1320	TYPIST	ADM	2	0.27%	40 790	1	0.18%	109 257	1	0.19%	61 232
1319	TYPIST, CHIEF	ADM									
		ADM Total	70	9.56%	1 165	51	9.43%	2 142	46	8.81%	1 331
10092	ARTISAN (A GROUP)	GEN	7	0.96%	11 654	4	0.74%	27 314	5	0.96%	12 246
10123	ARTISAN (B GROUP)	GEN									
10199	ARTISAN FOREMAN	GEN	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	61 232
10220	ARTISAN SUPERINTENDENT	GEN									
30169	CLEANER I	GEN	94	12.84%	868	75	13.86%	1 457	61	11.69%	1 004
30170	CLEANER II	GEN	9	1.23%	9 065	2	0.37%	54 629	3	0.57%	20 411
30190	FOOD SERVICES AID I	GEN	13	1.78%	6 275	8	1.48%	13 657	5	0.96%	12 246
30191	FOOD SERVICES AID II	GEN	7	0.96%	11 654	3	0.55%	36 419	3	0.57%	20 411
28043	GENERAL FOREMAN	GEN	2	0.27%	40 790	3	0.55%	36 419	4	0.77%	15 308
30178	GENERAL STORES ASSISTANT I	GEN									
30179	GENERAL STORES ASSISTANT II	GEN	5	0.68%	16 316	4	0.74%	27 314	2	0.38%	30 616
30181	GROUNDSMAN I	GEN	6	0.82%	13 597	5	0.92%	21 851	3	0.57%	20 411
30182	GROUNDSMAN II	GEN	3	0.41%	27 194				2	0.38%	30 616
30193	HOUSEHOLD AID I	GEN				4	0.74%	27 314	2	0.38%	30 616
30194	HOUSEHOLD AID II	GEN							2	0.38%	30 616
30184	LABOURER I	GEN				4	0.74%	27 314			
30185	LABOURER II	GEN									
30196	LAUNDRY ASSISTANT I	GEN				11	2.03%	9 932	19	3.64%	3 223
30197	LAUNDRY ASSISTANT II	GEN				8	1.48%	13 657	1	0.19%	61 232
30199	LINEN STORES ASSISTANT I	GEN	4	0.55%	20 395						
30200	LINEN STORES ASSISTANT II	GEN							5	0.96%	12 246
30204	MESSENGER	GEN	1	0.14%	81 581	1	0.18%	109 257	2	0.38%	30 616
90271	PORTER	GEN	13	1.78%	6 275	12	2.22%	9 105	7	1.34%	8 747
90231	PORTER, SENIOR	GEN	2	0.27%	40 790	2	0.37%	54 629	1	0.19%	61 232
28051	PRINCIPAL GENERAL FOREMAN	GEN									
980	PRINCIPAL PORTER	GEN	1	0.14%	81 581	1	0.18%	109 257			
10230	SENIOR ARTISAN SUPERINTENDENT	GEN									
28047	SENIOR GENERAL FOREMAN	GEN	2	0.27%	40 790	2	0.37%	54 629	1	0.19%	61 232
18618	SENIOR MESSENGER	GEN									
30187	TRADESMAN AID I	GEN	7	0.96%	11 654	4	0.74%	27 314	2	0.38%	30 616
30188	TRADESMAN AID II	GEN				3	0.55%	36 419	2	0.38%	30 616
		GEN Total	177	24.18%	461	157	29.02%	696	133	25.48%	460
28987	ASD: ADMINISTRATION	MAN	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	61 232
3645	ASD: INFORMATION TECHNOLOGY	MAN									
30121	CHIEF DIRECTOR	MAN									

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
2776	CHIEF MEDICAL/DENTAL SUPERINTENDENT	MAN	1	0.14%	81 581						
28971	DD: ADMINISTRATION	MAN	1	0.14%	81 581						
3846	DD: INFORMATION TECNOLOGY	MAN									
10540	DD: MEDICAL TECHNOLOGY	MAN									
30120	DIRECTOR	MAN							1	0.19%	81 232
851	MEDICAL/DENTAL SUPERINTENDENT	MAN	1	0.14%	81 581				1	0.19%	81 232
852	MEDICAL/DENTAL SUPERINTENDENT, SENIOR	MAN									
		MAN Total	4	0.55%	20 395	1	0.18%	109 257	3	0.57%	20 411
1113	MEDICAL OFFICER	MOF	18	2.46%	4 532	16	2.96%	6 829	16	3.07%	3 827
23825	MEDICAL OFFICER, CHIEF	MOF				1	0.18%	109 257			
1114	MEDICAL OFFICER, PRINCIPAL	MOF	3	0.41%	27 194						
		MOF Total	21	2.87%	3 885	17	3.14%	6 427	16	3.07%	3 827
6206	NURSING ASSISTANT	NAS	91	12.43%	896	55	10.17%	1 986	53	10.15%	1 155
6218	NURSING ASSISTANT, SENIOR	NAS	43	5.87%	1 897	22	4.07%	4 966	27	5.17%	2 268
		NAS Total	134	18.31%	609	77	14.23%	1 419	80	15.33%	765
6289	DIRECTOR: NURSING SERVICES, DEPUTY	NMA									
6278	NURSING SERVICE MANAGER	NMA	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	81 232
6287	NURSING SERVICE MANAGER, CHIEF	NMA									
6259	NURSING SERVICE MANAGER, SENIOR	NMA	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	81 232
6266	PROFESSIONAL NURSE, CHIEF	NMA	7	0.96%	11 654	4	0.74%	27 314	7	1.34%	8 747
		NMA Total	9	1.23%	9 065	6	1.11%	18 210	9	1.72%	6 804
6242	PROFESSIONAL NURSE	NPR	98	13.39%	832	71	13.12%	1 539	77	14.75%	795
6254	PROFESSIONAL NURSE, SENIOR	NPR	47	6.42%	1 736	35	6.47%	3 122	32	6.13%	1 913
		NPR Total	145	19.81%	563	106	19.59%	1 031	109	20.88%	562
6226	STAFF NURSE	NST	50	6.83%	1 632	50	9.24%	2 185	30	5.75%	2 041
6234	STAFF NURSE, SENIOR	NST	23	3.14%	3 547	17	3.14%	6 427	14	2.68%	4 374
		NST Total	73	9.97%	1 118	67	12.38%	1 631	44	8.43%	1 392
30237	CHIEF HEALTH THERAPIST	PAM	1	0.14%	81 581				1	0.19%	81 232
6583	CHIROPODIST	PAM									
30239	CONTROL HEALTH THERAPIST	PAM									
9514	DIETICIAN	PAM	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	81 232
9518	DIETICIAN, PRINCIPAL	PAM									
10345	DIRECTOR: SOCIAL SERVICES, ASSISTANT	PAM									
30233	HEALTH THERAPIST	PAM	6	0.82%	13 597	5	0.92%	21 851	5	0.96%	12 246
6580	OPTOMETRIST	PAM									
10342	SOCIAL WORKER	PAM	2	0.27%	40 790	1	0.18%	109 257	1	0.19%	81 232
10344	SOCIAL WORKER, CHIEF	PAM									
30231	STUDENT HEALTH THERAPIST	PAM									
		PAM Total	10	1.37%	8 158	7	1.29%	15 608	8	1.53%	7 654
3565	CHIEF PHARMACIST	PHA									
2280	PHARMACIST	PHA	4	0.55%	20 395	2	0.37%	54 629	4	0.77%	15 308
5	PRINCIPAL PHARMACIST	PHA									
4	SENIOR PHARMACIST	PHA	2	0.27%	40 790	1	0.18%	109 257	2	0.38%	30 616
		PHA Total	6	0.82%	13 597	3	0.55%	36 419	6	1.15%	10 205
478	REGISTRAR	REG									
		REG Total									
2513	CHIEF SPECIALIST/PROFESSOR	SPE									
18891	CLINICAL PHARMACOLOGIST	SPE									
23880	PRINCIPAL SPECIALIST	SPE	1	0.14%	81 581						
2514	SENIOR SPECIALIST	SPE							5	0.96%	12 246
1761	SPECIALIST	SPE	1	0.14%	81 581				5	0.96%	12 246
		SPE Total	2	0.27%	40 790						
4416	BIOMETRICIAN	SUP									
30212	CHIEF SPECIALISED AUXILIARY SERVICES OFFICER	SUP									
91669	CLINICAL PHOTOGRAPHER	SUP									
28155	COMMUNICATION OFFICER	SUP									
3768	CONTROL PROGRAMMER	SUP									
21009	DRIVER	SUP	5	0.68%	16 316	3	0.55%	36 419	4	0.77%	15 308
6441	ENGINEER	SUP									
18483	ENGINEER, DEPUTY CHIEF	SUP									
8825	FOOD SERVICES MANAGER	SUP	1	0.14%	81 581	1	0.18%	109 257	1	0.19%	81 232
8826	FOOD SERVICES MANAGER, CHIEF	SUP									
8827	FOOD SERVICES MANAGER, PRINCIPAL	SUP									
3449	FOOD SERVICES SUPERVISOR	SUP	5	0.68%	16 316	3	0.55%	36 419	3	0.57%	20 411
1749	FOOD SERVICES SUPERVISOR, PRINCIPAL	SUP				1	0.18%	109 257			
30340	HOUSEKEEPING SUPERVISOR	SUP	31	4.23%	2 632	19	3.51%	5 750	23	4.41%	2 662
7812	INDUSTRIAL TECHNICIAN	SUP									

POST CLASS (NUMBER/DESCRIPTION)		STAFF CATEGORY	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
7836	INDUSTRIAL TECHNICIAN, CHIEF	SUP									
7837	INDUSTRIAL TECHNICIAN, CONTROL	SUP									
29555	LAUNDRY MANAGER, CONTROL	SUP				2	0.37%	54 629			
29527	LAUNDRY SUPERVISOR	SUP				1	0.18%	109 257	1	0.19%	61 232
29531	LAUNDRY SUPERVISOR, SENIOR	SUP									
10967	LIASON OFFICER	SUP	2	0.27%	40 790	1	0.18%	109 257	1	0.19%	61 232
825	LINEN SUPERVISOR	SUP									
91866	LINEN SUPERVISOR, PRINCIPAL	SUP									
90272	LINEN SUPERVISOR, SENIOR	SUP									
29693	NETWORK CONTROLLER	SUP	8	1.09%	10 198	5	0.92%	21 851	5	0.96%	12 246
28075	OPERATOR*	SUP							1	0.19%	61 232
914	OPERATOR, SENIOR	SUP									
28079	OPERATOR, SENIOR*	SUP									
30344	PRINCIPAL HOUSEKEEPING SUPERVISOR	SUP									
29547	PRINCIPAL LAUNDRY MANAGER	SUP							2	0.38%	30 616
3730	PROGRAMMER	SUP	1	0.14%	81 581						
874	SEAMSTRESS	SUP									
876	SEAMSTRESS, SENIOR	SUP	2	0.27%	40 790						
1361	SECURITY OFFICER GRADE I	SUP									
24070	SECURITY OFFICER, CHIEF	SUP									
2299	SECURITY OFFICER, PRINCIPAL	SUP									
1362	SECURITY OFFICER, SENIOR	SUP	4	0.55%	20 395						
24066	SECURITYGUARD GRADE I	SUP	1	0.14%	81 581						
30343	SENIOR HOUSEKEEPING SUPERVISOR	SUP	11	1.50%	7 416	6	1.11%	18 210	15	2.87%	4 082
30206	SPECIALISED AUXILIARY SERVICES OFFICER	SUP									
29701	SPECIALISED AUXILIARY SERVICES, ASSISTANT	SUP	4	0.55%	20 395	2	0.37%	54 629	2	0.38%	30 616
11382	STOREKEEPER	SUP									
11398	STOREKEEPER, CHIEF	SUP	6	0.82%	13 597	5	0.92%	21 851	5	0.96%	12 246
28030	TELEKOM OPERATOR	SUP									
28038	TELEKOM OPERATOR, PRINCIPAL	SUP									
28034	TELEKOM OPERATOR, SENIOR	SUP									
		SUP Total	81	11.07%	1 007	49	9.06%	2 230	63	12.07%	972
8521	ANIMAL HOUSE TECHNICIAN	TEC									
8523	ANIMAL HOUSE TECHNICIAN, CHIEF	TEC									
10556	CLINICAL TECHNOLOGIST	TEC									
10558	CLINICAL TECHNOLOGIST, CHIEF	TEC									
29285	CLINICAL TECHNOLOGIST, CHIEF	TEC									
29293	CLINICAL TECHNOLOGIST, CONTROL	TEC									
9305	DIRECTOR: MEDICAL NATURAL SCIENCE, ASSISTANT	TEC									
28783	MEDICAL NATURAL SCIENTIST	TEC									
9459	MEDICAL PHYSICIST	TEC									
28687	MEDICAL PHYSICIST, CHIEF	TEC									
9461	MEDICAL PHYSICIST, CONTROL	TEC									
8585	MEDICAL TECHNICAL OFFICER	TEC									
8588	MEDICAL TECHNICAL OFFICER, CHIEF	TEC									
10536	MEDICAL TECHNOLOGIST	TEC									
29309	MEDICAL TECHNOLOGIST, CHIEF	TEC									
29317	MEDICAL TECHNOLOGIST, CONTROL	TEC									
10576	MEDICAL ORTHOTIST AND PROSTHETIST	TEC									
10578	CHIEF MEDICAL ORTHOTIST AND PROSTHETIST	TEC									
10599	MEDICAL ORTHOTIST AND PROSTHETIST	TEC									
29257	PRINCIPAL MEDICAL ORTHOTIST AND PROSTHETIST	TEC									
		TEC Total									
		Grand Total	732	100.00%	111	541	100.00%	202	522	100.00%	117

HOSPITAL DATABASE

		GSH	TBH	FRERE	LIVINGSTONE
	CPA REPORT 1993/94				
	ACTUAL BEDS	1 802	1 815	936	1 176
	IN PATIENT DAYS	473 743	501 498	221 681	291 306
	LENGTH OF STAY	6.59	6.29	7.22	7.17
	OCCUPANCY	91%	76%	65%	68%
	HEAD COUNTS	558 436	477 084	198 370	236 831
	VISITS	852 633	681 436	256 167	404 566
	EMERGENCIES	75 330	112 230	98 313	146 405
	HOME VISITS	531		14 895	18264
	VISITS/HEAD COUNTS	1.53	1.43	1.29	1.71
	EMERGENCIES/VISITS	9%	16%	38%	36%
	STAFF/BED	4.30	3.43	2.44	1.83
	WORK UNITS	530 691	546 927	241 738	321 930

OUT-PATIENT FACTOR	
15	VISITS
5	HOME VISITS (DOCTORS/NURSES)

STAFF CATEGORY	POSTS(2/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(13/6/95)	% OF TOTAL	WU/PERSON	POSTS(1/6/95)	% OF TOTAL	WU/PERSON
ADM Total	871	11.23%	609	741	11.89%	738	196	8.60%	1 233	176	8.18%	1 829
GEN Total	1501	19.35%	354	1466	23.53%	373	640	28.07%	378	560	26.03%	575
MAN Total	15	0.19%	35 379	15	0.24%	36 462	3	0.13%	80 579	5	0.23%	64 386
MOF Total	152	1.96%	3 491	161	2.58%	3 397	78	3.42%	3 099	133	6.18%	2 421
NAS Total	1260	16.25%	421	1004	16.11%	545	317	13.90%	763	294	13.67%	1 095
NMA Total	109	1.41%	4 869	71	1.14%	7 703	23	1.01%	10 510	21	0.98%	15 330
NPR Total	1302	16.79%	408	875	14.04%	625	493	21.62%	490	480	22.32%	671
NST Total	559	7.21%	949	430	6.90%	1 272	217	9.52%	1 114	182	8.46%	1 769
PAM Total	317	4.09%	1 674	294	4.72%	1 860	64	2.81%	3 777	63	2.93%	5 110
PHA Total	35	0.45%	15 163	26	0.42%	21 036	18	0.79%	13 430	21	0.98%	15 330
REG Total	305	3.93%	1 740	214	3.43%	2 556						
SPE Total	175	2.26%	3 033	141	2.26%	3 879	18	0.79%	13 430	24	1.12%	13 414
SUP Total	833	10.74%	637	494	7.93%	1 107	197	8.64%	1 227	192	8.93%	1 677
TEC Total	322	4.15%	1 648	299	4.80%	1 829	16	0.70%	15 109			
Grand Total	7756	100.00%	68	6231	100.00%	88	2280	100.00%	108	2151	100.00%	150

HOSPITAL DATABASE

OUT-PATIENT FACTOR	
15	VISITS
5	HOME VISITS (DOCTORS/NURSES)

CPA REPORT 1993/94	RXCH	CON/JOOSTE	SOMERSET	SPHG
ACTUAL BEDS	353	757	449	313
IN PATIENT DAYS	108 684	202 950	99 464	72 125
LENGTH OF STAY	4.7	13.6	5.42	6.06
OCCUPANCY	84%	74%	61%	63%
HEAD COUNTS	169 837	73 228	116 531	62 681
VISITS	220 471	203 610	144 043	116 404
EMERGENCIES	62 256	31 015	26 435	46 751
HOME VISITS				
VISITS/HEAD COUNTS	1.30	2.78	1.24	1.88
EMERGENCIES/VISITS	28%	15%	18%	39%
STAFF/BED	4.31	1.68	2.21	2.35
WORK UNITS	123 382	216 524	109 067	80 019

STAFF CATEGORY	POSTS(1/6/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
ADM Total	170	11.18%	726	86	6.77%	2 518	98	9.86%	1 113	71	9.65%	1 127
GEN Total	264	17.37%	467	326	25.65%	664	247	24.85%	442	192	26.09%	417
MAN Total	3	0.20%	41 127	2	0.16%	108 262	2	0.20%	54 533	2	0.27%	40 009
MOF Total	36	2.37%	3 427	35	2.75%	6 188	33	3.32%	3 305	34	4.62%	2 353
NAS Total	342	22.50%	361	278	21.87%	779	149	14.99%	732	125	16.98%	640
NMA Total	23	1.51%	5 364	21	1.65%	10 311	12	1.21%	9 089	10	1.36%	8 002
NPR Total	214	14.08%	577	183	14.40%	1 183	184	18.51%	593	115	15.63%	696
NST Total	114	7.50%	1 082	144	11.33%	1 504	105	10.56%	1 039	68	9.24%	1 177
PAM Total	55	3.62%	2 243	58	4.56%	3 733	23	2.31%	4 742	26	3.53%	3 078
PHA Total	11	0.72%	11 217	7	0.55%	30 932	11	1.11%	9 915	5	0.68%	16 004
REG Total	11	0.72%	11 217									
SPE Total	51	3.36%	2 419	7	0.55%	30 932	17	1.71%	8 416	3	0.41%	26 673
SUP Total	144	9.47%	857	124	9.76%	1 746	113	11.37%	985	85	11.55%	941
TEC Total	82	5.39%	1 505									
Grand Total	1520	100.00%	81	1271	100.00%	170	994	100.00%	110	736	100.00%	109

HOSPITAL DATABASE

OUT-PATIENT FACTOR	
15	VISITS
5	HOME VISITS (DOCTORS/NURSES)

CPA REPORT 1993/94	PAARL	EBEN DONGES	GEORGE
ACTUAL BEDS	298	318	247
IN PATIENT DAYS	80 303	98 771	57 549
LENGTH OF STAY	3.91	5.23	4.14
OCCUPANCY	74%	85%	64%
HEAD COUNTS	13 154	67 153	47 965
VISITS	13 154	144 786	52 624
EMERGENCIES	33 625	48 222	27 581
HOME VISITS	2 005	4 169	872
VISITS/HEAD COUNTS	1.00	2.16	1.10
EMERGENCIES/VISITS	256%	33%	52%
STAFF/BED	2.46	1.70	2.11
WORK UNITS	81 581	109 257	61 232

STAFF CATEGORY	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON	POSTS(28/4/95)	% OF TOTAL	WU/PERSON
ADM Total	70	9.56%	1 165	51	9.43%	2 142	46	8.81%	1 331
GEN Total	177	24.18%	461	157	29.02%	696	133	25.48%	460
MAN Total	4	0.55%	20 395	1	0.18%	109 257	3	0.57%	20 411
MOF Total	21	2.87%	3 885	17	3.14%	6 427	16	3.07%	3 827
NAS Total	134	18.31%	609	77	14.23%	1 419	80	15.33%	765
NMA Total	9	1.23%	9 065	6	1.11%	18 210	9	1.72%	6 804
NPR Total	145	19.81%	563	106	19.59%	1 031	109	20.88%	562
NST Total	73	9.97%	1 118	67	12.38%	1 631	44	8.43%	1 392
PAM Total	10	1.37%	8 158	7	1.29%	15 608	8	1.53%	7 654
PHA Total	6	0.82%	13 597	3	0.55%	36 419	6	1.15%	10 205
REG Total							5	0.96%	12 246
SPE Total	2	0.27%	40 790				63	12.07%	972
SUP Total	81	11.07%	1 007	49	9.06%	2 230			
TEC Total									
Grand Total	732	100.00%	111	541	100.00%	202	522	100.00%	117

ANNEXURE C

The cost of tertiary care at Groote Schuur Hospital and Tygerberg Hospital : based on estimates of tertiary clinical services

AIM:

To estimate the cost-implications of consolidating the current TBH tertiary service component with the current GSH tertiary service component.

Definitions

Secondary service was defined as clinical care that could satisfactorily be performed by a general specialist (physician or surgeon), orthopaedic surgeon, obstetrician/gynaecologist, radiologist, anaesthetist or paediatrician etc. at a well-functioning Level 2 hospital, eg. Frere Hospital.

Tertiary service was defined by combinations of the following criteria (in ascending order of reliability): super-specialist (organ, system, disease, technique); complex equipment, investigations, monitoring; a recognised "expert" in certain disorders; multidisciplinary specialist clinics; referral from without the region.

Level 2 Hospital:	A hospital serving a region of the province in which services up to and including those provided by specialists are available - Draft Provincial Health Plan (DPHP), p131.
Level 3 Hospital:	A hospital located at provincial level in which services up to and including those provided by a subspecialist are available (DPHP, p131).

Data Sources

Expenditure by cost centre : The Ernst and Young Management Accountancy Procedure (MAP) data for all cost centres at GSH as at 31 March 1995 were used for GSH. When these data were compared with the data in Chapter 9 of the DPHP, it was found that costs had gone up by 19% over those reported in the DPHP. The cost-centre based data for TBH were adjusted by an increment of 10% - this increment was based on data made availabe to Ernst and Young through the SMT Finance Committee.

Procedures

1.1 Identifying the existing tertiary component at GSH : The MAP data identified cost centres which, on the whole, corresponded with individual Units, Departments and, in some cases, wards. However, within a specific Unit (eg Respiratory Unit) a service may be wholly secondary (95% of acute asthmatics), wholly tertiary (eg investigation of lymphangiomyomatosis) or partly tertiary (eg an episode of pulmonary shadows in a patient on cytotoxics). Each cost centre was individually considered in consultation with Heads of Divisions and hospital administration at GSH. A proportion of each cost centre's budget was apportioned as "tertiary" or "secondary".

1.2 Costing the existing tertiary component at GSH : The estimated proportion of the budget expended by each cost centre on tertiary services was calculated. The results of these calculations are expressed as percentage of Total Service by Division in Table 1 and detailed in Tables 2 - 10.

1.3 Estimating the existing tertiary component at TBH : The proportion of expenditure on tertiary work performed at TBH was adjusted relative to the estimates for GSH, taking into consideration factors such as number of specialists per Division; number of patients admitted, number of out-patients, operations or deliveries; heavier weighting was given to indices of postgraduate activity including number of registrars, interns and publications on the grounds that tertiary activity in a teaching hospital necessarily involves registrars and research. (Tables 2-10 - see footnotes to tables).

The impact of off-site limited private practice has not been taken into account.

The data comparing the two institutions are shown in Table 11 (Situation analysis). (NOTE: The estimated adjustments for TBH are provisional, pending the future availability of accurate data.)

1.4 The cost of tertiary services : Using the procedures outlined in 1.1 and 1.2 above, the expenditure on "tertiary" services was calculated for GSH and TBH (Table 1). (NOTE: The amounts quoted have been considerably refined by subsequent modelling - see Annexures B and E.)

Note: The plan assumes that GSH belongs to neither US nor UCT; therefore, in order to render adequate tertiary services and to provide a rational base for teaching, savings made at TBH have been transferred to GSH.

CONCLUSIONS:

1. Based on the findings of this investigation, it appears financially feasible to merge the current TBH and GSH tertiary services and accommodate these in GSH. Further investigation of this model is justified.

2. If a tertiary bed cost R350 000 pa is assumed (see Annexure B), then R280,064m (the estimated current costs of tertiary services for GSH and TBH - see Table 1) represents approximately 800 tertiary beds.

21.4.1995

Table 1

ESTIMATED COST OF TERTIARY SERVICES AT GSH AND TBH

Based on DPHP Cost Centre Forecast of R905 487 000 (Red Cross Hospital excluded).

LEVEL 3	GSH	TBH X 10^3 TOTAL
Medicine	59 517	16 488
Surgery	49 354	22 070
O & G	16 687	10 606
Radiotherapy	13 292	8 226
Anaesthetics	5 536	1 939
Radiol & Nucl Med	13 527	5 775
Labs	15 723	11 549
Nursing (M&A)	12 769	1 586
PAM	4 711	2 623
	191 116	80 862
		+ 10% inflation 8 086
	191 116	88 948

NOTE: The cost of support services has not been included for either institution (these costs are included in models shown in Annexures B and E).

Total: R280,064m

21.4.1995

Table 2

MEDICINE

DPHP COST CENTRES		Est. Tertiary Component	
		GSH	TBH
Cardiac Clinic	(100%)	10 770	4 978
Emergency	(25%)	1 448	1 507
Clin Immunol	(100%)	363	
Clin Pharm	(100%)	1 746	2 089
Clin Science	(100%)	1 736	
Dermatol	(35%)	951	362
Endocr & Diab	(76%)	1 423	151
Gen Med	(40%)	8 399	6 425
Geriatrics	(15%)	23	
GIT	(70%)	4 407	423
Haem	(45%)	5 549	2 097
Genetics	(100%)	1 379	
HT Clinic	(100%)	264	
IHD	(50%)	90	
Lipid	(100%)	113	
Liver	(100%)	2 558	
Med Physics	(100%)	2 244	1 156
Neurology	(100%)	2 616	602
Oncology		-	4 769
Renal	(70%)	0 064	3 567
Resp	(70%)	5 847	4 618
Rh Dis	(80%)	549	
Psych	(20%)	978	230
TOTAL X 10^3		59 517	32 976

TBH estimated current tertiary component
= 50% of that done at GSH*
= 33 259 x $^{50}/_{100}$ = R16,629

*rationale: TBH has 65% of GSH full-time specialists
but 80% of GSH in-patients
and 57% of GSH out-patients
and 49% of GSH registrars
and 43% of GSH interns
and 28% of GSH publications

21.4.1995

Table 3

SURGERY:

DPHP COST CENTRES		Est. Tertiary Component	
		GSH	TBH
Cardiothoracic	(100%)	16 766	5 070
ENT	(50%)	361	1 196
Gen Surgery	(50%)	12 582	8 078
Neurosurgery	(70%)	4 712	4 102
Ophthalmol	(50%)	3 424	1 685
Orthopaedics	(55%)	7 171	4 296
Plastics	(40%)	1 474	324
Trauma	(20%)	1 768	740
Urology	(30%)	1 150	800
"Theatre" $3^0:2^0$	(50%)	-	4 705
TOTAL X 10^3		49 354	36 783

TBH estimated current tertiary component
= 60% of that at GSH*
= 36 783 x 60% = R22,069.8

*rationale : TBH has 70% of GSH full-time specialists
has 71% of GSH in-patients
has 90% of GSH out-patients (GSH + PAOH)
has 74% of GSH registrars
has 18% of GSH publications

21.4.1995

Table 4

Obstetrics & Gynaecology and Neonatology

DPHP COST CENTRES		Est. Tertiary Component	
		GSH	TBH
Obstets & Gynae	(50%)	11 365	13 180
Neonatology	(100%)	5 322	4 497
TOTAL X 10^3		16 687	17 677

TBH estimated current tertiary component
= 60% of that at GSH*
= 17 677 x 60% = R10 606.2

*rationale : TBH estimated current tertiary component
TBH has more consultants 19 (GSH = 13)
has 68% of GSH registrars
has 62% of GSH in-patients in Gynae
has 159% of GSH out-patients in Gynae
has 61% of GSH publications
has (est) 55% of GSH's Level 3 deliveries

21.4.1995

Table 5.

RADIOTHERAPY

DPHP COST CENTRE	Est. Tertiary Component	
	GSH	TBH
Radiotherapy (100%)	13 292	8 226
TOTAL X 10^3	13 292	8 226

Radiotherapy at TBH est at 100% tertiary
Transfer of service to GSH may result in saving of 10%

21.4.1995

Table 6.

ANAESTHETICS

DPHP COST CENTRE	Est. Tertiary Component	
	GSH	TBH
Distribution of Surgery L3 : L2	10 764 3.6:3.4	8 350 2.4:2.8
TOTAL x 10^3	5 535.8	3 232.2

TBH tertiary Anaesthetics
= 60% of that estimated for GSH*
= 3 232.2 x 60%
= R1,939.3

*rationale : based on Surgery estimates.

Table 7

RADIOLOGY

DPHP Cost Centre		est. Tertiary Component GSH	TBH
Radiol	(70%)	11 218	5 754
Nuclear Med	(90%)	2 309	2 496
TOTAL x 10^3		13 527	8 250

TBH Tertiary Radiology services
= 70% of the estimate for GSH, based on estimates for clinical services
= 70% x 8250
= R5 775

Table 8

LABORATORY

DPHP Cost Centre		est. Tertiary Component GSH	TBH
Chem Path	(80%)	7 550	6 508
Med Biochem	(100%)	1 214	1 900
Med Micro	(60%)	3 932	3 340
Toxicology	(100%)		824
Virology	(50%)	1 121	1 871
Anat Path	(40%)	2 756	2 056
TOTAL x 10^3		15 723	16 499

TBH Tertiary Laboratory services
= 70% of the estimate for GSH, based on estimates for clinical services
= 70% x 16 499
= R11 549

Table 9

NURSING

	est. Tertiary Component	
	GSH	TBH
DPHP Cost Centre (M & A) 100%	12 769	2 265

TBH Tertiary Related Nursing
= 70% of the estimate for GSH, based on estimates for medicin
and surgery
= 70% x 2 265
= R1 585.5

Table 10

PROFESSIONALS ALLIED TO MEDICINE

DPHP Cost Centre		est. Tertiary Component GSH	TBH
Physiotherapy	(72%)	1 775	1 215
Occupational Therapy	(65%)	1 004	1 095
Logopaedics	(75%)	668	191
Dietetics	(25%)	246	425
Social Work	(50%)	1 018	823
		4 711	3 749

TBH estimated tertiary PAM services
= 70% of the estimate for GSH, based on estimates for Medicine and Surgery
= 70% x 3 749
= R2 623.6