# Assessing access barriers to Tuberculosis (TB) and Antiretroviral (ARV) treatment in Mitchell's Plain, Cape Town South Africa.

A Mini-dissertation to the University of Cape Town in conforming with the requirement for the Master of Public Health (MPH) degree in Health Economics.

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# Part 0: Preamble

## Dedication

This work is dedicated to my family and friends, and also to God for giving me the opportunity.

## Plagiarism Declaration

1. I know that plagiarism is wrong. Plagiarism is to use another's work and pretend that it is one's own.
2. I have used the Harvard style for the study protocol, literature review and policy brief and the biomed central style for the journal manuscript convention for citation and referencing. Each contribution to, and quotation in, this thesis from the work(s) of other people has been attributed, and has been cited and referenced.
3. I have not allowed, and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.
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## Thesis Abstract

Access to health care is a very important concept which has equally important implications to the health status of individuals. However, there have been a lot of debates among researchers and policy makers on what constitutes access, and how it can be made less conceptual and more operational. The concept of access has continued to receive increased attention because of a growing realisation of its importance in health policy. Furthermore, provision of services alone without understanding barriers individuals face in accessing services could result in less optimal outcomes. It is therefore necessary to have an understanding of what 'access' entails and factors that influence it if we are to have a real chance of improving access to health services and therefore enhance health.

In this thesis access is viewed as consisting of three (3) interrelated and measurable dimensions (availability, affordability and acceptability). These access dimensions are related to both the system and user characteristics. Access is therefore said to have been achieved when all the three dimensions have been satisfied. Using the above definition of access, the main focus of this thesis is on access barriers (in relation to the three access dimensions) to both Tuberculosis (TB) and Antiretroviral Treatment (ART) services in Mitchell's Plain, Cape Town South Africa. Secondary cross-sectional data was used for this purpose. Access to TB and HIV treatment has been given priority because the two diseases have had a massive and negative impact on public health in the country. In addition, patients using these services may face similar barriers to care.

Findings of this thesis are expected to provide insights into the barriers TB and HIV patients face in seeking care vis-à-vis availability, affordability and acceptability of services. Findings will therefore prove valuable in as far as improving access is concerned.

## Acknowledgements

I wish to sincerely thank the REACH project for providing me with the secondary survey data from Mitchell's Plain, and therefore making this thesis possible. May I also take this opportunity to acknowledge and thank the Health Economics Unit at the University of Cape Town, and all the parties involved, for funding my studies. I further wish t o thank Leatitia Kampiire for the support rendered during data analysis and also for critically reviewing my work. Last but not the least, special acknowledgements go A/Prof Susan Cleary for making the REACH data available for analysis, as well as the dedicated supervision and guidance at every stage of the thesis, it would have been impossible without her relentless support.

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# Part A: Study Protocol

Assessing access barriers to Tuberculosis (TB) and Antiretroviral (ARV) treatment in Mitchell's Plain, Cape Town

## Synopsis

### Purpose of the study

The purpose of this study is to explore the access barriers to Tuberculosis (TB) and Antiretroviral treatment (ART) services encountered by individuals in Mitchell's Plain (MP), one of Cape Town's sub-districts in the Western Cape, South Africa. The study will also assess the extent to which access to these services differs between individuals of different socio-demographic groups.

### Measurement of Access

Access in this study context is viewed as the 'degree of fit' between providers and users of health care, and this access can be explained by the interaction of three distinct dimensions, namely availability, affordability and acceptability. This definition of access is adopted from McIntyre (2009) and also builds upon Penchansky's (1983) work.

### Study Site

The site for this study is Mitchell's Plain (MP), a sub-district of Cape Town. This area is one of the most populated and busy places in the city. The site is important for the study purposes because it faces public health challenges related to Human Immunodeficiency Virus (HIV) and Tuberculosis (TB).

Findings from this study will give health policy makers and facility managers in this area insight on what is required to improve people's access to TB and ART services. It is also anticipated that improved access will improve health outcomes and set the country on a path to reversing the incidence of these diseases. This will be a positive step to achieving the Millennium Development Goals (MDGs)[2] targets 6.A and 6.C of halting and/or reversing the spread of these diseases.

[2] [2] The United Nations Millennium Development Goals (MDGs) are eight goals that all 191 UN member states have agreed to try to achieve by the year 2015 (http://www.who.int/topics/millennium_development_goals/en/)

## Design of Study

This study uses secondary data collected in the REACH project, (Researching Equity in Access to Health Care), which examines access to health care services by focusing on the tracer services of TB, ART and obstetric care in South Africa. The secondary data used in this study was collected through a survey conducted within health facilities in Mitchell's Plain, which is one of the four REACH study sites in South Africa. A total of 657 respondents above 18 years were interviewed using questionnaires administered by trained interviewers.

## Study Ethics

Ethics approval for this study will be sought from the University of Cape Town Ethics Committee and the study will conform to the requirements in as far as using secondary data is concerned. It is important to note that the parent study (REACH), has already received ethical approval from the University of Cape Town Research Ethics Committee (REC Reference 460/2006).

### Study Benefits

Benefits of this study are not only restricted to aiding MP health managers to improving access to TB and ART services, but also include the fact that the improved access to these services will benefit the community and future users of these services. The study results will further contribute to the existing knowledge on access to TB and ART using methods that have not been widely explored. The study will serve as a reference point and will provide valuable information to future researchers on related topics in health systems research.

### Study Harms

The study does not anticipate any harm to the participants, but will nevertheless ensure that ethical requirements are met with regards to handling of data, i.e. confidentiality and privacy. Additionally, since the data do not include any identifying information such as names, dissemination of results is not expected to violate any ethical requirements.

## Background

The United Nations 2015 Millennium Development Goals (MDGs) numbers 6.A and 6.C suggest a respective halt and reversal of the spread of HIV/AIDS and other major diseases including TB by the year 2015 (UNAIDS 2010a). Despite this, HIV/AIDS and TB have continued to cause massive global morbidity and mortality, and there are suggestions that the MDGs will not be met. The World Health Organisation (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) statistics on HIV showed that in 2008, there were about 2.7 million reported new cases of HIV in the world, and about 70% of these cases occurred in Sub-Saharan Africa (WHO 2010, UNAIDS 2008) making Sub-Saharan Africa the region with the most HIV/AIDS cases and HIV-related deaths in the world (UNAIDS 2008). It is further reported that, in 2009, about 1.3 million people died from AIDS in sub-Saharan Africa while 1.8 million became infected with HIV (Avert website 2011a). Within Sub-Saharan Africa, Southern Africa and in particular South Africa continues to be most heavily affected by the HIV/AIDS pandemic (UNAIDS website 2009 AIDS Epidemic Updates).

Similarly, TB continues to be a public health challenge. The WHO Global Tuberculosis Control Report estimated 9.4 million new cases of TB in 2009, most of which (35%) occurred in Asia, followed by Africa (30%). These new TB cases brought the total number of people living with TB in 2009 to 14 million globally, an increase from an estimated 11.1 million in 2008 (WHO website 2011a). While TB incidence, prevalence and mortality rates have been declining in most regions of the world, Africa is still experiencing massive numbers of TB related deaths causing doubts as to whether Africa will be able to meet the 50% mortality and prevalence reduction targets proposed by the MDGs (WHO website. 2011b). More specifically, TB remains the leading cause of death in people living with HIV in South Africa (Statistics South Africa website 2008).

Not only are TB and HIV/AIDS causing significant morbidity and mortality, these two diseases have an intimate relationship in which they reinforce each other to the extent that they are commonly referred to as co-infections or co-epidemics (Chamie 2010, UNAIDS 2010b). As a result, regions that have high HIV prevalence rates tend to also have high TB incidence rates (Corbett 2003) resulting from reduced immunity among HIV patients. For instance Darley and others (Daley 1992) argue that HIV infection increases the risk of being infected with TB, while others have further stated that the risk of getting TB when HIV positive continues even for persons on antiretroviral therapy (Chamie 2010), and even after responding to treatment (Havlir 2008). It has also been shown that TB is making the

treatment of HIV/AIDS very difficult. Tuberculosis has been noted for increasing HIV related deaths on one hand while on the other hand TB in HIV-infected persons is curtailing global efforts to control TB, therefore increasing the incidence of TB (Chamie 2010, Wells 2007). To illustrate this, the WHO (2009) report estimated that of the 1.7 million TB patients that died in 2009, 24% of them were HIV positive (WHO 2011c). This co-infection also explains why South Africa, the country with the most HIV patients, has one of the highest TB-HIV co-infection rates (Avert website 2011b).

As a result of TB/HIV co-infection, it is expected that many of the patients on TB treatment are also on ART. The concern therefore is that access barriers to treatment for such patients will be higher if they have to receive TB and ART services from different facilities. There have been arguments as a result that, the most effective way to deal with these diseases is to address them together (Avert website 2011b), because if they are considered separately, we may miss opportunities for the prevention, identification and treatment of TB and HIV/AIDS (Coetzee 2004, Wood 2007). The WHO further stresses the importance of having a "one-stop shop" in dealing with these diseases (WHO 2005:3). It follows from this that we may get better results from studying and analysing these diseases together. It is against this background that this study examines access barriers to treatment of both diseases together, acknowledging that access barriers affecting one service are likely to affect access barriers of the other.



**Study Site**

Mitchell's Plain is situated 20 km from the city of Cape Town and is home to approximately 500,000 people (Cleary et al. 2011), most of whom are 'coloureds' (i.e. mixed race) (Mitchell's Plain Service Directory). With all these people in an area of 49.94 $km^2$, MP is the third-busiest nodal interchange in the City of Cape Town. Access to public amenities in MP is very challenging and as a result most residents have not completed high school and therefore mostly engage in informal businesses (Department of Provincial and Local Government; Mitchell's Plain Nodal Economic Development Profile: No date). In terms of health services, MP is served by ten clinics, three Community Health Centres and one Environmental Health Office.

# Problem Statement and Study Justification

## Overview: South Africa

South Africa continues to be the country with the largest number of people living with HIV in the world. It was estimated in 2009 that the country had a total number of 5.7 million people living with HIV (UNAIDS/WHO/UNICEF 2009). In relation to TB, South Africa had the third highest TB incidence rate in the world following India and China, in 2009 (WHO 2009). And even after substantial resources were dedicated towards the fight against TB and HIV in 2008, South Africa could still not reach the National Strategic Plan target of screening HIV positive people for TB in this year. It is reported that only about 3% of HIV patients received TB prophylactic preventive treatment against a national target of 60% – all this against a disease that is a leading cause of mortality among people living with HIV in the country (Republic of South Africa 2010).

## Western Cape and Cape Town

Tuberculosis (TB) and HIV are among the four leading causes of mortality in the Cape Town Metro district (WHO website 2011d). Although the Western Cape has the lowest HIV prevalence in South Africa (Republic of South Africa 2010), prevalence is highly heterogeneous, with some sub-districts like Khayelitsha having very high prevalence (Shaikh 2008). It has also been reported that the TB incidence in the Western Cape is amongst the highest in the world (City of Cape Town. 2003) and it may get worse considering the numbers of new cases of Multi-Drug-Resistant TB (MDR TB) that are being diagnosed every year in the province (Cape Gateway website 2011). The high urbanization and migration experienced in the area may be a contributing factor to increasing cases of TB and HIV.

## Mitchell's Plain

Mitchell's Plain, like any other sub-district of Cape Town, faces health challenges mostly from HIV/AIDS and TB. For instance, statistics on TB reveal that, in 2006, MP had the fourth highest incidence of TB in the Cape Metropole (Capegateway website 2011). In 2010, HIV/AIDS and TB were respectively ranked as second and third highest causes of mortality in Mitchell's Plain, behind homicide (Groenewald et al. 2010). It is important to note though that HIV services in this area are still not readily available which may not be a positive sign for the fight against HIV/AIDS. At the moment for instance, ART services in MP are only provided at four public facilities (Cabinet Lekgotla Report 2009). This poses a challenge of

ensuring easy access to those in need of this service, and also to reducing the opportunity cost associated with seeking care such as reduced time taken to see a health worker (Capegateway website 2011).

It has also been shown that MP and Khayelitsha's economies are dependent on each other (Department of Provincial and Local Government, Mitchell's Plain Nodal Economic Development Profile), meaning that individuals move between these two areas for business purposes, school etc. The problem is that interdependence and proximity to Khayelitsha, a sub-district with some of the highest prevalences of TB and HIV/AIDS in South Africa (Western Cape Province Department of Health 2009), may potentially affect MP's TB and HIV/AIDS incidence in the long run.

## Justification

The previous section of this chapter has highlighted problems caused by TB and HIV/AIDS in South Africa and more specifically Western Cape and Mitchell's Plain. This means that attempts should be made to come up with ways and means of countering the burden caused by these diseases if MDG 6A and 6C are to be realised. There have been efforts to this effect in South Africa. For instance, the government has committed itself to ensuring universal access to ART and has embarked on the largest antiretroviral treatment programme in the world (UNAIDS/WHO/UNICEF 2009). However, it can be argued that making medicines available alone is not sufficient, unless these medicines are made accessible to those that need them (Obrist 2007). It follows from this that it is relevant to examine barriers that people face in accessing TB treatment and ART. The hope is that findings from this study will be a pointer to health policy makers at various levels of care in improving access to treatment, so as to lessen the TB and HIV/AIDS stranglehold and hopefully improve health outcomes for patients.

Further, it has also been shown that the most disadvantaged segments of the population face disproportionate ill-health, and are also more likely to face higher access barriers to health care than their wealthier counterparts (Whitehead 1992, Gilson 2007). With this in mind, the study will attempt to assess whether access to TB and ART in MP is equitable by assessing access differentials by socioeconomic status and gender. Findings on this should give insights about how services can be better realigned to improve access to health care by the more disadvantaged segment of the population in need.

The importance of this study derives also from a realisation that, apart from the REACH project, there has not been a study that has attempted to measure access to TB and ART services in Cape Town, let alone South Africa, using a comprehensive approach to the conceptualization and measurement of access along the three key dimensions of availability, affordability and acceptability. This means that there is a gap in the literature, thereby making this study important. Findings of this study will offer valuable inputs to researchers and relevant stakeholders on the structuring and organising of TB and ART services in South Africa, in an attempt to get the most out of TB and HIV/AIDS interventions. Also, the methods of measuring access used in this study could be applicable to research in other low and middle-income countries. Other beneficiaries of this study include the Western Cape department of Health and health system managers in Mitchell's Plain.

Lastly, as long as TB and HIV/AIDS are not under control, there is a need to continue looking for new approaches to tackling the burden caused by these diseases besides ensuring availability of medicines. It may entail improving access to medicines for those in need regardless of their socio-economic background. Such improvements are expected to improve patient in-take, patient compliance and possibly efficacy of medicines, and also future effectiveness of TB and HIV/AIDS interventions. The next section discusses the concept of access and the definition that has been adopted for this study.



# Literature Review

## What is Access to health Care? A Conceptual Framework

Various attempts have been made to derive an operational definition of access and this is because access is at the "core of health systems" (Gulzar 1999: 14); if services were designed in such a way as to alleviate access barriers, this might lead to a more appropriate use of these services by those in need (Aday 1975a). In this study, access is defined as "the empowerment of an individual to use health care and as a multidimensional concept based on the interaction (or degree of fit) between health care systems and individuals, households, and communities"(McIntyre 2009: 179). Empowerment of individuals and interactive communication between providers and users are viewed here as key components that determine the level of access to be realised.

To make the notion of access more comprehensible, the study will use three distinct dimensions related to both the health system factors and users' characteristics, these being the availability, affordability and acceptability dimensions (McIntyre 2009). The availability

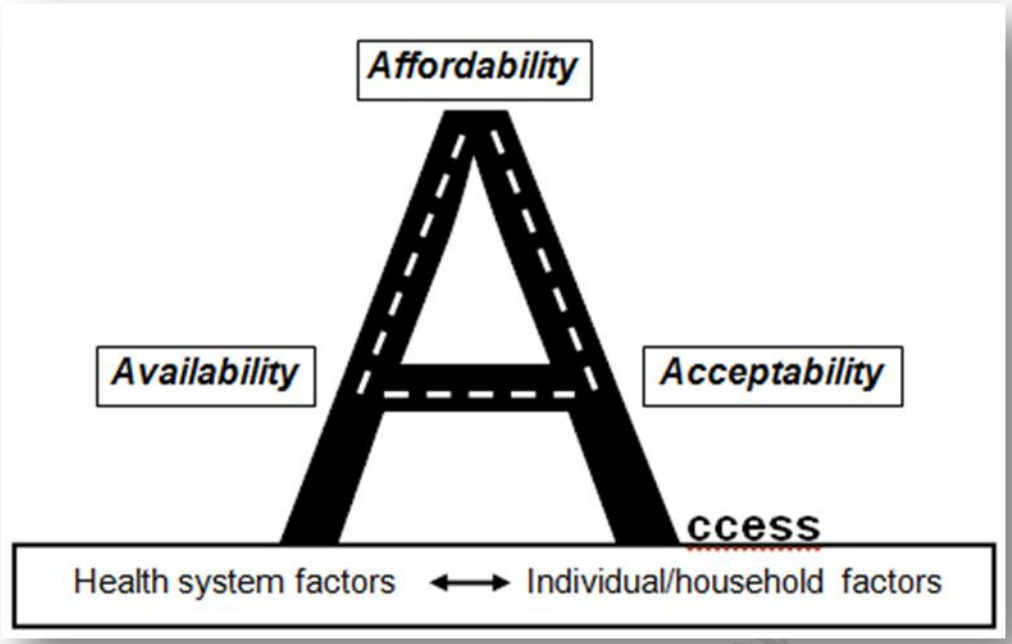
dimension is about "whether the appropriate health care providers or services are supplied in the right place and at the right time to meet the prevailing needs of the population" (McIntyre 2009: 184). It can also be viewed as the extent to which provided services meet the needs of clients (Obrist 2007). The availability dimension can further be broken down, based on the McIntyre (2009) framework, into four elements: 1). how the location of services relates to the location of clients, 2). the "ability and willingness" of providers to offer services desired by the people, 3). the 'degree of fit' between the services' operation hours and the time clients need services, and 4). the "relationship between the type, range, quantity and quality of health care services" in relation to the health needs of the users (McIntyre 2009: 184).

The affordability dimension is an association between the total costs of health care – direct and indirect – and the users' ability to pay these costs (Penchansky 1981, Obrist 2007, McIntyre 2009). Direct costs include all the health care costs directly related to health care at the point of use i.e. consultation fees, fees for any tests and costs of medicines (McIntyre 2009). Indirect costs on the other hand are costs incurred but not directly related to medical costs e.g. transport costs, money for food, lost income due to seeking care and lost productivity resulting from sickness (Obrist 2007, McIntyre 2009). Considering that being able to pay health care costs is dependent on the users' ability to pay, factors such as income, medical insurance cover and household assets play a vital role in this dimension.

The acceptability dimension is defined as the fit between providers and clients' expectations, characteristics, practices, beliefs etc. towards each other (McIntyre 2009, Obrist 2007, Penchansky 1981). The importance of the acceptability dimension has been highlighted by some authors because of its relation to trust and equity (Gilson 2007). It has been argued that once providers' expectations, characteristics, practices, beliefs and other related factors fit with those of their clients, trust between the two sides is enhanced. This trust will prompt the disadvantaged, who suffer more from acceptability and trust barriers, to access services more and hence promote equity (Gilson 2007).

The figure below (Figure 1) represents a simplified illustration of how the system factors and individual factors interact amidst the availability, affordability and acceptability dimensions to achieve access. The figure shows that access is dependent on the interaction between the three dimensions and a fit between system and individual/household factors.

**Figure 1:** The Access framework – Adopted from Thiede 2007




In summary, access is defined as the empowerment of individuals to use services, where access is a multidimensional concept (availability, affordability and acceptability) whose achievement is based on the interaction between system and individual, household and community factors (McIntyre 2009).

# Empirical Review

## Objectives of the Review

The objective of this review is to explore evidence from studies that have been conducted examining access to ART and TB treatment. The review will compare findings from various locations focusing on methods used to measure access to treatment and also identify gaps in this literature. This empirical review is a summary of the review that will be done in the next chapter (Part 2: structured literature review).

### Access to ART

A study conducted in Zambia utilising ethnographic case study methods attempted to examine how TB patients co-infected with HIV accessed Antiretroviral (ARV) services (Chileshe 2010) . The study findings showed that access to treatment was affected by economic factors such as costs associated with accessing care i.e. transport costs, and also ownership of assets and income. Other factors identified included location of facilities relative to users, availability of services and staff, and also system organisation factors such

as congestion, faulty equipment etcetera. Access was also affected by social factors which were causing some patients to reject diagnosis. Cultural or traditional issues have also been shown elsewhere (Kwalombota et al. 2004) to be important determinants of access to ART services among African women.

Other important determinants of access to ART services identified by some of these studies were financial factors or costs associated with treatment, both direct and indirect (Khonyongwa 2004, Kwalombota et al. 2004, Adeneye 2006, Mauch 2011, Mshana 2006, Posse 2008), as well as distance or location of facilities relative to clients (Dimbungu et al. 2004, Khonyongwa 2004) and availability of facilities and needed services (Dimbungu et al. 2004, Khonyongwa 2004, Kwalombota et al. 2004).

Other factors influential in accessing ART services include the opportunity costs associated with seeking care, such as loss of income and impact of treatment on households (Mshana 2006, Sanou 2004), stigmatisation of people living with HIV (Dimbungu et al. 2004, Mshana 2006) and lack of information or knowledge by clients about services (Dimbungu et al. 2004, Kwalombota 2004). Staff attitudes such as impoliteness, long waiting times (Mshana 2006), and inability to adequately sensitize the community and involve them in the planning of ART services (Dimbungu et al. 2004) were also mentioned as important in access to ART.

**Access to TB treatment**

Findings from reviewed studies on access to TB treatment were very similar to those from access to ART services. All the reviewed studies on access to TB treatment identified financial factors as key access barriers to seeking treatment (Eastwood 2004, Fong 2004, Sanou 2004, Xu 2004, Aye 2010, Mauch 2011). Other barriers to access included geographic factors such as distances to facilities and time taken to reach them (Fong 2004, Sanou 2004, Aye 2010), lack of knowledge by patients about TB services and symptoms (Eastwood 2004, Fong 2004, Sanou 2004), the opportunity cost associated with seeking care (Eastwood 2004, Sanou 2004), cultural factors such as the tendency for patients to seek care from traditional healers and self-treat (Sanou 2004) and for women to be culturally expected not to seek care without their partner's consent (Eastwood, 2004).

Some studies also showed that stigmatization of TB patients can affect their access to treatment (Aye 2010, Eastwood 2004), while two studies conducted in China showed that the ability of health care staff to correctly detect TB was a determinant of access to treatment

(Fong 2004, Xu 2004). Lack of privacy in the facilities was shown to be important to women's access to treatment (Eastwood 2004), and also health care staff's attitudes to patients such as the willingness to provide services (Fong 2004) and the distance they kept from clients (Sanou 2004). Other factors cited as affecting access to TB treatment include sex of patient (Eastwood 2004, Fong 2004), age and ownership of insurance (Xu 2004) and also side effects of the treatment (Aye 2010).

It can be seen from the empirical review that determinants of access to both ART and TB are very similar between the two treatments. Relating the findings to the definition of access used in this study, the various findings have focused on the affordability and availability dimensions by respectively examining direct and indirect costs of treatment, and location of facilities and services offered. The reviews also show that not so much emphasis has been put on the acceptability dimension. In addition, the reviewed studies have tended to analyse access from one perspective i.e. the users' without considering the 'degree of fit' between providers and seekers of treatment which is the definition of access used in this study. This shows the gap in the definition of access where only two dimensions receive attention while neglecting one, and this gap effectively makes this study relevant as it attempts to examine access in an integrated way using all three dimensions.

### Research Question

What are the access barriers to using ART and TB treatment? The case of Mitchell's Plain in the Western Cape, South Africa.

## Objectives of the Study

The study will explore the access barriers to the use of TB and ART services in Mitchell's Plain with a view to identifying policy-relevant solutions to these barriers. A further objective will be to explore whether these barriers differ between socio-demographic groups. Access will also be examined according to self reported adherence after which policy recommendations, based on the findings, will be made through the dissemination of a policy brief.

## Specific Objectives

The study has three (3) specific objectives and these are to:

1. Explore access barriers to TB and ART services in Mitchell's Plain using the availability, affordability and acceptability dimensions, and provide solutions to improving access.
2. Explore the socio-demographic differences in access to TB and ART services.
3. Examine access barriers according to self reported adherence
4. Present study findings and policy recommendations to various stake holders.

# Methods and Analysis

As mentioned earlier, this study is part of a larger project, REACH (Researching Equitable Access to Health Care) and will therefore utilise secondary data from the survey conducted by the REACH project in Mitchell's Plain. REACH is a five year project examining health systems access and equity in four sites across South Africa (REACH 2009) with Mitchell's Plain being the site selected in the Western Cape. Given that these data have already been collected, the methods section will concentrate on methods of data analysis.



## Analysis

Firstly, data will be explored so as to inform the type of analysis to be done. For non-normally distributed variables, data transformation will be done, for example logarithmic transformation for variables which are right skewed and $x^2$ transformation for those left skewed or non-parametric tests will be used. The importance of ensuring that variables are normally distributed is because statistical methods used in analysis assume normal distribution of data (Park 2008). In the event that variables are not normally distributed, an appropriate transformation, as described above, can be conducted. However, it is still possible to proceed with variables that are not normally distributed by using non-parametric tests, as these do not make any assumptions about normality of data (Fletcher 2009).

Analysis will be done using Univariate, Bivariate and Multivariate methods. Univariate analysis will be used to describe the basic characteristics of the data e.g. sex, marital status, and age of respondents etc. Univariate analysis will inform on the type of analysis to be used (Park 2008). For example, it will show how the variables are distributed, thereby making it possible to decide between parametric/non-parametric methods, or whether or not to transform the data. Bivariate analysis, as the name implies, will be done to examine any associations between two variables (independent and dependent variable) at the same time.

Bivariate analysis will be further used to determine if there are any potential confounding variables. For instance, it will be used to determine whether marital status is associated with borrowing money to pay for health care. Correlation coefficients will be computed to explore associations between numerical dependent and independent variables such as age and money spent on health care (both numeric variables). Parametric or non-parametric tests will be used to test associations between numerical and categorical dependent and independent variables, e.g. marital status (categorical independent) and money spent on health care (numerical dependent). Chi-squared tests will be used to test associations between categorical dependent and independent variables such as marital status and having a treatment buddy (both categorical).

Multivariate analysis will be used for analysing the final model because it will comprise of more than two variables (Abdi 2003). The final model will be run using a logistic regression for binary dependent variables while a linear regression will be run for quantitative dependent variables. The final model will be the one with the lowest Akaike Information Criterion (AIC)[3] and largest log likelihood[4]. Data analysis will be done using STATA version 11 for Windows. (StataCorp. 2009. *Stata Statistical Software: Release 11*. College Station, TX: StataCorp LP).



## Measurement and variables

As discussed in the literature review, access in this study is defined using three dimensions (availability, affordability and acceptability) and as such variables in the questionnaire for the study were designed to capture the notion of access as a multi-dimensional concept with these three distinct and measurable dimensions. The table below shows dependent variables measuring these dimensions and respective independent variables that will be run in the logistic models built for binary dependent variables, and in the linear regression models for quantitative dependent variables. Note that the same independent variables will be regressed with various dependent variables across the three dimensions, from both the ART and TB tracers.

[3] AIC is an estimator that shows the amount of information lost when one model is used to represent another (Posada, 2004)

[4] Log Likelihood is a test which expresses how many times more likely the data are under one model than the other (http://en.wikipedia.org/wiki/Likelihood-ratio_test)

**Table 1: Variables used in the analysis**

| |
|---|
| **1. Social Economic Status and Demographic Variables** |
| - Categorized asset index |
| - Employment of the respondent |
| - Marital status of the respondent |
| - Sex of respondent |
| - Number of years of education |
| - Age |
| - Receiving a disability grant |
| - Monthly household expenditure |
| **2. Availability variables** |
| - Time taken to travel to facility and home again |
| - Time taken to fetch medicines during last visit |
| - Time taken to see doctor or nurse during last clinical visit |
| - Able to travel by foot to facility |
| **3. Affordability Variables** |
| - Money spent on other providers during past month (GPs, traditional healers etc.) |
| - Money spent on self-care during past month (over the counter medicines, special foods, traditional medicines) |
| - Money spent on most recent facility converted into monthly amount (transport, phone, food, etc.) |
| - Total monthly expenditure on health care (Cost on Other Prov+ on Self-care + on most recent facility visited) |
| - Needing to borrow money to pay for health care |
| - Expenditure on health care >10% household expenditure |
| **4. Acceptability Variables** |
| - The health worker is too busy to answer my questions |
| - Respondent agrees that queues are too long |
| - Respondent agrees that some staff do not treat patients with sufficient respect |
| - Respondent agrees that the health care facility is dirty |
| - Respondent feels that people in the community judge him/her negatively for attending the TB or ART facility |
| **5. Adherence Variables** |
| - Ever missed taking your ARV or TB medicines |
| - Ever missed a visit to the ART or TB facility |
| - Time spent on TB or ART |

## Ethics

As mentioned in the first part of the protocol, this study is using secondary data from the REACH project which has already received ethical approval from the University of Cape Town Research Ethics committee. This study will therefore abide by the ethical regulations in the process of analysing and disseminating results.

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# Part B: Literature Review

## Conceptual Review of Access to Health Care

A number of definitions of access have been proposed in the literature. Some have defined access as the utilisation or use of health care services (Shortell 1973, Donabedian 1972, Fox 1972, Aday 1974, Salkever 1975), arguing that proof of access should be evident in the use of services (Donabedian 1972, Aday 1974). Some proponents of this definition further claim that examining utilisation rates can inform on whether or not those in need of services have access to them (Shortell 1973). Similarly, Salkever (1975) claims that, "access is described by the empirical relationship between need and the probability of entering the health care system for treatment" (p. 373). For all of the above authors, when clients utilise health care systems, then access has been achieved.

Other authors, though, have different views of access and define it in terms of adequate availability or supply of health care services in meeting people's health needs (Fein 1972, Freeborn 1973, Mooney 1983, Rogers 1999, Goddard 2001, Gulliford 2002). It is argued from this perspective that having the right services available to the people, i.e. a multi-skilled workforce, facilities, and availability of other necessary services convenient to the people at an appropriate time, is indicative of access (Freeborn 1973, Rogers 1999, Goddard 2001). The implication of this is that the further away individuals are located relative to location of services, the lesser access to health care they have, as argued by Mooney (Mooney 1983). While acknowledging that access is also determined by factors such as costs of health care, cultural factors and other factors, Gulliford (2002) maintains that "having access to health care requires that there is an adequate supply of health services available" (p. 186). For this group of authors, availability of facilities and services is viewed as the most important in achieving access.

Contrary to those that define access as adequate supply of needed services, others have defined it as a demand side concept and consider users' ability to pay for health care, or being in possession of assets to help them do so, as reflecting access (Simpson et al. 1997, Weinick, Weigers & Cohen 1998, White 2002, Falkingham 2004). The proponents of this definition consider having health insurance cover, sufficient financial resources to afford health care costs, and also other forms of ability to pay as key to accessing health care services (Simpson et al. 1997, Weinick, Weigers & Cohen 1998, White 2002, Falkingham 2004). Other demand

side factors that have been cited to affect access include users' "knowledge about health and health services, perceptions and preferences" (Thiede 2005).

There are, however, authors who feel that the above access definitions have flaws, and argue that access should not be defined solely in terms of system utilisation, availability and supply of services, nor as a demand side concept. These authors (Donabedian 1973, Aday 1975, Andersen 1983, Khan 1994), realised that the co-existence of both health system factors and users' characteristics are important determinants of access. They argue that the coexistence of certain system factors such as how the health system is organised, availability of services and appropriately trained health workers and user factors such as the cultural background of users, attitudes towards treatment, education level, gender sex and age etcetera, will determine whether or not individuals seek health care (Khan 1994, Gulzar 1999). For Thiede (2005), even after arguing for the importance of demand side factors to access, as discussed above, the author also acknowledges the importance of supply factors in achieving access. Achieving access, to these authors, is only possible if both supply and demand side factors are considered together.

After reviewing these various definitions, this study acknowledges the importance of both system and user factors when defining access. However, it is felt that not enough was done by proponents of this definition, such as showing under which conditions access is achieved, or how system and user factors combine to achieve access. This study therefore goes beyond just acknowledging the co-existence of system and use factors to achieve access, and defines it (access) as the 'degree of fit' or compatibility between the health system and individuals in need of health care services. This definition has been used by others {{68 Penchansky,R. 1981; 40 McIntyre,D. 2009}}. The 'degree of fit' which facilitates access should represent an interactive communication between service providers and health seekers such that it empowers individuals to use services {{40 McIntyre. 2009}}. Empowerment of users and interaction between providers and users are cornerstones of access in this study.

With regards to those who have defined access as utilisation of services, the argument from this study perspective, and of proponents from whom this study definition is adopted {{90 Thiede,M. 2008; 40 McIntyre,D. 2009}} is that making services available only offers individuals the opportunity to use services, but is not on its own enough to guarantee access. McIntyre (2009) for instance argues that access – the empowerment to use services – may not

necessarily result in use if an individual chooses not to use these services. Another author considers access as a "precondition to health services utilisation" {{90 Thiede,M. 2008}}.

The argument levelled against defining access as a supply side concept on the other hand, is on the premise that availability and adequacy of health care services alone, are not enough to empower users and therefore guarantee access. Admittedly, adequate supply of services reduces the physical distance, and therefore transportation costs for users, but is not sufficient to give users the "freedom to use services" {{188 Thiede,M. 2005; 40 McIntyre,D. 2009}} as is the case with access. Thiede (2005) further adds that ensuring service availability alone, without "interchange of information" between providers and users, is not enough to achieve access (p. 1453). Others for example have stated that having services alone cannot represent access if users are unable to afford payment for the services provided {{44 Gulzar,L. 1999}}. The weakness of viewing access as a supply side phenomenon is clear – it fails to account for important user characteristics and backgrounds that may make individuals decide to use or not to use services, even when facilities are available e.g. socio-cultural issues such as religion and cultural orientation (Puentes-Markides, C. 1992) {{188 Thiede,M. 2005}}.

Similarly, viewing access as a demand side concept, as argued by some authors, has not been considered an appropriate definition from this study perspective. This is because factors such as ability to pay for health care - the main driver of the demand side argument - fail to explain system deficiencies that can affect access. Two studies on access to Antiretroviral treatment (ART) showed that even when users demand services, access may not be realised if needed services are not available (Dimbungu et al. 2004, Chileshe 2010). It follows from this that the demand for health care services is also not so important if health workers are unwilling to attend to patients. As mentioned above, access is more likely to be achieved if there is interplay between system and user factors such that it results in desired services being provided, and also empowers individuals to use these services {{188 Thiede,M. 2005; 90 Thiede,M. 2008; 40 McIntyre,D. 2009}}.

In summary, access to health care in this study is defined as the communicative interaction between health providers and users of services (degree of fit), giving users the power to give their input on how services are to be made available, and also to have the freedom to decide when to use these services {{68 Penchansky,R. 1981; 90 Thiede,M. 2008; 40 McIntyre. 2009}}. The next section discusses various access dimensions that have been proposed by

some authors, and also an in-depth discussion of the dimensions that have been considered to be appropriate for this study, and why these have been chosen.

## Access dimensions and barriers

Given the complexity of the access concept, some authors (Penchansky, 1981; Obrist. 2007; McIntyre. 2009), have attempted to define a number of dimensions of access. It is argued that this conceptualization will assist in the empirical measurement of access barriers. These authors argue that if the developed access dimensions are considered independent of each other, access cannot be achieved. Rather, there is need for interaction between the dimensions, as it is from this interaction that we can explain why individuals may or may not use health services. Unpacking access in terms of these dimensions, rather than a single concept, may put to rest the debates on the meaning of access to health care (Gulliford 2002), and this will hopefully result in the appropriate use of access (Gulzar 1999).

Penchansky (1981) has argued that access could be conceptualized as consisting of five dimensions, namely: availability, accessibility, accommodation, affordability and acceptability. The author defined availability as the relationship between the "volume and type" of services offered by the health care system, to those that are needed by clients. The accessibility dimension is viewed as the relationship between the location of health care services to the location of clients served, while the accommodation dimension is defined as the relationship between the way in which the health care system is organised and the clients' response to this organisation. Affordability is viewed as the relationship between the costs of health care and payment mechanisms to the clients' "ability to pay". Lastly, Penchansky defines the acceptability dimension as "the relationship of clients' attitudes about personal and practice characteristics of providers to the actual characteristics of existing providers as well as to provider attitudes about acceptable personal characteristics of clients" (Penchansky 1981)

Following up on Penchansky's work, Obrist (2007) also came up with five dimensions which are very much identical to the former's work, with the only difference being that Obrist replaced the 'accommodation' dimension with the 'adequacy' dimension. However, reviewing both the accommodation and adequacy dimensions reveals that these two dimensions are very similar because they are both concerned with issues of health care system organisation and how these fit into clients' expectations. This means that the 'accommodation' and 'adequacy' dimensions are basically one and the same.

Unlike the two authors discussed above, McIntyre (2009) only developed three dimensions namely availability, affordability and acceptability. The major departure point between the McIntyre dimensions and those of the other two authors is that McIntyre collapses some of the previous authors' dimensions together to come up with only three dimensions. For instance, McIntyre combined three of Penchansky's dimensions (accommodation, accessibility, and availability) into what the author (McIntyre) called "a comprehensive definition of availability" (McIntyre 2009). McIntyre argues that all the aspects of Penchansky's accommodation, accessibility and availability dimensions are captured under the author's availability dimension, when it is defined as the "right health services being available in the right place and at the right time" (McIntyre 2009). Given that Obrist's adequacy dimension is not differentiated from Penchansky's accommodation dimension, it implies therefore that even the adequacy dimension is captured in McIntyre's availability dimension.

Further review of other dimensions common among these authors reveals that the McIntyre affordability dimension includes all the direct and indirect costs associated with health care. This means that the McIntyre affordability dimension encompasses that of Penchansky who defines his almost exclusively in terms of direct health care costs; and also Obrist's, who defines it both as direct and indirect health care costs (Penchansky 1981, Obrist 2007). In addition, McIntyre's affordability dimension goes further to include the "potential impact on household well-being of using household resources to cover the full cost of health care" (McIntyre 2009). The impact of health care costs on households has also been shown by other authors to be an important element in individuals' decision on whether to use or not to use health care services (McIntyre 2006, Wagstaff 2003, Xu 2003).

Looking at the acceptability dimension, both Penchansky (1981) and Obrist (2007) define it in terms of the relationship between what the clients expect from their providers and what they really get, and vice versa. Obrist though goes somewhat further to acknowledge the importance of information sharing between both sides, to enhance acceptability: such as whether clients feel cared for, clients trust their providers and also whether treatment takes into account "local illness concepts and social values"(Obrist 2007). Similarly, others (Hausmann-Muela et al 2003 as cited in (Gilson, McIntyre & Mooney 2007)) have defined acceptability as "the social and cultural distance between health care systems and their users" (p. 125). McIntyre, on the other hand defines the acceptability dimension as the fit between provider and patient attitudes, characteristics, beliefs and perceptions towards each other and

also expectations of each other (McIntyre 2009). In addition, McIntyre identifies problems related to the acceptability dimension as resulting from the normative organisation of the health system where users are expected to take services as presented to them without any say (McIntyre 2009). It is argued rather that, to enhance access, the focus of a health care system should be on "conditions required to empower individuals to use services" (McIntyre 2009).

Though the acceptability dimension of access has been less explored than the other two (Gilson, McIntyre & Mooney 2007, Peters 2008), some consider it to be the most important aspect of access, because it draws attention to the potential for positive interpersonal communication and trust to enhance access (Gilson, McIntyre & Mooney 2007). To highlight the importance of the acceptability dimension in access, Gilson (2007) categorises it into 3 elements; 1) "fit between lay and professional health beliefs", 2) "Nature of patient-provider engagement and dialogue", and 3) "Organisational arrangement of health care"(p. 126). The first element has to do with how health care beliefs of users and their communities are aligned with the views of health care by providers, and how this can enhance or impede the use of services. The example of this was demonstrated in a study which explored barriers to health care in which users rejected a medical diagnosis, and where this refusal was attributed to the social and cultural gap between providers and users of services (Goudge et al. 2009). Following such incidences, some authors have advocated for increased communication between providers and users regarding health beliefs so as to improve relationships between the two sides, and therefore increase acceptability of services (Gulliford et al. 2001).

The second element focuses on communication between patients and providers, and how this is important in ensuring that providers gain trust of their patients and become empowered to make use of services. Communication and its importance in acceptability of care and in access has also been mentioned by others (McIntyre 2009, Thiede 2008).

The third element is concerned with how services are tailored with regards to the needs of the people, and how this determines whether or not individuals use services or not. The organisational arrangements mentioned here may include provider characteristics or attributes such as type of provider, age, gender, race or ethnicity and religious affiliation of both providers and users. This means Gilson's third acceptability element is closely related to Penchansky and McIntyre's availability dimensions.

An important point worthwhile noting as we endeavour to bring the access concept to life, is that it is not enough to only understand factors that facilitates the realisation of access, but need also to examine factors that may hinder access so as to have an idea of how to overcome them (Aday 1975, McIntyre 2009). In the literature, barriers in access to health care have generally been associated with health system factors and user characteristics (Donabedian 1973, Aday 1975, Andersen 1983, Khan 1994). Barriers relating to the health system have mostly been about issues of availability, which include supply, location and organisation of services (Donabedian 1972, Fox 1972, Obrist 2007).

The issues of acceptability under the health system factors have only been mentioned when the organisation of services affect the social and cultural interactions between providers and users, i.e. how system treatment practices are organised to take into account users' cultural orientation (Obrist. 2007). User barriers have mostly been associated with being able to pay for health services while availability and acceptability have received less attention. Ability to pay for health services includes users' income, medical insurance cover and individual/household assets (Fox 1972, Andersen 1983, Obrist 2007). Availability barriers on users' side include spatial factors or location of users relative to facilities, and how education, information, social and psychological factors influence users to avail themselves for care (Donabedian 1972, Stewart 1990). Acceptability barriers on the other hand may include users' attitudes towards health care, their cultural backgrounds, and to some extent their social orientation, level of education and information factors (Donabedian 1972, Andersen 1983, Khan 1994, Stewart 1990). Other access barriers that may fall in any of the three categories (availability, affordability and acceptability barriers) include sex, age, race, religion etc.



This study will adopt the access dimensions developed by McIntyre and others (2009) – availability, affordability and acceptability. It is felt, from this study perspective, that the McIntyre dimensions are more comprehensive than those of the other two authors. For instance, it has been shown above that the McIntyre availability definition encompasses all aspects of Penchansky's three dimensions; accommodation, accessibility, and availability (McIntyre. 2009), and one of Obrist's dimensions (adequacy). It can be argued that the collapsed dimensions are not very different from each other, and therefore combining them is better than having to debate on for instance, how accessibility differs from availability. It can also be asserted that McIntyre's other two dimensions –affordability and acceptability – have been defined better than those of the other two authors. For example, it has been shown above

how McIntyre's affordability dimension takes into account both Penchansky and Obrist's respective affordability dimensions. McIntyre goes even further to explore other issues under this dimension that are not alluded to by the other authors, such as the impact on households of seeking care. Though the acceptability dimension seems to be defined in a similar manner by all the authors, McIntyre's dimension in addition discusses problems relating to acceptability, and proposes solutions.

The other factor emphasised by the McIntyre framework and viewed as important to access in this study, but not tackled by the other two authors, is that of empowering health care users (McIntyre 2009). The argument is that access does not only mean achievement of any one of the dimensions, but rather entails exchange of information and interaction between users and providers across the dimensions. This is aimed at sufficiently empowering individuals to use health care services and enable them to have command of health care resources (Gulliford et al. 2002). Information dissemination has been viewed by many as an essential pre-requisite to achieving access, and also critical in overcoming barriers to accessing health care (McIntyre 2009, Thiede 2008, Nutbeam 2000). It may be added here also that empowerment should not be one sided i.e. only to users, but should also extend to providers to enable them to improve their capacity and be able to provide that which is desired by users. As a result of the importance of empowerment in using health care services, this study therefore defines access to health care as the "empowerment of individuals to use health care services" (McIntyre 2009).

To make the discussion of access easy to follow and understand, Thiede (2007) and McIntyre (2009) developed two frameworks that summarise access: what it involves and how it is achieved. The two frameworks are: the Access framework (*figure 1*) and the Access evaluating framework (*figure 2*). The Access framework shows the three access dimensions and how they rely on each other in bringing about the degree of fit between the health system factors and the individual/household factors discussed above. It reinforces the assertion that access is three dimensional - can only be realised by interaction of the three dimensions.

**Figure 1:** The Access framework – Adopted from Thiede M, 2007

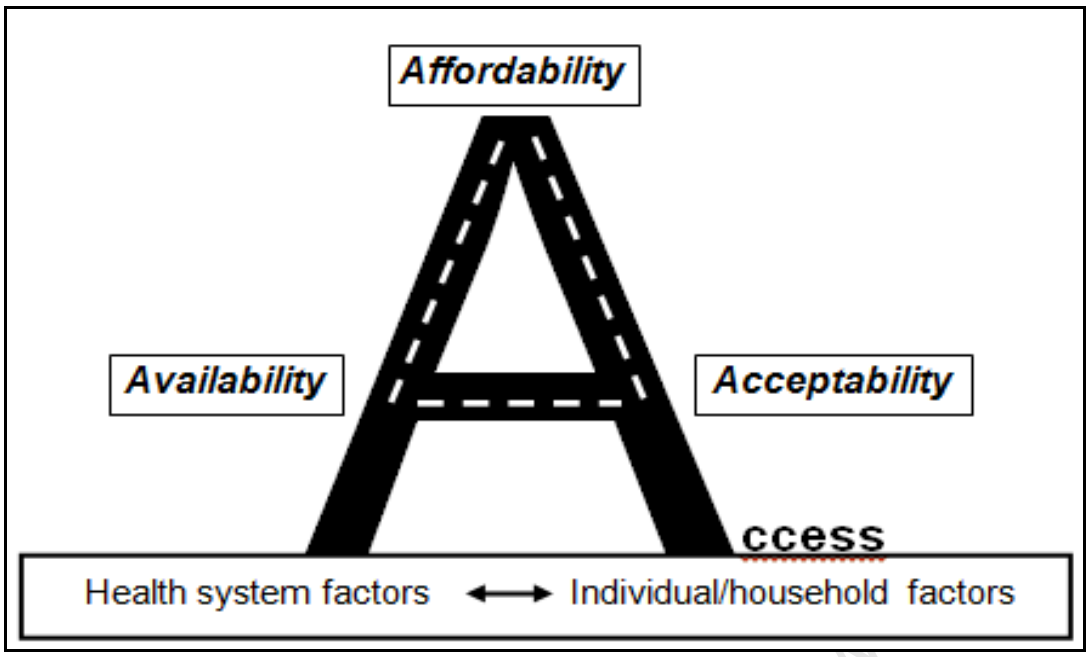
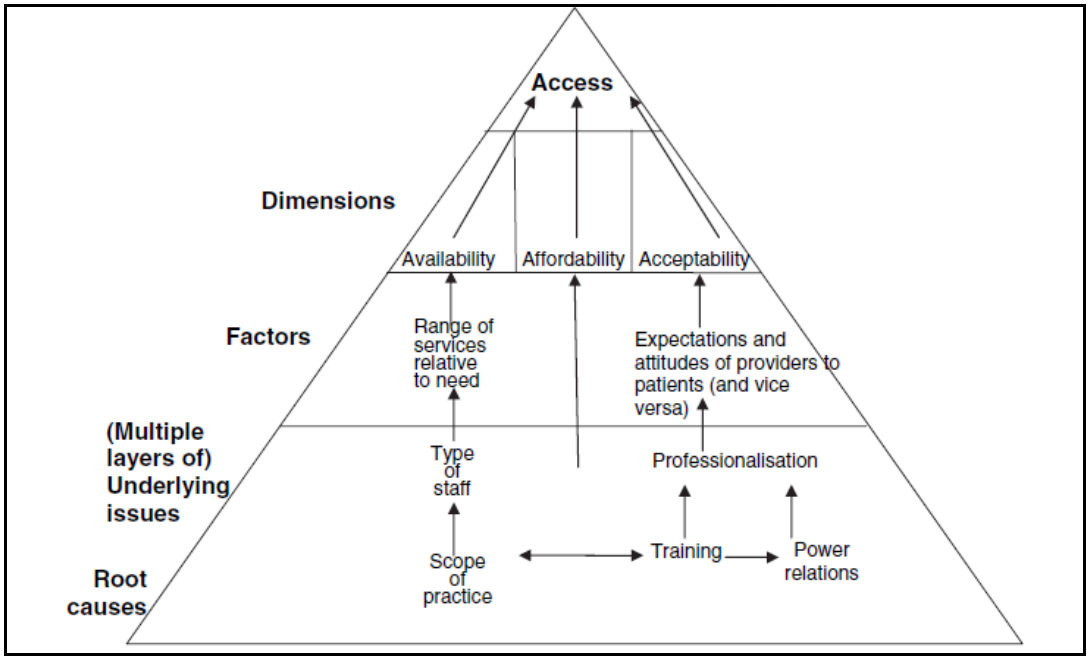



**Figure 2**: Access evaluating framework – Adopted from McIntyre 2009




The Access evaluating framework above (figure 2) shows how the three dimensions relate and interract with each other, and also factors that define them in moving towards achieving access to health care. Borrowing from the McIntyre (2009) illustration for instance, we see that if the scope of staff training is in accordance with the needs of clients (root causes stage), then they will be better placed to meet the needs of the community with a range of services (factors) and effectively improve service availability (availability dimension). This availability dimension has to interact with the other two dimensions at every level to achieve access.

## Importance of Access in Health care

The importance of understanding access to health care is linked to the key role that it plays in health policy (Penchansky 1981, Eckert 2004). Others have pointed out that understanding what access is will enable policy makers to be able to identify factors that influence and/or constrain individuals to seek care from a health care system (Lewis 1977). Furthermore, having a comprehensive definition and understanding of access is a very important health policy tool to improving service provision and health status of the population (Gulliford 2002, Aday 1975). It follows therefore that, without the knowledge of what access is, the work of health care professionals and policy makers would be hampered (Khan 1994). Obrist has argued for the importance of access to services by stating that the impact of medicines or treatment would not be realised if users have no access to them (Obrist 2007). For instance, a study in Zambia (Grant 2008) noted that making medicines available in facilities was not accompanied by improved access to services. This partly explains why the notion of access has been emphasised by policy makers when public health goals are dependent on patients being compliant to medicines, as is the case with TB and ART (McIntyre 2009).

Similarly, Khan (1994) claims that knowledge of access by policy makers will help them to make the appropriate adjustment needed so as to ensure access at whatever level of care. Using another example from McIntyre (2009), if services are available and affordable but users are facing acceptability barriers, policy makers can then make necessary adjustments in this regard such as ensuring that providers take into account the cultural or religious beliefs of the community they serve by for example, changing the health staff training curriculum to include cultural issues of the communities they serve. In addition, it has been asserted that knowledge on what access is and its measurement will help policy makers to come up with outcome indicators to be able to know when and to what extent access has been achieved, allowing for informed decisions by policy makers on allocation of resource (Khan 1994). While it is true that access to health care is a very important aspect of health care and at the centre of health systems analysis (Gulzar 1999), its usefulness can only be fully realised if it is placed into "useful and relevant frameworks" (Stevens 1992 – as cited in Gulzar. 2004: 14). This means that viewing access just as a concept is not very helpful and should therefore find use in a practical way to ensure health outcomes are enhanced.

The WHO World Health Assembly of 1978 declared health a human right (WHO 1978), whose achievement is to a larger extent determined by the level of access to appropriate health care services by individuals in need (Gulzar 1999). Obrist viewed the importance of

access to health care not only in terms of its contribution to health status but also the role it plays in the development process (Obrist 2007). The most plausible explanation to Obrist's assertion has to do with how improved access to health care affects health status of individuals positively, a notion which Khan (1994) termed as "realized access", and the relationship between this improved health status and the amount of time available to an individual to spend on productive activities like earning money and producing commodities (Grossman 1972), which can be viewed as pre-requisites for any development process.

In summary, it can be added that as long as the definition of access remains ambiguous it will remain difficult to grasp what access to health care means, or even how to know when access has been achieved. Further, without knowledge of access, it would be difficult to interpret and appreciate health policy goals relating to access, such as the meaning of "equal access" (Khan 1994). Therefore, using Andersen's definition of access as "the means through which the patient gains entry to the medical care system and continues the treatment process" (Andersen 2005), it can be concluded that access does not only entail individuals using services, as is the case with utilisation of services. It rather means care which is sustainable, thereby granting users a choice of accessing it whenever they have the need. And considering that effective TB and HIV/AIDS intervention requires diagnosis and treatment at the right time, improved and sustained access will reduce diagnostic and treatment delays. Early diagnosis and treatment of TB and HIV/AIDS can help to avoid adverse outcomes and can reduce fatalities (Raviglione 2007, Chamie 2010).

## Equity in Health Care

Braveman and Gruskin (Braveman 2003) view equity in health as the absence of systematic disparities in health between social groups that have different levels of underlying social advantage or disadvantage. Whitehead went on to define inequity as differences in health and/or (access to or use of) health care which are "unnecessary and avoidable", and can be considered to be "unfair and unjust" (Whitehead 1991). The Author further came up with three important pre-requisites for inequity to be said to exist: a) if differences in health or health care are systematic, (there is a pattern formed), b) if socially produced and c) unfair (Whitehead 2007). Building on Braveman (2003) and Whitehead (2007) definitions, inequity in health care can therefore be said to exist when there is a systematic difference in access patterns to health care between different socio-economic groups and this is evident when it becomes possible to predict the level of access to health care an individual will experience based on their social position in society.

It is important to note though that, since equity is based on fairness and justice (Braveman 2003, Whitehead 2007, Whitehead 1992) which are subjective concepts, and is also based on the grounds that health is a human right (Whitehead 2007, Aday 1981), its definition and meaning depends on the context and whatever else is happening in that society (Braveman 2003, Whitehead 1991). This is because, what is fair or just, and even what is considered right, vary considerably in different countries and places. However, in defining equity in health care and to come close to a generic understanding of equity, it is important to always take note of the three assumptions that define the objective of equity proposed by Aday (Aday 1981). These assumptions are: 1) health care is a right, 2) resources for allocating health care are limited, and 3) based on the above two, policies in health should be designed in such a way as to ensure that these scarce resources are allocated in a "just" way (Aday 1981). Additionally, equity in health care has generally been categorised into two: horizontal and vertical equity, and these are discussed below.

## Horizontal versus Vertical Equity

It is important to note when pursuing and trying to understand equity in health care that equity can either be categorized as "Horizontal" or "Vertical" (Fein 1972, Macinko, Starfield 2002), with horizontal equity getting relatively more attention in the literature (Macinko, Starfield 2002). Fein defines horizontal equity as the provision of the same health services to individuals in the same state of need or illness (Fein 1972), and Macinko calls this "equal treatment for equal need" (Macinko, Starfield 2002). This implies for instance that individuals diagnosed with TB are supposed to receive the same treatment regardless of their income, sex, race etc. without anyone getting preference based on such variables. It can be noted that the definition of horizontal equity has been used synonymously with the general definition of equity discussed above, and this has been acknowledged by Macinko as well (Macinko, Starfield 2002).

As mentioned, vertical equity is the less explored form of equity (Macinko, Starfield 2002, Mooney 1997) and has been defined according to Fein (Fein 1972) as the fair distribution of services for people in different economic circumstances. It can also be defined simply as providing enhanced health care or giving preferential treatment to those in greater need of care (Macinko, Starfield 2002). Vertical equity, unlike horizontal equity, does not consider equal treatment of individuals, but rather acknowledges that individuals, even when faced with the same kind of need, have different starting points in life and therefore need to be treated unequally by giving preference to those that are considered to be worse off (Mooney 1997, McIntyre 2000)(McIntyre 2000). Taking an example given earlier of individuals

diagnosed with TB, vertical equity would imply giving preference to those generally considered as having a history of being disadvantaged, such as favouring blacks over whites in post-apartheid South Africa (McIntyre 2000). Vertical equity may therefore be viewed more as positive discrimination (do Rosario Giraldes 1988).

When defining equity in access to health care therefore, it is important to take note of horizontal and vertical equity. And depending on what the equity goal is – vertical or horizontal –, it is important to note that equity in access to health care can only be said to exist when access to health care resources are based on a widely recognised definition of what is "fair and just". It may be that either those with the same health needs receive equal access i.e., to achieve horizontal equity, or whether preference should be given to specific groups in as far as access to health care is concerned so as to achieve vertical equity (McIntyre 2000).

Finally, based on the McIntyre framework (McIntyre 2009), defining access at an operational level should be viewed in terms of the fit between the health care system and users and how available, affordable and acceptable services are. Further, there is a need to evaluate the level of the discussed interaction and information sharing so as to determine whether individuals are sufficiently empowered to make use of services, which is the backbone of access adopted for this study. In addition, access should be evaluated on whether it is equitable or not, because as shown, equity concerns to a greater extent determine who gets which health care resources (Mooney 1997).

It has been argued that the disadvantaged groups have less access to health care (Whitehead 2007). As a result of this, other authors (Gilson, McIntyre & Mooney 2007) have argued for improved trust between providers and users, which is likely to enhance acceptability of services. The belief is that this will improve access to care for the disadvantaged as they are more likely to suffer trust and acceptability barriers (Gilson, McIntyre & Mooney 2007). In this study therefore, the concerned is about whether access barriers differ in the users sampled for the study. If the findings seem to suggest, for example, that affordability barriers differ by SES, this would not be a problem if the rich faced higher costs, because they would have a higher ability to pay. If on the other hand, the poor faced higher costs, then this would be evidence of inequitable access for the poor relative to the rich. So, inequity is said to arise if the "degree of fit" between users and the system is *less favourable* for the poor relative to the rich.

# Empirical Review

## Objectives of the Review

The objective of reviewing empirical research is to explore evidence from studies that have examined access to TB and ART in order to find out what factors influence access to treatment for these diseases. Reviewing empirical literature is also a way to identify gaps in the access literature, and therefore possible future research areas.

The review includes studies from around the world that are considered to be relevant in relation to this study's objectives. Therefore, studies utilising either qualitative or quantitative methods, and even mixed methods have been included in the review. The review starts by discussing the methods by which these studies were deemed fit for inclusion in the review after which the studies' characteristics will be described (i.e. study setting, method etc.). This will be followed by findings of the review before discussing these findings.

It should be noted that it was not possible to find studies that defined access as is proposed in this study i.e. three measurable dimensions: availability, affordability and acceptability. Except for a single study that used Obrist's (2007) access dimensions, and which will be discussed later, the rest of the studies seemed to equate access to use of TB and ART services. This finding indicates how access is still being widely viewed simply as the use of services. Against the background that access is a multi-dimensional concept that goes beyond use of services, the finding above highlights the gap that exists in the access literature.

## Methods of selecting studies

The selected studies were extracted from the following search engines and databases: Google as well as Google Scholar, PubMed and Medline. Searches were conducted using the following key words: Access, Barriers, Tuberculosis (TB), HIV/AIDS, Antiretroviral and Treatment. Inclusion of a study in the analysis was based on satisfying the following conditions:

- The study had to be about TB and/or HIV/AIDS and focus on access to treatment for one or both of these diseases and also barriers associated with accessing treatment.
- The study had to be in English.
- The study had to have been conducted after the year 2000, so as to be up to date with the changing TB and HIV/AIDS scenario, such as the provision of free ART in most countries.
- The studies did not have to define access as proposed in this study.

## Reviewed studies

A total of 26 studies were reviewed, of which 15 were on access to ART and the rest were on access to TB treatment. Of the reviewed studies, only one (Todrys 2011) examined access to both TB and HIV treatment, while the rest of the studies examined access to these services separately.

## Characteristics of studies on access to ART

Out of the 15 studies that focused on access to ART, 12 were from Africa: four studies were from Zambia (Chileshe 2010, Grant 2008, Todrys 2011, Kwalombota, Shumba 2004) two from Malawi (Kwalombota, Shumba 2004, Makwiza 2009) while the rest of the studies were each from Botswana (Dimbungu et al. 2004), Congo (Van Rompaey et al. 2011), Ethiopia (Assefa et al. 2010), Mozambique (Posse, Baltussen 2009), Nigeria (Adeneye et al. 2006), Tanzania (Mshana et al. 2006) and Zimbabwe (Muchedzi et al. 2010). The remaining three studies were from Haiti (Mukherjee, World Health Organization 2003), Thailand (Kitajima et al. 2005)and Vietnam (Vu Song Ha, Hoang Tu Anh & Bao 2004).

In terms of study design, six studies utilised quantitative methodology (Kwalombota, Shumba 2004, Van Rompaey et al. 2011, Adeneye et al. 2006, Muchedzi et al. 2010, Kitajima et al. 2005, Khonyongwa 2004), five were qualitative studies (Chileshe 2010, Grant 2008, Makwiza 2009, Mshana et al. 2006, Vu Song Ha, Hoang Tu Anh & Bao 2004), four studies used mixed methods (Dimbungu et al. 2004, Todrys 2011, Assefa et al. 2010, Posse, Baltussen 2009), while the remaining study used a case-study design (Mukherjee, World Health Organization 2003).

All the quantitative studies used questionnaires except for the study in Congo (Van Rompaey et al. 2011), which used census data, hospital monthly reports and patient registers. Qualitative studies on the other hand used a variety of data collection tools. For example, of the two qualitative studies from Zambia, one used mainly ethnographic methods (Chileshe 2010) while the other one (Grant 2008) used semi-structured interviews with participants and focus group discussions (FGDs). The study from Vietnam combined ethnography, FGDs and in-depth interviews (Vu Song Ha, Hoang Tu Anh & Bao 2004) while the one from Malawi analysed pre-existing data from literature and undertook key informant interviews, in-depth interviews, FGDs and also used some quotations from a qualitative project the same authors had conducted previously. Similarly, the study from Tanzania (Mshana et al. 2006) used

FGDs and in-depth interviews. The table below (Table 1) summarises characteristics of the studies reviewed on access to ART.

Table 1: Studies on access to ART

| Author and Year | Country | Study Methodology | Study Focus |
|---|---|---|---|
| **Adeneye, A. K & Others 2006** | Nigeria | Quantitative | Limitations to Access and Use of Antiretroviral Therapy (ART) Among HIV Positive Persons in Lagos, Nigeria. |
| **Assefa, Y & Others. 2010** | Ethiopia | Mixed methods | Toward Universal Access to HIV Counselling and Testing and Antiretroviral Treatment in Ethiopia: Looking Beyond HIV Testing and ART Initiation. |
| **Chileshe,M. 2010** | Zambia | Qualitative (Ethnography) | Barriers and outcomes: TB patients co-infected with HIV accessing antiretroviral therapy in rural Zambia |
| **Dimbungu & Others. 2004** | Botswana | Mixed Methods | Factors inhibiting access to ARVs treatment and PMTCT services: an analysis of the experience in North West Botswana. |
| **Grant, E & Others. 2008** | Zambia | Qualitative | Factors facilitating and challenging access and adherence to antiretroviral therapy in a township in the Zambian Copperbelt. |
| **Vu Song Ha & Others. 2004** | Vietnam | Qualitative | Access to care, support and treatment for PLHA in Vietnam: Users' perspective. |
| **Kitajima, T & Others. 2005** | Thailand | Quantitative | Access to antiretroviral therapy among HIV/AIDS patients in Khon Kaen province, Thailand. |
| **Khonyongwa 2004** | Malawi | Quantitative | HIV/AIDS Treatment access study a premise for policy and advocacy in Malawi. |
| **Kwalombota & Others. 2004** | Zambia | Quantitative | Influence of gender on access to antiretroviral therapy among African women. |

| | | | |
|---|---|---|---|
| **Makwiza, I & Others. 2009** | Malawi | A Review of previous studies & Qualitative methods | Who has access to counselling and testing and anti-retroviral therapy in Malawi – an equity analysis. |
| **Muchedzi, A & Others 2010** | Zimbabwe | Quantitative | Factors associated with access to HIV care and treatment in a prevention of mother to child transmission programme in urban Zimbabwe. |
| **Mukherjee, J & Others. 2003** | Haiti | Case study | Access to antiretroviral treatment and care: experience of the HIV Equity Initiative, Cange, Haiti: case study. |
| **Mshana,G H & Others. 2006** | Tanzania | Qualitative | Barriers to Accessing Antiretroviral Therapy in Kisesa, Tanzania: A Qualitative Study of Early Rural Referrals to the National Program |
| **Posse,M. 2009** | Mozambique | Mixed methods | Barriers to access to antiretroviral treatment in Mozambique, as perceived by patients and health workers in urban and rural settings. |
| **Todrys, K. W & Others. 2011** | Zambia | Mixed methods | Imprisoned and imperilled: access to HIV and TB prevention and treatment, and denial of human rights, in Zambian prisons. |
| **Van Rompaey,S & Others. 2011** | Congo | Quantitative (Census data & Patients' record reviews) | Operational assessment of access to ART in rural Africa: the example of Kisantu in Democratic Republic of the Congo. |

## Characteristics of studies on access to TB treatment

Eleven (11) studies were reviewed under access to TB treatment. Five of the studies were from China (Deng et al. 2006, Fong 2005, Wei et al. 2009, Xu et al. 2004, Xu, Diwan & Bogg 2007) while the other studies were each from Burkina Faso (Sanou et al. 2004), Ethiopia (Gele et al. 2010), Gambia (Eastwood, Hill 2004), Kenya (Mauch et al. 2011), Tajikistan (Aye et al. 2010) and Zambia (Todrys 2011). Important to note is that one of the reviewed studies (Fong 2005) was a Doctor of Philosophy (PhD) dissertation, submitted to The Johns Hopkins School of Public Health.

With the exception of two quantitative studies (Deng et al. 2006, Xu, Diwan & Bogg 2007) and two mixed methods studies (Todrys 2011, Mauch et al. 2011), the rest of the TB studies used qualitative methods. Both of the quantitative studies used questionnaires while the mixed methods studies combined questionnaires with follow-up interviews of key informants (Mauch et al. 2011), and also used facility assessments, reviews of government legislation and policies, in combination with in-depth interviews of key informants (Todrys 2011). With regards to the qualitative studies, the most common tools used were FGDs (Xu et al. 2004, Sanou et al. 2004, Aye et al. 2010) and in-depth interviews (Fong 2005, Wei et al. 2009, Sanou et al. 2004). A couple of studies used semi-structured questionnaires (Fong 2005, Eastwood, Hill 2004) while one study conducted informal interviews (Gele et al. 2010). The table below (Table 2) summarises the reviewed studies that examined access to TB treatment.

**Table 2: Studies on access to TB treatment**

| Author and Year | Country | Study Methodology | Study Focus |
|---|---|---|---|
| **Aye,R. 2010** | Tajikistan | Qualitative | Illness costs to households are a key barrier to access diagnostic and treatment services for tuberculosis in Tajikistan. |
| **Deng, H.J & Others. 2006** | China | Quantitative | Study on factors causing the delay of access to tuberculosis diagnosis and its influencing factors in migrating tuberculosis patients in Putuo district, Shanghai. |
| **Eastwood,S V. 2004** | Gambia | Qualitative | A gender-focused qualitative study of barriers to accessing tuberculosis treatment in The Gambia, West Africa. |
| **Fong. 2005** | China | Qualitative ( semi-structured in-depth interviews) | Gender and access to DOTS program (Directly Observed Treatment, Short Course) in a poor rural and minority area of Gansu province, China. |
| **Gele, A.A & Others. 2010** | Ethiopia | Qualitative | Barriers to tuberculosis care: a qualitative study among Somali pastoralists in Ethiopia. |
| **Mauch,V & Others. 2011** | Kenya | Mixed methods | Assessing access barriers to tuberculosis care with the Tool to Estimate Patients' Costs: pilot results from two districts in Kenya. |
| **Sanou,A & Others. 2004** | Burkina Faso | Qualitative | Access and adhering to tuberculosis treatment: barriers faced by patients and communities in Burkina Faso. |
| **Todrys, K. W & Others. 2011** | Zambia | Mixed methods | Imprisoned and imperilled: access to HIV and TB prevention and treatment, and denial of human rights, in Zambian prisons. |

| | | | |
|---|---|---|---|
| **Wei, X & Other. 2009** | China | Qualitative | Barriers to TB care for rural-to-urban migrant TB patients in Shanghai: a qualitative study. |
| **Xu,B & Others. 2004** | China | Qualitative | Perceptions and experiences of health care seeking and access to TB care – a qualitative study in Rural Jiangsu Province, China. |
| **Xu, B & Others. 2007** | China | Quantitative | Access to tuberculosis care: What did chronic cough patients experience in the way of healthcare-seeking? |

# Study Findings

## Access to ART

Findings from the reviewed studies identified various barriers to accessing ART services in the various settings. Barriers cited by most authors were costs associated with accessing this service – both direct and indirect (Chileshe 2010, Grant 2008, Kwalombota, Shumba 2004, Makwiza 2009, Assefa et al. 2010, Posse, Baltussen 2009, Adeneye et al. 2006, Mshana et al. 2006, Muchedzi et al. 2010, Kitajima et al. 2005, Vu Song Ha, Hoang Tu Anh & Bao 2004, Khonyongwa 2004). However, since ART services in all of the reviewed studies were offered free of charge at the point of delivery, transport costs were the major concern with regards to costs of accessing this service (Chileshe 2010, Assefa et al. 2010, Posse, Baltussen 2009, Muchedzi et al. 2010, Khonyongwa 2004). For instance, the study in Ethiopia (Assefa et al. 2010) revealed that transport barriers to access were acknowledged by both providers and users, and it was shown how they negatively affected retention of patients in the ART programme. Other cost related barriers identified were the costs of additional medicines that had to be taken with ARV drugs (Grant 2008, Makwiza et al. 2009), consultation fees (Makwiza et al. 2009) and the cost of the actual ARV drugs (Grant 2008). Note that the Zambian study (Grant 2008) that cited costs of ART drugs conducted a longitudinal study, and as such patients still had to pay for ART services during the first phase of the study. Muchedzi & colleagues (2010) highlighted the importance of opportunity cost as an access barrier i.e. looking after children, and caring for the sick etcetera. An important factor related to transportation costs, was the distance to ART services. Distance was also shown by some studies (Assefa et al. 2010, Posse, Baltussen 2009, Khonyongwa 2004) as a barrier to accessing ART.

Other access barriers identified in some of the studies are related to the organisation of the health system. These barriers were concerned with the availability and adequacy of facilities and services (Dimbungu et al. 2004, Chileshe 2010, Grant 2008, Kwalombota, Shumba 2004, Posse, Baltussen 2009, Muchedzi et al. 2010, Vu Song Ha, Hoang Tu Anh & Bao 2004, Khonyongwa 2004). Specific barriers cited include lack of facilities and health workers to attend to patients (Dimbungu et al. 2004, Chileshe 2010, Khonyongwa 2004). In the event that facilities were available, the barriers faced were unavailability of services, poor quality of services and drug unavailability (Kwalombota, Shumba 2004, Posse, Baltussen 2009, Muchedzi et al. 2010, Vu Song Ha, Hoang Tu Anh & Bao 2004). Other system access barriers included long waiting times, queues and overcrowded systems (Chileshe 2010, Grant 2008, Mshana et al. 2006, Muchedzi et al. 2010). A case study conducted in Haiti revealed that staff morale also contributes to individuals' access to ART services (Mukherjee, World Health Organization 2003).

Knowledge of ART services was also cited as crucial in determining access (Dimbungu et al. 2004, Grant 2008, Kwalombota, Shumba 2004, Posse, Baltussen 2009, Muchedzi et al. 2010, Vu Song Ha, Hoang Tu Anh & Bao 2004). Specific knowledge factors deemed to be important to accessing services were complete and accurate information on HIV and information on drugs and treatment given to the community and patients (Grant 2008, Kwalombota, Shumba 2004, Posse, Baltussen 2009, Vu Song Ha, Hoang Tu Anh & Bao 2004). There were suggestions therefore on the need for patient and community sensitisation (Dimbungu et al. 2004), and that the community and people living with HIV/AIDS should be involved in the planning of ART services (Dimbungu et al. 2004, Vu Song Ha, Hoang Tu Anh & Bao 2004). The involving of these individuals in planning is meant to enhance the "responsiveness and effectiveness" of ART services (Vu Song Ha, Hoang Tu Anh & Bao 2004). It can be concluded from the foregoing that lack of information on ART services is a very important access barrier to the use of ART.

Furthermore, factors such as lack of support from family and friends were also identified as barriers to accessing ART (Grant 2008, Assefa et al. 2010, Posse, Baltussen 2009, Vu Song Ha, Hoang Tu Anh & Bao 2004). Also related to lack of support was the stigmatisation of patients, both at health centres and in the community, which further impeded access to ART services (Dimbungu et al. 2004, Chileshe 2010, Assefa et al. 2010, Adeneye et al. 2006, Mshana et al. 2006, Mukherjee, World Health Organization 2003, Vu Song Ha, Hoang Tu Anh & Bao 2004).

Finally, other factors that were found to be barring individuals from accessing ART included patient beliefs and attitudes towards treatment (Grant 2008, Kwalombota, Shumba 2004, Posse, Baltussen 2009), reliance on traditional medicines and self-treatment (Chileshe 2010, Assefa et al. 2010, Vu Song Ha, Hoang Tu Anh & Bao 2004), and the fear of side effects of ART drugs (Grant 2008, Assefa et al. 2010). Other barriers were location i.e. individuals in rural locations had less access compared to those in urban settings (Chileshe 2010, Van Rompaey et al. 2011, Makwiza et al. 2009), and sex of patients i.e. females were less likely to access treatment (Chileshe 2010, Kwalombota, Shumba 2004, Makwiza et al. 2009).

## Access to TB treatment

Similar to the findings about ART access, reviewed studies on access to TB treatment also showed that the major barriers to accessing TB were costs associated with treatment (Todrys 2011, Wei et al. 2009, Xu et al. 2004, Xu, Diwan & Bogg 2007, Sanou et al. 2004, Eastwood, Hill 2004, Mauch et al. 2011, Aye et al. 2010). Most of these studies found indirect costs, specifically transport costs as very significant in determining access to TB treatment (Todrys 2011, Assefa et al. 2010, Sanou et al. 2004,

Eastwood, Hill 2004). Distance was also identified as a barrier to accessing TB care by studies from Ethiopia (Gele et al. 2010) and Gambia (Sanou et al. 2004). As mentioned earlier, the importance of distance is the relationship it has with transport costs and also time costs i.e. the further users are located from services, the more transport and time costs they incur, and therefore experience relatively more barriers to services.

A few studies (Wei et al. 2009, Xu et al. 2004) identified direct costs such as the cost of medicines and fee for service as important to achieving access. Accordingly, because of their relationship to 'ability to pay' for health care services, income and ownership of health insurance were found to be important determinants of access to services (Deng et al. 2006, Xu, Diwan & Bogg 2007). The implication therefore is that lack of income and medical insurance is a barrier to accessing this service. The opportunity cost associated with seeking care was also identified as a key access barrier by some studies because it determines whether or not individuals will use services (Sanou et al. 2004, Gele et al. 2010, Eastwood, Hill 2004, Mauch et al. 2011, Aye et al. 2010). For example, seeking TB care was viewed as conflicting with employment (Eastwood, Hill 2004) and leading to loss of income (Sanou et al. 2004, Aye et al. 2010), especially for those in agricultural activities (Sanou et al. 2004).

Similar to findings on access to ART, lack of knowledge about services was also identified by some of the studies as a barrier to accessing TB care (Fong 2005, Wei et al. 2009, Xu et al. 2004, Gele et al. 2010, Eastwood, Hill 2004). These studies showed that complete lack of knowledge (Fong 2005, Eastwood, Hill 2004) and limited knowledge about TB (Wei et al. 2009, Xu et al. 2004) were associated with individuals not accessing TB services. There were even individuals found who were not aware that TB was contagious (Gele et al. 2010).

Another access barrier to TB treatment was the tendency by patients to treat themselves (Fong 2005, Wei et al. 2009, Xu et al. 2004, Sanou et al. 2004, Eastwood, Hill 2004, Aye et al. 2010). For instance, in their study in Burkina Faso, Sanou and others (2004) found that individuals would naturally tend to treat themselves i.e. buying over the counter medicines, and later decide to consult a traditional healer if self-treatment wasn't successful. Tuberculosis treatment within the formal health sector was only sought when these avenues failed. Though not a significant finding from Tajikistan (Aye et al. 2010), it could be inferred that sometimes patients may resort to self-treatment if they are not sure about whether or not they have been cured. Lack of resources to meet health care costs can sometimes also lead patients to treat themselves, as was the case among the elderly in a study in China (Xu et al. 2004). On the issue of traditional healers, some of these studies (Sanou et al. 2004,

Gele et al. 2010, Eastwood, Hill 2004) found that patients who were visiting these healers and using their medicine had worse access to TB services compared to those who did not visit traditional healers.

System related factors were also identified as critical in determining access to TB services (Todrys 2011, Fong 2005, Xu et al. 2004, Sanou et al. 2004, Aye et al. 2010). Specific system factors cited were the ability of the health workers to detect and make a correct TB diagnosis (Fong 2005). Other studies found that health workers' qualifications (Todrys 2011) and their attitudes to users (Sanou et al. 2004) determined whether or not individuals sought care. An additional system barrier to TB access in a Gambian study (Eastwood, Hill 2004), was the lack of privacy in the TB facilities, especially for women.

Lastly, the sex of users was also identified as a factor in determining access to TB treatment (Deng et al. 2006, Fong 2005, Xu et al. 2004, Sanou et al. 2004, Eastwood, Hill 2004). Just as was the case with findings on access to ART services, all the studies that identified sex as an access factor found that women had worse access to TB services compared to men. Two of these studies (Sanou et al. 2004, Eastwood, Hill 2004), attributed women's worse access to TB services to their lower incomes, and therefore inability to manage health care costs. Fong (2004) on the other hand identified traditional beliefs, such as roles that women are traditionally expected to perform, as worsening their access to TB services. Other access barriers identified by individual studies included waiting time in facilities (Sanou et al. 2004) and age i.e. the elderly tended to delay in seeking treatment (Xu et al. 2004).

## Discussion

Findings on access to TB and ART services were very similar across the reviewed studies. It has been revealed that the cost of seeking care was the most significant barrier to accessing both services. More specifically, transport costs posed the largest barrier for users of both TB and ART services. Another barrier common between the two tracers (TB and ART), were the distances that the users had to cover to reach needed services. It was noted that individuals with TB were more likely to experience direct costs of care such as drug costs and having to pay user fees, compared to those on ART. This finding was expected as ART services, in all the reviewed studies, were offered free of charge. The opportunity cost of seeking care was also identified as a critical barrier to accessing both services, with relatively more studies on TB acknowledging the opportunity cost barrier.

Other barriers common between the two services were the lack of knowledge about TB and ART services. The importance of knowledge about services cannot be ignored. For example, it was demonstrated by Ngamvithayapong and others (Ngamvithayapong, Winkvist & Diwan 2000) that inadequate knowledge of TB leads to delay in seeking treatment. Also, lack of proper information and understanding of TB and HIV by health workers and communities, another identified barrier, may to a large extent be responsible for the stigmatisation of patients. A study in the US showed that stigma was associated with misunderstanding the mechanism through which HIV is transmitted (Herek, Capitanio & Widaman 2002) – the same can be said of TB related stigma. Stigma is therefore a very important access barrier in TB and HIV programs (Herek, Capitanio & Widaman 2002, Hadley, Maher 2000). It has even been asserted, for example, that prevention and treatment of HIV can only succeed if stigma is eradicated (Nyblade 2006). Stigma and information barriers are related, in that one way to reduce stigma is by rigorous community sensitisation and education, and positive interaction between providers and users. Odhiambo and colleagues ((Odhiambo et al. 2008), for instance, pointed out that communication between providers and users can help reduce stigma barriers to care.

The implication of the above argument, therefore, is that patients and the community should be involved in the planning process of these services. This might make communities, families and friends of patients more receptive to treatment, and possibly improve support for those on treatment. Hadley and Maher (2000) also suggest addressing community beliefs and attitudes through "awareness campaigns" (p. 402) as one way to eliminate stigma. Interactive communication not only takes care of stigma barriers, but also ensures that patients understand the dangers of actions such as delay in seeking care, self-treatment and use of traditional healers.

Furthermore, system level barriers were also identified in both cases. However, the difference was that while ART system barriers were associated with lack of facilities, services and drugs, TB system barriers were related to improper TB detection and diagnosis in the facilities. It can be concluded from this finding that compared to TB, Antiretroviral treatment (ART) services are not as available, and this has been acknowledged elsewhere (Dong et al. 2007). In addition to this problem, the findings seem to suggest that even when ART services are available, they are notable for poor quality and sometimes unavailability of drugs. The findings suggest that there is a need to expand ART services and also to improve the quality of TB case detection rates and also the quality of both services.

Another access barrier identified for both TB and ART services was the tendency by individuals to self-treat before seeking care. This is a very important finding because, together with lack of knowledge about services, this may explain why most individuals delay seeking care, and only present themselves in facilities when complications arise, as was shown by a study on Malaria in Uganda (Nuwaha 2002). Antiretroviral services were also associated with drug side effects, which created another barrier for individuals in need of this service. On the contrary, fear of drug side effects was not mentioned in studies examining access to TB services. Additionally, studies on ART services reported more barriers related to lack of support from family and friends, and also related to facing stigma in facilities, as well as in the community. As mentioned earlier, access barriers such as the use of self-treatment and stigmatisation can be lessened by information dissemination and community awareness campaigns. It can even help promote family and community support for both TB and HIV patients.

Additional suggestions can be put forward aimed at lessening identified access barriers to both TB and ART services. For example, where fear of side effects associated with ART drugs leads to lower adherence, the ART services may need to introduce a treatment similar to the Directly Observed Treatment (DOT) used in TB treatment (Posse 2008). Such a strategy was tried in a study examining the integration of the two services in South Africa (Gandhi 2009), and proved very effective. The downside of this strategy though is that it creates further barriers, since patients will have to visit the facility every day, and it requires additional resources such as transport costs. A possible solution to help patients overcome transport costs would be to ensure that all the patients on treatment receive social grants to cover transportation and other similar costs. As has been shown by the review, TB patients identify drug costs as barriers and as such social grants can be valuable in this regard. Another option would be to have treatment supporters in the community charged with the responsibility of collecting drugs from facilities on behalf of patients.

The conclusion we can draw from this review is that ART and TB treatment are often needed by the same individuals, and integration has therefore been proposed to minimize imposing additional barriers to access on these patients. Further, integration of these services is proposed because it has been said to improve access to TB and ART services (Harris et al. 2008). Integration is also a way of freeing resources, as it has been shown that TB and ART services are noted for overlap of services, and service duplication and under-utilization of health care staff (Dong et al. 2007, Coetzee 2004). The overlap and duplication of services mostly results from the fact that TB and HIV/AIDS infections mostly occur in the same individuals (Gasana 2008). It follows from this that when these services are offered parallel to each other, as is the case in all of the reviewed studies, barriers to

accessing these services will be enhanced. For example, individuals on both TB and ART will have to face the distance and opportunity cost barriers twice as they move between the two services.

Integrating TB and ART treatment thus seems a very promising strategy to improve the effectiveness of TB/HIV interventions, and also to remove some of the treatment barriers that patients face. However, integration has drawbacks that need to be thought through carefully before proceeding. For instance, bringing TB patients together with immune deficient HIV patients in one facility can lead to the spread of TB, enhance HIV progression and worsen related morbidity and mortality (Dong et al. 2007, Coetzee 2004). Furthermore, without additional facilities and appropriately trained staff, integration may result in overcrowding – a condition in which TB thrives (Coetzee 2004).

# Conclusion

Generally, the review presented an access definition considered to be very comprehensive, unlike other discussed definitions proposed by some scholars. It has also been shown how the measurement of access is dependent on the interaction of three dimensions: availability, affordability and acceptability – amidst system and user factors. The key to access in this study is the empowerment of individuals to use health services. The importance of access in health care, especially in health policy and planning, has also been highlighted. In addition, the review has shown that equity is a very important issue in access to health care, since individuals have different underlying social advantages and disadvantages, which needs to be considered when implementing policies aimed at improving access to care.

The review further explored empirical studies on access to both TB and ART services, which have been undertaken in various locations. Among the many barriers identified, the notable one is transportation costs, which closely relates to distance to services. Another important revelation from the empirical review is that, though TB and HIV/AIDS services overlap, their respective services are still offered as parallel programmes in all the reviewed studies, and this worsens access barriers to services even further. The review has also attempted to offer solutions to overcome most of the barriers, the main ones being integration of these services, and increased community sensitisation on TB and HIV to promote acceptance, improve patient support and reduce stigma.

It is interesting to note that of all the reviewed studies, only one study from Tajikistan (Aye et al. 2010), came close to the definition of access proposed in this study. The study used Obrist's (Obrist 2007) five dimensions of access to guide their analysis (availability, adequacy, acceptability, accessibility and affordability). Ultimately however, the study just used two dimensions (affordability

and acceptability), meaning that a lot of important information that defines access, from our study perspective, was left out.

Another important finding from the review was that none of the studies meeting our criteria for inclusion in our review was from South Africa. It is a rather surprising finding considering that the country is facing arguably the worst TB and HIV/AIDS burden in the world. The finding only highlights the existing gap in the literature on access to TB and ART services in South Africa, therefore making this study even more relevant.

Finally, it should be mentioned that though it has been considered by some authors, including this study, to be the most important access dimension, the acceptability dimension did not receive as much focus in the literature as the other two dimensions – affordability and availability of services. The importance of the acceptability dimension, as discussed earlier, cannot be ignored and until it is given equal priority in research, we may not be able to understand why patients still decide not to use services even when they are available free of charge.

Lastly, there is a need for more research using the integrated method of measuring access as defined in this study, as it covers all relevant aspects of access. Also critical is the need for more research focused on the benefits and harms of integration from users' perspectives. This is because most of the studies in this area have tended to focus more on integration from the perspective of providers.

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# Part C: Journal Manuscript

Availability, affordability and acceptability barriers to accessing Tuberculosis and HIV treatment services in Mitchell's Plain, Cape Town South Africa.

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Proposed Journal: **BMC Health Services Research**

# Abstract

**Objectives:** The disadvantaged segments of the population are not only at a higher risk of being infected by tuberculosis (TB) and HIV, but also face more access barriers to health care services compared to their richer counterparts. This study explores access barriers in the use of TB and Antiretroviral Treatment (ART) services in Mitchell's Plain with a view to identifying policy-relevant solutions to these barriers. The study will also assess how these barriers differ by socio-demographic status, and by self reported adherence to treatment.

**Methodology:** Access in this study is measured using a multi-dimensional approach, and is conceptualized as the interaction of three distinct and measurable dimensions namely availability, affordability and acceptability. The study utilised secondary cross-sectional data collected using questionnaires administered by trained interviewers. A two-stage sampling approach was used by first selecting a representative sample of health facilities before selecting a representative sample of users in the facilities. A total of 657 respondents above 18 years, and who have been on TB treatment for at least 8 weeks or on ART for 2 weeks were sampled for the study. Data analysis was done using STATA version 11 for Windows.

**Results:** *Availability of services:* Compared to TB services, ART services are inadequate to meet the needs of everyone in need i.e. there are fewer ART facilities compared to TB facilities. Further, women on both services take longer to see a health worker and to collect medicines.

*Affordability of services*: Despite their lower ability to pay for services, TB patients incur higher monthly health care costs compared to HIV patients. TB patients are more likely than HIV patients to incur catastrophic expenditure, defined as spending more than 10% of their household income on health care. Furthermore, female TB patients spend more money on a monthly basis on transport compared to males. On the other hand, younger patients on both services spend more money on self-care than older respondents.

*Acceptability of services:* Comparison between the two services with regards to acceptability of services revealed that ART services were less acceptable. This was evident in more patients on ART, compared to TB patients, feeling that facilities were dirty, had long queues and therefore long waiting times, and also that health workers in the ART facilities did not have time to answer patients' questions.

**Conclusion:** Users of TB and ART services in MP face access barriers. The users of TB services are particularly faced by affordability barriers caused by higher transport costs resulting from relatively more frequent facility visits under the policy of facility-based daily observed treatment (DOTs). On the other hand, the users of ART services face availability and acceptability barriers. Overcoming access barriers can enhance entry to care and retention in care and can therefore improve health outcomes.

**Key words:** Access, availability, affordability, acceptability, equity

# Background

Low- and middle-income countries have a disproportionately high burden of Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome (HIV/AIDS) compared to developed countries [1]. Considering that HIV patients are at a relatively greater risk of being infected with TB due to the weakened immune system [2], and that TB is worsened by poverty [3], TB incidence is generally higher in countries with high HIV prevalence. The tragedy is that regions most affected by the two diseases have limited resources, and therefore find it challenging to manage interventions aimed at controlling the spread of TB and HIV/AIDS [1]. With regards to HIV treatment for instance, in 2009 low- and middle income countries provided Antiretroviral Treatment (ART) to about 42% of those that needed it [4], which can be considered to be insufficient [1].

Among the developing countries, sub-Saharan Africa is hardest hit by the HIV epidemic [5]. Similarly, the WHO TB statistics for 2008 revealed that sub-Saharan Africa had the highest incidence of TB [6]. Within sub-Saharan Africa, South Africa remains the country with the most HIV infected people and also has the second highest incidence of tuberculosis in the world [7]. As a result of this coexistence between TB and HIV, South Africa has one of the highest TB/HIV co-infection rates in the world [8] as evidenced by the 2009 WHO estimates which showed that 60% of TB patients in the country were co-infected with HIV [6].

In an effort to curb the TB and HIV/AIDS epidemics, the South African government, with support from the US President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund [9], has embarked on a campaign to enrol as many people as possible onto ART and TB treatment. Such efforts have resulted in the country having more people on ART than any other country in the world [2]. Critics have however argued that South Africa has not made as much headway as would have been expected. For instance, by the end of June 2011, the country had only managed to enrol about 1.4 million persons on antiretroviral therapy [7], which still fell short of the 2009 estimate which put those

in need of treatment at 2.6 million [10]. The probable reason for the poor performance in HIV interventions for instance, could be a result of delayed initiation and rollout of the ART program in the country [2, 7], and also the more centralised organisation of ART services [7].

Further, the Antiretroviral Treatment (ART) program has been experiencing challenges such as insufficient resources to meet the needs of all those in need [9, 11]. It is also likely that the above challenges in HIV treatment have tended to worsen the TB scenario in the country due to the relationship described earlier. Considered separately, TB control has also been reported to be moving slowly in the country, and that the country has not been doing as well as other African countries on the DOTS (Daily Observed Treatment, Short-course) program [8]. Being on DOTs entails that patients should visit TB facilities on a daily basis to be observed taking their medication. The TB scenario is exacerbated by the emergence of Multi-Drug Resistant TB (MDR-TB), which results from among other things, poor adherence to TB treatment. The draft National Strategic Plan for HIV and AIDS, STIs[5] and TB (2012-2016) places South Africa as having the fourth highest case-load of MDR-TB in the world, highlighting the impact TB has had on the country.



It can be concluded therefore that after massive investments in both TB and HIV control in most countries, including South Africa, little has been achieved with regards to the fight against these diseases. HIV/AIDS continues to cause high levels of morbidity and mortality, while TB not only remains one of the 'world's biggest infectious killers' [12], but is still the main cause of death in people that are HIV–positive [13]. For South Africa and other low- and middle income countries to achieve the 2015 Millennium Development Goals (MDGs) 6A and 6C, which call for a halt and reversal of HIV/AIDS and TB respectively, much more effort is needed in addressing the 'needs of the poor and the vulnerable populations' [6]. This is because, as highlighted earlier, the two diseases are more prevalent among the poor.

[5] Sexually Transmitted Infections

The disadvantaged segments of the population are not only more likely to be affected with TB and HIV/AIDS, but also have worse access to health care services [14]. The implication of the above is that addressing the 'needs of the poor and the vulnerable populations' as suggested by the WHO, should also involve the identification of factors that impede them from accessing needed health care.

While there have been calls for improved access to TB and HIV/AIDS treatment if countries are to achieve the MDGs, the concept of access itself is not straightforward, and the meaning of access is disputed. In an attempt to evaluate access barriers, this study adopts a comprehensive framework of access [15].

Based on this framework, access is defined as the 'degree of fit' between the health care system and health care users. Access is further viewed as a concept whose achievement is determined by the interaction of three distinct and measurable dimensions namely availability, affordability and acceptability. While access has been defined differently by various authors i.e. as the use of health care services [16-20], the adequate supply of needed services [21-26] and as the ability to pay for services [27-30], the argument made by this study is that the above access definitions are insufficiently comprehensive, because they tend to focus on one of the three dimensions. Even when they define access using more than one dimension, these definitions do not acknowledge the inter-relationship and interaction of the three dimensions in determining access.



Within this framework, access can only be achieved when system and user factors, related to the access dimensions (availability, affordability and acceptability), interact in such a way as to 'empower' users or give them the 'freedom' to use services [15, 31]. The interaction referred to in this definition involves the active exchange of information on services between users and providers [31]. The definition of access used in this study is appealing not only because it enables the comprehensive measurement of access, unlike other definitions before it, but also because it is a new method that has not been extensively used.

The study utilises survey data collected by the REACH project (Researching Equity in Access to Health Care). REACH is a five year project whose main objective is to examine health systems access and equity in South Africa. The project has four sites in South Africa i.e. Bushbuckridge (Mpumalanga), Mitchell's Plain (Western Cape), Soweto Region D in Johannesburg (Gauteng) and Hlabisa (KwaZulu-Natal). The REACH institutions include Centre for Health Policy (CHP), University of Witwatersrand, Health Economics Unit (HEU), University of Cape Town, McMaster Institute of Environment and Health (MIEM), Centre for Health Economics and Policy Analysis (CHEPA), McMaster University, Africa Centre for Health and Population Studies, University of KwaZulu-Natal, and the Rural AIDS and Development Action Research Programme, University of Witwatersrand.

# Objectives of the study

The main objective of this study is to examine access barriers in the use of TB and Antiretroviral Treatment (ART) services in Mitchell's Plain, one of Cape Town's sub-districts, in the Western Cape Province of South Africa. The study will also examine access to services between socio-demographic groups and also access barriers according to self reported adherence. The study will furthermore endeavour to identify policy relevant solutions to access barriers. Note that access in this study is defined as the "degree of fit" between service users and the health system, and is conceptualised in terms of availability, affordability and acceptability of services.



# Methods

### Study Site and Service Organisation

This study was conducted in Mitchell's Plain (MP), a sub-district of Cape Town located about 20km from the city centre and home to about 500,000 people [32]. Like most sub-districts of Cape Town in the Western Cape, MP faces high TB and HIV burdens. While TB Services are available in most of the clinics in the sub-district, HIV treatment i.e. ART, was only offered in three facilities at the time of the study. Both services are offered free at the point of use.

While tuberculosis (TB) services in Mitchell's Plain include both clinic-based and community based DOTs (Directly Observed Treatment, Short-Course), patients for this study were on clinic based DOTs. Both TB and ART services in MP are organised in such a way that they involve treatment supporters and patient advocates, and also treatment buddies and support groups, respectively. This is meant to reinforce treatment adherence and continuity of care.

**Sampling and data collection**

A two-stage sampling approach was used, first selecting a representative sample of health facilities, then within these facilities, a representative sample of users. As most public health facilities provide TB services, a minimum of five facilities were selected and probability proportional to size (PPS) methods were used to select facilities using routine data on the total number of users in each facility at the time of the research. Within each chosen facility, a random sample of patients was interviewed until the proposed facility sample size was reached. For ART, all accredited facilities were included. Proportional sampling methods and routine facility data on the number of ART users per facility at the time of data collection were used to determine the number of interviewees per facility. In total, a minimum of 300 patients were interviewed within each tracer; the planned sample size was therefore 600 respondents. Respondents were included provided that they were over 18 years of age and had been on TB treatment for at least 8 weeks or on ART for 2 weeks.



The questionnaire was administered by trained interviewers in the language of the respondent's choice. Completed questionnaires were checked for accuracy by a data collection coordinator and double entered into a data entry platform specifically designed for this purpose in Epidata.

**Study Variables**

The study collected socio-economic (SES) and demographic data in addition to a number of variables that were designed to capture attributes related to the three dimensions of access (availability, affordability and acceptability). Other variables included levels of patient adherence to treatment. All the variables used for the study are presented in Table 1 below.

**Table 1: Study variables**

| 1. Social Economic Status and Demographic Variables | 2. Availability variables |
|---|---|
| - Categorized asset index (*Categorical: 0=Poorest, 1=Richest)*<br>- Employment status (*Categorical: 0=Unemployed, 1=Employed*)<br>- Marital status (*Categorical: 0=single, 1=married or living with partner)*<br>- Sex of respondent (*Categorical: 0=female, 1=male*)<br>- Number of years of education (*Continuous variable*)<br>- Age (*Continuous variable; measured in years*)<br>- Receiving a disability grant (*Categorical: 0=no, 1=yes*)<br>- Monthly household expenditure (*Continuous variable: measured in Rand* ) | - Time taken to travel to facility and home again (*Continuous variable: time measured in minutes –median time used*)<br>- Time taken to fetch medicines during last visit (*Continuous variable: measured in minutes – median time used)*<br>- Time taken to see doctor or nurse during last clinical visit (*Continuous variable: time measured in minutes – median time used)*<br>- Able to travel by foot to facility (*Categorical: 0=no, 1=yes*) |
| **3. Affordability Variables** | **4. Acceptability Variables** |
| - Money spent on other providers during past month (GPs, traditional healers etc.) (*Continuous variable: measured in Rand – Mean amounts used*)<br>- Money spent on self-care during past month (over the counter medicines, special foods, traditional medicines) (*Continuous variable: measured in Rand – Mean amounts used*)<br>- Money spent on most recent facility visit converted into monthly amount (transport, phone, food, etc.) (*Continuous variable: measured in Rand – Mean amounts used*)<br>- Total monthly expenditure on health care (Cost on: Other Providers+ Self-care + monthly facility visits) (*Continuous variable: measured in Rand – Mean amounts used*)<br>- Needing to borrow money to pay for health care (*Categorical: 0=no, 1=yes*)<br>- Expenditure on health care >10% household expenditure (*Categorical: 0=no, 1=yes*) | - The health worker is too busy to answer my questions (*Categorical: 0=no, 1=yes*)<br>- Respondent agrees that queues are too long (*Categorical: 0=no, 1=yes*)<br>- Respondent agrees that some staff do not treat patients with sufficient respect (*Categorical: 0=no, 1=yes*)<br>- Respondent agrees that the health care facility is dirty (*Categorical: 0=no, 1=yes*)<br>- Respondent feels that people in the community judge him/her negatively for attending the TB or ART facility (*Categorical: 0=no, 1=yes*) |
| **5. Adherence Variables** | |
| - Ever missed taking your ARV or TB medicines (*Categorical: 0=no, 1=yes*)<br>- Ever missed a visit to the ART or TB facility (*Categorical: 0=no, 1=yes*)<br>- Time spent on TB or ART (*Continuous variable: measured in months)* | |

**Data Analysis**

Data analysis was undertaken in STATA version 11 for Windows [33]. Univariate analysis was used to describe the basic characteristics of the respondents e.g. sex, marital status, and age etc. while bivariate analysis was used to examine associations between two variables, and to assess potential confounding between variables before the analysis. The main analysis utilised multivariate analysis through logistic regression for binary dependent variables, and linear regression for quantitative dependent variables.

Before the analysis, a variety of multivariate linear and logistic regression models were built. In each model, standard control variables of age, sex, and socioeconomic status (categorized as rich versus poor) were included. Access variables were used as outcome variables (including travel time to the facility, waiting time to fetch medicine and to see a health worker, ability to travel by foot to the facility, money spent on self-care and on other providers during past month, money spent on most recent facility visit converted into monthly amounts, total monthly expenditure on health, needing to borrow money to finance health care, expenditure on health care greater than 10% of household expenditure, health workers too busy to answer patients' questions, some staff not treating patients with sufficient respect, dirty facilities and patients being judged negatively in the community), while explanatory variables included a range of socio-demographic (employment, marital status, number of years of education, recipient of a disability grant and monthly household expenditure), treatment related (duration on treatment) and self-reported adherence variables (i.e. missing taking medicine and missing facility visits).

Regression models were developed through the inclusion of conceptually relevant variables, and Akaike's information criteria were used to choose the most parsimonious model.

# Results

A total of 657 respondents took part in the cross-sectional study to determine factors that affect access to ART and TB treatment in Mitchell's Plain. The number of respondents was almost equally divided between those on TB treatment (50.84%) and those on Antiretroviral Treatment (ART) (49.16%). Table 2 shows other characteristics of the study population.

**Table 2: Study population characteristics**

| Population Characteristics | TB (n) | ART (n) |
|---|---|---|
| **Number of Respondents interviewed** | **334** | **323** |
| **Female** | **178** *(53.3%)* | **244** *(75.5%)* |
| **Male** | **156** | **79** |
| **Median Age** | **34** (Range: 18 – 75) | **33** (Range: 20 – 69) |
| **Years of Education (Median Years)** | **9** (Range: 0 – 12) | **10** (Range: 0 – 12) |
| **Married** | **88** *(26.4%)* | **92** *(28.5%)* |
| **Unmarried** | **246** | **231** |
| **Employed** | **70** *(20.9%)* | **100** *(30.9%)* |
| **Unemployed** | **264** | **223** |
| **Receiving a Disability Grant** | **71** *(21.3%)* | **100** *(30.9%)* |



## AVAILABILITY OF TB AND ANTIRETROVIRAL TREATMENT (ART) SERVICES

The availability of services is an important aspect of access and was estimated in four ways:

i. Examining the time it took patients to travel to and from the facilities
ii. The time it took patients to fetch medicines
iii. The time it took patients to see a doctor or nurse during their last clinical visit, and
iv. The mode of transport respondents used to get to the facilities (i.e. on foot or other modes of transport e.g. bicycles, taxis, bus or train and ambulance etc.).

Note that since time taken to travel to the facility and time taken to fetch medicine was not normally distributed for both TB and ART services, median times were used for analysis. The Wilcoxon Sum Rank Test, a non-parametric test, was used to test for significant difference between TB and ART services median times (i.e. travel time, waiting times for health workers and to fetch medicine). While time taken to see a doctor or nurse during the last visit was normally distributed for ART services, median time was still used for comparison because time taken to see a doctor or nurse under TB services was not normally distributed. Mode of transport used was a dummy variable (i.e. 1=travel by foot; 0=other means of transport), and therefore proportions were used for comparisons between TB and ART services.

Comparisons between TB and ART services revealed that TB services were generally more available than ART services. This conclusion was reached at after the Wilcoxon Sum Rank Test (non-parametric test used to test whether two populations have equal medians) revealed significant differences in median times between the two services. Specifically respondents on TB treatment spent significantly less time fetching medicines ($p<0.001$) and less waiting time to see a doctor or nurse ($p<0.001$) compared to respondents receiving HIV treatment. Furthermore, it was found that compared to patients on HIV treatment, significantly more TB patients travelled on foot to the facilities (67.7% vs. 32.1% for ART) as opposed to using other modes of transport (p-value=0.001), and spent slightly less time to reach facilities (Wilcoxon Sum Rank Test p-value<0.001). This highlights the proximity of TB services. Note however that although results revealed similar median travel time between the services, a Wilcoxon Sum Rank Test showed a significant difference in travel time between services ($p<0.001$), with patients on ART taking significantly longer to get to facilities (Mean travel time = 23.5 minutes vs. 20.9 minutes for TB patients). Table 3 and figures 1 and 2 summarise findings on availability of TB and ART services.

**Table 3: Availability of Services**

| Availability Variables | TB | ART | P-Value |
|---|---|---|---|
| **Time taken to travel to facility and vice versa (*Median Time*)** | 20 min | 20 min | <0.001 |
| **Time taken to fetch medicines during last visit (*Median Time*)** | 15 min | 180 min | <0.001 |
| **Time taken to see doctor or nurse during last clinical visit (*Median Time*)** | 60 min | 240 min | <0.001 |
| **Able to travel by foot to facility (*Frequencies*)** | 67.66% (226) | 32.09% (103) | <0.001 |

*Wilcoxon Sum Rank Test, a non-parametric test, was used to test significance difference in median time (in minutes) between TB and ART service.

**Figure 1: Availability of Services (*median time*)**

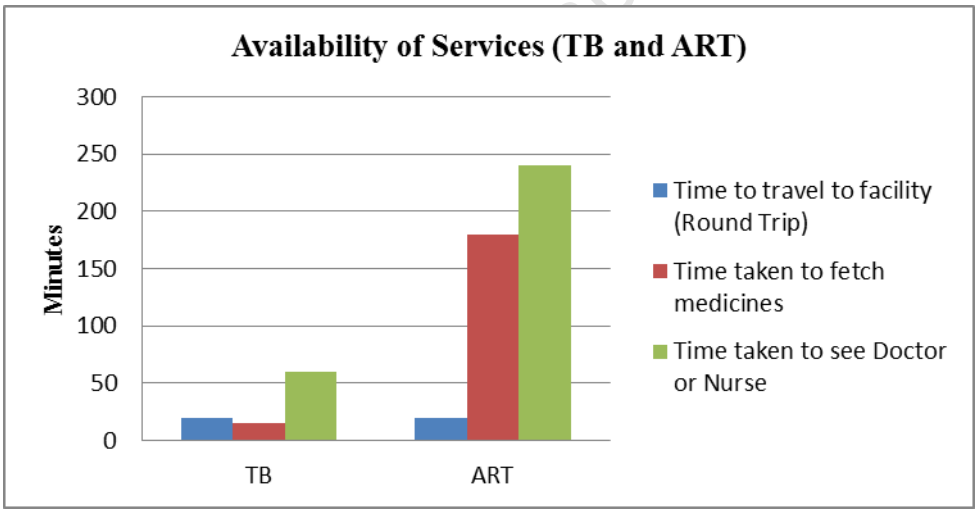
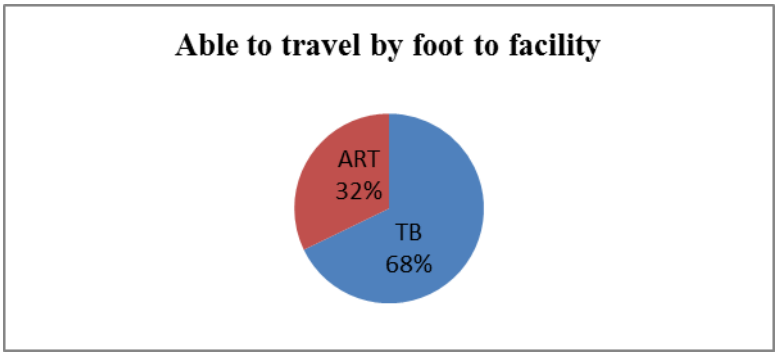



**Figure 2: Percentage of respondents travelling by foot to facilities (TB and ART)**



## Factors Associated with Availability of Services

### Availability of TB Services

Multivariate analysis revealed that the sex of the respondents was associated with waiting time to see a health worker. The results showed that male respondents were more likely to spend less time waiting to see a health worker compared to female respondents, with an average of 17.7 minutes less than females (p-value=0.015, CI: -31.9 – -3.5). Note however that when waiting time to see a health worker was examined by facility, sex was no longer a significant predictor for all 5 TB facilities.

Further results on availability of TB services revealed that time spent on treatment was an important factor when it came to the time taken to see a doctor or nurse. More precisely, an additional month spent on treatment resulted on average in 4 additional minutes waiting time to see a doctor or nurse (p-value=0.002, CI: 1.5 – 6.6).

### Availability of HIV treatment Services

Similar to TB services, multivariate analysis on availability of ART services also found that patients that had been on treatment for longer spent more time waiting to see a health worker. Specifically, an additional month spent on ART was likely to increase the time taken by respondents to wait for the doctor or nurse by an average of 0.73 additional minutes (p-value=0.039, CI: 0.04 – 1.41).



## AFFORDABILITY OF TB AND HIV TREATMENT SERVICES

To assess the affordability of services, various factors were considered which included individuals' abilities to pay for health care services, and the actual expenditures they incurred in the process of seeking health care. Ability to pay was assessed by examining employment rates, whether or not respondents had to borrow money to pay for health care, whether or not respondents were recipients of the disability grant and also the number of respondents who had to incur health care costs of more than 10% of their household expenditure (catastrophic health care expenditure).

On the other hand, actual health care costs included total monthly expenditure on health care, money spent on self-care and on other providers in the past month and money spent on transport, phone, food costs etc., converted into monthly amounts These two components of affordability are discussed below.

**Ability to Pay for Services**

Employment rates were generally low for respondents on both TB and HIV treatment (21% and 31%, respectively) in MP. However bivariate analysis revealed that respondents attending TB services had lower employment rates than those on ART (p-value=0.0034, CI: -0.17 – -0.03). With regards to borrowing money to pay for health care, there were a number of patients who were borrowing money to pay for health care and other related costs (45 patients on TB and 36 patients on ART). The numbers of respondents borrowing money for health care was however similar between TB and ART services (p-value=0.37, CI: -0.03 – 0.073).

With regards to the numbers of patients receiving the disability grant, it was found that only about 21.3% and 31.9% of patients on TB and ART services, respectively were receiving the disability grant. While the numbers receiving the disability grant were low for both services, bivariate comparisons between the services revealed that significantly more people on ART were recipients of the disability grant compared to patients on TB treatment (p-value=0.0046, CI: -0.26 – -0.03).

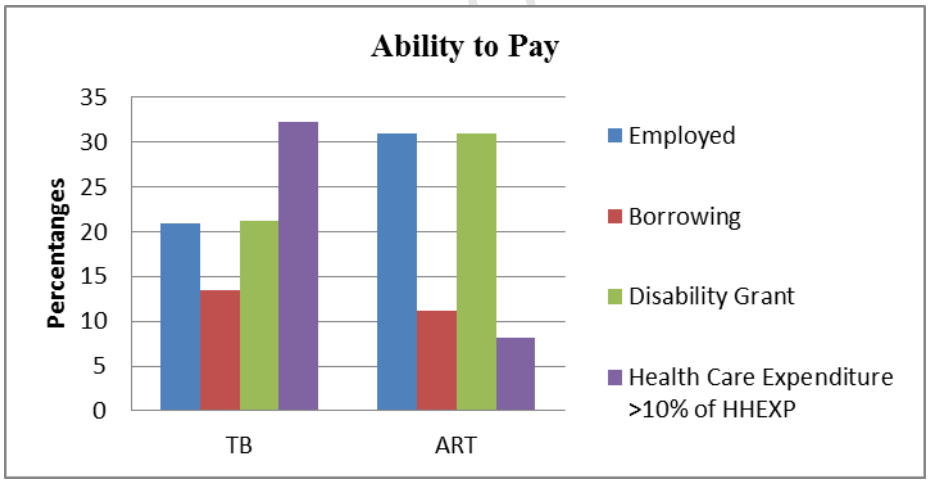
A very important factor with regards to affordability of services was to examine the number of patients between TB and ART services that had spent more than 10% of household expenditure on health care. It was found that significantly more patients on TB treatment compared to patients on ART (32.2% vs. 8.2%, p-value<0.001, CI: 0.2 – 0.3) incurred health care costs exceeding 10% of their household expenditure. This implies that TB services exposed patients to catastrophic health expenditure more than ART services. Table 4 and figure 3 below summarises findings on the ability to pay by patients in both services.

**Table 4: Ability to Pay for Services**

| Affordability Variables | TB (n) | ART (n) | P-value | 95% CI |
|---|---|---|---|---|
| **Employed** | **70** 20.96% | **100** 30.96% | 0.0034 | -0.17 – -0.03 |
| **Borrow money to pay for Health Care** | **45** 13.47% | **36** 11.18% | 0.3722 | -0.03 – 0.073 |
| **Respondents receiving the Disability Grant** | **71** 21.26% | **100** 30.96% | 0.0046 | -0.26 – -0.03 |
| **Expenditure on health care >10% Household Expenditure** | **105** 32.21% | **26** 8.20% | <0.001 | 0.2 – 0.3 |



**Figure 3: Ability to Pay for Health Care (TB and ART)**




## Factors Influencing Patients' Ability to Pay for Services

### Ability to Pay for TB Services

Multivariate analysis showed that spending more money on self-care and on other providers was an important indicator of whether an individual was going to borrow money for health care, and/or incur catastrophic health care expenditure. It was specifically found that spending an additional Rand on self-care (buying over the counter medicines, traditional medicines etc.) resulted in higher likelihood

of borrowing money to pay for health care (OR=1.37, p-value=0.006, CI: 1.1 – 1.7) and also of incurring catastrophic health care expenditure (OR=1.87, p-value=0.056, CI: 0.9 – 3.6). Similarly, spending an additional Rand on other providers also increased the chances of borrowing money to finance health care (OR=1.18, p-value=0.049, CI: 1.0 – 1.4), and also significantly higher odds of incurring catastrophic health care expenditure (OR=3.58, p-value<0.001, CI: 2.4 – 5.2).

Comparisons between the richest and poorest TB respondents revealed that richer respondents had significantly lower chances of experiencing catastrophic health expenditure than their poorer counterparts (OR=0.11, p-value<0.001, CI: 0.03 – 0.39). For example, the majority (52%) of those that experienced catastrophic health expenditure fell into the poorest 50% of the sampled respondents (according to the asset index). Furthermore, married respondents (OR=0.25, p-value=0.056, CI: 0.06 – 1.03) and also employed respondents (OR=0.3, p-value=0.084, CI: 0.08 – 1.17) had lower odds of spending more than 10% of their household expenditure on health care. Specifically, only about 29% and 23% of respondents incurring catastrophic health expenditure were married and employed, respectively. Note that findings on 'married and employed' with regards to catastrophic health expenditure were only significant at 10% level of significance.

Just a note that the mode of transport used to get to the facilities, i.e. travelling on foot versus other modes of transport such as travelling by taxi, bus and train etc., was an important determinant of whether or not a patient would borrow and/or incur catastrophic health expenditure. This highlights the importance of having facilities as close to the people as possible.



**Ability to Pay for ART Services**

Examining factors affecting ability to pay for patients on HIV treatment utilising multivariate analysis revealed that the likelihood of incurring catastrophic health expenditure increased with every additional Rand patients spent on self-care (OR=5.43, p-value=0.001, CI: 2.0 – 14.7) and seeking care from private GPs, traditional healers and other providers (OR=5.56, p-value<0.001, CI: 2.4 –

13.1). Specifically, the odds of experiencing catastrophic expenditure increased by more than 5 times for every Rand spent on both self-care and on other providers.

In addition, the results also showed that the odds of borrowing money to pay for health care were higher for respondents who spent relatively more money on self-care and on other providers. More precisely, an additional Rand spent on self-care resulted on average in 1.25 higher odds of borrowing money to pay for health care (OR=1.26, p-value=0.066, CI: 0.9 – 1.6) while an additional Rand spent on other providers resulted in an average of 1.21 higher odds of borrowing (OR=1.21, p-value=0.065, CI: 0.9 – 1.5). Note though that these results were only significant at 10% level of significance. The results further revealed that the likelihood to borrow money for health care diminished with an additional month a patient spent on ART (OR= 0.95, p=0.026, CI: 0.89 – 0.99).

Finally, the sex of patients was found to be an important factor with regards to ability to pay for ART services, specifically in incurring catastrophic health care expenditure. Specific results further showed that the likelihood of incurring catastrophic health care expenditure was 7.6 times higher for male respondents compared to their female counterparts (OR=7.6, p-value=0.027, CI: 1.3 – 45.8).

**Health Care Related Costs**

As mentioned earlier, health care related costs included the total monthly expenditure on health care. Total monthly cost was made up of money spent on self-care (over the counter medicines, special foods, traditional medicines) and money spent on other providers (GPs, traditional healers) in the past month, and also money spent on transport, phone, food and other related costs incurred by patients expressed in monthly amounts. Examining these various costs will give an idea about the cost of being on both TB and ART in MP.

Examining health care costs within each service showed that in TB services, the largest share of total health care costs included costs on transport, phone calls and food expenses incurred during

numerous monthly facility visits. The numerous TB visits resulted from the fact that most of these patients have to visit the facility every day to be observed taking their TB treatment. To put this into perspective, the majority of TB patients (92.8%) visited their respective facilities daily during the week i.e. 20 times in a month, while most of those on ART (78.2%) only made a single visit to the facility in a month. This explains why TB services are associated with high monthly transport costs compared to ART services. The second largest contributor to health care costs came from money spent on other providers and this was followed by money spent on self-care.

On the other hand, the largest contributor to total health care costs in the ART services was money patients spent on other providers followed by money they spent on self-care. Unlike under TB services, and as a result of varying frequencies of facility visits between the two services as described above, expenditure on transport, phone calls and food in the ART service expressed in monthly amounts was lower than in TB services for obvious reasons.

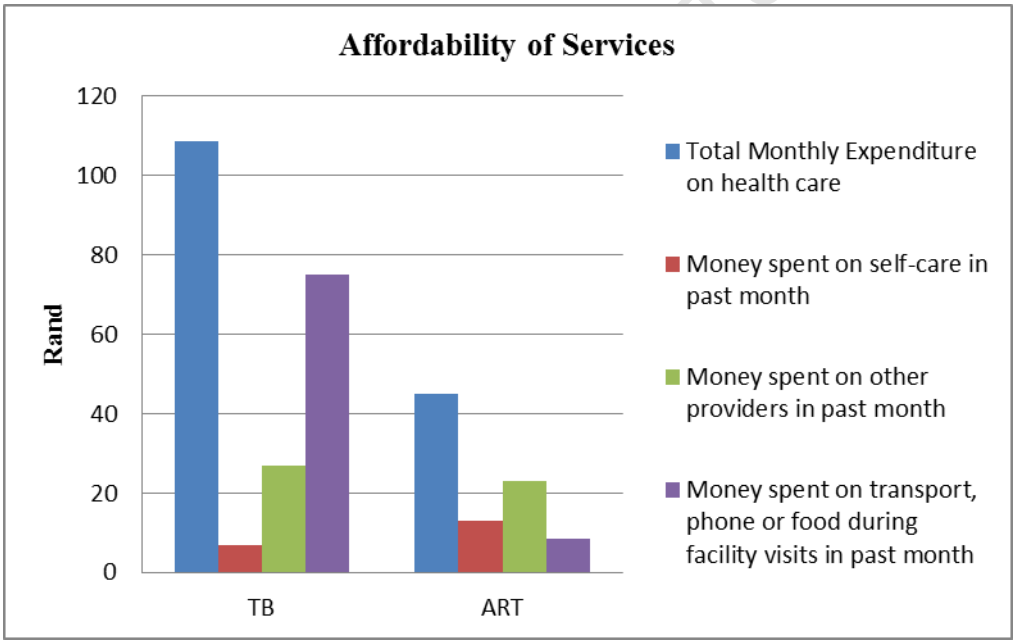
Bivariate analysis was used to compare costs across the two services, and it was found that respondents receiving TB treatment spent an average of R108.72 (median cost=R0) in a month on health care while their colleagues on ART only spent an average monthly total cost of R44.92 (Median Cost=R10) on health care.

When the various components of total cost were examined separately, it was also found that while patients on TB treatment spent an average of R74.98 (Median amount=R0) on transport, phone calls and food costs in past month, those on ART only spent an average of R8.53 (Median amount=R8) in the same period. With regards to money spent on other providers and self-care in the past month, TB patients spent an average of R26.8 (Median=R0) and R6.84 (Median=R0) on other providers and self-care respectively, compared to R23.16 (Median=R0) and 12.95 (Median=R0) spent on other providers and on self-care, respectively by HIV patients. Table 5 and figure 4 present the affordability of both TB and ART services in MP.

**Table 5: Average (Mean) cost of TB and ART services**

| Cost Item | TB (Rands) | ART (Rands) |
|---|---|---|
| **Total Monthly Expenditure on health care** | 108.72 | 44.92 |
| **Money spent on other providers** | 26.8 | 23.16 |
| **Money spent on self-care** | 6.84 | 12.95 |

**Figure 4: Affordability of TB and ART services in MP**




## Factors Associated with Health Care Costs

### Health Care Costs on TB services

Multivariate analysis on the factors that affect health care costs showed that age and sex of respondents were important variables with regards to health care spending. Specifically, with every year increase in the age of respondents, the less money they spent on self-care (p= 0.012, CI: -0.024 –

-0.003), while male respondents had significantly lower expenditure on transport, phoning and on food expressed in monthly costs, compared to female respondents (p-value=0.004, CI: -0.5 – -0.1).

Further, it was revealed that the longer the time respondents spent waiting to fetch medicines, the more likely they were to spend significantly more money on other providers such as private general practitioners (GP) and traditional healers (p-value<0.001, CI: 0.006 – 0.020). Relatively longer time to fetch medicines was also associated with patients resorting to spending more money on self-care, i.e. over the counter and traditional medicines (p-value=0.051, CI: -0.00002 – 0.00899).

In addition, respondents who felt disrespected by some health workers spent more money seeking care from other providers compared to those that felt respected by health workers (p=0.035, CI: 0.04 – 1.18). Finally, it was revealed that the relatively richer respondents had lower expenditure on transport, phone and food when expressed in monthly costs compared to their poorer counterparts (p= 0.09, CI: -0.4 – 0.02). Note that though results between the richest and poorest respondents showed significance at 10% level, the confidence intervals revealed no significant differences between the two groups.



**Health Care Costs on ART services**

Further multivariate analysis on the factors that affect health care costs in the ART services revealed a number of factors ranging from demographic variables (e.g. sex), availability variables (e.g. time taken to fetch medicines and to see a doctor or nurse), acceptability variables (e.g. some health workers lacking respect towards patients, health workers too busy to answer questions, dirty facilities and long queues in facilities) and also time spent on HIV treatment.

Specific results showed that an additional month spent on treatment was associated with spending significantly lower amounts on self-care (p-value<0.001, CI: -0.02 – -0.01) and significantly less on

travelling, making phone calls and on food expenses when expressed as monthly costs (p<0.001, CI: -0.02 – -0.01).

With regards to waiting times to see a doctor or nurse and costs on health care, results showed that an additional minute spent waiting to see a doctor or nurse increased the likelihood of spending more money on other provider (p-value=0.032, CI: -0.0042 – -0.0002). A related finding was that an additional minute spent waiting to fetch medicines significantly increased the likelihood of patients spending more on self-care (p-value<0.001, CI: 0.002 – 0.005).

As mentioned earlier, the acceptability of health care services proved to be important with regards to health care costs. Specifically, HIV patients who agreed that some health workers did not treat them with sufficient respect were more likely to spend significantly more money on self-care (p-value=0.007, CI: 0.15 – 0.98). Similarly respondents who agreed to the statement that the ART facilities were dirty were more likely to spend significantly more money seeking care from other providers compared to patients who felt facilities were clean (p-value=0.028, CI: 0.06 – 1.08). At a lower significance level (10%), patients who answered in the affirmative that queues were too long in the facilities had a higher likelihood of spending more money seeking care from other providers compared to patient who did not have a problem with queues in facilities (p-value=0.064, CI: -0.02 – 0.71).

## ACCEPTABILITY OF TB SERVICES

To assess the acceptability of both TB and ART services in MP, patients were asked a range of questions about the health workers and organisation of health services in general. Specifically, respondents were asked about whether they agreed or disagreed with the following statements:

1. The health worker is too busy to answer my questions
2. Queues are too long in the facilities
3. Some staff do not treat patients with sufficient respect
4. The health care facility is dirty
5. People in the community judge the respondent negatively for attending the TB or ART facility

Generally, most of the respondents from both TB and ART services seemed to feel that the respective services they attended were acceptable. The only exception was regarding queues in ART facilities in which the majority (67.6%) of respondents agreed that queues were too long.

Bivariate analysis between TB and ART services however revealed that TB services were relatively more acceptable from patients' perspectives. This conclusion is based on the fact that significantly more respondents on HIV treatment were likely to agree that health workers were too busy to answer their questions (16.5% vs. 11%: p-value=0.045, CI: -0.107 – -0.001), that queues were too long in the facilities (67.6% vs. 43.5%, p-value<0.001, CI: -0.3 – -0.2) and that health care facilities were dirty (25.8% vs. 14.1%, p-value<0.001, CI: -0.18 – -0.06). It was only on the notion of being judged negatively in the community for attending TB or ART facilities that more respondents on TB treatment, as compared to those on ART, agreed to being judged negatively in the community for attending facilities (11% vs. 6%, p-value=0.027, CI: 0.006 – 0.091). Table 6 summarises comparative findings on acceptability of services between TB and ART services.

**Table 6: Acceptability of Services: TB vs. ART**

| % of patients who agree to the following statements | TB (%) | ART (%) | P-Value | 95% CI |
|---|---|---|---|---|
| Respondents agree that the health worker is too busy to answer my questions | 11.11% | 16.51% | 0.045 | -0.107 – -0.001 |
| Respondents agree that queues are too long | 43.54% | 67.60% | <0.001 | -0.3 – -0.2 |
| Respondent agree that some staff do not treat patients with sufficient respect | 19.76% | 16.61% | 0.298 | — |
| Respondent agrees that the health care facility is dirty | 14.11 | 25.86% | <0.001 | -0.18 – -0.06 |
| Respondents feel that people in the community judge him/her negatively for attending the TB or ART facility | 11.08% | 6.21% | 0.027 | 0.006 – 0.091 |

## Factors Affecting Patients' Acceptability of Services

### Acceptability of TB Services

In as far as acceptability of TB services was concerned, multivariate analysis revealed that the likelihood of complaining about 'too busy' health workers was higher for the richest respondents than it was for the poorest ones (OR=2.6, p-value=0.018, CI: 1.2 – 5.8). The sex of respondents was also found to be very important in the acceptability of TB services as it was revealed that males were less likely to assert that facilities were dirty as compared to females (OR=0.29, p-value=0.002, CI: 0.1 – 0.6). It was further found that the odds of complaining about busy health workers was lower for males than it was for females, at 10% significance level (OR=0.49, p-value=0.081, CI: 0.2 – 1.1).

Time spent on treatment was also important in as far as agreeing to the statement that 'health workers were too busy to answer patients questions' was concerned. Though the finding was only significant at 10% level of significance, it was shown that an additional month spent on treatment increased the

likelihood that a patient would allude to the issue of health workers being too busy to answer their questions (OR=1.11, p-value=0.084, CI: 0.9 – 1.3)

**Acceptability of HIV Treatment Services**

Regarding factors affecting acceptability of HIV treatment services, multivariate results revealed that time spent on HIV treatment was important in this regard. Similar to results on the TB services, it was found that an additional month on treatment increased the likelihood of respondents agreeing that health workers were too busy to answer their questions (OR=1.03, p-value=0.003, CI: 1.01 – 1.05). As would be expected however, the likelihood of feeling judged negatively in the community for attending HIV treatment services reduced significantly with an additional year a respondent spent in school (OR=0.95, p-value=0.027, CI: 0.90 – 0.99).

**ADHERENCE TO TB AND HIV TREATMENT SERVICES**

Estimating the level of access to TB and ART services would not be complete without also considering the level of adherence to treatment. To assess adherence to both services, respondents were asked whether they had ever missed taking their medicines, and also whether they had ever missed a visit to the respective facilities they were attending.

Comparison between the services using bivariate analysis revealed significant difference in adherence levels with ART services performing better. As illustrated in the table below (Table 7), significantly more respondents on TB treatment reported ever missing taking their drugs compared to those reporting missing taking ARVs (p-value<0.001, CI: 0.08 – 0.20). There were also more missed visits for TB than there were for ART services (p-value<0.001, CI: 0.17 – 0.28). The table below shows findings on adherence to TB and ART services.

**Table 7: Adherence to Services**

| % of patients who agree to the following statements | TB (%) | ART (%) | P-Value | 95% CI |
|---|---|---|---|---|
| Ever missed taking TB/ARV medicines | 26.95% (90) | 12.73% (41) | <0.001 | 0.08 – 0.20 |
| Ever missed a visit to the TB/ART facility | 30.24% (101) | 7.45% (24) | <0.001 | 0.17 – 0.28 |

## Factors Affecting Adherence to Services

### Adherence to TB Services

Multivariate analysis of the factors that affect adherence to TB services indicated that the age of respondents was important in this regard. Results showed that the likelihood of missing a visit to a TB facility decreased with age i.e., with every year increase in age, the likelihood of missing a TB visit also diminished (OR=0.97, p-value=0.049, CI: 0.95 – 0.99). In addition, examining the impact of respondents' age against ever missing taking TB drugs also revealed that, at 10% significance level, the odds of missing taking drugs diminished with a year increase in age (OR=0.97, p-value=0.061, CI: 0.9 – 1.0).

The analysis further found that time spent on treatment was an important determinant of TB adherence. For instance, results showed that the odds of ever missing taking TB drugs increased for an additional month a patient spent on treatment (OR=1.25, p-value<0.001, CI: 1.1 – 1.4). Time spent on treatment was also a factor with regards to missing visits to TB facilities. Similarly, the likelihood of ever missing a visit to the TB facility significantly increased for every additional month a patient spent on treatment (OR=1.22, p-value<0.001, CI: 1.1 – 1.4). While it is expected that those who have been on treatment longer have a higher probability of having missed taking drugs and visiting a facility because of duration on treatment, the results could also indicate that adherence tends to

decrease with additional months spent on treatment, which could be because patients start feeling much better and become complacent.

**Adherence to HIV treatment Services**

Multivariate analysis on adherence to HIV treatment services revealed that the odds of ever missing taking ARVs was lower for patients receiving the disability grant, compared to the odds of missing taking drugs for non-recipients of the disability grant (OR=0.45, p=0.074, CI: 0.2 – 1.1). Specifically, only 19.5% of the disability grant recipients reported ever missing taking their HIV drugs compared to 80.5% of patients not receiving the disability grant. The age of respondents was also found to be important in as far as missing an ART visit was concerned. Specifically, every year increase in patients' age reduced the likelihood of missing a visit to the ART facility (OR=0.94, p=0.065, CI: 0.882 – 1.003). Note that the above results were significant at 10% level of significance.

Similar to findings on TB adherence, it was shown under ART that the odds of patients ever missing taking their ARVs increased with every additional month spent on treatment (OR=1.05, p<0.001, CI: 1.03 – 1.07). The results also revealed that with every additional month spent on treatment, patients were more likely to miss a visit to the ART facility than they were previously (OR=1.07, p<0.001, CI: 1.04 – 1.09). As mentioned earlier, care needs to be taken when examining findings on adherence and time on treatment.

# Discussion

This analysis has revealed a number of barriers to accessing both TB and ART care in MP. Most of the identified barriers are common between both services, which may be a good thing as it may be possible to implement a one-strategy-suits-all solution. The discussion of the findings will be categorised into socio-economic barriers and health system barriers, borrowing from Kagee and Delport's analysis on the barriers to adherence to antiretroviral treatment [34].

***Socio-economic barriers to care***

Socio-economic barriers to accessing care in MP included health care costs incurred by patients in the process of seeking care, and also the tendency by patients to resort to spending more money on self-care and on other providers. Spending more money on self-care and on other providers were important barriers because they have a potential to cause patient migration from the formal health care services and also contribute to catastrophic health care expenditure.

Health care costs are an important challenge with regards to accessing care and in ensuring long term adherence [35, 36]. In this study, tuberculosis service users experienced relatively higher costs to seeking care, most of which was on transport. These costs were worsened by the lower ability to pay of TB patients i.e. lower employment rates, lower likelihood of receiving a disability grant and the higher frequency of visits to the facilities for their daily Directly Observed Treatment, Short –Course (DOTs). The importance of ability to pay for services cannot be ignored as it has been shown to influence access to chronic care [37]. It can be further argued that the huge monthly amounts spent on transport for TB services, resulting from more facility visits, were responsible for most TB patients having to spend more than 10% of their household expenditure on health care. Note that female TB patients spent more on transport than male patients. The importance of transport costs as a key determinant to accessing TB treatment has also been cited elsewhere [38-41].

Lessening health care costs of TB services may require improving patients' ability to pay for health care related costs. This can be done by improving the targeting of the disability grant to cover as many TB patients as possible, especially women who incurred significantly higher costs on transport to TB facilities than males. In addition, the process of acquiring the disability grant for TB patients may need to be eased to make it compatible with the relatively shorter term TB treatment compared to HIV treatment. Alternatively, TB services can make use of the services of TB treatment supporters in the community to collect TB medicines from the facilities on behalf of patients. This can significantly reduce patients' daily costs on transport, phone calls and food, and ultimately on monthly expenditure on health care. This can also reduce the number of TB patients incurring catastrophic health care expenditure, thereby improving their ability to absorb other health costs. Integration of services is another strategy that has been shown to reduce patients' transport costs, especially in cases where TB patients also need HIV treatment [34].

On the other hand, the cost of seeking care from other providers was the largest cost incurred by HIV patients. Patients on HIV treatment therefore need to be sensitised to the dangers of seeking care from other providers on whom they spend a lot of money. Seeking care from other providers such as private GPs and/or traditional healers has been shown to delay seeking TB care in Zambia [42]. In addition, adding drugs from other providers to ARVs may result in drug toxicity and even affect the efficacy of the ARVs. Considering that the tendency of patients to resort to seeking care from other providers could be due to health system inefficiencies or perhaps acceptability barriers, there is a need for health system managers to ensure systems are responsive to patient needs to prevent patient migration.

***Health system barriers to care***

Other observed barriers to accessing services in MP were related to health system organisation. Specifically, ART services in MP were inadequate, and located further from patients as evidenced by the longer travel time to ART services compared to TB services. This finding was expected though

considering that while TB facilities were widely spread around MP at the time of the research, there were only three facilities offering ART services in the area. The problem of inadequate ART services compared to TB services seems to be a common challenge in South Africa because another study conducted in KwaZulu-Natal province of South Africa also found ART services to be significantly inadequate compared to TB services [43].

Related to the problem of inadequate ART services, queues were another health system barrier that was identified in MP. Long queues in the ART facilities may not only indicate that ART facilities are few, but may also mean that health workers in the facilities were insufficient in number to cope with patients' demand. The problem of inadequate health workers in HIV treatment has been shown to constrain treatment access [44]. Inadequacy of health workers in ART facilities seems to be a key access challenge to HIV treatment in Southern Africa as was also revealed by other studies from Botswana, Zambia and Malawi [45-47].

Furthermore, poor system organisation of both services was evidenced by poor attitudes of health workers. Disrespect from some health workers and unhygienic facilities may explain why some patients resorted to either buying over the counter medicines and/or paying for the services of other providers. In addition, the long waiting times in the facilities, especially ART facilities, may worsen the problem of patient retention because of the opportunity costs of waiting for medicines and for consultations. Appropriate health system organisation does not only improve access to care but has also been shown to improve patient retention and compliance to treatment. For instance having health care providers offering support and education to HIV patients has been shown to improve patient compliance to treatment [35].

Looking at the findings from an equity perspective, a number of issues have been identified that require attention if equitable access to TB and ART services in MP is to be enhanced. Firstly, the disability grant is not being targeted equitably between TB and ART services. If equity is the goal in

the way the disability grant is targeted, then we would expect more TB patients to be on the grant because they have the worst ability to pay for services, and pay significantly more for health care on a monthly basis than their counterparts on HIV treatment. More TB patients on the disability grant will ensure better ability to pay and better ability to manage health care costs.

Secondly, both TB and ART facilities in MP need to ensure gender-friendly services especially towards female patients because services in MP seem to be tailored to suit male patients as evidenced by shorter waiting times for males in collecting medicines and seeing a health worker. Further investigation may be required on sex and organisation of TB services to have a complete understanding of the above results. For instance, it could be that TB services in the old part of MP, which serves more 'coloured' (mixed race) and male patients, are better organised than the services in the informal settlements that serve largely the African and female TB patients (e.g. Crossroads II). Such differing service organisation described in TB provision may also explain why health workers seemed to have more time to answer questions from males than they did with females. Similar to findings in this study, other studies elsewhere have also found that female patients tend to have worse access to HIV treatment [47-49] and to TB treatment [38, 39, 50-52], compared to males. Furthermore, services in MP need to meet the needs of the less educated and younger respondents who also had longer waiting times and were less compliant to treatment, respectively. The younger patients also spent more money on self-care indicating the unacceptability of the services.



It is worrying that there are still patients in both services reporting missing visits and taking medication, with TB services having worse adherence. Poor adherence to treatment can cause undesirable health care outcomes such as drug resistance resulting from interruption of treatment [53, 54]. Reinforcing adherence to treatment will also require additional engagements with patients that have shown higher likelihood of defaulting treatment such as the younger patients, unmarried patients and those that stay further from the facilities. Special attention should also be paid to patients who have been on treatment relatively longer with regards to adherence, as findings seem to suggest

that adherence worsened with time spent on treatment. Adherence to treatment, both for TB and HIV, cannot be ignored due to its importance to successful treatment [55].

It may seem obvious that the solution to improving access to services and patient retention is to increase the number and quality of facilities. However, it has to be noted that making services available alone is not a guarantee of access without understanding the underlying cause of access challenges [15, 56], and without ensuring services are affordable and acceptable. Further, there should also be interactive communication and engagements between health workers and patients [37, 56] to ensure that patients have sufficient knowledge about their conditions, and the dangers of self-care and seeking care from other providers. It has been shown that without such knowledge, patients have tended to seek alternative care [37].

Based on the similarities of barriers between TB and ART services, and the revelation that TB and HIV/AIDS infections mostly occur in the same individuals [57], the one-strategy-fits-all solution would be to integrate the provision of these services in MP. As mentioned earlier, not only would integration ensure improved access to care [58], but would also ensure reduced patients' costs to accessing treatment i.e. transport and opportunity costs by having services provided in the same location [34]. It can also be asserted that integration of these services is essential in reducing costs of providing these services by eliminating service overlaps and work duplication by health care staff which is common when services are offered separately [43, 59]. Further, integration can be an opportunity to make services more efficient. For instance, the TB service can learn the patient-centred approach of the HIV treatment service to improve adherence [43].

The study findings are a revelation that access is a multi-dimensional concept that requires assessing all the three dimensions at the same time to be able to know if and to what extent access has been achieved. For instance, analysing access this way has enabled this study to show that availability of services alone i.e. TB services, is not enough to explain access as evidenced by worse TB adherence

rates even after having adequate facilities. Among other factors, poor access to TB services is mainly due to high transport costs (affordability dimension) and also the frequency of the visits that characterise the service. Poor access may also stem from the fact that TB seems to be a stigmatised disease in MP (acceptability). The analysis has also shown that access to ART services has not yet been achieved because even when this service is relatively affordable, it is marked by inadequate services (availability) and poor acceptability of services i.e. longer waiting times, dirty facilities and poor health worker attitudes. Viewing access as a multi-dimensional concept therefore enables analysis across a range of factors i.e. availability, affordability and acceptability of services, and therefore also offers a multi-dimensional approach to solving access problems.

***Limitations of the study***

Note for future studies that the acceptability dimension can best be understood using qualitative interviews, making this one of the limitations of this study since it utilised quantitative data. In addition, since study respondents were those patients receiving treatment in various facilities, patients that were lost to follow-up were automatically excluded from the study. The implication of this is that we may not be able to understand access barriers that made these patients drop out of treatment. Similarly, since the study is limited to only those attending health facilities, it is not possible to understand access barriers faced by patients not using services at all.



Furthermore, since sampling of respondents is clustered by clinic attended, it is likely that some responses by participants attending the same clinic will be similar, e.g. the cleanliness of the clinic or waiting time. This implies a lack of independent observations and therefore a limitation.

Finally, the data used for the analysis did not allow for analysis of TB/HIV co-infection and patient-health worker ratios, and how this impact on access to TB and HIV services. Understanding the impact of TB/HIV co-infection and patient-health worker ratios on access would have provided valuable information for policy formulation.

# Conclusions

The study presented findings on the barriers to accessing TB and ART services in MP using a multi-dimensional approach. Using this approach has helped to show how intertwined the access dimensions are, and why it is important to examine them together. For instance, it has been shown in the case of TB services that availability of services does not result in better treatment adherence. This is because other factors come into play such as the affordability and the organisation of services to meet the expectations of patients.

The study findings indicate that a number of access challenges still exit in MP, particularly high costs associated with TB treatment and patients' lower ability to meet these costs, and also inadequacies of ART services and lower acceptability for the available ones. A number of solutions have been proposed, the key being the integration of both TB and ART services. It has to be noted though that integration on its own is not enough to eliminate access barriers in MP without solving other underlying access challenges. Other challenges that need attention include poor targeting of the disability grant, long waiting times in facilities especially for women, the tendency to resort to self-care especially for younger patients and also the use of other providers by patients.

With regards to the ART services, there is need to improve system factors vis-à-vis cleaner facilities and provider-patient engagement. In relation to engaging with patients, particular attention should be paid to the relatively younger patients who seem to spend more on self-care and are also more likely to default treatment. As shown earlier, female patients seemed to have longer waiting times in facilities to see a health worker and fetch medicines, and as such should be monitored as they may resort to either self-care or seek care from other providers.

Finally, it is clear from the foregoing that a comprehensive understanding of access is the first and probably most important step to improving access to care. Any study assessing access to care needs

therefore to examine the interrelated dimensions namely availability, affordability and acceptability of services together, without which access will be nothing more than a concept.

## Competing interests

The author declares no competing interests.

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# Part D: Policy Brief

Assessing access barriers to Tuberculosis (TB) and Antiretroviral (ARV) treatment in Mitchell's Plain, Cape Town

## BACKGROUND

South Africa carries the largest burden of people living with the Human Immunodeficiency Virus (HIV) globally (UNAIDS, 2010), and is also among the top three countries with the highest Tuberculosis (TB) incidence rates in the world (WHO. 2009).

The South African government, with support from donors, has dedicated substantial resources towards the fight against TB and HIV. However, patients attending both services continue to face challenges in accessing treatment. For example, in 2009 only about 37% of HIV infected people were on Anti-Retroviral Therapy (ART) in accordance to the guidelines prescribed by the WHO (WHO/UNAIDS/UNICEF , 2010). Owing to the fact that South Africa has one of the highest TB-HIV co-infection rates in the world (Avert website. 2011), and that HIV infection increases the risk of being infected with TB {{102 Daley,C L. 1992}}, tuberculosis remains the main cause of mortality among people living with HIV in the country (Republic of South Africa. 2010).

With the above background, this study aimed to examine access barriers to TB and ART services in Mitchell's Plain (MP). The hope is that findings will inform policy makers about the barriers patients face in using these services and also ways to solve them. Both TB and HIV/AIDS are important causes of premature mortality. Between 2001-2006, Cape Town mortality data indicated that HIV/AIDS had replaced homicide as the leading cause of

**Box 1: Key Findings**

- Patients on TB treatment incur higher health care costs, mostly on transport because of relatively higher frequency of facility visits compared to HIV patients. Women spent more money on transport than men.
- More TB patients compared to HIV patients spend greater than 10% of their household expenditure (HHEXP) on health care.
- There are fewer ART service points in MP compared to TB services.
- ART services perform relatively poorly with regards to meeting patient expectations e.g. longer waiting times and inability by health workers to answer patients' questions.
- Patients on TB treatment have worse adherence to treatment than patients on ART.
- Despite their eligibility, fewer patients on TB treatment receive disability grants than those on ART.
- Results suggest that female TB patients have longer waiting times to see a health worker compared to males. Further investigation is needed to determine whether this difference is due to different service organisation between the facilities attended more by women compared to those attended more by men.
- Younger patients on both services are more likely to resort to self-care.

premature mortality (Groenewald et al. 2010). Tuberculosis was also among the four leading causes of mortality. Similarly, MP also faces HIV and TB related health challenges. The 2010 figures, for instance, showed that HIV/AIDS and TB respectively ranked as second and third highest causes of mortality in Mitchell's Plain, after homicide (Groenewald et al. 2010). Mortality might increase if nothing is done to improve access to TB and HIV treatment, and other related interventions in the area.

It is against this background that this study was undertaken to identify specific factors affecting access to treatment of HIV and TB. The two services were assessed together because not only are 60% of TB cases co-infected with HIV, but TB is also the major cause of mortality in HIV patients (Gasana 2008; National Department of Health. 2011), and patients using these services are therefore likely to be faced with similar challenges to accessing care.

## METHODS

The study used an approach that defines access to health care as comprising three distinct and measurable dimensions namely: availability, affordability and acceptability. It follows from this that to ensure a comprehensive evaluation and therefore understanding of access to health care, the three access dimensions need to be examined together because they are interrelated.

This study used secondary survey data from the REACH project (Researching Equity in Access to Health Care project). REACH is a programme working to examine health system access and equity in South Africa focusing on the tracer services of TB, ART and obstetric care. The analysis presented in this policy brief included TB and ART patients aged above 18 years that were receiving care from health facilities in Mitchell's Plain, Cape Town.

## STUDY FINDINGS

- **Availability of Services.**

The results reveal that ART services are inadequate to meet the needs of everyone in need of treatment. This inadequacy of health facilities

is evident from longer waiting times to collect medicines and to see a health worker, compared to TB services. Specifically, at the time of the study, there were only three (3) ART facilities in Mitchell's Plain.

Further investigation on waiting time in the facilities showed that female patients on both TB treatment and ART spent more time waiting to collect medicines and to see a health worker, compared to male patients. As alluded to earlier, further investigation needs to be done to determine the underlying cause of this finding.

- **Affordability of Services**

The results revealed that patients on TB treatment incur higher monthly health care expenditure than their counterparts on HIV treatment. Most of this expenditure is on transport resulting from higher frequency of facility visits for the daily DOTs (Directly Observed Treatment, Short-course).

The higher health care costs together with lower ability to pay for services (lower employment rates, fewer patients on the disability grant etc) result in many TB patients spending more than 10% of their household expenditure (HHEXP) on health care. Spending so much money on health in relation to their ability to pay is viewed to be catastrophic as it may drive households into poverty.

Furthermore, female TB patients incurred higher monthly transport costs compared to their male counterparts, while relatively younger respondents on both TB and HIV treatment spent more money on self-care i.e. buying over-the-counter drugs, buying traditional medicines etc.

- **Acceptability of services**

With regards to acceptability of services, it was found that in addition to the majority of patients who complained about long queues and therefore long waiting times, more patients on ART, compared to those on TB treatment, felt that facilities were dirty, and that health workers did not have time to answer their questions.

- **Adherence to Treatment**

Although neither of the services experienced 100% patient adherence to treatment, there were more patients on TB treatment than on ART who reported ever missing a health facility visit and also missing treatment doses. This could be as a result of the higher costs associated with seeking TB care i.e. transport costs plus the higher frequency of visits to the facilities.

In addition, results revealed that younger patients on TB treatment were more likely to miss both a health facility visit and TB treatment dose, and that younger patients on HIV treatment were more likely to miss a health facility visit.

## CONCLUSION

- Patients receiving both TB and HIV treatment face barriers to accessing care in MP. Barriers are either related to patients' socio-economic status i.e. costs of seeking care, or to the organisation of the health care system i.e. over-crowded facilities.
- The disability grant should be better targeted in order to include more patients

on TB treatment, to cover their relatively higher health care costs, and protect them from being driven into poverty by having to pay more than 10% of their HHEXP on health care.

- Integrating TB and ART services should reduce the cost of seeking care for patients. Having a one-stop-shop for both services should help patients who need care from both services to cut down on transport costs and travelling time, thereby giving patients more resources and time for other economic activities.
  Integration will also improve system performance by lessening work over-lap of health workers and over-stretching health care resources by having separate services.
- Availability, affordability and acceptability of services need to be examined together if access to health care is to be understood and measured appropriately.

**POLICY RECOMMENDATIONS**

- Promote the integration of TB and HIV services in Mitchell's Plain
- Increase HIV treatment services and make them as close to the people as possible
- Improve targeting of the disability grant to include more TB patients
- Improve organisation of health care systems by ensuring user-friendly services especially to women and younger respondents. Also ensure cleaner facilities to improve patient retention.
- Train providers on the importance of patient engagement and education with regards to patient retention and treatment compliance. There is no doubt that patients' participation in decisions about health care organisation is essential for improved access to services and service delivery.

**Box 2: Lessons from Mitchell's Plain**

- Access can only be achieved by the interaction of three interrelated dimensions (availability, affordability and acceptability)
- Catastrophic health care costs are very common in the TB service, potentially putting patients at risk of being driven further into poverty
- Inadequacy of services can result in over-crowding and long queues in facilities, leading to work overload for health workers and hence reduced time per patient.
- Poor attitudes by health workers and dirty facilities result in poor acceptability of services and affect adherence to care.
- Patients will resort to self-care and even seeking care from other providers if services are unavailable, costs are too high and/or if their care expectations are not met.

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# Part E: Appendices

## Appendix 1: Data Collection Tools

### 1. ART Tracer Questionnaire

**REACH**

**PATIENT INTERVIEW CONSENT FORM**

**TRACER: ART**

**CONSENT TO PARTICIPATE IN THE INTERVIEW**

**Facility:** *[enter name of facility]*_____

**I HAVE BEEN INFORMED ABOUT THE PROJECT *RESEARCHING EQUITY IN ACCESS TO HEALTH CARE*, AND I UNDERSTAND THAT IT IS UP TO ME WHETHER OR NOT TO BE INTERVIEWED.**

I understand that there will be no consequences of any kind through my responding to this questionnaire; in particular, there will be no impact on the care that I receive in this hospital.

I understand that I can ask the person interviewing me to stop the interview at any time.

I understand that the information that I give will be treated in the strictest confidence and that my name will not be used when the interviews are analysed.

Yes, I give my permission for the interview ☐

_____ _____

Interviewee's signature Date

_____

Interviewer's name (please print)

_____ _____

Interviewer's signature Date

| **REACH**<br><br>**PATIENT EXIT INTERVIEW QUESTIONNAIRE**<br><br>**TRACER: ART** | |
|---|---|
| 0.1<br>Date of interview | dd mm yyyy |
| 0.2<br>Interviewer<br>name | _____ |
| 0.3<br>Patient number | **Place sticker here** |

| | |
|---|---|
| | |
| 0.4<br>Start time of interview | _____:_____<br>hour min |
| 0.5<br>Site (name of facility) | _____ |

**Instructions for interviewers:**



Questions or parts of questions that do not always need to be read out and instructions are

in highlighted text.

Skips indicating which questions can be left out are indicated by arrows

Unless specifically asked to do so, options do not need to be read out.

## SECTION 1: SOCIOECONOMIC AND DEMOGRAPHIC BACKGROUND QUESTIONS ABOUT THE RESPONDENT, HIS/HER HOUSEHOLD AND HOUSEHOLD HEAD

**READ OUT**

I am going to start by asking you a few questions about you and your household. When I talk about your household, I am including all the people who live in your house and who share the same food with you.

When I talk about your household head, this is the person who usually makes the important decisions in the household.

| | | |
|---|---|---|
| **1.1** Sex | Male | 1 |
| | Female | 2 |

| | | |
|---|---|---|
| **1.2** Note the race of the respondent. If you are not certain, ask: How would you describe yourself racially? | African/Black | 1 |
| | Coloured | 2 |
| | Asian/Indian | 3 |
| | White | 4 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **1.3** What was your age at your last birthday? Fill in one block only | _____ Year born | _____ Years |

| | | |
|---|---|---|
| **1.4** Who is the head of your household? By this, I mean, who is the person who usually makes the important decisions in the household. Indicate relationship e.g. father, mother not name. | _____ Relationship | **If respon-dent HHH, go to 1.9** |

| | | |
|---|---|---|
| **1.5** Code sex of HHH. If not clear ask: What is the sex of your HHH? | Male | 1 |
| | Female | 2 |

| | | |
|---|---|---|
| **1.6** Code position in HH of respondent. If unclear, ask: What is your position in the household, in relation to the household head such as …read out a few relevant options. | Head/acting head | 1 |
| | Husband/wife/partner | 2 |
| | Son/daughter/stepchild/adopted child | 3 |
| | Brother/sister/step brother/step sister | 4 |
| | Father/mother/step father/step mother | 5 |

| | | |
|---|---|---|
| Circle one only | Grandparent/great grandparent | 6 |
| | Grandchild/great grandchild | 7 |
| | Other relative (e.g. in laws or aunt/uncle) | 8 |
| | Non-related persons (tenant, boarder, lodger) | 9 |
| | Don't know | 99 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **1.7**<br>What was the age of your HHH i.e. husband / father / mother etc. at his/her last birthday? fill in one block only | _____<br>Year born | _____<br>Years |

| | | |
|---|---|---|
| **1.8**<br>Does your HHH i.e. husband / father / mother etc. stay with you for at least 2 weeks each month? | Yes | 1 |
| | No | 0 |

| | | |
|---|---|---|
| **1.9**<br>What is your current marital status?<br>Circle one only | Married | 1 |
| | Living with partner | 2 |
| | Widow/widower | 3 |
| | Divorced or separated | 4 |
| | Never married (single) | 5 |
| | Other | 97 |
| | If other, specify | |

| | | | | |
|---|---|---|---|---|
| **1.10**<br>What is YOUR highest level of education?<br>Circle one only<br>If the person is NOT the HHH ask<br>What is the highest level of education of your HHH i.e. husband / father / mother etc. | **Type of education** | | **You** | **Your HHH** |
| | No schooling | | 0 | 0 |
| | Highest grade passed in school (1-12) | | | |
| | Completed diploma/certificate | | 13 | 13 |
| | Completed degree | | 14 | 14 |
| | Other | | 97 | 97 |
| | If other, specify | **You** | **Your HHH** | |

| | | | |
|---|---|---|---|
| **1.11**<br>Are you currently employed working or earning money? | **Type of employment** | **You** | **Your HHH** |

| | | | |
|---|---|---|---|
| If the person is NOT the HHH ask<br><br>Is your HHH i.e. husband / father / mother etc. currently employed? | Yes, full-time | 1 | 1 |
| | Yes, part-time | 2 | 2 |
| | No | 3 | 3 ← |
| | Don't know | 99 | 99 ← |

**If no or don't know go to**

| **1.12**<br>If respondent employed ask:<br>Are you self-employed or do you work for someone else?<br><br>If HHH employed, ask:<br>Is your HHH i.e. husband / father / mother etc. self-employed or does HE/SHE work for someone else? | **Type of employment** | **You** | **Your HHH** |
|---|---|---|---|
| | Self-employed | 1 | 1 |
| | Employee | 2 | 2 |
| | Don't know | 99 | 99 |

| **1.13**<br>If respondent not employed ask:<br><br>What are the reasons that you are not employed?<br><br>Circle "Yes" or "No" on every row. | **Reason** | Yes | No |
|---|---|---|---|
| | Studying | 1 | 0 |
| | Looking for work | 1 | 0 |
| | Retired or pensioner | 1 | 0 |
| | Sick or injured | 1 | 0 |
| | Pregnant or caring for own children | 1 | 0 |
| | Caring for other children | 1 | 0 |
| | Caring for sick/injured | 1 | 0 |
| | Retrenched | 1 | 0 |
| | Nothing | 1 | 0 |
| | Don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

| | |
|---|---|
| **1.14**<br>Including yourself, how many adults **(18 years or older)** live in your household? When I talk about your household, I am including all the people who live in your house and who share the same food with you. | _____<br>No. Adults 18 or older |
| **1.15**<br>How many children **(younger than 18 years)** live in your household? | _____<br>No. Children under 18 |

| **1.16**<br>Does anyone in your household receive a government grant OR income from the government such as…….read out each option and circle yes or no.<br><br>IF YES ask:<br>How many of each type of grant is received (i.e. how many people receive each?) | **Type of grant** | **Yes** | **No** | **If yes, number received** |
|---|---|---|---|---|
| | Unemployment insurance (UIF) | 1 | 0 | |
| | Worker's compensation | 1 | 0 | |
| | State old age pension | 1 | 0 | |
| | Disability grant | 1 | 0 | ← |
| | Child support grant | 1 | 0 | |
| | Care dependency grant | 1 | 0 | |
| | Foster care grant | 1 | 0 | |
| | Grant in aid | 1 | 0 | |
| | Social relief | 1 | 0 | |
| | Other | 1 | 0 | |
| | Don't know | 99 | | |

**If no DG go to**

| **1.17**<br>If someone in the household receives a disability grant, ask:<br>Is it you that receives the disability grant? | Yes | 1 |
|---|---|---|
| | No | 0 ← |

**If no go to**

| | | |
|---|---|---|
| **1.18**<br>If YES ask:<br>What is the reason that you receive this disability grant? | _____<br>_____<br>_____ | |
| **1.19**<br>If NO ask:<br>Have you applied for a disability grant? | Yes | 1 |
| | No | 0 |
| **1.20**<br>Where were you born? READ OUT I know this is a sensitive question to ask at this stage, but we are asking because we want to see if health services treat South Africans differently to those who are not from South Africa. | South Africa | 1 |
| | Other | 97 |
| | If other, specify | **If other go to 1.22** |
| **1.21**<br>If respondent born in South Africa, ask:<br>Which province were you born in?<br>Use current province borders | Western Cape | 1 |
| | Eastern Cape | 2 |
| | Northern Cape | 3 |
| | Free State | 4 |
| | KwaZulu-Natal | 5 |
| | North West | 6 |
| | Gauteng | 7 |
| | Mpumalanga | 8 |
| | Limpopo | 9 |
| | Don't Know | 99 |
| | | **Go to 1.23** |
| **1.22**<br>If respondent not born in South Africa, ask:<br>Do you have a South African ID document? | Yes | 1 |
| | No | 0 |
| **1.23**<br>Are you covered by a Medical Aid or any scheme that helps you pay for health-care services or medicines? | Yes | 1 |
| | No | 0 |

## SECTION 2: UTILISATION OF HIV AND OTHER HEALTH SERVICES AND INDIRECT COSTS OF THE DISEASE

**READ OUT:** In this section I am going to be asking you some questions about the health care that you have used for your HIV.

| | | |
|---|---|---|
| **2.1**<br>When did you find out you were HIV positive? | _____<br>MM YYYY | |
| **2.2**<br>When did you FIRST begin receiving antiretroviral (ARV) treatment? | _____<br>MM YYYY | |
| **2.3**<br>Where were you diagnosed with HIV? | _____<br>Facility name/mobile clinic/at home<br>_____<br>Province/city/village/township | |
| **2.4**<br>How often do you collect your ARV treatment here at the clinic? | Monthly or less (weekly/bi-weekly) | 1 |
| | 2-monthly | 2 |
| | More than 2 monthly | 3 |
| **2.5**<br>Who supports you in taking your ARV treatment each day? indicate relationship e.g. sister, friend etc, can be more than one | _____<br>Relationship<br>_____ | |

| | | |
|---|---|---|
| | Relationship<br><br>Relationship<br><br>Relationship | |
| **2.6**<br>Have you received ARV treatment from a clinic other than this one? | Yes | 1 |
| | No | 0 |
| **2.7**<br>Besides ARVs, are you able to get the other health services you need in this facility? | Yes | 1 ← **If yes go to 2.9** |
| | No | 0 |
| **2.8**<br>If NO ask:<br><br>What services do you have to get elsewhere? | | |

**READ OUT:** Some people find it quite hard to stick to the ARV treatment and might not always be able to make their appointments at the clinic. We are now going to ask you about whether you have had any of these sorts of problems and what the reasons might be.

| | | |
|---|---|---|
| **2.9**<br>Did you miss taking any of your ARV tablets YESTERDAY? | Yes | 1 |
| | No | 0 |
| **2.10**<br>Did you miss taking any ARV tablets the day before YESTERDAY? | Yes | 1 |
| | No | 0 |
| **2.11**<br>Did you miss taking any ARV tablets 3 DAYS AGO? Specify the calendar day in relation to the day of the interview | Yes | 1 |
| | No | 0 |
| **2.12**<br>Apart from the last three days, have you ever missed taking any ARV tablets? | Yes | 1 |
| | No | 0 |
| **2.13**<br>Have you missed any visits to the ARV clinic in the last 6 months? | Yes | 1 |
| | No | 0 ← **If no go to 2.16** |
| **2.14**<br>IF YES<br>How many visits did you miss? | No. visits | |

| **2.15**<br>What was the reason(s) for missing the visits?<br><br>Do not read the list aloud; probe respondent to give you up to three reasons<br><br>Circle up to three yes options and circle all others no | **Reason** | **Yes** | **No** |
|---|---|---|---|
| | Lack of money | 1 | 0 |
| | Lack of time | 1 | 0 |
| | I felt better | 1 | 0 |
| | I could not take time off from work | 1 | 0 |
| | No transport | 1 | 0 |
| | Too ill to travel | 1 | 0 |
| | Other responsibilities | 1 | 0 |
| | The treatment is not effective / does not make me feel better | 1 | 0 |
| | The queues in the facility are too long | 1 | 0 |
| | The staff are rude or uncaring | 1 | 0 |
| | I have had bad experiences with staff in the past | 1 | 0 |

| | | |
|---|---|---|
| | Don't know | 99 |
| | Other | 97 |
| | If other, specify (1) | |
| | If other, specify (2) | |

**2.16**
Apart from visits to this clinic for your ARVs, have you used this clinic or any other health service in the last four weeks?
Specify in relation to the calendar date

Read out each option one at a time. IF YES ask:
How many visits (or inpatient days) did you have?

Then ask:
How much did you have to pay the provider for each?

Circle all that apply "Yes" and others "No"

| Type of facility or service | Yes | No | If yes, times used | If yes, amount spent |
|---|---|---|---|---|
| Chemist/pharmacy | 1 | 0 | | |
| This clinic (not for ARVs) | 1 | 0 | | |
| A different public clinic | 1 | 0 | | |
| A private doctor | 1 | 0 | | |
| A traditional healer | 1 | 0 | | |
| A public hospital emergency/ outpatient department | 1 | 0 | | |
| Inpatient stay in a public hospital | 1 | 0 | | |
| A private hospital emergency/ outpatient department | 1 | 0 | | |
| Inpatient stay in a private hospital | 1 | 0 | | |
| TB clinic | 1 | 0 | Leave blank | |
| Antenatal clinic [women only] | 1 | 0 | | |
| Other | 1 | 0 | | |
| If other, specify | | | | |

**2.17**
Have you spent any other money on health care in the past month (e.g. traditional medicines, spaza shops, special food, etc). IF YES, how much have you spent?

| | |
|---|---|
| Yes | 1 |
| No | 0 |
| If Yes, specify amount _____(Rand) | |

**SECTION 3: AFFORDABILITY**

**READ OUT**: I am now going to ask you some questions about the financial difficulties you might face in seeking health care for your HIV/AIDS.

**3.1**
In the last month did you have to borrow money to pay for healthcare?

| | |
|---|---|
| Yes | 1 |
| No | 0 |

**If no go to 3.3**

**3.2**
If YES
How much money did you borrow? _____(Rand)

3.3
In the last month did you have to sell personal or household items in order to pay for healthcare?

| | |
|---|---|
| Yes | 1 |
| No | 0 |

**3.4**
How much time did you spend at the clinic last time you came to collect your ARV treatment? _____ hrs _____ minutes

| | | | |
|---|---|---|---|
| **3.5**<br>How much time did you spend at the clinic last time you came to see the doctor/nurse for your ARVS? | _____ hrs _____ minutes | | |
| **3.6**<br>What would you have been doing if you weren't at the clinic today?<br><br>Circle "Yes" or "No" on every row. | **Activity** | **Yes** | **No** |
| | Working for pay | 1 | 0 |
| | Doing unpaid community work or volunteer work | 1 | 0 |
| | Doing household chores such as cleaning, cooking, shopping for food, maintenance and repairs, working in the garden, gathering wood, gathering water, housework etc. | 1 | 0 |
| | Taking care of children | 1 | 0 |
| | Leisure activities (sport, watching TV, listening to music, reading, visiting friends and family, going to movies etc) | 1 | 0 |
| | Attending school or other educational institution | 1 | 0 |
| | Nothing | 1 | 0 |
| | I don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

| | | |
|---|---|---|
| **3.7**<br>In coming to receive treatment today, how much did you pay for:<br><br>Read out each item. If no money spent, code as "0" for each item | **Category** | **Rand** |
| | Transport (one way) | |
| | Clinic/hospital fees | |
| | Medicines | |
| | Someone to take over your tasks while you are here including childcare | |
| | Accommodation if you need to stay the night nearby | |
| | Food during visit | |
| | Phoning or sms'ing | |
| | Other, specify: | |

**If no expenses go to 3.9**

| | | |
|---|---|---|
| **3.8**<br>Did you find it easy or difficult to incur these expenses? Refer to expenses in 3.7 | Easy | 1 |
| | Difficult | 2 |
| | Neither easy nor difficult | 3 |
| | Don't know | 99 |

| | | |
|---|---|---|
| **3.9**<br>If respondent is working for pay<br>Did you lose income from the time you took from your job to come here today? | Yes | 1 |
| | No | 0 |

**If no go to 3.11**

| | |
|---|---|
| **3.10**<br>If YES:<br>How much money did you lose? | _____ (Rand) |

| | | | |
|---|---|---|---|
| **3.11**<br>Who has been helping you financially, i.e. with cash, buying food, providing transport etc, with your HIV/AIDS?<br><br>Circle "Yes" or "No" on every row. | **Person** | **Yes** | **No** |
| | Husband/wife | 1 | 0 |
| | Father/mother | 1 | 0 |
| | Boyfriend/girlfriend | 1 | 0 |
| | Other relatives | 1 | 0 |
| | Friends | 1 | 0 |
| | Nobody | 1 | 0 |
| | Employer (over and above normal wages) | 1 | 0 |
| | Don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

**SECTION 4: AVAILABILITY**

| | | | |
|---|---|---|---|
| **4.1** Is this the closest clinic to your home that offers ARV treatment? | Yes | 1 | **If yes go to 4.3** |
| | No | 0 | |
| **4.2** If NO Why do you prefer this facility? | _____ | | |
| **4.3** Are the opening hours of this clinic convenient for you? | Yes | 1 | |
| | No | 0 | |
| | Don't know | 99 | |

| **4.4** How did you get here today? Circle "Yes" or "No" on every row. | **Transport mode** | **Yes** | **No** |
|---|---|---|---|
| | By foot | 1 | 0 |
| | Bicycle | 1 | 0 |
| | Minibus taxi | 1 | 0 |
| | Bus / Train | 1 | 0 |
| | Own private car | 1 | 0 |
| | Other private car (can be meter taxi, hired car, catching a lift) | 1 | 0 |
| | Ambulance / hospital transport | 1 | 0 |
| | Other | 1 | 0 |
| | If other, specify | | |

| | | | |
|---|---|---|---|
| **4.5** How long did it take you to get here? (one way only) time taken from leaving home to arriving at facility | _____ hrs _____ minutes | | |
| **4.6** Do you currently belong to a support group | Yes | 1 | **If yes go to 4.8** |
| | No | 0 | |
| **4.7** If NO Have you ever belonged to a support group in the past? | Yes | 1 | |
| | No | 0 | |
| **4.8** Do you have a treatment buddy? | Yes | 1 | |
| | No | 0 | |
| **4.9** Do you have a pillbox [show] for keeping your tablets? | Yes | 1 | |
| | No | 0 | |
| **4.10** Since you learnt about your HIV status, has anyone from the health service ever visited you at home for your HIV? | Yes | 1 | |
| | No | 0 | |
| **4.11** Are you able to give me the result of your latest CD4? | Yes | 1 | |
| | No | 0 | **If no go to 4.13** |
| **4.12** If YES write result | _____ CD4 count result | | |

**READ OUT** Please tell me if you think the following two statements are true/correct or false/incorrect:

| | | |
|---|---|---|
| **4.13** It is acceptable to stop ARVs after gaining weight | True / correct | 1 |
| | False / incorrect | 2 |
| | Don't know | 99 |
| **4.14** | True / correct | 1 |

| | | |
|---|---|---|
| ARVs cure HIV/AIDS | False / incorrect | 2 |
| | Don't know | 99 |

**SECTION 5: ACCEPTABILITY**

| | | |
|---|---|---|
| **5.1** Have you told anyone besides the health care workers that you are HIV positive? | Yes | 1 |
| | No | 0 ← **If no go to 5.3** |

**5.2**
IF YES
Who have you told about your HIV status? indicate relationship
e.g. sister, friend etc, not name

_____ Relationship

_____ Relationship

_____ Relationship

_____ Relationship

**READ OUT** For the following three questions, please tell me whether you agree or disagree with the statements I make.

| | | |
|---|---|---|
| **5.3** "I have all the support from my partner that I need to cope with my illness"? | Agree | 1 |
| | Disagree | 0 |
| | Don't know | 99 |
| | Not applicable | 98 |
| | | |
| **5.4** "I have all the support that I need from my family" | Agree | 1 |
| | Disagree | 0 |
| | Don't know | 99 |
| | Not applicable | 98 |
| **5.5** "I have all the support that I need from my friends" | Agree | 1 |
| | Disagree | 0 |
| | Don't know | 99 |
| | Not applicable | 98 |
| **5.6** Do you feel that people in the community judge you negatively for attending this facility for your ARV treatment? | Yes | 1 |
| | No | 0 |
| | Don't know | 99 |
| **5.7** For your ARV treatment what would you prefer:<br>a) To see a nurse in a nearby clinic or<br>b) To travel further to see a doctor | Nurse | 1 |
| | Doctor | 2 |
| | Indifferent | 3 |
| | Don't know | 99 |
| **5.8** In this clinic are you able to talk to the doctors or nurses in private? | Always | 1 |
| | Sometimes | 2 |
| | Never | 3 |

**READ OUT:** Can you tell me whether you agree or disagree with these statements when thinking about your general experience in this clinic?

| | | |
|---|---|---|
| **5.9** The queues to see a doctor or nurse are too long at this facility | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |

| | | |
|---|---|---|
| **5.10** The doctors and nurses (*health workers)* discussed the treatment fully with me | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.11** It is a problem that the *health workers* DO NOT speak my language. | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.12** I find it easy to tell the *health workers* when I have missed taking my tablets | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| | Not applicable | 98 |
| **5.13** The *health workers* are too busy to listen to my problems | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.14** Patient information is kept confidential in this clinic | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.15** Some staff DO NOT treat patients with sufficient respect | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.16** The health workers I see respect me | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.17** The facilities (including waiting area and toilets) are dirty | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.18** How satisfied were you with the service today? | Very satisfied/ Satisfied | 1 |
| | Neither satisfied nor dissatisfied | 2 |
| | Dissatisfied/ Very dissatisfied | 3 |
| | Don't know | 99 |
| **5.19** Since you first started coming to this facility, have you ever left without being helped? | Yes | 1 |
| | No | 0 ← **If no go to 5.21** |
| **5.20** IF YES Can you explain what happened? | _____ _____ _____ | |

| | | |
|---|---|---|
| **5.21** Have you ever not used ARV services when you needed them? | Yes | 1 |
| | No | 0 ← **If no go to 5.23** |

| | |
|---|---|
| **5.22** IF YES<br><br>Why did you not use ARV services?<br>Include all factors – personal and facility-related | _____<br>_____<br>_____ |

| **5.23** How do you think the service in this clinic could be improved?<br><br>Circle "Yes" or "No" on every row. | **Improvement** | **Yes** | **No** |
|---|---|---|---|
| | Shorter queues | 1 | 0 |
| | More health workers | 1 | 0 |
| | Cleaner facilities | 1 | 0 |
| | Better patient facilities (toilets, waiting room area etc) | 1 | 0 |
| | Don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

## SECTION 6: DWELLING CHARACTERISTICS, HOUSEHOLD INCOME, EXPENDITURE AND HOUSEHOLD ASSETS

READ OUT Finally, we want to ask you some questions about the characteristics of the house where you live and type of facilities available within your household

| | |
|---|---|
| **6.1** Where do you live? | _____village or community<br><br>_____area or township |

| **6.2** Which best describes the type of house in which you live?<br><br>Clarify answer<br><br>Circle one only | | |
|---|---|---|
| | House or brick structure on a separate stand or yard or on farm | 1 |
| | Traditional dwelling/hut/structure made of traditional materials | 2 |
| | Flat | 3 |
| | Town/cluster/semi-detached house (simplex, duplex or triplex) | 4 |
| | Unit in retirement village | 5 |
| | Dwelling/house/flat/room in backyard | 6 |
| | Informal dwelling/shack IN the backyard of a formal house | 7 |
| | Informal dwelling/shack NOT in backyard e.g. in an informal/squatter settlement or on farm | 8 |
| | Room/flatlet not in backyard but on a shared property e.g granny flat | 9 |
| | Caravan/tent | 10 |
| | Worker's hostel | 11 |
| | Other | 97 |
| | If other, specify | |

| **6.3** What is the main material of your house's walls?<br><br>Clarify answer<br><br>Circle one only | | |
|---|---|---|
| | Bricks & plaster/finished | 1 |
| | Bare brick/cement block | 2 |
| | Corrugated iron/zinc | 3 |
| | Wood | 4 |
| | Plastic | 5 |
| | Cardboard | 6 |
| | Mixture of mud and cement | 7 |
| | Wattle and daub | 8 |

| | | |
|---|---|---|
| | Mud | 9 |
| | Other | 97 |
| | If other, specify | |
| **6.4**<br>What is the main material of your house's roof?<br><br>Clarify answer<br><br>Circle one only | Tiles | 1 |
| | Corrugated iron/zinc | 2 |
| | Thatching | 3 |
| | Asbestos | 4 |
| | Plastic | 5 |
| | Cardboard | 6 |
| | Other | 97 |
| | If other, specify | |
| **6.5**<br>How many rooms, including kitchens, does your house have? Interviewer, prove and exclude bathrooms, sheds, garages, stables, etc. from the total unless people are living in them. | _____No. rooms | |
| **6.6**<br>What is the main source of **drinking water** for members of your household?<br><br>Clarify answer<br><br>Circle one only | Piped (tap) water in dwelling | 1 |
| | Piped (tap) water on site or in yard | 2 |
| | Borehole on site | 3 |
| | Rain water tank on site | 4 |
| | Neighbour's tap | 5 |
| | Public/communal tap (either free or paid) | 6 |
| | Water carrier/tanker | 7 |
| | Borehole off site/communal | 8 |
| | Flowing water/stream/river | 9 |
| | Stagnant water/dam/pool | 10 |
| | Well | 11 |
| | Spring | 12 |
| | Other | 97 |
| | If other, specify | |
| **6.7**<br>What type of toilet does your household use?<br><br>Clarify answer<br><br>Circle one only | Flush toilet (connected to sewage) | 1 |
| | Flush toilet (with septic tank) | 2 |
| | Chemical toilet | 3 |
| | Pit latrine with ventilation pipe | 4 |
| | Pit latrine without ventilation pipe | 5 |
| | Bucket toilet | 6 |
| | No facility/bush/field | 7 |
| | Other | 97 |
| | If other, specify | |
| **6.8**<br>What is the main source of energy for cooking in your household?<br><br>Clarify answer | Electricity from mains | 1 |
| | Electricity from generator | 2 |
| | Gas | 3 |
| | Paraffin | 4 |

| | | |
|---|---|---|
| Circle one only | Wood | 5 |
| | Coal | 6 |
| | Animal dung | 7 |
| | Solar energy | 8 |
| | Other | 97 |
| | If other, specify | |

| **6.9** Does your household have any of the following items in good working order? Read out each item and circle "Yes" or "No" on every row. | | **Yes** | **No** |
|---|---|---|---|
| | Telkom / landline phone | 1 | 0 |
| | Cell phone | 1 | 0 |
| | Radio | 1 | 0 |
| | Television | 1 | 0 |
| | Video recorder/DVD player | 1 | 0 |
| | Electric stove with oven | 1 | 0 |
| | Bicycle | 1 | 0 |
| | Personal computer at home | 1 | 0 |
| | Internet facilities at home | 1 | 0 |
| | Fridge | 1 | 0 |
| | Car/truck/bakkie | 1 | 0 |
| | Primus cooker, Sikeni | 1 | 0 |
| | Electric hot plate | 1 | 0 |
| | Gas cooker | 1 | 0 |
| | Electric kettle | 1 | 0 |
| | Sewing machine | 1 | 0 |
| | Block maker | 1 | 0 |
| | Motorcycle or scooter | 1 | 0 |
| | Kombi, lorry or tractor | 1 | 0 |
| | Bed | 1 | 0 |
| | Table and chairs | 1 | 0 |
| | Sofa or sofa set | 1 | 0 |
| | Kitchen sink | 1 | 0 |
| | Car battery for electricity | 1 | 0 |
| | Wheelbarrow | 1 | 0 |
| | Hoe, spade or garden fork | 1 | 0 |
| | Bed nets | 1 | 0 |
| | Cattle | 1 | 0 |
| | Other livestock (chickens etc) | 1 | 0 |

| | | | |
|---|---|---|---|
| **6.10** Does your household own cattle, livestock or chickens? | Yes | 1 | |
| | No | 0 ← | **If no go to 6.16** |

| | | |
|---|---|---|
| **6.11** IF YES How many cattle does the household own? | _____(No. cattle) | |
| | None | 0 |
| | Don't know | 99 |

| | | |
|---|---|---|
| **6.12**<br>IF YES<br><br>How many goats does the household own? | _____(No. goats) | |
| | None | 0 |
| | Don't know | 99 |
| **6.13**<br>IF YES<br><br>How many chickens does the household own? | _____(No. chickens) | |
| | None | 0 |
| | Don't know | 99 |
| **6.14**<br>IF YES<br><br>How many pigs does the household own? | _____(No. pigs) | |
| | None | 0 |
| | Don't know | 99 |
| **6.15**<br>IF YES<br><br>Does the HH own any other farm animals? IF YES What are they<br><br>How many [other] does the household own? | If other, specify | |
| | _____(No. other) | |
| | None | 0 |
| | Don't know | 99 |
| **6.16**<br>In general how much does your household usually spend in a month?<br><br>If the respondent does not give you a precise estimate ask him/her<br><br>In which of the following ranges, would you say your household EXPENDITURE generally falls?<br><br>Circle one only | _____Rand | |
| | R0 – R399 | 1 |
| | R400 – R799 | 2 |
| | R800 – R1 199 | 3 |
| | R1 200 - R1 799 | 4 |
| | R1 800 - R2 499 | 5 |
| | R2 500 - R4 999 | 6 |
| | R5 000 - R9 999 | 7 |
| | R10 000 or more | 8 |
| | Don't know | 99 |
| | Refuse | 97 |
| **6.17**<br>Do you have anything else that you would like to tell us about your experience of seeking or receiving care at this facility? | _____<br>_____<br>_____<br>_____<br>_____<br>_____<br>_____<br>_____ | |
| **6.18**<br>Note the end time of the interview | _____:_____<br>hour min | |

**Thank the interviewee and indicate that you would now like to ask his/her permission to examine his/her medical record**

## 2. TB Tracer Questionnaire

REACH

PATIENT exit INTERVIEW CONSENT FORM

tracer: TB

CONSENT TO PARTICIPATE IN THE INTERVIEW

Facility: *[enter name of facility]*_____

I have been informed about the project *Researching equity in access to health care*, and I understand that it is up to me whether or not to be interviewed.

I understand that there will be no consequences of any kind through my responding to this questionnaire; in particular, there will be no impact on the care that I receive in this hospital.

I understand that I can ask the person interviewing me to stop the interview at any time.

I understand that the information that I give will be treated in the strictest confidence and that my name will not be used when the interviews are analysed.



Yes, I give my permission for the interview ☐

_____ _____

Interviewee's signature Date

_____

Interviewer's name (please print)

_____ _____

Interviewer's signature Date

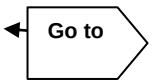
| REACH<br><br>PATIENT EXIT INTERVIEW QUESTIONNAIRE<br><br>tracer: TB | |
|---|---|
| 0.1<br>Date of interview | dd mm yyyy |
| 0.2<br>Interviewer<br>name | _____ |
| 0.3<br>Patient number | **Place sticker here** |

| | |
|---|---|
| 0.4<br>Start time of interview | _____:_____<br>hour min |
| 0.5<br>Site (name of facility) | _____ |

Instructions for interviewers:

Questions or parts of questions that do not always need to be read out and instructions are in highlighted text.

Skips indicating which questions can be left out are indicated by arrows




Unless specifically asked to do so, options do not need to be read out.

## SECTION 1: SOCIOECONOMIC AND DEMOGRAPHIC BACKGROUND QUESTIONS ABOUT THE RESPONDENT, HIS/HER HOUSEHOLD AND HOUSEHOLD HEAD

READ OUT:

I am going to start by asking you a few questions about you and your household. When I talk about your household, I am including all the people who live in your house and who share the same food with you.

When I talk about your household head, this is the person who usually makes the important decisions in the household.

| | | |
|---|---|---|
| 1.1<br>Sex | Male | 1 |
| | Female | 2 |

| | | |
|---|---|---|
| 1.2<br>Note the race of the respondent. If you are not certain, ask: How would you describe yourself racially? | African/Black | 1 |
| | Coloured | 2 |
| | Asian/Indian | 3 |
| | White | 4 |
| | Other | 97 |
| | If other, specify | |

| | | | |
|---|---|---|---|
| 1.3<br>What was your age at your last birthday?<br>Fill in one block only | _____<br>Year born | _____<br>Years | **If respondent HHH, go to 1.9** |

| | |
|---|---|
| 1.4<br>Who is the head of your household? By this, I mean, who is the person who usually makes the important decisions in the household. Indicate relationship e.g. father, mother not name. | _____<br>Relationship |

| | | |
|---|---|---|
| 1.5<br>Code sex of HHH. If not clear ask: What is the sex of your HHH? | Male | 1 |
| | Female | 2 |

| | | |
|---|---|---|
| 1.6<br>Code position in HH of respondent. If unclear, ask:<br>What is your position in the household, in relation to the household head such as …read out a few relevant options. | Head/acting head | 1 |
| | Husband/wife/partner | 2 |
| | Son/daughter/stepchild/adopted child | 3 |
| | Brother/sister/step brother/step sister | 4 |
| | Father/mother/step father/step mother | 5 |

| | | |
|---|---|---|
| Circle one only | Grandparent/great grandparent | 6 |
| | Grandchild/great grandchild | 7 |
| | Other relative (e.g. in laws or aunt/uncle) | 8 |
| | Non-related persons (tenant, boarder, lodger) | 9 |
| | Don't know | 99 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| 1.7<br><br>What was the age of your HHH i.e. husband / father / mother etc. at his/her last birthday? fill in one block only | _____<br>Year born | _____<br>Years |

| | | |
|---|---|---|
| 1.8<br><br>Does your HHH i.e. husband / father / mother etc. stay with you for at least 2 weeks each month? | Yes | 1 |
| | No | 0 |

| | | |
|---|---|---|
| 1.9<br><br>What is your current marital status?<br><br>Circle one only | Married | 1 |
| | Living with partner | 2 |
| | Widow/widower | 3 |
| | Divorced or separated | 4 |
| | Never married (single) | 5 |
| | Other | 97 |
| | If other, specify | |

| | | | |
|---|---|---|---|
| 1.10<br><br>What is YOUR highest level of education?<br><br>Circle one only<br><br>If the person is NOT the HHH ask<br><br>What is the highest level of education of your HHH i.e. husband / father / mother etc. | Type of education | You | Your HHH |
| | No schooling | 0 | 0 |
| | Highest grade passed in school (1-12) | | |
| | Completed diploma/certificate | 13 | 13 |
| | Completed degree | 14 | 14 |
| | Other | 97 | 97 |
| | If other, specify | You | Your HHH |

| 1.11 | Type of employment | You | Your HHH |
|---|---|---|---|
| Are you currently employed working or earning money? | Yes, full-time | 1 | 1 |
| | Yes, part-time | 2 | 2 |
| If the person is NOT the HHH ask | No | 3 | 3 |
| | Don't know | 99 | 99 |
| Is your HHH i.e. husband / father / mother etc. currently employed? | | | |

If no or don't know go to

| 1.12 | Type of employment | You | Your HHH |
|---|---|---|---|
| If respondent employed ask: | Self-employed | 1 | 1 |
| Are you self-employed or do you work for someone else? | Employee | 2 | 2 |
| | Don't know | 99 | 99 |
| If HHH employed, ask | | | |
| Is your HHH i.e. husband / father / mother etc. self-employed or does HE/SHE work for someone else? | | | |

| 1.13 | Reason | Yes | No |
|---|---|---|---|
| If respondent not employed ask: | Studying | 1 | 0 |
| | Looking for work | 1 | 0 |
| What are the reasons that you are not employed? | Retired or pensioner | 1 | 0 |
| | Sick or injured | 1 | 0 |
| Circle "Yes" or "No" on every row. | Pregnant or caring for own children | 1 | 0 |
| | Caring for other children | 1 | 0 |
| | Caring for sick/injured | 1 | 0 |
| | Retrenched | 1 | 0 |
| | Nothing | 1 | 0 |
| | Don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

| 1.14 | |
|---|---|
| Including yourself, how many adults (18 years or older) live in your household? When I talk about your household, I am including all the people who live in your house and who share the same food with you. | _____ No. Adults 18 or older |
| 1.15 | |

| | |
|---|---|
| How many children (younger than 18 years) live in your household? | _____<br>No. Children under 18 |

| 1.16<br><br>Does anyone in your household receive a government grant OR income from the government such as…….read out each option and circle yes or no on every row.<br><br>IF YES ask:<br><br>How many of each type of grant is received (i.e. how many people receive each?) | Type of grant | Yes | No | If yes, number received |
|---|---|---|---|---|
| | Unemployment insurance (UIF) | 1 | 0 | |
| | Worker's compensation | 1 | 0 | |
| | State old age pension | 1 | 0 | |
| | Disability grant | 1 | 0 | |
| | Child support grant | 1 | 0 | |
| | Care dependency grant | 1 | 0 | |
| | Foster care grant | 1 | 0 | |
| | Grant in aid | 1 | 0 | |
| | Social relief | 1 | 0 | |
| | Other | 1 | 0 | |
| | Don't know | 99 | | |

**If no DG go to 1.19**

| 1.17<br><br>If someone in the household receives a disability grant, ask<br><br>Is it you that receives the disability grant? | Yes | 1 |
|---|---|---|
| | No | 0 |

**If no go to 1.19**

| 1.18<br><br>If YES ask:<br><br>What is the reason that you receive this disability grant? | _____<br><br>_____<br><br>_____ |
|---|---|

| 1.19<br><br>If NO ask:<br><br>Have you applied for a disability grant? | Yes | 1 |
|---|---|---|
| | No | 0 |

| **1.20**<br>Where were you born? READ OUT I know this is a sensitive question to ask at this stage, but we are asking because we want to see if health services treat South Africans differently to those who are not from South Africa. | South Africa | 1 |
|---|---|---|
| | Other | 97 |
| | If other, specify | |

**If other go to 1.22**

| | | | |
|---|---|---|---|
| **1.21**<br><br>If respondent born in South Africa, ask:<br><br>Which province were you born in?<br>Use current province borders | Western Cape | 1 | **Go to 1.23** |
| | Eastern Cape | 2 | |
| | Northern Cape | 3 | |
| | Free State | 4 | |
| | KwaZulu-Natal | 5 | |
| | North West | 6 | |
| | Gauteng | 7 | |
| | Mpumalanga | 8 | |
| | Limpopo | 9 | |
| | Don't Know | 99 | |
| **1.22**<br>If respondent not born in South Africa, ask:<br>Do you have a South African ID document? | Yes | 1 | |
| | No | 0 | |
| **1.23**<br>Are you covered by a Medical Aid or any scheme that helps you pay for health-care services or medicines? | Yes | 1 | |
| | No | 0 | |

**SECTION 2: UTILISATION OF TB AND OTHER HEALTH SERVICES AND INDIRECT COSTS OF THE DISEASE**

**READ OUT:** In this section we are asking you some questions about what health care you have used for your TB.

| | | |
|---|---|---|
| **2.1**<br>Is this the first time you have had TB? | Yes | 1 |
| | No | 0 |

**2.2**
During this current episode, when did you start taking your TB treatment??

_____
MM YYYY

**2.3**
Where were you diagnosed with TB?

_____
Facility name/mobile clinic

_____
Province/city/village/township

| | | |
|---|---|---|
| **2.4**<br>Have you been offered an HIV test (during this current treatment episode) | Yes | 1 |
| | No | 0 |
| | Don't know | 99 |

| | | |
|---|---|---|
| **2.5**<br>How often do you collect your TB treatment here at the clinic? | Daily during the week | 1 |
| | Weekly | 2 |
| | Monthly | 3 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **2.6**<br>Who checks that you have taken your TB treatment each day? i.e. what form of DOTS does the patient receive? | The TB DOTS sister or counsellor in the clinic (clinic DOTS) | 1 |
| | A community worker (community DOTS) | 2 |
| | Someone at my place of work (workplace DOTS) | 3 |
| | No-one | 4 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **2.7** | Yes | 1 |

| | | |
|---|---|---|
| During this current treatment episode, have you received TB treatment from a clinic other than this one? | No | 0 |
| **2.8** Besides TB, are you able to get the other health services you need in this facility? | Yes | 1 |
| | No | 0 |

**If yes go to 2.10**

| | |
|---|---|
| **2.9** If NO ask: What services do you have to get elsewhere? | _____ _____ _____ |

**READ OUT:** Some people find it quite hard to stick to their TB treatment and might not always be able to make their appointments at the clinic. We are now going to ask you about whether you have had any of these sorts of problems and what the reasons might be.

| | | |
|---|---|---|
| **2.10** Did you miss taking any of your TB tablets YESTERDAY? | Yes | 1 |
| | No | 0 |
| **2.11** Did you miss taking any TB tablets the day before YESTERDAY? | Yes | 1 |
| | No | 0 |
| **2.12** Did you miss taking any TB tablets 3 DAYS AGO? Specify the calendar day in relation to the day of the interview | Yes | 1 |
| | No | 0 |
| **2.13** Apart from the last three days, have you ever missed taking any tablets? | Yes | 1 |
| | No | 0 |

**2.14** Have you missed any of the following since you started TB treatment for this current episode

| **Type of visit** | **Yes** | **No** | **N/A** | If YES, how many? |
|---|---|---|---|---|
| Daily DOTS visit | 1 | 0 | 98 | |
| Nurse/doctor clinic visit | 1 | 0 | 98 | |
| TB treatment collection | 1 | 0 | 98 | |

**If all no or N/A go to 2.16**

**2.15** For the last appointment missed, what was your reason(s)?

Do not read the list aloud; probe respondent to give you up to three reasons

Circle up to three yes options and circle all others no

| **Reason** | **Yes** | **No** |
|---|---|---|
| Lack of money | 1 | 0 |
| Lack of time | 1 | 0 |
| I felt better | 1 | 0 |
| I could not take time off from work | 1 | 0 |
| No transport | 1 | 0 |
| Too ill to travel | 1 | 0 |
| Other responsibilities | 1 | 0 |
| The treatment is not effective / does not make me feel better | 1 | 0 |
| The queues in the facility are too long | 1 | 0 |
| The staff are rude or uncaring | 1 | 0 |
| I have had bad experiences with staff in the past | 1 | 0 |
| Don't know | 99 | |
| Other | 97 | |
| Other 1 (specify) | | |
| Other 2 (specify) | | |

**2.16** Apart from visits to this clinic for your TB, have you used this

| **Type of facility or service** | **Yes** | **No** | **If yes, times used** | **If yes, amount spent** |
|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| clinic or any other health service in the last four weeks? Specify in relation to the calendar date<br><br>Read out each option one at a time. IF YES ask:<br>How many visits (or inpatient days) did you have?<br><br>Then ask:<br>How much did you have to pay the provider for each?<br><br>Circle "Yes" or "No" on every row. | Chemist/pharmacy | 1 | 0 | | |
| | This clinic (not for TB) | 1 | 0 | | |
| | A different public clinic | 1 | 0 | | |
| | A private doctor | 1 | 0 | | |
| | A traditional healer | 1 | 0 | | |
| | A public hospital emergency/ outpatient department | 1 | 0 | | |
| | Inpatient stay in a public hospital | 1 | 0 | | |
| | A private hospital emergency/ outpatient department | 1 | 0 | | |
| | Inpatient stay in a private hospital | 1 | 0 | | |
| | ARV (HIV) clinic | 1 | 0 | **Leave blank** | |
| | Antenatal clinic [women only] | 1 | 0 | | |
| | Other | 1 | 0 | | |
| | If other, specify | | | | |

| | | |
|---|---|---|
| **2.17**<br><br>Have you spent any other money on health care in the past month (e.g. traditional medicines, spaza shops, special food, etc). If YES, how much have you spent? | Yes | 1 |
| | No | 0 |
| | If Yes, specify amount<br><br>_____(Rand) | |

**SECTION 3: AFFORDABILITY**

**READ OUT:** I am now going to ask you some questions about the financial difficulties you might face in seeking health care for your TB.

| | | |
|---|---|---|
| **3.1**<br><br>In the last month did you have to borrow money to pay for healthcare? | Yes | 1 |
| | No | 0 ◄ **If no go to 3.3** |
| **3.2**<br><br>If YES<br><br>How much money did you borrow? | _____(Rand) | |
| **3.3**<br><br>In the last month did you have to sell personal or household items in order to pay for healthcare? | Yes | 1 |
| | No | 0 |
| **3.4**<br><br>How much time did you spend at the clinic last time you came for DOTS | _____ hrs _____ minutes | |

| | |
|---|---|
| **3.5**<br>How much time did you spend at the clinic last time you came to see the doctor/nurse for your TB? | _____ hrs _____ minutes |

| **3.6**<br>What would you have been doing if you weren't at the clinic today?<br><br>Circle "Yes" or "No" on every row. | **Activity** | **Yes** | **No** |
|---|---|---|---|
| | Working for pay | 1 | 0 |
| | Doing unpaid community work or volunteer work | 1 | 0 |
| | Doing household chores such as cleaning, cooking, shopping for food, maintenance and repairs, working in the garden, gathering wood, gathering water, housework etc. | 1 | 0 |
| | Taking care of children | 1 | 0 |
| | Leisure activities (sport, watching TV, listening to music, reading, visiting friends and family, going to movies etc) | 1 | 0 |
| | Attending school or other educational institution | 1 | 0 |
| | Nothing | 1 | 0 |
| | I don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

| **3.7**<br>In coming to receive treatment today, how much did you pay for:<br><br>Read out each item. If no money spent, code as "0" for each item | **Category** | **Rand** |
|---|---|---|
| | Transport (one way) | |
| | Clinic fees | |
| | Medicines | |
| | Someone to take over your tasks while you are here including childcare | |
| | Accommodation if you need to stay the night nearby | |
| | Food during visit | |
| | Phoning or sms'ing | |
| | Other, specify: | |

**If no expense, go to 3.9**

| **3.8**<br>Did you find it easy or difficult to incur these expenses? Refer to expenses in 3.7 | | |
|---|---|---|
| | Easy | 1 |
| | Difficult | 2 |
| | Neither easy nor difficult | 3 |
| | Don't know | 99 |

| **3.9**<br>If respondent is working<br>Did you lose money from the time you took from your job to come here today? | | |
|---|---|---|
| | Yes | 1 |
| | No | 0 |

**If no go to 3.11**

| **3.10**<br>If YES:<br>How much money did you lose? | _____(Rand) |
|---|---|

| 3.11 Who has been helping you financially, i.e. with cash, buying food, providing transport etc, with your TB?<br><br>Circle "Yes" or "No" on every row. | Person | Yes | No |
|---|---|---|---|
| | Husband/wife | 1 | 0 |
| | Father/mother | 1 | 0 |
| | Boyfriend/girlfriend | 1 | 0 |
| | Other relatives | 1 | 0 |
| | Friends | 1 | 0 |
| | Nobody | 1 | 0 |
| | Employer (over and above normal wages) | 1 | 0 |
| | Don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

**SECTION 4: AVAILABILITY**

| 4.1 Is this the closest clinic to your home that offers TB treatment? | | | |
|---|---|---|---|
| | Yes | 1 | **If yes go to 4.3** |
| | No | 0 | |

| 4.2 If NO ask: Why do you prefer this facility? | |
|---|---|
| | _____<br>_____<br>_____<br>_____ |

| 4.3 Are the opening hours of this clinic convenient for you? | | |
|---|---|---|
| | Yes | 1 |
| | No | 0 |
| | Don't know | 99 |

| 4.4 How did you get here today?<br><br>Circle "Yes" or "No" on every row. | Transport mode | Yes | No |
|---|---|---|---|
| | By foot | 1 | 0 |
| | Bicycle | 1 | 0 |
| | Minibus taxi | 1 | 0 |
| | Bus / Train | 1 | 0 |
| | Own private car | 1 | 0 |
| | Other private car (can be meter taxi, hired car, catching a lift) | 1 | 0 |
| | Ambulance / hospital transport | 1 | 0 |
| | Other | 1 | 0 |
| | If other, specify | | |

| 4.5 How long did it take you to get here? (one way only) time taken from leaving home to arriving at facility | _____ hrs _____ minutes |
|---|---|

**SECTION 5: ACCEPTABILITY**

| 5.1 Have you told anyone besides the health care workers that you have TB? | | | |
|---|---|---|---|
| | Yes | 1 | **If no go to 5.3** |
| | No | 0 | |

| 5.2 If YES Who have you told about your TB? Indicate relationship e.g. sister, friend etc not name. | _____<br>Relationship |
|---|---|

| | | |
|---|---|---|
| | Relationship | |
| | Relationship | |
| | Relationship | |

**READ OUT:** For the following three questions, please tell me whether you agree or disagree with the statements I make.

| | | |
|---|---|---|
| **5.3**<br>"I have all the support from my partner that I need to cope with my illness"? | Agree | 1 |
| | Disagree | 0 |
| | Don't know | 99 |
| | Not applicable | 98 |
| **5.4**<br>"I have all the support that I need from my family" | Agree | 1 |
| | Disagree | 0 |
| | Don't know | 99 |
| | Not applicable | 98 |
| **5.5**<br>"I have all the support that I need from my friends" | Agree | 1 |
| | Disagree | 0 |
| | Don't know | 99 |
| | Not applicable | 98 |
| **5.6**<br>Do you feel that people in the community judge you negatively for attending this facility for your TB treatment? | Yes | 1 |
| | No | 0 |
| | Don't know | 99 |
| **5.7**<br>In general, when you need to seek healthcare, what do you prefer:<br><br>c) To see a nurse in a nearby clinic or<br>d) To travel further to see a doctor | Nurse | 1 |
| | Doctor | 2 |
| | Indifferent | 3 |
| | Don't know | 99 |
| **5.8**<br>In this clinic are you able to talk to the doctors or nurses in private? | Always | 1 |
| | Sometimes | 2 |
| | Never | 3 |

**READ OUT**: Can you tell me whether you agree or disagree with these statements when thinking about your general experience in this clinic?

| | | |
|---|---|---|
| **5.9**<br>The queues to see a doctor or nurse are too long at this facility | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.10**<br>The doctors and nurses (*health workers)* discussed the treatment fully with me | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.11**<br>It is a problem that the *health workers* DO NOT speak my language. | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.12**<br>I find it easy to tell the *health workers* when I have missed taking my tablets | Agree | 1 |
| | Disagree | 0 |

| | | |
|---|---|---|
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| | Not applicable | 98 |
| **5.13** The *health workers* are too busy to listen to my problems | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.14** Patient information is kept confidential in this clinic | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.15** Some staff DO NOT treat patients with sufficient respect | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.16** The health workers I see respect me | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |
| **5.17** The facilities (including waiting area and toilets) are dirty | Agree | 1 |
| | Disagree | 0 |
| | Both agree and disagree | 2 |
| | Don't know / not sure | 99 |

| | | |
|---|---|---|
| **5.18** How satisfied were you with the service today? | Very satisfied/ Satisfied | 1 |
| | Neither satisfied nor dissatisfied | 2 |
| | Dissatisfied/ Very dissatisfied | 3 |
| | Don't know | 99 |

| | | | |
|---|---|---|---|
| **5.19** Since you first started coming to this facility, have you ever left without being helped? | Yes | 1 | |
| | No | 0 | **If no go to 5.21** |

| | |
|---|---|
| **5.20** IF YES Can you explain what happened? | _____ _____ _____ |

| | | | |
|---|---|---|---|
| **5.21** Have you ever <u>not used</u> TB services when you needed them? | Yes | | |
| | No | 0 | **If no go to 5.23** |

| | |
|---|---|
| **5.22** If YES Why did you not use TB services? Include all factors – personal and facility-related | _____ _____ _____ _____ |

| | | | |
|---|---|---|---|
| **5.23** How do you think the service in this clinic could be improved? | **Improvement** | **Yes** | **No** |
| | Shorter queues | 1 | 0 |

| | | | |
|---|---|---|---|
| Circle "Yes" or "No" on every row. | More health workers | 1 | 0 |
| | Cleaner facilities | 1 | 0 |
| | Better patient facilities (toilets, waiting room area etc) | 1 | 0 |
| | Don't know | 99 | |
| | Other | 97 | |
| | If other, specify | | |

**SECTION 6: DWELLING CHARACTERISTICS, HOUSEHOLD INCOME, EXPENDITURE AND HOUSEHOLD ASSETS**

**READ OUT:** Finally, we want to ask you some questions about the characteristics of the house where you live and type of facilities available within your household

| | | |
|---|---|---|
| **6.1** Where do you live? | _____village or community<br>_____area or township | |
| **6.2** Which best describes the type of house in which you live?<br>Clarify answer<br>Circle one only | House or brick structure on a separate stand or yard or on farm | 1 |
| | Traditional dwelling/hut/structure made of traditional materials | 2 |
| | Flat | 3 |
| | Town/cluster/semi-detached house (simplex, duplex or triplex) | 4 |
| | Unit in retirement village | 5 |
| | Dwelling/house/flat/room in backyard | 6 |
| | Informal dwelling/shack IN the backyard of a formal house | 7 |
| | Informal dwelling/shack NOT in backyard e.g. in an informal/squatter settlement or on farm | 8 |
| | Room/flatlet not in backyard but on a shared property e.g granny flat | 9 |
| | Caravan/tent | 10 |
| | Worker's hostel | 11 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **6.3** What is the main material of your house's walls?<br>Clarify answer<br>Circle one only | Bricks & plaster/finished | 1 |
| | Bare brick/cement block | 2 |
| | Corrugated iron/zinc | 3 |
| | Wood | 4 |
| | Plastic | 5 |
| | Cardboard | 6 |
| | Mixture of mud and cement | 7 |
| | Wattle and daub | 8 |
| | Mud | 9 |
| | Other | 97 |
| | If other, specify | |
| **6.4** What is the main material of your house's roof?<br>Clarify answer | Tiles | 1 |
| | Corrugated iron/zinc | 2 |
| | Thatching | 3 |
| | Asbestos | 4 |

| | | |
|---|---|---|
| Circle one only | Plastic | 5 |
| | Cardboard | 6 |
| | Other | 97 |
| | If other, specify | |

| | |
|---|---|
| **6.5**<br>How many rooms, including kitchens, does your house have? Interviewer, prove and exclude bathrooms, sheds, garages, stables, etc. from the total unless people are living in them. | _____No. rooms |

| | | |
|---|---|---|
| **6.6**<br>What is the main source of **drinking water** for members of your household?<br><br>Clarify answer<br><br>Circle one only | Piped (tap) water in dwelling | 1 |
| | Piped (tap) water on site or in yard | 2 |
| | Borehole on site | 3 |
| | Rain water tank on site | 4 |
| | Neighbour's tap | 5 |
| | Public/communal tap (either free or paid) | 6 |
| | Water carrier/tanker | 7 |
| | Borehole off site/communal | 8 |
| | Flowing water/stream/river | 9 |
| | Stagnant water/dam/pool | 10 |
| | Well | 11 |
| | Spring | 12 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **6.7**<br>What type of toilet does your household use?<br><br>Clarify answer<br><br>Circle one only | Flush toilet (connected to sewage) | 1 |
| | Flush toilet (with septic tank) | 2 |
| | Chemical toilet | 3 |
| | Pit latrine with ventilation pipe | 4 |
| | Pit latrine without ventilation pipe | 5 |
| | Bucket toilet | 6 |
| | No facility/bush/field | 7 |
| | Other | 97 |
| | If other, specify | |

| | | |
|---|---|---|
| **6.8**<br>What is the main source of energy for cooking in your household?<br><br>Clarify answer<br><br>Circle one only | Electricity from mains | 1 |
| | Electricity from generator | 2 |
| | Gas | 3 |
| | Paraffin | 4 |
| | Wood | 5 |
| | Coal | 6 |
| | Animal dung | 7 |
| | Solar energy | 8 |
| | Other | 97 |
| | If other, specify | |

| | | | |
|---|---|---|---|
| **6.9** | | **Yes** | **No** |

| | | | |
|---|---|---|---|
| Does your household have any of the following items in good working order?<br><br>Read out each item and circle "Yes" or "No" on every row. | Telkom / landline phone | 1 | 0 |
| | Cell phone | 1 | 0 |
| | Radio | 1 | 0 |
| | Television | 1 | 0 |
| | Video recorder/DVD player | 1 | 0 |
| | Electric stove with oven | 1 | 0 |
| | Bicycle | 1 | 0 |
| | Personal computer at home | 1 | 0 |
| | Internet facilities at home | 1 | 0 |
| | Fridge | 1 | 0 |
| | Car/truck/bakkie | 1 | 0 |
| | Primus cooker, Sikeni | 1 | 0 |
| | Electric hot plate | 1 | 0 |
| | Gas cooker | 1 | 0 |
| | Electric kettle | 1 | 0 |
| | Sewing machine | 1 | 0 |
| | Block maker | 1 | 0 |
| | Motorcycle or scooter | 1 | 0 |
| | Kombi, lorry or tractor | 1 | 0 |
| | Bed | 1 | 0 |
| | Table and chairs | 1 | 0 |
| | Sofa or sofa set | 1 | 0 |
| | Kitchen sink | 1 | 0 |
| | Car battery for electricity | 1 | 0 |
| | Wheelbarrow | 1 | 0 |
| | Hoe, spade or garden fork | 1 | 0 |
| | Bed nets | 1 | 0 |
| | Cattle | 1 | 0 |
| | Other livestock (chickens etc) | 1 | 0 |
| **6.10**<br>Does your household own cattle, livestock or chickens? | Yes | 1 | |
| | No | 0 | **If no go to 6.16** |
| **6.11**<br>IF YES<br><br>How many cattle does the household own? | _____ (No. cattle) | | |
| | None | 0 | |
| | Don't know | 99 | |
| **6.12**<br>IF YES<br><br>How many goats does the household own? | _____ (No. goats) | | |
| | None | 0 | |
| | Don't know | 99 | |
| **6.13**<br>IF YES<br><br>How many chickens does the household own? | _____ (No. chickens) | | |
| | None | 0 | |
| | Don't know | 99 | |

| | | |
|---|---|---|
| **6.14**<br>IF YES<br><br>How many pigs does the household own? | _____(No. pigs) | |
| | None | 0 |
| | Don't know | 99 |
| **6.15**<br>IF YES<br><br>Does the HH own any other farm animals? IF YES What are they<br><br>How many [other] does the household own? | If other, specify | |
| | _____(No. other) | |
| | None | 0 |
| | Don't know | 99 |
| **6.16**<br>In general how much does your household usually spend in a month?<br><br>If the respondent does not give you a precise estimate ask him/her<br><br>In which of the following ranges, would you say your household EXPENDITURE generally falls?<br><br>Circle one only | _____Rand | |
| | R0 – R399 | 1 |
| | R400 – R799 | 2 |
| | R800 – R1 199 | 3 |
| | R1 200 - R1 799 | 4 |
| | R1 800 - R2 499 | 5 |
| | R2 500 - R4 999 | 6 |
| | R5 000 - R9 999 | 7 |
| | R10 000 or more | 8 |
| | Don't know | 99 |
| | Refuse | 97 |
| **6.17**<br>Do you have anything else that you would like to tell us about your experience of seeking or receiving care at this facility? | _____<br>_____<br>_____<br>_____<br>_____<br>_____<br>_____<br>_____ | |
| **6.18**<br>Note the end time of the interview | _____:_____<br>hour min | |

**Thank the interviewee and indicate that you would now like to ask his/her permission to examine his/her TB record (card).**

# Appendix 2: Ethics Approval Letter

UNIVERSITY OF CAPE TOWN

Health Sciences Faculty
Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
Telephone [021] 406 6338 • Facsimile [021] 406 6411
e-mail: preaward@curie.uct.ac.za

**07 November 2007**

**REC REF: 460/2006**

**A/Prof D McIntyre**
Health Economics Unit
School of Public Health

Dear A/Prof McIntyre

**PROJECT TITLE: RESEARCHING EQUITY IN ACCESS TO HEALTH CARE (REACH)**

Thank you for your letter to the Research Ethics Committee dated 26th October 2007.

It is a pleasure to inform you that the Ethics Committee has **granted ethical approval** to use the set of data gathering tools and information sheets and informed consent forms described in appendices 1-18.

Please could you address the following two concerns:

- Will patient-participants receive any compensation for taking part in the in-depth interviews (semi-structured and narratives)? These are long and may be burdensome for some patients.
- Do you intend to take any action should you observe harmful staff-patient interaction? You indicate that all observations will be strictly confidential which might pose an ethical dilemma should 'patient-abuse' be observed by researchers.

Please would you notify Dr Tracey Naledi in the Western Cape Department of Health that you are undertaking this study. You indicate that you already have provincial permission to do this research , so it may be a redundant exercise (I'll email you her latest requirements).

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

**Please quote the REC. REF in all your correspondence.**

Yours sincerely

**PROF M BLOCKMAN**
**CHAIRPERSON, HSF HUMAN ETHICS**

lemiedi

# Appendix 3: Journal Instructions for authors

**Instructions for BMC Health Services Research authors**

**Preparing main manuscript text**

**File formats**

The following word processor file formats are acceptable for the main manuscript document:

- Microsoft Word (version 2 and above)
- Rich text format (RTF)
- Portable document format (PDF)
- TeX/LaTeX (use BioMed Central's TeX template)
- DeVice Independent format (DVI)
- Publicon Document (NB)

Users of other word processing packages should save or convert their files to RTF before uploading. Many free tools are available which ease this process.

TeX/LaTeX users: We recommend using BioMed Central's TeX template and BibTeX stylefile. If you use this standard format, you can submit your manuscript in TeX format (after you submit your TEX file, you will be prompted to submit your BBL file). If you have used another template for your manuscript, or if you do not wish to use BibTeX, then please submit your manuscript as a DVI file. We do not recommend converting to RTF.

Note that figures must be submitted as separate image files, not as part of the submitted DOC/ PDF/TEX/DVI file.



**Article types**

When submitting your manuscript, you will be asked to assign one of the following types to your article:

Research article

Case report

Database

Debate

Software

Study protocol

Technical advance

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Title page
Abstract
Background
Methods
Results
Discussion
Conclusions
List of abbreviations used (if any)
Competing interests
Authors' contributions
Authors' information (if any)
Acknowledgements and Funding
References
Figure legends (if any)
Tables and captions (if any)
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**Acknowledgements and Funding**

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**Article within a journal**

1. Koonin EV, Altschul SF, Bork P: BRCA1 protein products: functional motifs. Nat Genet 1996, 13:266-267.

**Article within a journal supplement**

2. Orengo CA, Bray JE, Hubbard T, LoConte L, Sillitoe I: Analysis and assessment of ab initio three-dimensional prediction, secondary structure, and contacts prediction. Proteins 1999, 43(Suppl 3):149-170.

**In press article**

3. Kharitonov SA, Barnes PJ: Clinical aspects of exhaled nitric oxide. Eur Respir J, in press.

**Published abstract**

4. Zvaifler NJ, Burger JA, Marinova-Mutafchieva L, Taylor P, Maini RN: Mesenchymal cells, stromal derived factor-1 and rheumatoid arthritis [abstract]. Arthritis Rheum 1999, 42:s250.

**Article within conference proceedings**

5. Jones X: Zeolites and synthetic mechanisms. In Proceedings of the First National Conference on Porous Sieves: 27-30 June 1996; Baltimore. Edited by Smith Y. Stoneham: Butterworth-Heinemann; 1996:16-27.

**Book chapter, or article within a book**

6. Schnepf E: From prey via endosymbiont to plastids: comparative studies in dinoflagellates. In Origins of Plastids. Volume 2. 2nd edition. Edited by Lewin RA. New York: Chapman and Hall; 1993:53-76.

**Whole issue of journal**

7. Ponder B, Johnston S, Chodosh L (Eds): Innovative oncology. In Breast Cancer Res 1998, 10:1-72.

Whole conference proceedings

8. Smith Y (Ed): Proceedings of the First National Conference on Porous Sieves: 27-30 June 1996; Baltimore. Stoneham: Butterworth-Heinemann; 1996.

**Complete book**

9. Margulis L: Origin of Eukaryotic Cells. New Haven: Yale University Press; 1970.

Monograph or book in a series

10. Hunninghake GW, Gadek JE: The alveolar macrophage. In Cultured Human Cells and Tissues. Edited by Harris TJR. New York: Academic Press; 1995:54-56. [Stoner G (Series Editor): Methods and Perspectives in Cell Biology, vol 1.]

**Book with institutional author**

6. Advisory Committee on Genetic Modification: Annual Report. London; 1999.

**PhD thesis**

7. Kohavi R: Wrappers for performance enhancement and oblivious decision graphs. PhD thesis. Stanford University, Computer Science Department; 1995.

**Link / URL**

13. The Mouse Tumor Biology Database [http://tumor.informatics.jax.org/mtbwi/index.do]

**Link / URL with author(s)**

14. Neylon, C: Open Research Computation: an ordinary journal with extraordinary aims. [http://blogs.openaccesscentral.com/blogs/bmcblog/entry/open_research_computation_an_ordinary]

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Last revised: 9 August 2010