Assessing the Current Practice of Tuberculosis (TB) Screening in HIV-infected Persons at Mount Ayliff Hospital

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Declaration

By submitting this assignment electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Signature: RA Ganesh

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Abstract

The delayed diagnosis of a curable disease such as TB contributes to the morbidity and mortality of HIV-infected persons in South Africa. The life-time risk for active TB in an HIV-negative person is 5–10%, while the annual risk in HIV-infected persons is up to 15%. The risk of developing TB in HIV-infected persons can be reduced by as much as 60% with an integrative approach to HIV/AIDS and TB. The health care environment can pose a risk with regard to TB transmission. TB infection control aims to provide a safe health care environment for both patients and HCPs.

The aim of the study was to establish the current practice of TB screening in HIV-infected persons in Mount Ayliff Hospital in order to provide guidelines for the clinical management of TB in HIV-infected persons.

The research study focussed on TB transmission and risk; infection control and practice and integrated HIV/AIDS and TB services in the area of work. The current practice of TB screening in HIV-infected persons in Mount Ayliff Hospital is poorly aligned to the National TB Infection Control policy. The integration of HIV/AIDS and TB services has not been fully implemented. Formulation of an institutional TB infection control plan that includes regular occupational audits may assist in the development of guidelines for the management of TB.

Opsomming

Die vertraagde diagnose van ‘n geneesbare siekte, soos TB, dra by tot die morbiditeit en morataliteit/dodetal van MIV-geinfekteerde persone in Suid-Afrika. Die leeftydsrisiko vir aktiewe TB in ‘n MIV-negatiewe person is 5-10%, terwyl die jaarlikse risiko van MIV-geinfekteerde persone, tot 15% is. Die risiko van die ontwikkeling van TB in MIV-geinfekteerde persone kan verminder word met soveel as 60%, met ‘n geïntegreerde benadering tot MIV/VIGS en TB. Die gesondheidsorgomgewing kan ‘n gevaar inhou met betrekking tot TB-oordrag. Die beheer van TB-infektering beoog om ‘n veilige gesondheidsorg-omgewing te skep vir beide pasiënte en gesondheidsorg-werkers.

Die doel van die studie was om die huidige gebruik van TB-sifting in MIV-geinfekteerde persone in Mount Ayliff Hospitaal te bepaal met die die doel om riglyne te voorsien vir die kliniese hantering van TB in MIV-geinfekteerde persone.

Die navorsing het gefokus of TB-oordrag en risiko, besmettingsbeheer en geïntegreerde MIV/VIGS en TB-dienste in die gebied van werk. Die huidige gebruik van TB-sifting in MIV-geinfekteerde persone in Mount Ayliff Hospitaal is swak ten opsigte van die Nasionale TB-infeksie beheerbeleid. Die integrasie van MIV/VIGS en TB-dienste is nog nie ten volle geïmplimenteer nie. Die vorming van ‘n institutionele TB-infeksie beheerbeleid, wat gereelde beroepsoudits insluit, kan help met die ontwikkeling van riglyne vir die bestuur van TB.

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List of Abbreviations

ART	Anti-retroviral Therapy
ARV	Anti-retroviral Drugs
DOTS	Directly Observed Treatment Short course
HAST	HIV/AIDS, STI and TB
HCP	Healthcare Professionals
HIV	Human Immunodeficiency Virus
IPT	Isoniazid Preventive Therapy
IRIS	Inflammatory Immune Reconstitution Syndrome
KZN	Kwazulu Natal
MSF	Medicines Sans Frontiers
MTB	Mycobacterium Tuberculosis
OPD	Out-patients Department
PLWHA	People living with HIV/AIDS
STI	Sexually Transmitted Infection
TB	Tuberculosis
WHO	World Health Organisation

Chapter I

Introduction and background

In an international report by the HIV/TB Global Leaders Forum, it has been reported that Tuberculosis (TB) is the leading cause of death in South Africa (Statistics South Africa, October 2008). In the context of the HIV epidemic, in which an estimated 5.7 million people were living with HIV and AIDS in 2009 (UNGASS, March 2010), the burden of these two diseases in South Africa is more than any other country.

Persons living with HIV are at an accelerated risk of developing active TB due to a weakened immune system. This means that HIV infection facilitates the development of TB and in the same way, TB can accelerate HIV progression to AIDS. The WHO reports on Global Tuberculosis Control reports that in countries with high HIV prevalence, TB has tripled in the past 15 years, clearly demonstrating that HIV and TB disease are linked (WHO, 2009).

At the 2010 South African TB Conference in Durban , South African Health Minister Dr Aaron Motsoaledi confirmed that South Africa's TB epidemic was among the worlds' most severe with South Africa having the highest co-infection rates of TB and HIV. As South Africa accounts for 0.7% of the global population, this means that of this total population, 28% of people living with HIV and TB are in South Africa alone. This dual epidemic is a public health emergency.

The call for an integration of HIV/TB services remains a challenge in South Africa and the National TB Strategic Plan 2007-2011 on integrating these services is yet to be implemented (Government of South Africa, March 2007). Pilot programmes around South Africa agree that integrating HIV and TB systems means it is easier for people with one disease to be tested and treated for the other. The success of the HIV/TB service integration is such that the Western Cape has adopted this as policy. In 2007 over one-third of South African HIV-positive TB patients were provided with antiretroviral therapy and two-thirds received Co-Trimoxazole prophylaxis in 2007. The WHO has stated that "collaborative TB/HIV activities are being scaled up across the country" (WHO, 2009).

The international medical charity, Medicines Sans Frontiers (MSF) began integrating HIV and TB services five years ago and reports that integrating HIV and TB services has improved case detection, decreased the number of patients lost to follow up , and increased the proportion of co-infected patients on Antiretroviral Therapy (ART) (Activists call for integrated HIV/TB Services, South Africa, June 2010). This suggests that routine screening for TB in infected persons, earlier testing and diagnosis of TB will support each programme and achieve greater levels of adherence and cure rates with adoption of Directly Observed Treatment Short-course (DOTS) and adherence strategies and help to control the rising threat of resistant TB in South Africa.

Background

The delayed diagnosis of a curable disease such as TB contributes to the morbidity and mortality of HIV-infected persons in South Africa. HIV has resurrected TB as a global health concern, while TB has amplified the mortality from HIV substantially (Dye, 2006). A cohort study in South African Gold Miners found the risk of TB doubles within a year of infection of HIV (Sonnenberg et al, 2005). This early increase in risk was sustained and increased slightly during the following years, and assumed to increase during later years as CD4 cell counts decrease further (Antonucci et al, 1995; Badri et al, 2002).

It is estimated that HIV-infected persons have an annual 10% chance of developing TB throughout their natural life (Riley, 1993). More than 65% of all active TB patients are co-infected with HIV, and TB is the leading cause of morbidity and mortality among HIV-infected patients (Mukadi et al, 1999). Despite the widespread availability of TB treatment, TB/HIV co-infected patients have an annual mortality rate of 25-40% before the introduction of Antiretrovirals (ARV) (Mukadi et al, 1999; Connolly et al, 1999). This mortality was attributable to both complications from overwhelming TB disease and immunosuppression from advance HIV disease (Murray et al, 1999; Lawn et al, 2005).

Tuberculosis can occur at any point in the course of HIV infection. Pulmonary tuberculosis is the most common manifestation of tuberculosis in adults infected with HIV.

All patients presenting with clinical symptoms of TB that include cough, excessive weight loss over three months and night sweats must be screened for TB. HIV-infected persons newly initiated on ARVs have an increased risk of TB infection known as Inflammatory Immune Reconstitution Syndrome (IRIS) especially in the first six months after initiation. The risk of developing TB in HIV-infected persons can be reduced by as much as 60% with an integrative approach to HIV/AIDS and TB.

The National TB Management Guidelines allude to HIV/AIDS treatment guidelines in that all HIV-infected patients should be symptomatically screened and tested for TB at every clinical visit with ongoing adherence counselling and support. This will help reduce morbidity and mortality of co-infected clients and help improve treatment outcomes. Patients diagnosed with TB should also be offered and screened for HIV and access on-going HIV care. The National ART Guidelines allude to the TB guidelines in addressing TB as a common co-morbid illness with HIV. HIV positive patients are at higher risk of developing TB compared to the general population, especially during the period immediately after initiating ART. All patients with HIV should be screened for TB. It is very important to investigate patients for tuberculosis before starting ART and to routinely screen patients on ART.

Interventions to support the operational function of HIV/AIDS and TB programmes include complementing current treatment practice with an awareness of TB preventive therapy, strengthening supervision of treatment using DOTS system and enhanced treatment adherence strategies. Integrated HIV/AIDS and TB management clinical interventions include intensified case-finding and screening of all HIV-infected persons for TB and all TB infected persons for HIV at all hospital visits.

The early diagnosis of TB in HIV-infected persons followed by immediate initiation of treatment will strengthen and improve TB treatment completion and higher cure rates, reduce the TB burden, support ART scale-up and provide HIV care and therapy to a greater number of persons and their quality of life.

Research Problem

In order to detect and diagnose TB prior to advanced HIV immunosuppression, Health Care Professionals (HCPs) must be aware of the clinical and non-clinical symptoms that may increase the risk of TB infection in HIV-infected individuals. All too often these symptoms may be masked by HIV infection and/or opportunistic infections. Complacent practice may miss opportunities for early diagnosis and treatment of TB by only testing persons who significantly present with clinical symptoms of TB instead of actively screening all HIV-infected persons at every medical evaluation for TB.

Adherence to treatment of co-infection HIV/AIDS and TB disease are influenced by multiple factors that relate to the individual, the disease and treatment and the health service, and HCPs must be acutely aware of all factors when screening and educating persons living with HIV/AIDS. That TB accelerates HIV disease progression means that preventing TB among HIV-infected persons will work towards preventing morbidity and mortality attributed to TB and prolong their survival.

A keen awareness of transmission of TB within HIV services, in waiting areas and amongst in-patients and a consistent TB screening practice of all HCPs and infection control interventions that include triaging patients, scheduling new and follow-up patients separately, cough hygiene and the use of personal respirators by HCPs and patients alike will make an impact on clinical outcomes and treatment goals in HIV/AIDS and TB programmes.

Notwithstanding the lack of resources, the attainment of the national TB goals and, the extent to which National Guidelines are translated into working programmes and integrated into HIV/AIDS and TB services, and actively practiced by HCPs at every medical evaluation within health institutions, is not known.

Research Question

To what extent do Health Care Providers (HCPs) actively screen for TB in HIV-infected persons as stated in the National TB Management Guidelines?

Aim

To establish the current practice of TB screening in HIV-infected persons in Mount Ayliff Hospital in order to provide guidelines for the clinical management of TB in HIV-infected persons.

Objectives

- To analyse the current policy and treatment guidelines for management of TB in HIV-infected persons
- To establish the current practice of HCPs in actively screening for TB in HIV-infected persons
- To identify discrepancies between the current policy and treatment guidelines and current practice and the institution HIV/AIDS and TB programmes
- To provide guidelines for the screening of TB in HIV-infected persons

Chapter II

Literature Review

Until the last part of the twentieth century, tuberculosis (TB) was a major cause of death in both developed and developing countries. Due to a range of factors such as the human immunodeficiency virus (HIV) epidemic, population growth, migration, socioeconomic changes, and broad spread of aggressive and resistant new strains such as the Beijing and W strains, a resurgence of TB has occurred, even in low endemic areas (Dolin et al,1994).

In 1993, the World Health Organization (WHO) declared a state of global emergency for TB due to the steady worldwide increase in the disease. Along with HIV and malaria, TB has been declared a global enemy. In 2005, 12 million new cases of tuberculosis were identified, a 58% increase from the 7.5 million estimated cases in 1990, and it was estimated that in 2005 the disease caused 1.5 million deaths worldwide (WHO, 2005).

The goal of TB control programs is to arrest transmission within the community. Achieving this goal takes considerable time, because most individuals in endemic areas are already infected, constituting a reservoir that continuously contributes to the pool of infectious cases. An effective TB control program requires early diagnosis and immediate initiation of treatment. Delay in diagnosis is significant with regard to not only disease prognosis at the individual level but also transmission within the community and the reproductive rate of the TB epidemic (Dye et al, 1999; Bjune, 2005).

Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) and tuberculosis (TB) are overlapping epidemics that cause an immense burden of disease in sub-Saharan Africa (Harries et al. 2009).

In many parts of sub-Saharan Africa, tuberculosis (TB) has been endemic for many decades and transmission has been enhanced by overcrowding and poor living conditions. The advent of the human immunodeficiency virus (HIV) epidemic has increased the burden of TB significantly, as untreated HIV infection leads to progressive immune deficiency and increased susceptibility to infections such as TB. In Southern Africa, TB is the leading cause of mortality in HIV-infected persons and HIV is driving the TB epidemic. Human immunodeficiency virus is the strongest factor capable of promoting progression of Mycobacterium tuberculosis (MTB) infection to active tuberculosis (Rieder et al. 1989) both in people with recently acquired and latent MTB infections (Maher et al. 2002). The life-time risk for active TB in an HIV-negative person is 5–10%, while the annual risk in HIV-infected persons is 5–15% (Von Reyn 1999).

Sub-Saharan Africa bears the brunt of the overlapping epidemics of the human immunodeficiency virus (HIV) and tuberculosis (TB). Countries in Southern Africa are particularly affected, with over 50% of TB patients diagnosed each year being co-infected with HIV (Corbett et al.2003; WHO, 2007). HIV-TB co-infected patients treated only with standardised anti-tuberculosis chemotherapy have poor outcomes compared with patients who only have TB. Case fatality rates are higher (Harries et al.2001) and in patients who complete treatment there is a higher rate of recurrent TB (Korenromp et al.2003).

Research shows that even in areas where there is a good TB control programme, when the sero-prevalence of HIV is >20%, the annual percentage increase in TB will be high at over 10% (Cantwell and Binkin 1996). However, TB accelerates HIV disease progression and is associated with decreased survival. TB specific mortality is fourfold higher among HIV-infected patients than amongst the uninfected (17.8 and 4.4 deaths per 100 per year for HIV-infected and uninfected patients, respectively) (Connolly et al. 1999). In addition, the TB epidemic in persons infected with HIV increases the infectious pool and the risk of TB transmission in the community, whether or not HIV-infected (Maher et al. 2002). Clinical interventions have demonstrated that the burden of TB can be reduced in persons infected with HIV (Anderson & Maher 2001).

Despite the growing evidence base and the WHO's resounding calls for a stronger connection between TB and HIV care, many of the hardest hit countries have been slow to implement these recommendations on a wide scale(WHO, 2008).

KwaZulu-Natal (KZN), home to nearly 10 million people, is one of the poorest provinces in South Africa and is at the epicentre of the HIV and TB pandemics. In 2006, the incidence of TB in KZN was 1076/100000 (Day et al.2007), the HIV prevalence was 39.1% (Department of Health, South Africa, 2006) and 80% of TB patients were co-infected with HIV (Gandhi et al. 2006).

Despite an HIV-TB co-infection rate of approximately 75% in some settings(Global TB/HIV Working Group, 2007), the SA National TB Control Programme (SANTCP) and HIV/AIDS control efforts remain largely separate.

As ART services expand (WHO, 2005), the burden of TB diagnosis or exclusion in HIV-infected individuals may necessitate the utilization of less trained personnel in resource-limited settings. Such staff need simple, efficient and inexpensive clinical algorithms that could be used to identify those at risk for active TB. This could improve the efficiency of TB screening and allow more efficient use of relatively expensive diagnostic procedures. A previous study has shown that, in a population with advanced HIV disease in South Africa, a screening instrument of two or more symptoms of weight loss, cough lasting >2 weeks, night sweats, or fever lasting >2 weeks, was highly sensitive (100%) and specific (88%) for TB diagnosis (Mohammed et al.2003).

In the article by Perumal et al. 2009, he stated that the transformation of the TB landscape by HIV, demands a public health response that extends well beyond the traditional boundaries of TB control. Similarly, HIV cannot be adequately managed if its' intimate relationship with TB is not reflected in HIV services. The public health response to HIV has focused on individuals and safely guarded their right to confidentiality. This inclination toward the rights of the individual with minimal focus on the competing rights of the community is maintained throughout the spectrum of HIV care. The response to TB has always been quite different with the historical response including many restrictions to

personal rights. Patients were "institutionalized" and subjected to the necessary treatment in a seemingly paternalistic manner. While much has changed in terms of aligning the **r**esponse to TB with human rights, the response still reflects an interest in the competing rights of the public, and the need to prevent spread of infection. Programmes have been targeted at communities, and little effort has been made to protect the individual. While TB programmes have benefited from initiatives such as care support buddies and tracing of defaulters, non-disclosure in HIV presents a barrier to treatment adherence. Moreover, it is difficult to shape a public health policy for HIV care with an HIV programme that is individual-centred. The individual-centred, rights-based paradigm, which characterizes much of the SA National AIDS Policy, therefore remains dissonant with the compelling public health approach of TB control.

The high HIV prevalence in TB patients make these patients and health centres a readily identifiable cohort and facility for efficiently providing HIV counselling, testing and entry into the continuum of HIV care services. Moreover, the high prevalence of HIV in TB suspects strengthens the call for an integrated TB-HIV service (Srikantiah et al. 2007).

The full potential of an integrated TB-HIV service has not been fully harvested. Missed opportunities discount existing efforts in both programmes, will perpetuate the burden of disease, and prevent major gains in future interventions (Perumal et al.2009).

Chapter III

Research Design

Method

A qualitative document analysis of the current National and institutional policy and treatment guidelines for HIV/AIDS and TB management was conducted and any discrepancies between the documents was identified.

Target material for the document analysis includes HIV/AIDS and TB policy and treatment guidelines from the National Department of Health and the Mount Ayliff working documents on HIV/AIDS and TB. These were used to analyse information provided and the current practice written up for the management of TB in HIV-infected individuals. All documents were selected for the inclusion of TB management in HIV infection.

This was followed with a quantitative assessment of the current practice of HCPs in actively screening for TB in HIV-infected person.

Target Group

Thirty Health Care Providers (HCPs) from Mount Ayliff Hospital were randomly selected for the assessment of current practice of TB screening. The HCPs were selected using random number tables of day staff on duty that are not in a position of management, as the selection criteria.

Measuring Instrument

A self-administered anonymous questionnaire was used to collect data on the current practice of HCPs in actively screening for TB in HIV-infected persons. Informed and written consent was sought from participants prior to their participation. The questionnaire and consent forms were available in both English and isiXhosa for participants of the research. The questionnaire focussed on three themes in areas of work, namely, TB transmission and risk; infection control and practice and integrated HIV/AIDS and TB services.

Data Analysis

The document analysis focussed on the content of the National and institutional policy and treatment guidelines on HIV/AIDS and TB, and the context which informs each of these, its adaptability and practicality for the HCP users at Mount Ayliff Hospital.

The questionnaire analysis and interpretation assessed the knowledge of TB transmission and TB transmission risk in the area of work, assessed infection control and screening practices in the area of work environment and those undertaken by the HCPs, and assessed awareness and checked understanding about the clinical management of integrated HIV/AIDS and TB services in actively screening HIV-infected patients for TB.

Ethical Considerations

Ethical clearance and consent to perform this research and assessment was sought from the University of Stellenbosch Research Ethics Committee: Human Research (Non-Health). Approval to conduct this assessment followed consent from Mount Ayliff Hospital Management and the Quality Assurance Committee. All participants of the study were approached for voluntary participation and were provided with forms of informed and written consent. All information obtained was confidential, used only for the purposes of this study after informed and written consent had been gained.

Chapter IV

Results

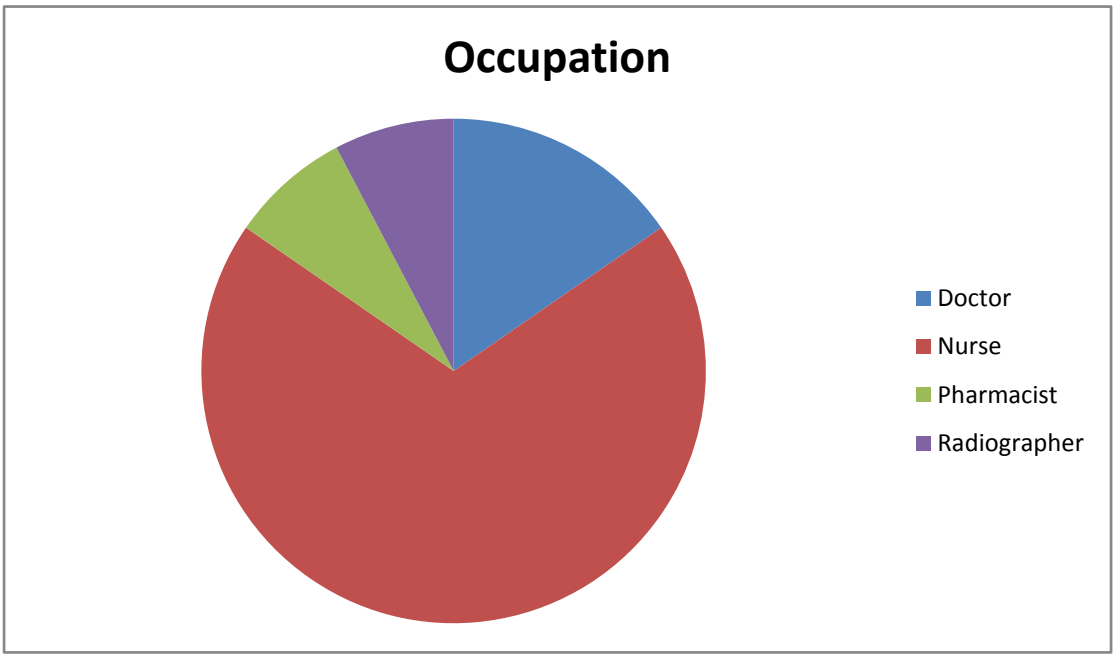
A total of thirty questionnaires were distributed, twenty-eight were returned and two of these were incomplete. Twenty- six questionnaires were analyzed.

1. What is your occupation?

Occupation	**Frequency**	**%**
Doctor	4	15.4
Nurse – Out-patients department	6	23.1
Nurse – Casualty	3	11.5
Nurse – Wards	7	26.9
Nurse- ARV	2	7.7
Pharmacist	2	7.7
Radiographer	2	7.7
Total	26	100

The majority of the respondents (69.2%) were nurses.

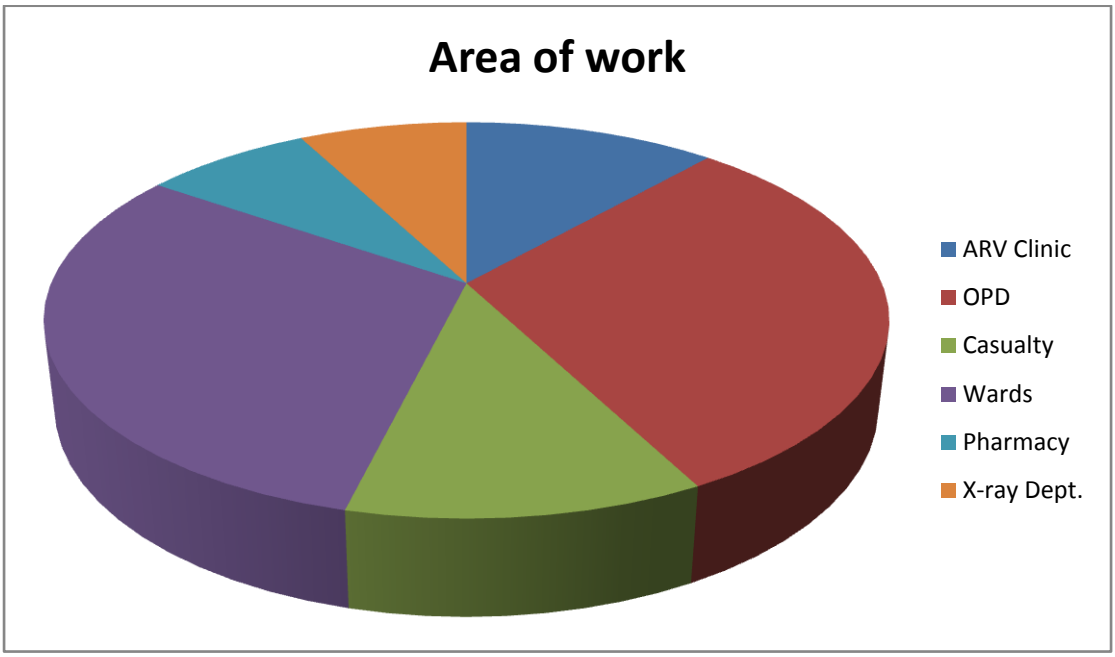
Figure 1: Pie chart showing occupational group of participants



2. Which areas are you responsible for?

Area of work	Frequency	%
ARV Clinic	3	11.5
Out-patients Department	8	30.8
Casualty	3	11.5
Wards	8	30.8
Pharmacy	2	7.7
X-ray Department	2	7.7
Total	26	100

Figure 2: Pie chart showing area of work of participants



3. How risky is your area of work with regard to TB transmission?

Table 3: Number of patients seen daily in area of work

3.1	**Frequency**	**%**
0 – 50	7	26.9
50- 100	13	50
>100	6	23.1
Total	26	100

Table 4: Estimate of TB suspects/ patients seen daily

3.2	**Frequency**	**%**
<5%	7	26.9
5- 15%	10	38.5
>15%	9	34.6
Total	26	100

From the data, the majority of patients are seen by nurses in the Out-patients Department and the Wards.

Table 5: Average patient waiting time in area of work

3.3	**Frequency**	**%**
0-1 hour	3	11.5
1-2 hours	6	23.1
>2 hours	17	65.4
Total	26	100

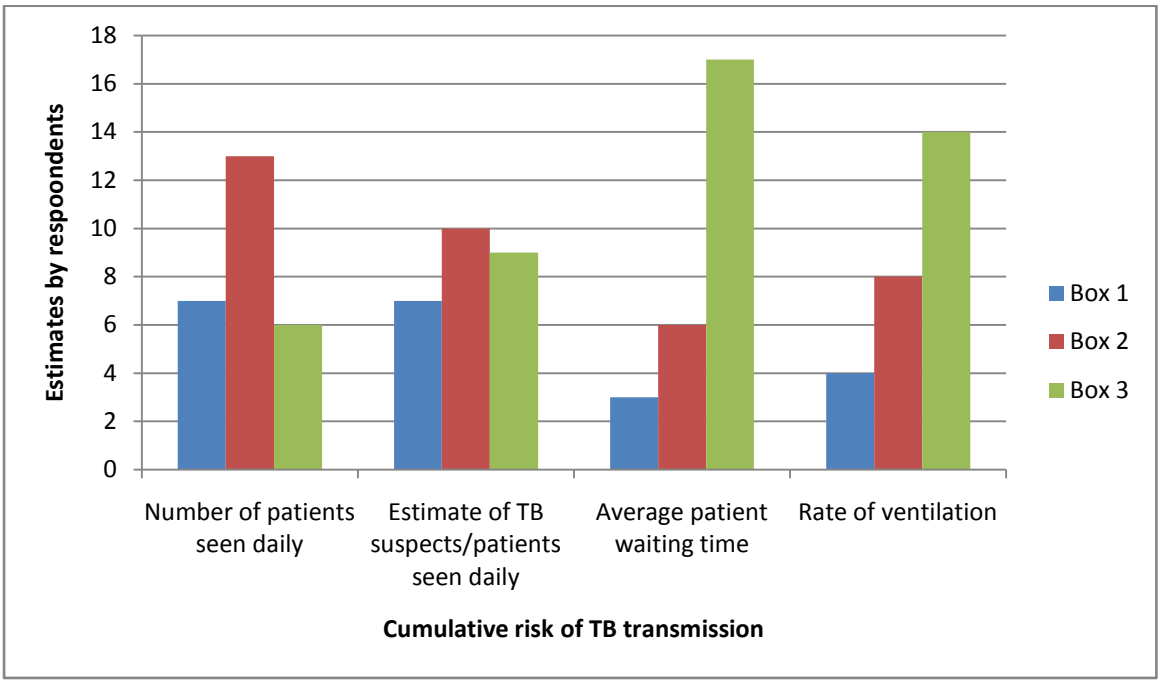
65.4% respondents reported that the average patient waiting time in their work area as >2 hours. This was mainly staff in the Out-patients department. 23.1% reported patient waiting time of between 1-2 hours and 11.5% less than 1 hour.

Table 6: Rate of ventilation in area of work

3.4	**Frequency**	**%**
Good	4	15.4
Average	8	30.8
Bad	14	53.8
Total	26	100

15.4% thought that the airflow/ventilation was good in the area of work, 30.8% thought that the airflow/ventilation was average and 14 (53.8%) thought it was bad.

Figure 3: Bar chart showing how risky the work area is with regard to TB transmission



4: Strategies to reduce generation of infectious aerosol (administrative controls)

Table 7: TB Screening of patients

4.1	**Frequency**	**%**
Yes	7	26.9
Occasionally	12	46.2
No	7	26.9
Total	26	100

46.2% of respondents occasionally screen for TB in patients who present with cough > 2 weeks as they enter the facility. It was found that the more likely staff category compliant with TB screening practices are the doctors and most nurses occasionally screen for TB.

Table 8: Cough Hygiene

4.2	**Frequency**	**%**
Yes	9	34.6
Occasionally	4	15.4
No	13	50
Total	26	100

34.6 % of respondents educate patients in cough hygiene if they are coughing. 50 % of respondents do not educate patients in cough hygiene if they are coughing.

Table 9: Provision of masks/tissues to patients

4.3	**Frequency**	**%**
Yes	5	19.2
Occasionally	6	23.1
No	15	57.7
Total	26	100

Majority of the respondents (57.7 %) do not provide patients who are coughing with masks/tissues to reduce generation of infectious aerosol in the hospital. This could be due to the erratic availability of masks/tissues in the hospital.

Table 10: Isolation of TB suspects/patients

4.4	**Frequency**	**%**
Yes – consistently isolated	5	19.2
Occasionally isolated	2	7.7
Not isolated	19	73.1
Total	26	100

73.1 % of respondents report that patients who are TB suspects/patients are not isolated / separated from those who are.

Table 11: Priority to TB suspects to decrease waiting times in out-patient facilities

4.5	**Frequency**	**%**
Yes	2	7.7
Occasionally	9	34.6
No	15	57.7
Total	26	100

TB suspects are given priority to shorter waiting times in the Out-patients Department occasionally (34.6 %). 57.7 % of respondents do not prioritize patients who are TB suspects.

Table 12: Staff awareness of need for early TB diagnosis

4.6	**Frequency**	**%**
Yes	6	23.1
No	20	76.9
Total	26	100

20 (76.9 %) of the respondents are not aware of aware of the need for early TB diagnosis. The ARV clinic is more likely to comply with the awareness through staff training.

Table 13: Separate and ventilated facilities for sputum collection from TB suspects

4.7	**Frequency**	**%**
Yes	3	11.5
Yes, but not ventilated	2	7.7
No	21	80.8
Total	26	100

There are no designated separate and ventilated facilities for sputum collection. This is reported by 21 of the respondents.

Table 14: Fast-queue for collection of sputum results

4.8	**Frequency**	**%**
Yes	5	19.2
No, but collection of results is fast	8	30.8
No	13	50
Total	26	100

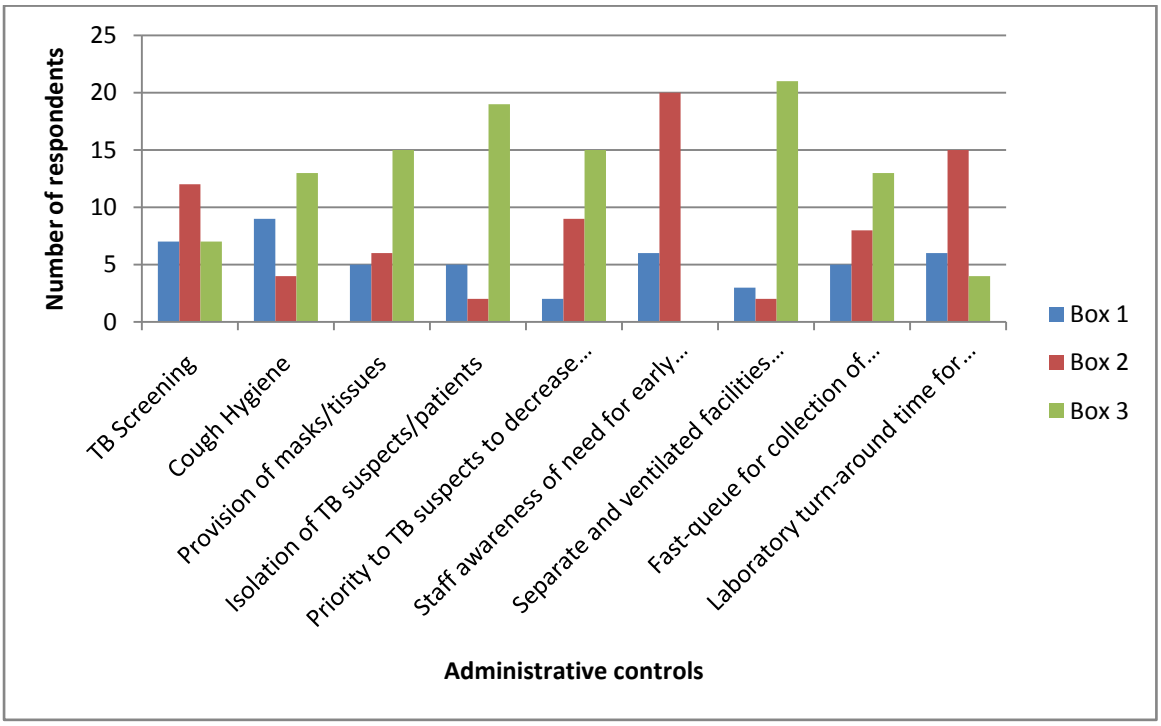
There is no fast-queue for collection of sputum results. This is represented by 50 % of the respondents, 30.8 % do not have a fast-queue but expedite collection of results.

Table 15: Laboratory turn-around time for sputum testing

4.9	Frequency	%
>48 hours	6	23.1
48-72 hours	15	57.7
>72 hours	5	19.2
Total	26	100

57.7 % of sputum results have a turn-around time of 48-72 hours.

Figure 4: Bar chart showing the strategies to reduce the generation of infectious aerosol (administrative controls)



Key:

- Box 1: Regular staff training
- Box 2: Occasional staff training
- Box 3: No staff training

5: Strategies to reduce/eliminate infectious aerosol after generations (environment control)

Table 16: Time spent outside

5.1	**Frequency**	**%**
Yes	5	19.2
Occasionally	12	46.2
No, it's not possible	9	34.6
Total	26	100

19.2 % of respondents reported that TB inpatients are able and encouraged to spend time outside during daylight hours. 46.2 % reported that the inpatients were occasionally encouraged to spend time outside. For 34.6 % of the respondents, this was not possible. These responses were found to be from the X-ray, Maternity and Pharmacy departments.

Table 17: Windows able to open

5.2	**Frequency**	**%**
Yes	22	84.6
Some	2	7.7
No	2	7.7
Total	26	100

22 (84-6 %) respondents reported that all of the windows are open in their area of work all the time. 7.7 % reported that the windows were open some of the time and 2 (7.7 %) reported not at all.

Table 18: Windows kept open

5.3	**Frequency**	**%**
Yes	8	30.8
Occasionally	11	42.3
No	7	26.9
Total	26	100

8 (30.8 %) respondents reported that all of the windows were kept open in their area of work all the time. 42.3 % reported that the windows were kept open some of the time and 7 (26.9 %) reported no windows open at all.

Table 19: Fans Used

5.4	**Frequency**	**%**
Yes	4	15.4
Occasionally	6	23.1
No	16	61.5
Total	26	100

4 (15.4 %) respondents reported that fans were used to increase circulation of air in their area of work. 23.1 % reported that the fans were used some of the time and 16 (61.5 %) reported no fans were used.

Table 20: Direction of air-flow

5.5	Frequency	%
Yes	3	11.5
Yes, but I don' t always	6	23.1
No	17	65.4
Total	26	100

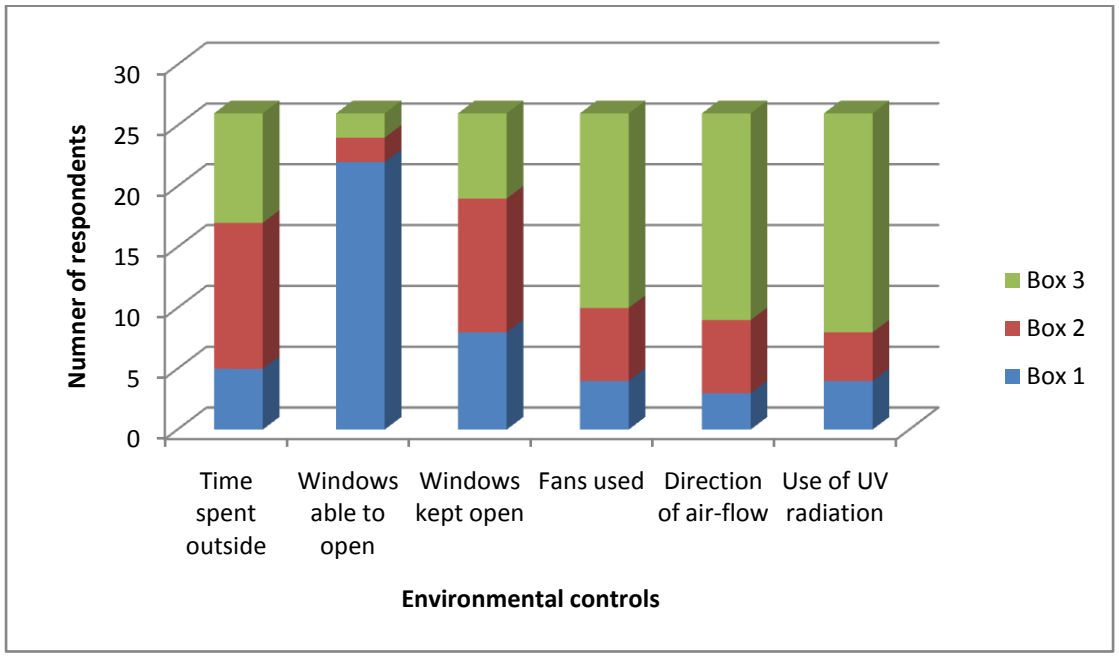
17 (65.4 %) respondents were not aware that during consultation or work with patients, the direction of the air-flow should be towards the patient and from behind them. These were nurses, X-ray and Pharmacy Department respondents. 23.1 % reported that the knowledge is present, but that they do not always practice it.

Table 21: Use of UV radiation

5.6	Frequency	%
Yes	4	15.4
Occasionally	4	15.4
No	18	69.2
Total	26	100

4 (15.4 %) respondents reported that UV radiation facilities were used in their area of work. This response was from the Out-patients Department. A total of 69.2 % reported no UV radiation facilities were used in their area of work; these were X-ray, Maternity and Pharmacy Departments.

Figure 5: Bar chart showing the strategies to reduce/eliminate infectious aerosol after generation (environmental controls)



Key:

- Box 1: Regular staff training
- Box 2: Occasional staff training
- Box 3: No staff training

6. Strategies to reduce inhalation of infectious aerosols (personal protective equipment)

Table 22: TB screening as a part of conditions for employment

6.1	Frequency	%
Regularly	4	15.4
No, but I have done this in my personal capacity	4	15.4
No	18	69.2
Total	26	100

18 (69.2 %) respondents reported that they are not being screened for TB infection and disease as part of routine employment conditions. 15.4 % reported screening for TB screening and disease in their personal capacity.

Table 23: Encouragement of staff to know individual HIV status

6.2	**Frequency**	**%**
Yes, regularly	6	23.1
Occasionally	4	15.4
No, not at all	16	61.5
Total	26	100

16 (61.5 %) respondents reported that they are not regularly encouraged by their line mangers to know their HIV status. 15.4% reported that they are occasionally encouraged to know their HIV status. 23.1 % are always encouraged to know by their line managers to know their HIV status.

Table 24: Staff awareness of risks of TB infection and disease to people living with HIV

6.3	**Frequency**	**%**
Yes	23	88.5
Some knowledge	3	11.5
No	0	0
Total	26	100

23 (88.5 %) respondents were aware of the risks of TB infection and disease to people living with HIV. 11.5 % reported having some knowledge of the associated risks, this was the X-ray department.

Table 25: Staff trained in TB infection Control

6.4	Frequency	%
Regularly trained	4	15.4
Occasionally trained	8	30.8
Not trained	14	53.8
Total	26	100

14 (53.8 %) respondents were not trained in TB infection control. 30.8 % have received some training and 15.4 % were always trained in TB infection control.

Table26: Training of staff in recognition of TB suspects and TB diagnosis

6.5	Frequency	%
Regularly trained	6	23.1
Occasionally trained	11	42.3
No training at all	9	34.6
Total	26	100

9 (34.6 %) respondents were not trained in recognition of TB suspects and diagnosis of TB. 42.3% have received partial training and 23.1 % have received training in recognition of TB suspects and diagnosis of TB.

Table 27: Availability of N95 masks

6.6	Frequency	%
Yes, always	10	38.5
Yes, occasionally	7	26.7
No	9	34.6
Total	26	100

9 (34.6%) respondents reported that N95 masks were never available for use; this was mainly staff from X-ray and Pharmacy Departments. 38.5% reported available N95 masks and 26.7 % reported that N95 masks were not always available.

Table 28: Staff trained in the use of N95 masks

6.7	Frequency	%
Yes, always	8	30.8
Occasionally	4	15.4
No, not at all	14	53.8
Total	26	100

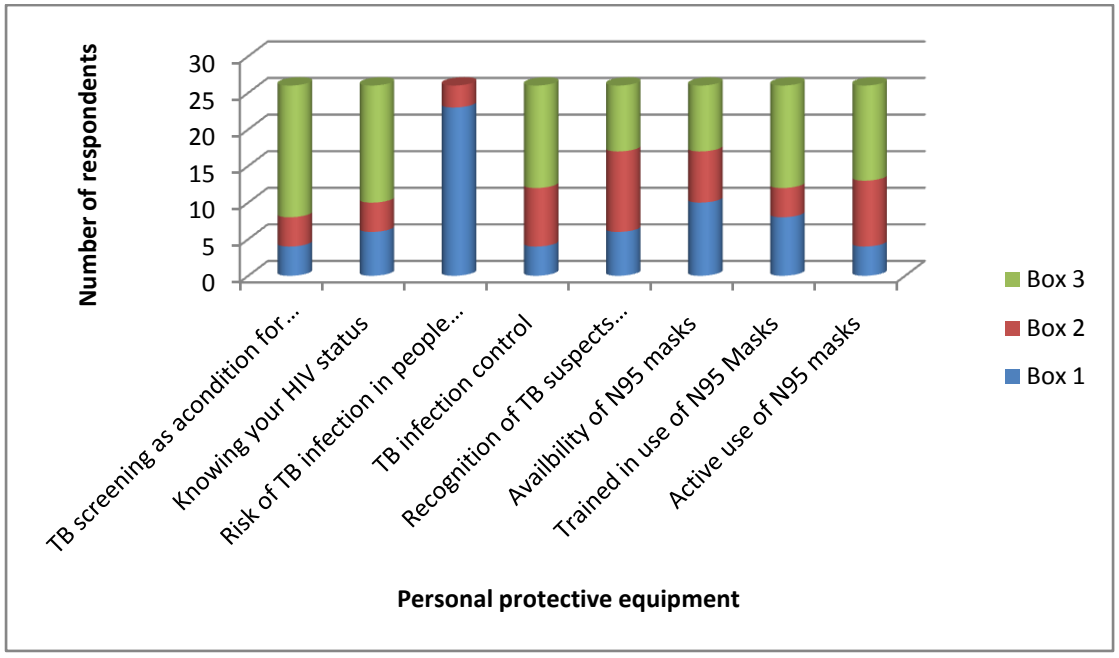
53.8% reported that they were never trained in the use of N95 masks. 15.4% had received some training, and 30.8% were adequately trained in the use of N95 masks.

Table 29: Active use of N95 masks by staff

6.8	Frequency	%
Yes, always	4	15.4
Occasionally	9	34.6
No, not at all	13	50
Total	26	100

Half of the respondents do not use the N95 masks at all in their areas of work. This was mainly staff from Out-patients, Pharmacy, X-ray and Casualty Departments. 34.6% occasionally use the N95 masks during work. 15.4% always use the N95 masks.

Figure 6: Bar chart showing the strategies to reduce inhalation of infectious aerosols (personal protective equipment)



Key:

- Box 1: Regular staff training
- Box 2: Occasional staff training
- Box 3: No staff training

7. Integrated HIV/AIDS and TB services

Table 30: Co-infected HIV/TB patients

7.1	**Frequency**	**%**
<5	5	19.2
5-15	8	30.8
>15	13	50
Total	26	100

Half of the respondents reported that they see >15 co-infected HIV/TB patients daily in their area of work. 8 (30.8%) respondents reported they see between 5-15 co-infected HIV/TB patients daily and 19.2% reported <5 co-infected HIV/TB patients seen daily in their area of work.

Table 31: Treatment and adherence counselling prior to TB therapy initiation

7.2	**Frequency**	**%**
Yes	6	23.1
No	20	76.9
Total	26	100

23.1% of respondents reported providing treatment and adherence counselling to patients prior to TB therapy initiation. This was mainly Doctors and ARV clinic nurses. 76.9% of respondents reported never providing treatment and adherence counselling to patients prior to TB therapy initiation.

Table 32: Practice DOTS to aid compliance and adherence in patients on ARVs

7.3	**Frequency**	**%**
Always	7	26.9
No	19	73.1
Total	26	100

26.9% of respondents reported practicing a DOTS approach to aid compliance and adherence in patients on ARVs. 73.1% of respondents reported never practicing a DOTS approach to aid compliance and adherence in patients on ARVs.

Table 33: Screening for HIV in TB patients

7.4	**Frequency**	**%**
Always	9	34.6
Occasionally	6	23.1
Usually not	11	42.3
Total	26	100

34.6% of respondents reported actively screening for HIV in TB patients. 23.1% occasionally screen for HIV in TB patients and 42.3% do not actively screen for HIV in TB patients.

Table 34: Screening for TB in HIV patients

7.5	**Frequency**	**%**
Always	7	26.9
Occasionally	8	30.8
Usually not	11	42.3
Total	26	100

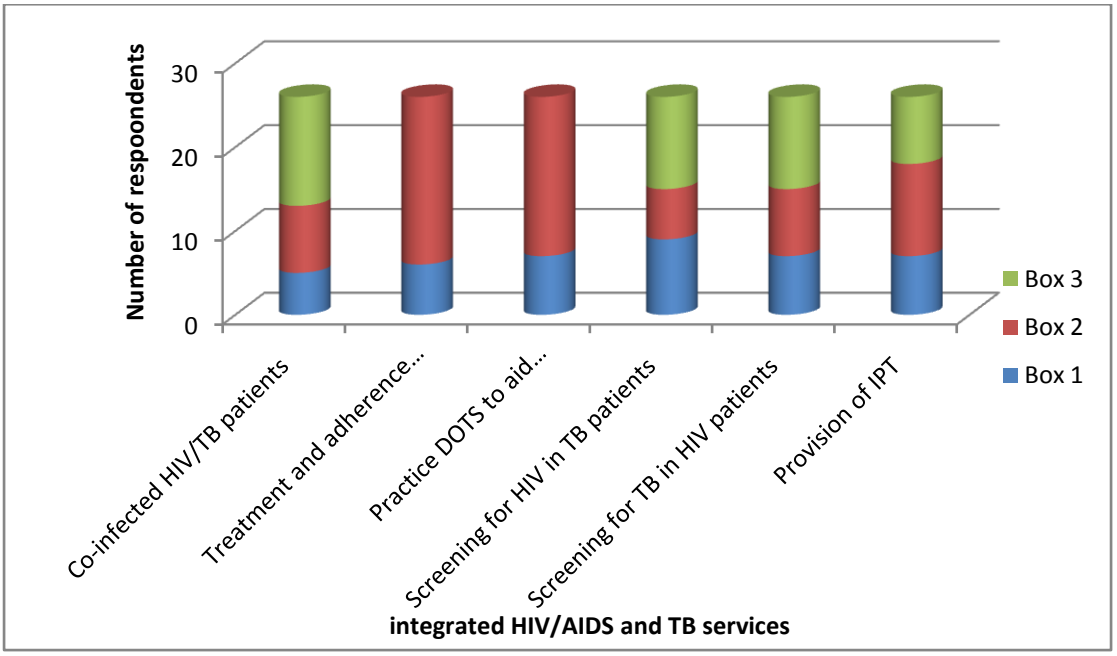
26.9% of respondents reported actively screening for TB in HIV patients. 30.8% occasionally screen for TB in HIV patients and 42.3% do not actively screen for TB in HIV patients.

Table 35: Provision of IPT

7.6	**Frequency**	**%**
Always	7	26.9
Occasionally	11	42.3
Usually not	8	30.8
Total	26	100

26.9% of respondents reported that IPT is not provided to HIV patients on ARVs. 42.3% occasionally provide IPT to HIV patients on ARVs and 30.8% do not provide IPT.

Figure 7: Bar chart showing the integrated HIV/AIDS service



Key:

- Box 1: Regular staff training
- Box 2: Occasional staff training
- Box 3: No staff training

Chapter V

Discussion

The aim of the study was to establish the current practice of TB screening practice in HIV-infected persons and infection control at Mount Ayliff Hospital. This was assessed using a self-administered questionnaire distributed amongst Health Care Professionals.

5.1 Occupation profile of respondents

The majority of the respondents were Nurses, who encounter the majority of patients accessing the facility and who are most likely to be initiatives of TB screening and infection control in patient interactions. This was followed by Doctors, then Pharmacist and Radiographers. The Out-patient Department and Hospital Wards are the areas most often susceptible to infection control measures due to the volume and turnover of patients accessing these areas of care and most widely accessed by Doctors and Nurses.

In-service training of infection control should therefore be prioritised especially towards Doctors and Nurses, but should also be integrated into the generic practices and quality of care standards and services for all HCPs. Both the Pharmacy and X-ray Departments are in the Out-patients Department, and should be areas of concern that require more attention.

The ARV clinic is an area in which infection control measures should be stringently practiced due to the increased risk and susceptibility of immune-compromised patients to opportunistic infections, as well as the risks of re-infection, TB contacts, and drug-resistant TB. Both the X-ray and Pharmacy Departments have intimate contact with all patients that require infection control measures in place to eliminate the risk of transmission and infection.

5.2 Risk of TB transmission

The data displays the risk of TB transmission is highest for the Out-patients Department and the Wards, as the majority of patients are seen in these areas by Nurses and Doctors. The number of patients seen daily in these areas implies that these environments require TB infection control as a matter of priority. With 5-15% of these patients categorized as TB suspects coupled with an average waiting time > 2 hours implies that the HCPs in these

areas are more likely to be exposed to TB suspects and risk of infection, and are also in a stronger position to implement TB infection control measures and triage patients effectively to reduce risk of transmission.

The patient waiting time can also be managed more effectively by educating patients about cough hygiene; remove coughing patients from non-coughing patients; create a ventilated waiting area in sunlight, or outside (weather permitting) etc. This also implies that HCPs are more likely to be exposed to the risk of TB, and should be exercising personal infection control measures as well. These patients should be fast-tracked and be attended to, reducing the average waiting time.

The majority of respondents rated ventilation/airflow in the waiting area in their area of work as bad, this implies that the area of work with regard to TB transmission is at high risk for both patients and HCPs. Revisiting the airflow to ensure correct circulation and extraction within these areas, as well as triaging patients to reduce congestion may mean setting up work environments differently and changing existing infrastructure.

5.3 Administrative Controls

Administrative controls should be practiced by all HCPs. The screening of patients needs to become a part of the routine and baseline investigations for all patients, as the data displays that it is not practiced routinely by all HCPs. The data shows that patients who are coughing are not educated in cough hygiene or provided with masks/tissues to reduce generation of infectious aerosols.

This is one of most effective ways to reduce TB transmission and its implementation should be included in the basic package of care to all patients. This basic intervention of creating awareness amongst both HCPs and patients is core to quality assurance and infection control improvement plans and could contribute to the reduction of TB transmission within the community as well.

The lack of isolation/separation of TB suspects could be due to space constraints and /or infrastructure, but again, the practical set-up and arrangement of triage, the use of ventilated and sheltered/sunlit outside waiting areas and awareness of cough practice would effectively contribute to infection control measures.

Both the Out-patients and Wards should work effectively to prioritise TB suspects using the triage and fast-track these patients for early diagnosis and treatment if necessary and ensure shorter waiting times especially in the out-patient department.

Staff are not aware of the need for early TB diagnosis, which demonstrates that the orientation and rotation of nurses in departments are not engaging in staff and in-service training as effectively. The use of visual mediums and printed flow-charts need to be legibly and visibly displayed and enforced by operational and area mangers as well as to ensure the flow of communication from management to service level.

It appears from the data that the expedition of results is standard practice for some individuals than for others. This implies that a platform of social dialogue between laboratory and clinical practice needs to be set-up to compliment TB infection control measures in reducing waiting times for consultation and investigation and collection of results.

The importance of early TB diagnosis, confirmation of results and treatment initiation contributes to higher cure rates, lower mortalities and minimising risk of drug-resistant TB. An integrated approach within the multi-disciplinary framework requires the hospital management together with laboratory personnel and HAST programme co-ordinators to adopt strategic administrative controls within the facility. It is difficult to monitor compliance to the national TB guidelines, but the data clearly displays a lack of compliance by HCPs to basic infection control interventions and non-existent measures in place. Institutional and in-house policies and protocols are either not implemented or audited to discover whether measures are/not in place or practiced poorly or not at all.

5.4 Environmental Controls

The data demonstrates a lack of consistent engineering controls which impacts the lack of administrative controls within the institution. The environmental controls is a collective responsibility, and although the infrastructure is not always present, more work needs to be done in consultation with the hospital maintenance and infection control departments. There are some patients that are unable to spend time outside, these include bed-ridden,

post-surgery and during cold-weather. However mechanical controls that include the arrangement of the area as well as windows, extracting air-conditioners and fans should be utilised irrespective of weather. Only the out-patients waiting area has two fans, these are not always switched on. The windows and door in the Out-patients waiting area is kept closed during rainy and cold weather.

The wards have windows on one side only and one entrance for entering/exiting staff and visitors. Most of the windows are not secure and are kept shut due to avoid swinging open/shut in windy weather and during cold weather. In-patients lie opposite and across each other and there are windows on one side only. The TB wards are isolated from the general wards, but they are along the same corridor for exit/entry of staff, patients and visitors. Both staff and patients require awareness and education on airflow and proper circulation and ventilation.

In areas such as X-ray department, it is understandable that some mechanical ventilation may not be present, in this instance patients should be fast-tracked and personnel should have measures in place, that include isolation of patients, separate waiting areas, allocated times for x-ray appointments to avoid congestion and mingling of TB suspects with other patients. Extractor fans should also be installed.

The Pharmacy Department has dispensing windows that blow air directly from the pharmacy patient waiting area into the pharmacy. There are no windows in the pharmacy, air blows in from both the pharmacy waiting area and the out-patients waiting area and the extent to which the air-conditioner extracts and filters the air is undetermined. There is a single entrance/exit in use that is opposite the out-patients waiting area and the traffic of staff using this entrance in the collection and delivery of medication is constant.

Implementation of environmental controls work hand in hand with administrative controls and how HCPs practice will affect what is done. Majority of the respondents were unaware of the direction of airflow during consultation. The data demonstrates that the respondents are not aware/informed of practical infection control measures.

The ARV Clinic should be a strategic priority for the institution due to its size and lack of infection control measures. There are no windows in the waiting area, no fans, a single

exit/entrance for staff, patients and visitors, no triage of patients, and a non-extracting air-conditioner. This results in long waiting times, high congestion and traffic and poor airflow. The high volume of patients accessing this point of care alone daily is an area of high concern as well as a high risk for TB transmission and infection.

5.5 Personal Protective Equipment

Occupational strategies for TB infection control in the working environment require a concerted effort from management and a renewed emphasis on the managerial role of occupational health and safety within the working environment. HCPs are at a higher risk of infection with TB due to the frequent exposure to patients with infectious diseases. Stringent need for screening and infection control practices is also critical because the estimated 5-15% of TB suspects seen daily equate to the undiagnosed, untreated and potentially contagious TB transmitters who increase the exposure risk even more. The increasing risk of drug-resistant TB is an additional risk for HCPs. Occupational Health and Safety must also ensure that HCPs with HIV-associated immune suppression should be placed away from areas of high risk.

The use of personal protective equipment works in conjunction with administrative and environmental controls and if each of these infection control measures are stringently implemented and upheld, it can alleviate the associated risks of contracting TB.

Personal protection is at a minimal in this institution. An alarming 69% of respondents have not been screened for TB infection and disease which reflects upon the occupational health plan as well as on the management of the institution. TB screening should be a routine part of the conditions of employment for all staff and should be conducted at least annually. At least 15% of respondents have been screened in a personal capacity, which displays an employee concern about the risk of TB transmission even though the practice is poor. The role of management in providing in-service training, acknowledging the occupational health risks and asserting a stronger commitment to how HIV/AIDS and TB affect all employees at Mount Ayliff Hospital appears absent. Although most respondents are aware of the risks of TB infection and disease to people living with HIV, there is a significant lack of translating this knowledge into attitude and practice in the work environment and in to implementing infection control measures. There has been unanimous acknowledgement consistent in the

responses of a need for in-house education and training in TB infection control and practice. Respondents display a partial understanding of TB infection control, and lack the education and awareness of the importance of standardising infection control measures within the work environment. An overwhelming majority of respondents have never been trained nor use the N95 masks in the areas of work, which is critical in a health facility and requires immediate revision. It is the responsibility of management to ensure that protective equipment is readily available for all workers and that at all levels, education and training occurs.

5.6 HIV/AIDS and TB integration

The data demonstrates that based on the volume of patients seen daily at Mount Ayliff Hospital, the prevalence of TB within this community is high. This reinforces the need for TB and HIV programmes to become integrated in their approach at all levels. Screening, testing and treating for TB and HIV should be a standard package of care and services. Mount Ayliff Hospital currently provides ART and TB treatment, however due to the confidentiality of patient information; the referral system between TB and HIV services is inefficient. Complete patient information requires a standardised HIV patient record and care plan inclusive of TB screening and treatment. This will enable HCPs to provide the proper care and support required to maintain adherence and achieve greater clinical outcomes.

50% of respondents interact with co-infected HIV/TB patients daily, and even more lack the skills to provide treatment and adherence counselling prior to TB therapy initiation. The integration of HIV/AIDS and TB services seem to fall onto the ARV Clinic nurses and doctors, and active screening to HIV in TB and TB in HIV appears to be the responsibility of a few instead of all. This lack of knowledge and practice reveals an increasing need for education and awareness on the managerial and service level.

Interventions include intensified TB case finding which translates to screening HIV-positive clients for TB at every clinical visit and all TB treatment patients for HIV. There should be materials available that encourage and support testing for HIV and screening to TB. This also means that at every monthly medication visit, patients are screened for TB. There is a need for the institution to develop standard screening protocols to assist in the early

detection and diagnosis of TB in HIV-positive patients. All HCPs need to be trained in TB screening especially with regards to extra-pulmonary and smear negative TB.

In 2010, Mount Ayliff Hospital initiated IPT to all HIV-positive patients. The prevention of latent TB developing to active TB amongst PLWHA has been well documented and the drug Isoniazid (INH) is used for a period of six months. INH can be used prior to starting ART or during ART, when active TB has been ruled out. The IPT national policy was documented in 2002, but has only been implemented in 2010.

Chapter VI

Conclusion and Recommendations

The current practice of TB screening in HIV-infected persons in Mount Ayliff Hospital is poorly aligned to the National TB Infection Control policy. Areas that require immediate action includes, effective triage and screening of all patients, intensified TB case finding and treatment, ventilation of work environments, ongoing staff education and training on TB infection control and appropriate use of N95 masks. The occupational health plan for all employees needs to be reviewed to include annual screening for TB infection and disease, voluntary HIV counselling and testing. It is quite clear that the integration of HIV/AIDS and TB services has not been fully implemented. Programme co-ordinators need to integrate programme objectives and strategies forming an integrated and standardised approach that will be practiced by all HCPs.

The results of this research report indicate a need for a working document on TB infection control at Mount Ayliff that include the implementation of administrative, environmental and personal control measures. The following recommendations are made:

- Effective triage of all patients on entry by separating coughing patients from non-coughing patients, educating patients on cough hygiene, provision of masks/tissues to patients
- Fast-tracking / intensified case detection of TB suspects for early diagnosis and treatment and improve the laboratory turn-around time for sputum
- Improving ventilation by keeping windows open, promote cross ventilation, where possible use extractor fans and UV light.
- Promote the regular use of N95 masks by all staff
- Create a separated ventilated area for sputum collection
- Regular staff training on the need for effective TB infection control and integration of HIV/AIDS and TB programmes
- Implementation of DOTS strategy in ARV programme and treatment preparation, pill count and adherence counselling for TB patients

- Formulation of an institutional TB infection control plan that include regular occupational audits
- Stronger managerial role and involvement in implementation of infection control measures

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Appendices

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STELLENBOSCH UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

Assessment of TB screening practices and infection control at Mount Ayliff Hospital

Population Group: Health Care Professionals at Mount Ayliff Hospital

You are asked to participate in a research study conducted by Rochelle A Ganesh, BPharm 2007, from Industrial Psychology at Stellenbosch University. The results from this study will contribute towards a thesis. You were selected as a possible participant in this study because of the increasing prevalence of TB in HIV-infected individuals. As a Health Care Professional in your area of work, active TB screening and infection control practices provide early opportunities for diagnosis and treatment of TB in HIV-infected individuals, and contributes towards strengthening and improving TB treatment completion and higher cure rates, reducing the TB burden, supporting ART scale-up and providing HIV care and therapy to a greater number of persons and their quality of life.

1. PURPOSE OF THE STUDY

To establish the current practice of TB screening in HIV-infected persons in Mount Ayliff Hospital in order to provide guidelines for the clinical management of TB in HIV-infected persons.

2. PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

Complete an anonymous questionnaire on the current practice of Health Care Professionals in Mount Ayliff Hospital in actively screening for TB in HIV-infected persons. The questionnaire focuses on these three specific areas or themes in your area of work, TB transmission and risk; infection control and practice and integrated HIV/AIDS and TB services.

The questionnaire should be completed individually and returned to Rochelle A Ganesh at Mount Ayliff Hospital as soon as it has been completed. The questionnaire requires approximately 20 minutes to complete and requires no additional writing or comment.

3. POTENTIAL RISKS AND DISCOMFORTS

The questionnaire is anonymous and participants are chosen randomly. All information from the questionnaires will remain confidential and used only for the purpose of this study. No information can be used to discredit any individual or the institution.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The questionnaire aims to increase awareness of TB transmission and TB transmission risk in HIV-infected individuals in Mount Ayliff Hospital, and the personal and environmental infection control and screening practices that should be in place. This increased knowledge and awareness by Health Care Professionals can be used to provide guidelines for the screening of TB in HIV-infected individuals and inform institution policy and guidelines for the clinical management of TB in HIV-infected individuals. The study hopes to benefit Health Care Professional practice and can be used for in-service training and orientation of new professionals in integrated HIV/AIDS and TB services.

PAYMET FOR PARTICIPATION

There is no payment or remuneration for participation in this study. It is a study to change current practice for continued professional development and to increase the quality of service offered.

5. CONFIDENTIALITY

Participation in this study requires informed consent from the participant. This means that the purpose and intent of the study must be explained to the participant fully before and confirmed by the participant prior to participating. A copy of the consent form must be given to the participant confirming that he/she is aware of the purpose of the study and agrees to participate as well as being assured that the study has been approved by the institution as well as Stellenbosch University, thus ensuring confidentiality. The Quality Assurance Department of the Hospital will also act to ensure confidentiality of the participant.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of anonymous questionnaires that will be distributed and collected by Rochelle A Ganesh. Questionnaires will be filed in the pharmacy store room in which access to the store is monitored by Rochelle A Ganesh and pharmacy staff. Access to the questionnaires will be limited to Rochelle A Ganesh to whom the key to the cabinet will be on her person always.

The information from the questionnaire will be analysed for the data analysis of the study and any information released to the Hospital and Quality Assurance Management will be compiled in a report of Hospital Practice and in no way will discredit any person or the institution but will serve to highlight the current practices of Health Professionals at Mount Ayliff Hospital.

The distribution of the questionnaires will be overseen by the Quality Assurance Management to ensure objectivity and confidentiality of information. The safe storage of questionnaires will be monitored over the data collection period, and the disposal of questionnaires will be undertaken by the Quality Assurance Management to ensure irretrievability of data collected.

The total number of questionnaires distributed will be accounted for and any incomplete or illegible questionnaires will be disposed by the Quality Assurance Officer. The anonymity of the questionnaires will be stated explicitly when writing up the findings of the study and will assert to health practices of the institution and no one person.

6. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

In circumstances where the questionnaire responses are illegible or ambiguous, that response will not be included in the analysis.

7. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact

1. Rochelle A Ganesh*: Principal Investigator*

Mount Ayliff Hospital, Pharmacy Department

Telephone: 039 254 0230 (Ext 129)

2. Mr Greg Munro: Study Leader

3. Mr J Ntanzi: Quality Assurance Assistant Director

Mount Ayliff Hospital, Quality Assurance and Infection Control Department

Telephone: 039 254 0230 (Ext 119)

8. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

The information above was described to [*me/the subject/the participant]* by [*name of relevant person]* in [*Afrikaans/English/Xhosa/other]* and [*I am/the subject is/the participant is]* in command of this language or it was satisfactorily translated to [*me/him/her*]. [*I/the participant/the subject]* was given the opportunity to ask questions and these questions were answered to *[my/his/her]* satisfaction.

[I hereby consent voluntarily to participate in this study/I hereby consent that the subject/participant may participate in this study.] I have been given a copy of this form.

_____

Name of Subject/Participant

_____

Name of Legal Representative (if applicable)

_____ _____

Signature of Subject/Participant or Legal Representative **Date**

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to _____ [*name of the subject/participant]* and/or [his/her] representative _____ [*name of the representative]. [H*e/she] was encouraged and given ample time to ask me any questions. This conversation was conducted in [*Afrikaans/*English/*Xhosa/*Other*] and [*no translator was used/this conversation was translated into* _____ by _____].

_____ _____

Signature of Investigator **Date**

Questionnaire for the

Assessment of TB screening practices and infection control at Mount Ayliff Hospital

Instructions for completion: put a cross in the box most applicable to you and your area of work

1. What is your occupation?

Doctor	Nurse – Surgical Wards	Pharmacist
Nurse – Out-patients department	Nurse – Maternity Ward	X-ray attendant / Radiographer
Nurse – Casualty	Nurse – Theatre	
Nurse – TB Wards	Nurse – ARV Clinic	

2. Which areas are you responsible for?

ARV Clinic	Surgical Wards	Pharmacy
Out-patients department	Maternity Ward	X-ray Department
Casualty	Theatre	HIV/AIDS Counselling and Testing
TB Wards		

3. How risky is your area of work with regard to TB transmission?

		1	2	3
	1. How many patients are seen daily in your area of work?	0-50	50-100	>100
	2. How many TB suspects/patients do you estimate are seen daily in your area of work?	<5%	5-15%	>15%

	3. What is the average patient waiting time in your area of work?	0-1 hr	1-2 hrs	>2 hrs
	4. In your opinion, how good is the airflow/ventilation of the waiting area in your area of work?	Good	Average	Bad

4. Strategies to reduce generation of infectious aerosols (administrative controls)

1.	Are patients screened for TB if they present with cough >2 weeks as they enter your facility?	Yes	Occasionally	No
2.	Are patients educated in cough hygiene if they are coughing?	Yes	Occasionally	No
3.	If patients are coughing, are they provided with masks/tissues to reduce generation of infectious aerosols in the hospital ?	Yes	Occasionally	No
4.	Are patients who are TB suspects/patients separated from those who are not? (i.e. separate waiting areas/ separate locations in wards or separate wards)	Yes	Occasionally	No
5.	Are TB suspects given priority to ensure shorter waiting times in outpatient facilities	Yes	Occasionally	No

6.	Are you aware of the need for 'early TB diagnosis' (e.g. through emphasis in staff training?)	Yes		No
7.	Are there separate and ventilated facilities for sputum collection from suspects?	Yes	Yes, but not ventilated	No
8.	Is there a 'fast-queue' for collection of sputum smear results?	Yes	No, but collection of results is fast	No
9.	What is the laboratory turn-around time for sputum AFB/microscopy?	<48 hours	48-72 hours	>72 hours

5. Strategies to reduce/eliminate infectious aerosols after generation (environmental controls)

1.	Are suspected TB inpatients able and encouraged to spend time outside during daylight hours?	Yes	Occasionally	No, it's not possible
2.	Are the windows in your area of work able to open?	Yes	Some	No
3.	Are the windows in your area of work kept open?	Yes	Occasionally	No
4.	Are fans to increase circulation of air used in your area of work?	Yes	Occasionally	No
5.	Are you aware that when you consult or work with patients, the direction of air-flow should	Yes	Yes, but I don't	No

	be towards the patient, and from behind you?		always do it	
6.	Are ultra-violet germicidal radiation facilities in use in the area where your work?	Yes, always	Occasionally	No

6. Strategies to reduce inhalation of infectious aerosols (personal protective equipment)

1.	Are you screened for TB infection and disease as part of your conditions of employment?	Regularly	No, but I have done this in my personal capacity	No
2.	Are you encouraged by your line managers to know your HIV status?	Yes, regularly	Occasionally	No
3.	Are you aware of the risks of TB infection and disease to people who are living with HIV?	Yes	Some knowledge	No
4.	Are you trained in TB infection control?	Regularly	Occasionally	No
5.	Are you trained in recognition of TB suspects and diagnosis of TB?	Regularly	Occasionally	No
6.	Are N95 masks available?	Yes, always	Yes, occasionally	No

7. Are you trained in the use of N95 masks?	Yes		No,
	Always	Occasionally	not at all
How often do you use N95 masks?	Always	Occasionally	Not at all

7. Integrated HIV/AIDS and TB services

1. How many co-infected HIV/TB patients are seen daily in your area of work?	<5	5-15	>15
2. Do you provide treatment and adherence counselling prior to TB therapy initiation?	Yes		No
3. Do you practice a Directly Observed Therapy Short course (DOTS) approach to aid compliance and adherence in patients on ARVs?	Yes		No
4. Do you actively screen for HIV in TB patients?	Always	Occasionally	Usually not
5. Do you actively screen for TB in HIV patients?	Always	Occasionally	Usually not
6. Do you provide Isoniazid Prophylaxis to HIV patients			

on ARVs?	Always	Occasionally	Usually not

Thank you for completing this questionnaire.

If you have any enquiries, and to return all questionnaires, please contact Rochelle A Ganesh at Mount Ayliff Hospital Pharmacy Department or telephonically on 039 254 0230 (Ext 129).

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jou kennisvennoot • your knowledge partner

22 November 2010

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Ms RA Ganesh
Africa Centre for HIV/Aids Management
University of Stellenbosch
STELLENBOSCH
7602

Reference: 435/2010

Ms RA Ganesh

APPLICATION FOR ETHICAL CLEARANCE

With regards to your application, I would like to inform you that the project, *Assessment of TB Screening Practices and Infection Control at Mount Ayliff Hospital*, has been approved on condition that:

1. The researcher/s remain within the procedures and protocols indicated in the proposal;
2. The researcher/s stay within the boundaries of applicable national legislation, institutional guidelines, and applicable standards of scientific rigor that are followed within this field of study and that
3. Any substantive changes to this research project should be brought to the attention of the Ethics Committee with a view to obtain ethical clearance for it.
4. The researcher/s implements the suggestions made by the mentioned by the Research Ethics Committee (Human Research) in order to reduce any ethical risks which may arise during the research.

We wish you success with your research activities.

APPROVED
22 NOV 2010

Best regards

MR SF ENGELBRECHT
Secretary: Research Ethics Committee: Human Research (Non-Health)