

**HEALTH CARE WORKERS' ACCESS TO OCCUPATIONAL POST
EXPOSURE PROPHYLAXIS (PEP) AND PERCEPTION OF HIV
OCCUPATIONAL RISK EXPOSURE: LESSONS FROM MCHINJI DISTRICT.**

M.A. (SOCIOLOGY) THESIS

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UNIVERSITY OF MALAWI

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Master of Arts (Sociology) Thesis

By

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**Submitted to the Department of Sociology, Faculty of Social Science in fulfilment of
the requirements for the degree of Master of sociology**

**University of Malawi
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October 2008

DECLARATION

I the undersigned hereby declare that this thesis/dissertation is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

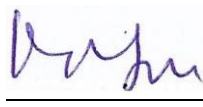
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The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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Supervisor

DEDICATION

I dedicate this work to my beloved dad, loving sister, Rose and caring brother, Charles. You worked very hard to see me excel in life; unfortunately you did not live to see the fruits of your hard work. Your dreams for me were always in colour. Heaven is where you belong. May your souls rest in eternal peace. Amen.

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To Lot Jata Nyirenda, mwana wa Nyakanyasko, my class mate, I say ‘*Chiuta ni doda*’.

ABSTRACT

Occupational exposures are relatively common among HCWs. The risk of seroconversion following occupational exposures among HCWs may be reduced by knowledge of and accessing occupational post exposure prophylaxis (PEP). In addition, practising universal guidelines may greatly reduce HCW occupational exposures. The aim of this study was to explore HCWs' access to PEP and their perception of occupational HIV risk exposure and practice of universal precautions. The study was done in two phases using qualitative methods in the first phase and quantitative methods in the second phase.

Results from the survey show that 36 % (n=122) had experienced an occupational exposure to HIV in the past 12 months of which most (52%) were females. However, only 28% of those who experienced an occupational injury reported the injury to authorities within their respective workplaces. Most (78%) of all occupational exposures were needle stick injuries. Qualitative data shows that most respondents did not report occupational exposures for fear that they will be asked to go for an HIV test. Lack of knowledge of PEP, fear of stigma and unavailability of PEP in most study sites were the major challenges to access PEP. There was inconsistent practice of universal precautions amongst most respondents. For example, 56% (n=126) reported that they always wash their hands before and after attending to a patient; 64% (n=126) indicated that they always put on closed shoes when they are on duty. Lack of protective materials and heavy work load were some of the major barriers to HCW practicing universal precautions.

In conclusion, the study has shown that HCWs in Mchinji continue to face challenges to access PEP and practice universal precautions. There is need to address the human resource crisis in the health sector to reduce the work load in most facilities. Supervision of HCW practice of universal precautions should be ongoing in all facilities. There is need to decentralise PEP services to health centres and for 24 hour PEP services in all facilities. Providers of PEP services should respect and promote confidentiality so that

HCWs can report occupational injuries and access PEP without restraint. The Health Belief Model and the symbolic interactionism theory can help in designing programmes for HCWs to promote their access to PEP and practice of universal precautions.

TABLE OF CONTENTS

DECLARATION.....	3
CERTIFICATE OF APPROVAL	4
DEDICATION.....	5
ACKNOWLEDGEMENTS	6
ABSTRACT.....	7
TABLE OF CONTENTS	9
LIST OF TABLES	12
LIST OF FIGURES	13
OPERATIONAL DEFINITION OF TERMS.....	14
CHAPTER ONE	16
1.0 Introduction.....	16
1.1 Problem Statement.....	19
1.2.0 Aim of the Study.....	21
1.2.1 Objectives.....	21
1.3 Study Justification	21
CHAPTER 2- LITERATURE REVIEW	24
2.0 Introduction.....	24
2.1 HCW occupational risk exposure to HIV – A brief overview	25
2.2 HCW perception of HIV occupational risk.....	26
2.3 Scale of HCW occupational risk exposure to HIV and AIDS.....	26
2.4 Occupational risk exposure to HIV across cadres	28
2.5 HCW occupational risk exposure to other infections.....	28
2.6 Negotiating multiple barriers to health services: what are some of the implications for HCWs own access?	30
2.7 Post exposure prophylaxis (PEP)	32
2.8 Conceptual Framework.....	34

CHAPTER 3- RESEARCH METHODOLOGY	37
3.0 Introduction.....	37
3.1 Study location	37
3.3 Study design.....	37
3.4 Study respondents.....	38
3.5 Recruitment of respondents and Sampling methodology	38
3.6.0 Sample size calculation	39
3.6.1 Sample size calculation in qualitative sample	39
3.6.2 Sample size calculation in quantitative sample	40
3.7 Data collection tools	40
3.8 Interviewers	41
3.9 Analysis of data	41
3.10 Possible limitations and quality control.....	43
3.11 Consent and confidentiality	44
CHAPTER 4- RESULTS	45
4.0 Introduction.....	45
4.1 Respondents' socio-demographics from the survey.....	46
4.2 Demographics for respondents in the qualitative phase	47
4.3 HCW knowledge and perceptions on HIV and AIDS	48
4.5 HCW experience with occupational exposure.....	50
4.6 Reporting and management of exposure	54
4.7 HCW knowledge and perceptions about PEP.....	54
4.8.0 Challenges to access post exposure prophylaxis	56
4.8.1 Unavailability of post exposure prophylaxis drugs.....	57
4.8.2 Lack of knowledge about post exposure prophylaxis.....	58
4.8.3 Lack of confidentiality	59
4.8.4 Fear of testing for HIV	59
4.8.5 Refusal of some patients to test for HIV	60
4.8.6 Absence of test kits.....	61
4.9 HCW perception of effectiveness of HIV prevention methods	61
4.10 Trainings respondents had attended	63

4.11 HCW practising of infection prevention guidelines.....	64
4.12 Challenges to practice universal precautions from qualitative interviews	66
CHAPTER 5: DISCUSSION AND CONCLUSION	68
5.1 Conclusion	72
REFERENCES.....	75
6.0 APPENDICES	85
Appendix 1: Check list for HCWs study- qualitative phase	85
Appendix 2: National Study team	90
Appendix 3: Questionnaire for HCWs- quantitative phase.....	91

LIST OF TABLES

Table 1 : Respondents drawn from different study sites.....	45
Table 2 : Demographics of respondents (N=128)	47
Table 3 : Fear of HIV transmission (N=127)	50
Table 4 : HCW experience of occupational exposure by cadre	51
Table 5: Results comparing ever experienced an exposure with sex, cadre and education of respondents.....	52
Table 6: Challenges HCWs face to access PEP (N= 128)	57
Table 7: Level of practice of infection prevention guidelines (N=128)	64

LIST OF FIGURES

Figure 1: Age Distribution of respondents (N=128)	46
Figure 2 Distribution of procedures causing exposures (N=42)	53
Figure 3 Activity taken soon after occupational exposure (N=42)	54
Figure 4 Effectiveness of HIV prevention methods	61
Figure 5 Types of trainings respondents ever attended	63
Figure 6: Practising of hand hygiene before and after attending to a patient by cadre	65
Figure 7: HCWs who always put on closed shoes on duty in each cadre	65

OPERATIONAL DEFINITION OF TERMS

Health care workers: Nurses, clinical officers, doctors, medical assistants, technicians (pharmacy, dental and laboratory) and health surveillance assistants (HSAs).

Sharps: Sharp objects or instruments such as needles, scissors, scalpel blades and others used in health care settings

Universal precautions: minimum standards of infection prevention and control used in the handling of blood and other bodily fluids, at all times to reduce the risk of transmission of blood borne infections. These include careful handling and disposal of sharps; hand washing with soap and water before and after all procedures; use of protective barriers such as gloves, masks, aprons for direct contact with blood and other body fluids; safe disposal of waste contaminated with blood and other body fluids; proper disinfection of instruments and contaminated equipment; and proper handling of soiled linen.

ABBREVIATIONS AND ACRONYMS

AFRODAD	African Forum and Network on Debt and Development
AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
CRHCS	Commonwealth Regional Health Community Secretariat
CDC	Centres for Disease Control
CHAM	Christian Health Association of Malawi
CIN	Critical Incidence Narrative
HCW	Health Care Worker
HIV	Human Immunodeficiency Virus
HTC	HIV Testing and Counselling
ILO	International Labour Organisation
IP	Infection Prevention
TB	Tuberculosis
MoH	Ministry of Health
MDHS	Malawi Demographic and Health Survey
NAC	National Aids Commission
NACP	National AIDS Control Programme
NSO	National Statistical Office
NGO	Non-Governmental Organisation
NIOSH	National Institute for Occupational Safety and Health
PEP	Post Exposure Prophylaxis
REACH Trust	Research for Equity and Community Health Trust
SARA	Support for Analysis and Research in Africa
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
USAID	United States International Development
WHO	World Health Organisation

CHAPTER ONE

1.0 Introduction

Malawi is a landlocked country situated within sub-Saharan Africa with a population of over 12 million people. It shares boundaries with Tanzania in the north and north east; Mozambique in the east, south and west; and Zambia in the west. It is one of the poorest countries in the world. The Malawi 2004/05 Integrated Household Survey shows that 52.4% of the population live below the poverty line. This translates into 6.3 million Malawians who are poor, with the poorest people living in the southern region. Most of the health indicators remain poor, for example the maternal mortality rate is still high at 984 maternal deaths per 100,000 live births (National Statistical Office 2005). The 2007 HIV and Syphilis sero-prevalence survey shows that 12% of the population aged 15-49 is living with HIV (MoH 2007). Data shows that prevalence is higher among women than men estimated at 13% and 10% respectively (National Statistical Office 2005). This reflects gender disparities in abilities to negotiate for safe sex, which in turn reflects access to resources, asymmetrical gender roles and relations as well as the female's biological vulnerability to HIV infection (Nyirenda 2006).

Malawi's overall health policy aims at raising the standard of health of all Malawians through a reliable health care delivery system. Health care delivery in Malawi is at three levels: primary, secondary and tertiary. Primary health care (PHC) is the major philosophy underpinning the health services delivery system (Msukwa 1987). For this purpose, the Ministry of Health (MoH) gives priority in ensuring that there are enough medical assistants and enrolled nurses who serve at all levels of care and are the mainstay of PHC.

Apart from the Ministry of Health as the main health service provider, the Christian Health Association of Malawi (CHAM) is a key partner in the provision of health care. CHAM has a membership of 171 health facilities spread across the country. Out of these facilities twenty are main hospitals, nineteen community hospitals, one mental hospital and 131 health centres. Over 90% of the health facilities are located in rural areas.

CHAM provides about 37% of all health care services; therefore, it is a key partner in health service delivery (See 'About CHAM Secretariat' on www.cham.org).

Inadequate numbers of health personnel is one of the major challenges to delivery of health services in Malawi (UNDP/MoH 2003). There are severe staff shortages in Malawi with an average vacancy rate of around 50 percent for all professional HCWs' posts sector-wide (Babu 2006). The health workforce (doctors/nurses/midwives) population ratio for Malawi is as low as 0.27/1000 population compared with the World Health Organisation (WHO) defined threshold of an adequate workforce of at least 2.3 well trained doctors, nurses and midwives available per 1,000 people (WHO 2006). The WHO (2006) report further shows that out of the 28 districts in Malawi, 15 had fewer than 1.5 nurses per facility and 5 districts did not have a nurse, while four districts had no doctor at all. Studies indicate that there is one doctor per 62,000 population in Malawi, comparable with one per 25,000 in Tanzania, one per 7,200 in Zimbabwe and one per 1,800 in the Republic of South Africa (MoH 2006). Harries (2002) showed that many hospitals and clinics were unstaffed or understaffed, and patients' access to functional health services continued to be difficult and time-consuming even though physical facilities were available. Anecdotal data shows that some health centres are only providing under-five clinic services due to lack of trained cadres. High vacancies result in ineffectiveness and inefficiency in the delivery of services (UNDP 2003).

High vacancy rates in key health cadres are occurring at a time when the burden of disease is increasing mainly because of the HIV and AIDS epidemic and the resurgence of major public health problems such as malaria, tuberculosis, cholera, childhood illnesses, and the still-appalling rates of maternal mortality (Africa Human Development, Africa Region 2004). Anecdotally, Malawian HCWs report that they are stretched dangerously thin as they deal with higher patient loads and increasingly complex cases. A study conducted in six districts in Malawi revealed that the average bed occupancy rate in the district hospitals was 119 percent with Lilongwe Central hospital reporting the highest bed occupancy rate at 162 percent (USAID 2004). This increase in work load is

in the context of critical health care worker shortage (African Forum and Network on Debt and Development [AFRODAD] 2005) to deliver the essential health package.

Health care workers are generally at a higher risk of contracting HIV than the general public. Apart from them being at risk of sexual exposure, the nature of their job exposes HCWs to multiple situations which increase their risk to occupational exposure. Data on health care worker occupational risk exposure from developing countries is scarce. However, data from developed countries indicate that the risk of HIV transmission from a single percutaneous exposure is approximately 0.3% (van Oosterhout 2007). This presents a low but potential risk of infection (Hamlyn 2007).

In addition, research has shown that tuberculosis (TB) infection rates among HCWs in Malawi are higher than the general community (Harries 1999). Harries (2002) reported that in 1999, 2% of HCWs in Malawi died of AIDS (60 deaths out of 2,797). Highest death rates were recorded amongst female HCWs in the 25-34 years age group. The main reported causes of death were TB (47%), chronic illness (45%) and acute illness 8%; these were most likely to be HIV and AIDS related. HCWs' deaths due to preventable and curable illnesses raise a lot of questions about their access to prevention and treatment services in Malawi. This situation is crippling for a developing nation like Malawi, which is facing critical shortage of human resources for health. It is envisaged that human development achievements made so far will come under increasing pressure as a result of HIV and AIDS (UNDP 2003).

HCWs, more than any other work force, are uniquely affected by HIV and AIDS as they are constantly confronted by death and illness on both a professional and personal level (USAID 2004). Being at the front line of treating people infected with HIV gives HCWs an unusual opportunity and responsibility to develop a culture that is free from fear, denial, stigma and discrimination. McDonald and Ruiters (2005) argue that this can only happen if HCWs are confident that they are protected from exposure at work. However, a study assessing challenges facing health workforce in Malawi in the era of HIV and AIDS found that inadequate supplies of protective equipment and high patient loads

increased health care worker risk exposure to HIV (Commonwealth Regional Health Community Secretariat 2004). This study set out to explore health care worker access to post exposure prophylaxis (PEP) and practice of universal guidelines to infection prevention.

1.1 Problem Statement

The HIV and AIDS situation in Malawi has been declared a national disaster (AFRODAD 2005). Inadequate supplies of protective equipment in most health facilities increase HCWs risk to occupational exposure to HIV. Although it is possible to prevent or reduce HCW exposure to HIV infection and other infectious diseases, HCWs are actually experiencing increasing numbers of occupational injuries and illnesses (Niu 2000). A study to investigate challenges facing the Malawian health work force in the era of HIV and AIDS raised serious concerns about lack of protective measures against occupational exposure to infection. Most respondents indicated that they lack materials to effectively protect themselves from occupational exposure to HIV (USAID 2004). Similar findings have been documented in other countries in the region (Chikanda 2004; McDonald 2005). In Malawi, there is little information about health care worker practice of universal precautions to reduce the risk of HIV transmission and other blood borne infections. This makes the situation worrisome for Malawi.

In addition, many people in Malawi are unaware of their HIV serostatus and may unknowingly serve as sources of viral transmission to HCWs. The Malawi, 2005 Demographic and Health Survey showed that 83% of people in the 15-49 years age group were not aware of their HIV status. Research shows that HIV prevalence among hospitalised patients in most hospitals is high with over 70% of bed occupancy in public hospitals considered HIV and AIDS related (UNDP 2003). Nearly all HCWs are involved in some way with the care of these persons who require frequent visits to the health facilities. As patients often present with advanced disease, a high HIV viral load is likely and occupational injuries therefore carry a relevant risk of HIV transmission (Oosterhout 2007). There are few documented cases of health care worker to patient transmission of HIV (CDC 1991; Cielsielski 1992; Lot 1999; Goujon 2000). However, the documented

cases of occupationally acquired HIV infection raise concerns and calls for concerted effort, to protect HCWs from occupational risk exposure to HIV.

Anecdotal evidence suggests there is low uptake of HIV and AIDS services amongst HCW in Malawi despite their being at risk of occupational exposure to HIV. This trend is similar across the continent as documented in other African countries. A study conducted in three districts in Zimbabwe on HCW's access to HIV testing and counselling (HTC) found that most HCWs (87.4%) had not gone for HTC. Most HCWs reported unwillingness to go for HIV testing (Tarwireyi and Majoko 2003) although they are at risk of occupational exposure to HIV. For a health care worker to access PEP he or she needs to know his or her HIV status apart from establishing the HIV status of the source of infection. Therefore, if HCWs shun going for HIV testing they cannot benefit from PEP services. There is need to explore innovative ways to improve HCWs access to PEP.

The Government of Malawi through the Ministry of Health (MoH) introduced occupational post exposure prophylaxis in health facilities in 2004. The government through the HIV and AIDS policy committed itself to ensure access to affordable short term antiretroviral (ARV) prophylaxis for people who have experienced occupational exposure to HIV (MoH 2005). However, there is no extensive data on HCWs infected through occupational exposure and their uptake of post exposure prophylaxis. Anecdotal data available show that few HCWs access treatment after occupational exposure and sometimes post exposure prophylaxis kits expire in some health facilities and many needle stick injuries go unreported. A study to evaluate challenges in HIV post-exposure prophylaxis for occupational injuries in a large teaching hospital in Blantyre found that 28 (76%) nurses reported a total of 56 injuries in 2004. However, only one of the 28 nurses, who had an occupational injury, sought advice for post exposure prophylaxis. Some of the reasons for not seeking post exposure prophylaxis were; being unaware about the PEP programme; not wanting an HIV test; and lack of seriousness on part of the nurses (van Oosterhout 2007). Gold (2004) argues that in resource poor countries the incidence and impact of occupational exposures is usually under-reported although occupational transmission of blood borne infections constitute an important risk factor for health care workers.

In conclusion, unavailability of protective materials and failure of some HCWs to practice universal precautions in most health facilities put HCWs at a higher risk of exposure to HIV in a country with one of the highest HIV prevalence in the world. Furthermore, failure of some HCWs to report occupational exposures and access PEP even where PEP is provided is a challenge that needs concerted efforts.

1.2.0 Aim of the Study

The study aimed to understand the work environment of the HCWs and learn how best to reduce occupational exposures to HIV and improve health care worker uptake of post exposure prophylaxis in hospitals and health centres in Mchinji district.

1.2.1 Objectives

The specific study objectives were as follows:

1. To understand challenges HCWs face to practice universal precautions to infection prevention.
2. To assess HCWs' knowledge, attitude and perceptions about post exposure prophylaxis in Mchinji.
3. To explore HCWs' perceptions towards their occupational risk exposure to HIV.
4. To determine factors that affect access and utilisation of post exposure prophylaxis among HCWs in Mchinji.

1.3 Study Justification

Health care workers need to be protected from HIV infection in their work environment. This is not only their right but also a necessary strategy to safeguard the health systems that are needed to deliver health services (WHO 2006). McDonald (2005), argues that the occupational safety and health conditions of HCWs are closely related to HCWs conditions of employment, their status and the social protection afforded to them, as well as to the operation of the health care delivery systems and their financing. By including HCWs from both the MoH and Christian Health Association of Malawi this study collected experiences from different settings, which is vital to development of policies and interventions to promote health care worker occupational safety. In addition, the study aimed to better understand the different levels of knowledge of post exposure

prophylaxis and practice of infection prevention and occupational exposures to HIV by different cadres across different work environment. This information was considered important in designing different strategies for different cadres who experience different occupational exposures to HIV.

Therefore, this study will help to add to literature by exploring barriers HCWs face in accessing post exposure prophylaxis. In addition, this information will help to improve the provision of other HIV and AIDS services to HCWs.

Health care workers are vital for any health system and any initiative that focuses on the health and well-being of HCWs is an initiative that also strengthens the health system. Research has shown that HCWs fear of occupational exposure to HIV may lead to their discriminating against people with HIV or those perceived to be at risk (Reis 2005). Given the high HIV prevalence in Malawi, and the limited number of HCWs in the health system, focusing on HCWs is crucial for the effective delivery of health services.

Health care workers need support and protection from occupational exposure to infections. However, HCWs acceptance of poor working conditions can make prevention difficult. McDonald (2005) argues that most of the time occupational health and safety of HCWs is defined by the employer and most occupational health and safety programmes tend to be reactionary rather than proactive. Data shows that lack of continuous and efficient in-service training and absence of a written policy for precautions regarding infection control are some of the factors leading to the defects in practising universal precautions (Kabbash 2007). This study will therefore help inform policy to better understand how best to protect HCWs from occupational exposure to HIV.

Preventing health care worker occupational exposure to HIV can help to develop an environment that contributes to good health, for example, reducing health related costs associated with HIV and AIDS. There are costs such as those for training of new employees, loss of working days if sick, funeral costs in cases of death and medical bills which are usually borne by the employer. Some studies in Africa have shown that occupational injuries occur frequently and that in combination with high HIV prevalence,

risk of HIV transmission is significant (Gumodoka 1997; van Oosterhout 2007). In view of the importance of the health system to national development, focusing on HCWs can go a long way in ensuring a healthy nation and assist policy makers and advocacy groups to shape and accelerate the implementation of HIV and AIDS programmes at workplace.

CHAPTER 2- LITERATURE REVIEW

2.0 Introduction

Protecting HCWs in resource constrained settings, where even the basics of medical care are difficult to provide, presents a challenge to many health systems not only in Malawi but in other developing countries. Health care workers in developing countries are at a greater risk of infection from blood borne pathogens particularly hepatitis and HIV because of the high prevalence of such pathogens in many poor regions of the world (Kane 1999). Research has shown that over two thirds (68%) of the world's HIV-infected population live in sub Saharan Africa where more than three quarters (76%) of all HIV related deaths in 2007 occurred (UNAIDS 2007). This means that HCWs in resource poor countries are at a higher risk of occupational exposure to HIV.

The widespread adoption of standard universal precaution guidelines which include provision of adequate sharp containers, the training of workers in the risks and prevention of transmission of blood borne virus has led to a significant reduction in needlestick and other injuries over the last two decades (Beekman 2005). There is evidence that adherence to standard precautions is often suboptimal and that the occurrence of percutaneous injury and mucocutaneous blood exposure is inversely related to routine standard precaution compliance (Doebbeling 2003). However, despite these precautions data shows that occupational injuries still occur and are usually underreported (Aisien 2005). Documented cases of health care worker occupational risk exposure in resource settings raise serious concerns for HCWs working in resource poor settings with high HIV prevalence.

The prescription of antiretroviral therapy as post exposure prophylaxis (PEP) following significant potential exposure to HIV has now become routine and it is important that HCWs with potential risk of exposure are aware of the procedures to follow (Aisien 2005). However, post exposure prophylaxis for HIV transmission through HIV occupational injuries in HCWs has received little attention. In Malawi, for example, there is no comprehensive information on the incidence of occupational injuries in hospital

workers (Van Oosterhout 2007). Malawi has a Workers' Compensation Act which provides compensation for injuries suffered or diseases contracted in the course of their employment or for death resulting from such injuries or diseases. However, few cases of HIV occupational exposure cases are reported and qualify for compensation. The major challenge to compensation of HIV occupational injuries lies in the complexity in establishing that the health care worker contracted the virus through occupational exposure. For occupational injuries, most of the times, it is the injury that is compensated and not the contraction of the virus on the job.¹ Few data available show that reporting of occupational exposures in health facilities in Malawi is low (van Oosterhout 2007). Sagoe (2001) argues that it is unlikely that surveillance and reporting of occupational exposure to infected blood will be undertaken in places where PEP, treatment and workers' compensation are lacking.

2.1 Health care worker occupational risk exposure to HIV – A brief overview

Data shows that transmission of HIV in health care settings is complicated as it involves unusual routes of transmission. In developed countries with well-organised surveillance system, routes of transmission are detected by studying HIV infected persons who have no identified risk of infection (Cardo 2001). Research has shown that the picture is however different in countries facing critical shortages of human and financial resources. Many hospital settings in developing countries experience lack of safe disposal systems for the secure containment and elimination of contaminated waste (Battersby 1998). In addition, lack of equipment such as gloves, gowns, masks and goggles to protect them from contact with blood increases HCWs HIV occupational risk exposure. A report from Tanzania indicated that birth attendants covered their hands with plastic bags to protect themselves from exposure to HIV during delivery because there were no gloves (Mfungale 2001). In addition, a study on HCWs done in Benin, Nigeria found that lack of knowledge and unavailability of materials contributed to poor adherence to universal precautions (Aisien 2005). The situation is no better in Malawi especially with high patient work loads and inadequate supply of protective materials (USAID 2004).

¹ Personal communication from a Senior Claims Officer in the Ministry of Labour and Vocational Training in Lilongwe, Malawi.

2.2 Health care worker perception of HIV occupational risk

Research in Sub Saharan Africa shows that HCWs perceive themselves as being at high risk of HIV (Adelekan 1995; Kiamenyi and Ndung'u 1994; USAID 2004). Of the 267 HCWs interviewed in Dar es Salaam, Kilimanjaro and Mwanza districts of Tanzania, 72% perceived themselves to be at high risk of HIV infection. Furthermore, a study conducted in Malawi showed that an overwhelming majority of HCWs (90%) interviewed perceived themselves to be at high risk of occupational HIV infection (USAID 2004). On the other hand Li (1992) reported that the majority of HCWs in China perceived HIV to be a threat to others but not to themselves and their families. These differences in perception in a way reflect the reality of the HIV situation in Africa and in China where overall HIV prevalence in China is estimated at 0.05% (WHO 2008 www.who.int). For HCWs in Africa the high HIV prevalence may have largely contributed to the high perception of HIV risk.

Research shows that HCW occupational risk exposure to infection which may be actual, potential or imagined is the core of occupational health and safety. Awusabo Asare (1997) argues that for HCWs the risk may be real or imaginary. However, health care worker perception - whether real or perceived - may influence delivery of services. In another study done in Nigeria, Adelekan (1995) showed that 35% (n=111) of the physicians would not perform surgery on persons known to have AIDS even if they took all the necessary precautions. In a study conducted in Ghana results showed that some support staff refused to assist in an operation when they were informed that the patient to be operated on was HIV positive (Awusabo Asare 1997).

2.3 Scale of health care worker occupational risk exposure to HIV and AIDS

There are no direct measures of the magnitude of HCW occupational exposure to HIV, but the few estimates available give reason for concern. The main cause of infection in occupational settings is exposure to HIV-infected blood via a percutaneous injury (CDC 1997). The WHO (2003) data shows that around 2.5 percent of HIV cases in HCWs around the world are a result of needle stick injuries.

Research shows that the actual risk of health care worker occupational exposure to HIV is low. Prospective studies from several countries have estimated that the risk after occupational percutaneous exposure to HIV infected blood is 0.3 % and 0.09% after a mucous membrane exposure; the risk is estimated to be higher following an exposure to a large volume of blood (Chant 1993; CDC 2001; Puro 2004). Although the rate of HIV occupational risk exposure is estimated to be low, the consequences of occupational exposure to HIV can be devastating and in areas where HIV prevalence is high and infection prevention practices are poor the risk is likely to be greater. The risk of transmission after exposure to fluids or tissues other than HIV-infected blood also has not been quantified but is probably considerably lower than for blood exposures (Henderson 1991). Studies have shown that HIV infection among admitted patients in Malawi is high (van Oosterhout 2007; UNDP 2003). There is need for more research on health care worker occupational risk exposure to infection as much remains unknown.

There is no extensive data on HCWs infected through occupational exposure and most of the data on occupational exposure come from well resourced countries. Estimates show that a country with a stable fifteen percent HIV prevalence can expect between 1.6 percent and 3.3 percent of its health care providers to die from HIV and AIDS each year (Tawfik and Stephen 2001). As of December 1999, CDC had received reports of 56 HCWs from the United States with documented HIV seroconversion temporally associated with occupational exposure. Most of the exposures documented were percutaneous in nature. Another 42 documented cases and 56 possible cases of occupationally acquired HIV infection were reported from other countries from resource constrained settings (Cardo 2001). In a study in nine hospitals in Tanzania's Mwanza region, Cardo (2001) found an average of five percutaneous injuries (PI) per HCW per year. Estimating a 20% HIV prevalence among patients and a transmission probability of 0.25%, the incidence of HIV infection through occupational exposure would be 0.27% per year. Since HCWs do not usually report occupational exposures, these numbers are certainly low therefore the risk is far from negligible.

2.4 Occupational risk exposure to HIV across cadres

Research has shown that there are differences in occupational exposure to HIV across cadres. Most studies show that nurses are at greater risk of occupational exposure. A study in a South African hospital investigating the potential for HIV transmission from needle sticks and other sharp-instrument injuries found that 41 percent of such injuries occurred among nurses and 38 percent among cleaners, although the former comprised only 16 percent of total hospital personnel (de Villiers, 2000). In Malawi, a study done at Queen Elizabeth Central Hospital reported an alarmingly high reported incidence of occupational injuries among nurses in the clinical department where 76% reported to have ever experienced an occupational exposure. (van Oosterhout 2007). In the USA, nursing professionals experience the highest proportion of injuries and diseases within the health care industry. For example, registered and enrolled nurses together made up 34% of injury/disease occurrence in the sector (Niu 2000). Protecting HCWs from contracting the virus through occupational exposure would help to reduce the number of HCWs infected with HIV. There is need to critically focus on the different roles HCWs do and design tailor made interventions specific to each cadre.

2.5 Health care worker occupational risk exposure to other infections

The risk of acquiring a work related fatal infection represents a substantial risk to HCWs in developing countries (Sagoe 2001). Health care workers apart from being exposed to HIV in their work environment, they are also at risk of acquiring other infections in their workplaces. Research shows that there is a substantial rise in active cases of TB among HCWs many of whom die of the disease. The appearance of multi-drug resistant tuberculosis poses a new threat to HCWs (Niu 2000). Medical links between HIV and AIDS and TB are fairly well established, with the evidence for a link between HIV and TB being quite compelling. In Malawi, data shows that 70% of all TB patients are also HIV positive (Kwanjana 2001). In the Sub Saharan region, acquired tuberculosis is increasing (Wilkinson 1998; Eyob 2002). In Malawi, TB was the major cause of death amongst HCWs in urban areas accounting for 47 percent (Harries 2002).

Blood borne pathogens such as hepatitis B (HBV) and C virus (HCV) represent an important hazard for HCWs (Prüss-Üstün 2003). The World Health Organization (2006) estimates that each year in Europe 304,000 HCWs are exposed to at least one percutaneous injury with a sharp object contaminated with hepatitis B; 149,000 are exposed to hepatitis C. In developing countries these estimates are likely to be high. The probability of acquiring a blood borne infection following an occupational exposure has been estimated to be on average 0.5% for hepatitis C and 18% to 30% for hepatitis B, depending on the type of exposure², the body fluid involved, and the infectivity of the patient (ibid). A study conducted in six major metropolitan hospitals in Melbourne in Australia to determine the number of occupational exposures to blood and body fluids (including needle stick injuries) found that, of the 1,450 reported occupational exposures in a period of over eleven months, needle stick injuries made up more than 60% of the total number of exposures (Charles 2003).

Research shows that both health system and individual HCWs barriers hinder HIV prevention by HCWs. Health system barriers in Malawi and other African countries include shortages of essential resources for prevention such as gloves and disinfectant, shortages of trained personnel, and lack of adequate staff training and supervision (Talashek 2007; Reis 2005; Sadoh 2006; Walusimbi and Okonsky, 2004). On the other hand, individual HCWs barriers to HIV prevention identified in previous research include knowledge deficits and risky behaviours in their personal lives (Bongololo 2008; Talashek 2007; Ezedinachi 2002). In developing countries where necessary training and access to medical supplies are limited, universal precautions have not been implemented consistently (WHO 2003). Without data on HCW practice of universal precautions in Malawi, much remains unclear on health care worker practice of universal precautions.

From the ongoing discussion, it is clear that HCWs are at risk of occupational exposure to a number of infections. This therefore calls for a concerted effort to protect HCWs from occupational exposures to infection and promote their access to treatment, prevention, care and support services.

² Percutaneous injuries with hollow-bore, blood-filled needles carry the highest risk of infection

2.6 Negotiating multiple barriers to health services: what are some of the implications for HCWs own access?

It cannot be over emphasised that socio-cultural factors play an important part in the way people seek treatment and disease prevention measures. Perceptions about illnesses determine health seeking behaviour of people (Awusabo - Anarfi 1997. Munthali (2003) argues that men are less likely to seek health care compared with females because of socialisation but in the event that the illness is chronic there is no distinction between the sexes. Munthali (2003) continues to assert that other demographic factors such as age, education, socio-economic factors all intertwine to influence decisions regarding therapy choice. This calls for the need to use a gender lens for example, to explore HCWs access to post exposure prophylaxis.

Cost is yet another factor affecting utilisation of health services. A number of studies (Offiong, 1999; Devisch 1999; Makwiza 2004) have shown that cost may be one of the deterrent factors affecting access to health services. In a study conducted at Lighthouse Clinic in Malawi when antiretroviral therapy was provided at a fee, cost emerged as one of the major barriers to accessing and adhering to antiretroviral therapy (ART). However, there were disparities with respect to gender and age where more men were found to start ART before their children and wives (Makwiza 2004) as they could afford to pay for the treatment unlike women and children. Poverty underlined most of the reasons for not starting and or defaulting from treatment. In Zambia, it was noted that one of the reasons for the decline in national hospital attendance rates was the introduction of user fees in state delivered health services (Chabot 1998).

However, even where health services are free at the point of delivery, research has shown that patients continue to face challenges to access free health services. A study on barriers to accessing and adhering to free ART in Thyolo, a district in southern Malawi found that patients experience a number of challenges to access and adhere to ART (Makwiza 2005). Most of the barriers for example, lack of food and transport costs were rooted in poverty.

Research shows that other factors such as low staffing levels, unavailability of appropriate or essential medicines at health facilities and poor treatment of patients by HCWs all intertwine to influence access to health services. Therefore, it is important to assess health care worker access to free PEP services.

Stigma resulting from actual or feared discrimination has proved to be perhaps the most difficult obstacle to access to HIV related treatment care and support services. Most research has been conducted on stigma experienced by people living with HIV and AIDS in the health sector. However, little research has been done on the impact of stigma on health care worker's access to HIV and AIDS prevention, treatment, care and support services. The little data available show that 'internal stigma' is the single most important obstacle to HCWs accessing HIV services (WHO 2003). A study in South Africa showed that 50.5% of professionals believed that there was stigma attached to HIV in their workplaces in comparison with only 22.7 percent of non professionals (Shisana 2002). In a study in Lusaka, Zambia, Frankenberg (1997) found that some of the traditional healers were being consulted because they were near and their services were private and available without queuing. Although research has shown that better utilisation of services can best be achieved by increasing the quality of services, Kloos (1990), argues that quality is not the only determining factor as other factors including cultural definition of the illness and what is believed as the most efficacious therapy are also important (Munthali 2003). Anthropologists argue that health seeking behaviour (to a large extent) depends on peoples' understanding and interpretation of the causes of their illness (Awusabo Anarfi 1997). Hence there is need to explore the determining factors to health care worker access to PEP services.

In conclusion, it can be seen that there are several factors that determine access to health care among different groups of people. Different groups of people experience different barriers in accessing treatment. Understanding the problems HCWs face in accessing post exposure prophylaxis (PEP) can make significant contributions to tailoring interventions to improve their access to other HIV and AIDS related health services.

2.7 Post exposure prophylaxis (PEP)

The Government of Malawi has implemented several programmes to manage the HIV and Aids epidemic. One such intervention is post exposure prophylaxis (PEP)³, a short term antiretroviral treatment to reduce the likelihood of HIV infection after potential exposure (WHO 2008).

Although no large prospective randomised controlled trials have been performed to determine the efficacy of occupational post exposure prophylaxis, it is assumed to be efficacious if initiated within 72 hours of suspected exposure (MoH 2005). Much of the evidence for prescribing PEP derives from Centre for Disease Control (CDC) case control study of occupational exposure in HCWs. A retrospective study of 33 HCWs with occupationally acquired HIV, compared to 665 controls, demonstrated an 81% reduction in the risk of HIV infection in those who took zidovudine as prophylaxis for 28 days following exposure. The study had some limitations including the relatively small number of cases compared to controls and the retrospective design making it difficult to control for known and unknown factors that contribute to HIV transmission (Cardo 1997).

Other data from studies on vertical transmission of HIV show that prescription of antiretroviral medication can prevent human to human transmission of HIV. A number of studies have shown that the prescription of antiretroviral drugs to mother and infant has been proven to significantly reduce mother to child transmission (Connor 1994; Mofenson 1999; Sperling 1996; Wade 1998). A WHO (2006) report argues that PEP can serve to increase staff motivation among people infected with HIV and may help to retain staff concerned about the risk of HIV exposure in the workplace.

In addition, recent prospective observational cohort studies on the use of PEP following sexual exposure to HIV may provide evidence for its efficacy (Fisher 2006; Schecter 2004).

³ In Malawi, PEP dose includes Zidovudine (AZT) (300 mg) and Lamivudine (3CT) (150 mg) for 30 days.

In a study done in Brazil on the use of PEPSE in high risk HIV seronegative homosexual men, (Schechter 2004) showed that those taking PEP had significantly fewer seroconversions to HIV than those who did not (0.6 versus 4.2%). However, results from PEPSE studies cannot be directly applied to occupational HIV exposure as there may be confounding factors related to the reasons why people do or do not receive PEP in these circumstances (Hamlyn 2007).

While preventive measures are supposed to work, sometimes they fail due to reasons such as the preventive medicine was not compatible with the person, the person did not finish the dosage or the drug had expired (Munthali 2003). In cases where the treatment is known to have failed most people are unlikely to access the preventive treatment. Failure of PEP to prevent HIV infection in HCWs has been reported in a number of cases (Puro 1995; Beltrami 2000; Jochimsen 1997). In developing countries the proportion of HCWs offered PEP after a sharp injury is poorly documented and often assumed negligible (Prüss-Üstün 2003). Van Oosterhout (2007) found that only one of the 28 nurses who had an occupational injury at Queen Elizabeth Central hospital in 2004 sought advice for post exposure prophylaxis. Data shows that many HCWs remain ignorant about correct use of PEP and the need for urgent assessment in the case of an exposure to HIV (Hamlyn 2007). There is need to properly document, monitor and evaluate HCWs access to PEP in Malawi.

Post exposure prophylaxis, as is the case with most HIV medications, has unpleasant serious side effects that can make it difficult to finish the dose. The most common side effects from PEP medications are general nausea, fatigue, vomiting and headache (Cichocki 2006). Studies have shown that HIV negative subjects receiving antiretroviral drugs as PEP are more likely to experience side effects than subjects taking the same medication for treatment of HIV (Braitstein 2002; Quirino 2000). Drug intolerance and regimen complexity are factors affecting adherence to PEP and causing interruptions to approximately 50% of HCWs (Puro 2004). In another study about 22% of those receiving PEP stopped taking the medication before completing the dosage because of side effects (Cichocki 2006).

In conclusion, it is clear that not much research has been done in Malawi, nor in the region and the world over on health care worker occupational post exposure prophylaxis. Rey (2000) argues that although recommendations on the use of PEP have been issued in a number of countries, differences exist and several issues remain controversial. There is need for more research on PEP in Malawi.

2.8 Conceptual Framework

The study used the Health Belief Model (HBM) and the symbolic interactionism to help understand HCW behaviour with respect to their access to post exposure prophylaxis and practise of universal precautions. The Health Belief Model explains how individual perceptions about risk influences variations in risk behaviour. The model further argues that individuals will adopt preventive measures against particular risks if they see themselves as susceptible to health threats perceived to have serious consequences. By extension, the model proposes that an individual is more likely to take an action where the benefits of taking the preventative action is seen to outweigh the perceived costs (Rosenstock 1974; Brown 1999) of not taking such preventive action(s). For example, PEP just like all antiretroviral drugs, has negative side effects which may out weigh the benefits of accessing or continuing with the PEP dosage. In addition, there are a number of conditions that one has to fulfil to continue with PEP. Some of the actions associated with PEP, or lack of some actions may implicitly or explicitly disclose a HCW's HIV serostatus. An HIV positive status is often associated with immoral conduct or promiscuity and AIDS continues to be a disease of great stigma and emotional stress. Thus, the perceptions that their access to PEP can reveal their HIV status or that they may experience negative side effects is most likely to make most HCWs shun PEP. In addition, where the HCWs feel that their practising of infection prevention guidelines will not be rewarding for example, if they feel that they are less likely to contract infections or that their practising of infection prevention will attract negative responses or that it will reduce their efficiency, they are less likely to follow the IP guidelines. Therefore, the HBM can be used to explain HCW access to PEP and adoption of HIV prevention strategies against occupational exposure.

Symbolic interactionism, a broad theoretical perspective within sociology, argues that behavior is guided by an active construction of reality using subjective interpretations (symbols) of our interactions with the world. The theory asserts that through our regularized social interactions (our roles) we make sense of ourselves: we look to our environment and the information inherent in it to understand how we should behave in these roles (Lindsey 1998). A role is a set of associated meanings and behavioural expectations that guide interactions between individuals and depend upon the nature of a relationship (Burke and Reitzes 1981). Expectations associated with a role are guided in part by shared cultural norms and in part by the idiosyncrasies of individual negotiations between people (Brown 2009). As such, every role is unique in practice. Brown (2006) continues to argue that roles provide a sense of identity because people use roles as basic conceptual tools in thinking about self – we become the roles that we play.

Symbolic interactionism holds the principle of meaning as central in human behavior. The theory states that humans act toward people and things based upon the meanings that they have given to those people or things (Griffin, 1997). Thus society is considered to be socially constructed through human interpretation (Berger and Luckmann 1967; Blumer 1969). Therefore, this theory can help to understand why HCWs would shun PEP even when they know that PEP can help to prevent seroconversion in case of HIV exposure. Furthermore, the theory can help to understand why some HCWs would not follow universal precaution guidelines even where the materials are available. The theory insists that there is need to carefully look at how individuals interact, how they interpret their own and other people's actions and the consequences of those actions for the larger group (Blumer 1969; Frank 1988). When we make choices about our interactions with other people for example, we may be said to be acting rationally. Kornblum (2008) asserts that other forces are likely to shape our actions. Coleman (1990) cited in Stark (2007) argues that much of what is ordinarily described as irrational is merely so because observers have not discovered the point of view of the actor from which the action is rational. Some forms of communication give information without speaking.

For example, where a HCW is dressed with all the protective materials the patient or client may interpret that he or she is infectious such that the HCW is avoiding him or her for fear of being infected. Therefore, the symbolic interactionism theory offers us an opportunity to understand how HCWs define their situations and understand why they fail to access PEP and or practise universal precautions even where the materials are available.

The HIV epidemic has increased HCWs risk of occupational exposure to infections. The Malawi Government through the Ministry of Health (MoH) introduced a number of interventions such as PEP to help ensure continued availability of HCWs for the Malawi population. It is important that HCWs access PEP to prevent contraction of HIV from occupational exposures. The two theories have attempted to explain HCWs actions with regard to access to PEP as well as their practising of universal precautions in the face of HIV. While there appears to be high knowledge about HIV there seem to be no relation between knowledge and access to PEP as well as practising of infection prevention. Given our earlier discussion on the social imbeddedness of behaviour this is perhaps not surprising. Nettleton (2001) argues that behaviour associated with HIV transmission is shaped by significant social and cultural concerns other than health. The two theories have helped to understand factors for utilisation or under utilisation of PEP and practising of universal precautions among health care workers in Mchinji.

CHAPTER 3- RESEARCH METHODOLOGY

3.0 Introduction

This study adopted a methodology from a national study conducted in eight districts across the country where Mchinji was one of the eight districts. The study districts for the main study were Lilongwe, Mchinji, Thyolo, Mzimba, Nkhatabay, Salima, Blantyre and Machinga. The main objective of the national study was to explore coverage levels of HCWs accessing HIV testing and counselling (HTC), post exposure prophylaxis (PEP) and antiretroviral therapy (ART) services in Malawi.

3.1 Study location

The study was conducted in Mchinji district situated in the central region in Malawi. The district is located 110 kilometres (km) west of Lilongwe city and 12 km east of the Zambian border post of Mwami. The district shares international boundaries with Zambia to the west and Mozambique to the south. Projected population based on the 1998 Population and Housing Census for the year 2007 shows a population of 440,162 where 220,237 were male (National Statistical Office 1998) . The district has a total of fifteen established static health facilities. Although the 2007 HIV and syphilis sero-survey does not estimate district level HIV prevalence, the two sites in the district showed that HIV prevalence at the district (Boma) was 8.8% and 6.3% in rural areas. The overall HIV estimated prevalence in the central region was 10.7% (MoH 2007).

3.3 Study design

The study used both qualitative and quantitative methods during data collection. The study was done in two phases using qualitative methods in the first phase and quantitative methods in the second phase. The qualitative method used in-depth interviews to collect data from HCWs. Qualitative data was collected in August 2006. The information generated from the in-depth interviews helped to develop quantitative survey questions and informed interventions to promote HCW access to PEP and practice universal precautions. The quantitative method used researcher administered questionnaires with both open and closed ended questions.

The questionnaire was pre- tested at Mitundu Rural Hospital in Lilongwe and data collection for the quantitative phase was in April 2007.

3.4 Study respondents

Respondents in this study were HCWs. There is no single definition of a HCW. The WHO report (2006) defines HCWs as people engaged in activities whose primary intent is to enhance health. This is a broad definition which includes mothers looking after their patients, and other unpaid carers in the health work force. However, this study focused on people trained and engaged in paid activities. In this study, HCWs referred to clinical care providers (medical doctors, clinical officers and medical assistants); nursing and midwifery providers (excluding auxiliary nurses); technical support staff (laboratory technicians, radiographers, dental assistants and pharmacists) and Health Surveillance Assistants (HSAs). Although an identifiable group, HCWs consist of a range of medical and paramedical personnel with varying levels of exposure, perception of risk and attitudes to occupational exposure (Awusabo Asare 1997). Understanding differences between these groups in terms of how they make decisions around accessing PEP and following universal precautions to infection prevention is fundamental to tailoring targeted and appropriate interventions to prevent health care worker occupational exposure to HIV and AIDS.

3.5 Recruitment of respondents and Sampling methodology

The District Health Officer (DHO) for Mchinji facilitated identification and recruitment of respondents in Mchinji during both phases. The DHO appointed an individual to support the research team with logistics in all the study sites. This facilitator helped to introduce the study team in all the study facilities. Respondents and study sites in the qualitative phase were purposively sampled to ensure representation from each cadre and gender. In-depth interviews were conducted with HCWs from Mchinji District Hospital, Nkhwazi Health Centre and Kapiri mission rural hospital which is CHAM while as the other two are government. Nkhwazi Health Centre and Kapiri mission rural hospital are situated 47 km and 56 km from the district hospital, respectively.

The qualitative approach was useful in giving insights to understand how and why people in this regard HCWs think and behave in the ways they do (Pope and Mays 1990). From the qualitative interviews, the study documented perceptions, attitudes and experiences from the HCWs on their access to PEP and their practising of universal precautions.

In the survey, study facilities were also purposively sampled. However, in each selected health facility, HCWs were proportionately sampled in each cadre to ensure representation. Selection of HCWs for interviews was done after stratifying by cadre at each study facility. The HCWs were listed according to cadre and then according to gender and were randomly selected from each cadre. The number of HCWs selected for the survey was proportional to the number of HCWs in that cadre by gender at that study site.

3.6.0 Sample size calculation

Each phase had a different sample size.

3.6.1 Sample size calculation in qualitative sample

For the qualitative phase, the researchers continued to interview respondents until saturation point, when no new information was coming from the respondents. A total of 30 HCWs (20 females and 10 males) were interviewed from the three health facilities.

3.6.2 Sample size calculation in quantitative sample

The sample size for the quantitative phase was based on the sample size calculation of the national study from which this study was developed. The minimum sample size for the national study was determined using the standard formula estimating sample size for a single proportion. The formula below was adapted from Bartlett et al (2001).

$$n = \frac{K \times ((P(1-P) \times Z^2))}{d^2}$$

Where:

- n is the desired sample size
- P is proportion of the population having a particular characteristic of interest, in this case the proportion of health workers accessing PEP. Since a single proportion is required, we used a value of 0.1 or 10%
- e is the required size of standard error, set at 5% (0.05)
- Z is standard normal deviate normally set at 1.96 for the 95% confidence interval

Given confidence level = 95%, absolute width of confidence interval around the estimate = 5%, proportion of the population having a particular characteristic of interest, in this case the proportion of HCWs accessing the services⁴. Since a single proportion was required, and the level of access to services was unknown, the study used a safety value of 0.5 or 50% to get the maximum sample size and design effect of 3. Then the required minimum number of HCWs for the national study was 953. Therefore, a minimum sample size of 120 was set for each of the 8 districts. However, for the purposes of this study, sample size for Mchinji district was increased to 140 so as to get more insights and allow further analysis at district level.

3.7 Data collection tools

In-depth interviews, a key tool in qualitative research (Britten 1995) and a questionnaire were the main tools for data collection in qualitative and quantitative phases respectively.

⁴ The services of focus in the national study were; Post exposure Prophylaxis (PEP); Anti retroviral Therapy (ART) and HIV Testing and Counselling (HTC).

Both study instruments included questions on understanding of HIV transmission among HCWs and knowledge of PEP as well as experiences of occupational exposure to HIV. The study did not have its own data collection tools as such it used some questions from the checklist and the questionnaire from the study tools for the main study. (See appendix section).

3.8 Interviewers

The researcher in conjunction with another researcher from REACH Trust recorded all in depth interviews. Both have experience in conducting sensitive research topics which involve interviewing patients living with HIV, policy makers, HCW and the general community in both rural and urban settings. To ensure a high quality of recorded interviews, the researchers checked all recording materials before every interview. Interviews were either in Chichewa or English depending on the flexibility of the respondent. However, transcription was done in English while preserving local meanings by leaving the words which do not have equivalent meaning in English in their original form.

The core research team members from the national study checked the transcripts and provided feedback on the quality of transcription. (See the annex section for the study team).

A team of six research assistants helped with data collection during the quantitative phase. All research assistants were university graduates with experience in conducting multimethod research topics. They were all trained for one week in the survey methodology and administration of the questionnaire. Pre-testing of survey methodology and the survey tool was done during the training session.

3.9 Analysis of data

The in-depth contextual information gathered during the qualitative phase captured the actual voices of HCWs. A framework of analysis was developed using objectives and

themes identified in the initial problem analysis. A framework approach (Spencer et al 2003) through the use of MAXQDA software facilitated qualitative data analysis.

The researcher revised the framework of analysis to include any additional themes and sub themes that emerged from the data. Contrasting themes and similar themes and sub themes as well as supporting quotes were drawn. Analysis also considered any similarities and differences with regard to gender and cadre of the respondents.

All data from the survey were double entered and validated using Epi Info 6.04b. The researcher used Statistical Package Software for Social Science (SPSS) to analyse data. Research questions guided the analysis process. Significance testing of proportional data was done using Pearson's Chi – square where a P value of less than 0.05 was considered statistically significant.

3.10 Possible limitations and quality control

The study was part of a larger study where the sample size was determined based on that study. The researcher did not do specific sample calculation for this study. However, the researcher adjusted the sample from 120 to 140 to take into account non responses. The sample size could not be increased further due to limited resources.

Furthermore, certain cadres did not have adequate numbers as such those cadres were grouped into one category without taking into account their specific cadres for example, medical assistants, clinical officers and medical doctors were grouped as clinicians. This might have affected the associations done for such specific cadres.

In addition, clients were not available during the study even after follow up which affected reaching the predetermined sample size for the study. However, the study managed to run some analysis to answer the study objectives.

Given the sensitive nature of discussing HIV-related issues, the researcher anticipated that some respondents may resort to giving false information or refuse to participate in the study. This was a possible source of bias in the study. Recruitment of skilled research assistants with experience in conducting multi-method research, including building trust with study participants helped to reduce this bias. No respondent refused to participate in the study.

3.11 Consent and confidentiality

The National Health Sciences Research Committee, an institutional review board that approves health related studies in Malawi approved the national study. At the beginning of each interview, the interviewers obtained written consent from the respondent. Participation in the study was voluntary; respondents did not receive any incentive.

All interviews were conducted in a private room in or near the health facility. No names or identifying information were recorded on the audiotape or on the questionnaire. For qualitative data, a coding system was developed so that each interview tape had a unique identity (ID) that had key demographic elements of the interviewee while still protecting their confidentiality. All data were kept securely in a lockable cabinet with access only to the researchers.

CHAPTER 4- RESULTS

4.0 Introduction

Study findings from both qualitative and quantitative phases will be presented simultaneously. In the qualitative phase respondents were drawn from Nkhwazi health centre, Kapiri Mission Rural Hospital located 47 km and 56 km from the district hospital respectively and Mchinji district hospital. The questionnaire was administered to HCWs from the district hospital and Kapiri Rural mission hospital in addition to four other health facilities namely; Tembwe health centre, Mkanda health centre, Guillime health centre and Kochilira Rural Hospital, situated 26 km, 43 km, 24 km, and 22 km respectively from the district hospital.

From the quantitative phase a total of 128 respondents were interviewed (see *Table 1*). The other respondents could not be interviewed because some were attending workshops within and or outside Mchinji, some had gone to attend a funeral and others were just too busy to be available for interviews.

Table 1 : Respondents drawn from different study sites

Health facility	Respondents interviewed	Percentage
Mchinji District Hospital	53	41
Kapiri Rural Mission Hospital	24	19
Guillime Health centre	15	12
Mkanda Health Centre	12	9.3
Tembwe Health Centre	12	9.3
Kochilira Health Centre	12	9.3
Total	128	100%

Table 1 shows that most respondents in the quantitative phase were drawn from the district hospital.

4.1 Respondents' socio-demographics from the survey

This section presents the sex, age, marital status, educational qualifications and cadres of respondents. Out of 128 respondents 52% were male and 48% were female. Most respondents were below 40 years of age (see *Figure 1*):

Figure 1: Age distribution of respondents (n=128)

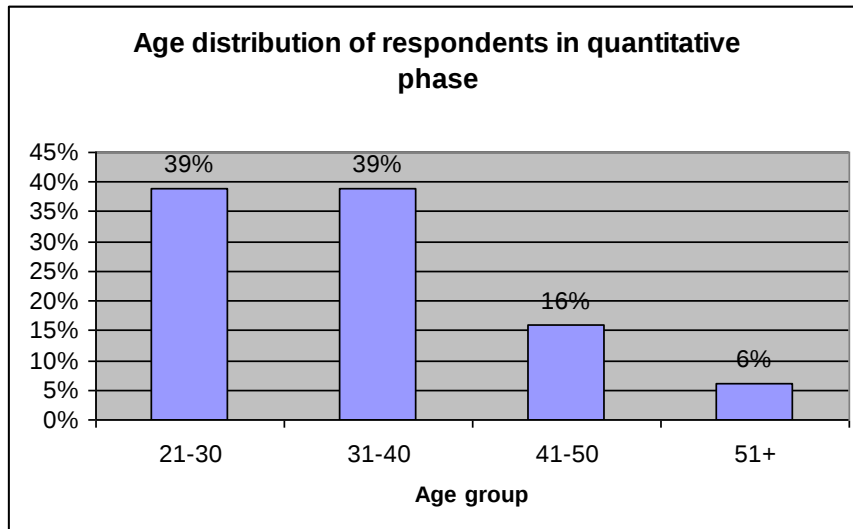


Figure 1 shows that most respondents were youthful aged between 21 and 40 years. This is similar to the national age demographics where the majority of the population is youthful. Furthermore, most respondents (98%) were working full time within their respective workplaces; the 2% who were working on part time basis were all in the 51+ age group.

In addition, most respondents (70%) were married during the time of the study (see *Table 2*)

Table 2 : Demographics of respondents (n=128)

Cadre		Marital Status		Education Qualification	
Cadre	Percent	Marital Status	Percent	Qualification	Percent
HSA	48	Married	70	Primary	0.8
Nurses	29.9	Never married	18.8	Junior certificate	25.8
Clinician**	15	Widowed	7	Malawi Certificate of Education	45
Technician*	7.1	Divorced	3	College certificate	21.7%
		Separated	1	University studies without a degree	4.2%
Total			100%	University degree	2.5
Total					100%

** Comprises clinical officers, medical assistants and medical doctors

* Includes pharmacy assistants, laboratory technicians, radiographers and dental assistants

4.2 Demographics for respondents in the qualitative phase

A total of 30 HCWs were interviewed during the qualitative phase. At 30 the study had reached saturation point where no new information was coming from the respondents. At the time of the qualitative study, most respondents were married. All respondents had attended some formal education where the highest qualification was a university degree and the lowest was primary school leaving certificate. The respondents' average age was 33 and the maximum age was 43. Most respondents were recruited from the district hospital. There were no HSAs at Kapiri Mission Rural Hospital during the time of the study. Health surveillance assistants are deployed to CHAM facilities from the District Health Office (DHO).

4.3 Health care worker knowledge and perceptions on HIV and AIDS

The study also collected data on health care worker knowledge and perceptions on HIV and AIDS. Most respondents 66% (n=128) reported that the commonest mode of HIV transmission among HCWs in Malawi is through unprotected sexual contact. In addition, qualitative interviews showed that most HCWs engage in unprotected sex that put them at risk of HIV (see Box 1).

Box 1

.....If you can take a health care worker and another person from the village you will see that those who indulge in unprotected sexual intercourse [more] are health care workers compared to [other] people.

Clinician at Mchinji District Hospital

Furthermore, most respondents, 59% indicated that lower cadres are more likely to contract the virus thorough unprotected sex than other cadres. In depth interviews showed that males from higher cadres tend to lure female junior HCWs to have sex with them in exchange of cash or other favours taking advantage of the female junior workers' low rank and low salaries.

4.4 Health care worker perception of occupational risk to HIV

Ninety eight percent (n=128) reported that HCWs are at risk of occupational exposure to HIV. Although most respondents from the qualitative interviews also noted that HCWs are at risk of occupational exposure, some respondents showed scepticism on health care worker risk to occupational exposure. Most of the arguments of those respondents who doubted health care worker occupational HIV risk showed that they lacked knowledge on HCW risk to occupational exposure (see Box 2).

Box 2

But truly speaking I don't think that in hospitals we are getting HIV.... I am not familiar with that. But if at all health care workers are getting HIV, it is through sexual transmission.

Nurse at Kapiri Mission Rural Hospital

Quantitative data showed that 87% (n=128) indicated that there are some cadres which are at a higher risk of occupational exposure than other cadres.

Seventy percent indicated that nurses are at high risk of occupational exposure to HIV because of the nature of a nurse's job which demands constant contact with patients when compared to other cadres. Most respondents (68%) reported that the labour ward is the ward most likely to put HCWs at high risk of exposure to HIV. For those respondents (13%) who noted that no cadre is at a higher risk to HIV occupational exposure than other cadres reported that the work that HCWs do is related and risky.

On the other hand, qualitative interviews showed most respondents perceived that HCWs from the lower cadres (HSAs and patient attendants) were at higher risk of contracting HIV through occupational exposure than other cadres because they have low levels of understanding in terms of universal precautions and HIV and AIDS. Furthermore, some respondents reported that with the scarcity of HCWs some low cadres perform procedures with no prior training (see Box 3).

Box 3

Here we have a lot of patient attendants because of shortage of nurses. And these patient attendants also work as nurses, they give injections, they administer drips..... They are working but are doing so blindly.

Nurse at Kapiri Mission Rural Hospital

I would say the maids, the hospital servants... these are more susceptible to catching HIV. This is because of their lack of (low)...level of understanding.

Clinician at Mchinji district hospital

Most respondents, 84%, indicated that HCWs in Mchinji were afraid of occupational exposures to HIV. Qualitative data shows that most HCWs take several measures such as doubling gloves when performing some procedures to protect themselves from occupational exposure (see Box 4).

Box 4

.....yes they are afraid that is why they follow precautions (universal precautions). For example, you can find others doubling the gloves when they are doing some procedures... They are afraid because when they have contracted the virus... it does not have treatment.

Clinician at Kapiri Mission rural hospital

Respondents were also asked if they would have fear to perform a number of activities on a client with HIV and AIDS. Qualitative data showed that most respondents feared handling HIV positive patients. Over half of the respondents feared performing surgical or invasive procedures on a client with HIV compared to caring for an HIV positive patient (see *Table 3*). However, when the cadre, sex and age of the respondents were considered separately using chi square, there was no significant relationship with the fear to perform surgical operations.

Table 3 : Fear of HIV transmission (n=127)

Activity	Have Fear
Performing surgical or invasive procedure(s) on a client – HIV status unknown	52%
Putting a drip on someone with signs of HIV infection	50%
Dressing wounds of a person with HIV and AIDS	46%
Giving an injection to a person with HIV and AIDS	45%
Caring for a person with HIV and AIDS	37%

Table 3 illustrates that very few respondents feared caring for a person with HIV and AIDS compared to performing surgical procedures on a client whose HIV status is not known.

4.5 Health care worker experience with occupational exposure

Results from the survey indicate that 36 % (n= 128) had ever experienced an occupational exposure in the past twelve months. Most of those who reported to have ever experienced occupational exposures, 52% were female. Quantitative data shows that some cadres reported more exposures than other cadres (see *Table 4*). Respondents in other cadres like nurses, clinicians, laboratory and dental assistants reported more occupational exposures than other cadres. However, when sex, cadre, age and education of the respondents were run separately using chi- square, there was no significant relationship.

Table 4 : HCW experience of occupational exposure by cadre

Cadre	Ever experienced an occupational exposure	N
Laboratory and dental Assistants	83%	6
Clinicians	41%	19
Nurse	41%	34
Health Surveillance Assistant	30%	59
Pharmacy Assistant	0%	2
	Total	120

Table 4 shows that occupational exposures were common among laboratory and dental technicians. In addition, qualitative data indicate that most of the HCWs who reported to have ever experienced an occupational exposure were from senior cadres especially nurses and clinicians. From the interviews, it was clear that occupational exposures bring psychological problems to the individual HCW. Majority of respondents indicated that experiencing an occupational exposure is like receiving a death sentence (see Box 5).

Box 5

After pricking myself with a needle, I felt bad and I could be going there where the patient was [the patient was admitted] to ask him questions now and again. Are you married? Do you have children? I was afraid that maybe this man has the virus and maybe I had contracted the virus from him.

Nurse at district hospital.

I knew that I was HIV negative, but after I pricked myself, I was just crying. I was thinking about the child I had wanted to administer a drip. The child was very sick. So I was thinking: I am sure this child can be HIV positive. I was just crying. I even knocked off at the same time..... I was afraid. I thought I would be ashamed when I am discovered with HIV.getting HIV through a needle prick is very painful.

Nurse at Kapiri Mission Rural Hospital

Quantitative data showed that when the cadre, sex and age of the respondents were considered separately using chi square, there was no significant relationship with respect to experiencing occupational exposure (see *Table 5*).

Table 5: Results comparing ever experienced an exposure with sex, cadre and education of respondents.

Sex	Ever experienced an occupational exposure	Test statistic
Male	48%	X ² =0.740,P=0.390
Female	52%	
Cadre		
HAS	40%	X ² =3.561,P=0.313
Nurse	32%	
Clinician	16%	
Technician	11%	
Education		
Primary	0.02%	X ² =7.183,P=0.205
Secondary	86%	
Post secondary	12%	

Table 5 shows that there was no significant relationship between experiencing an occupational exposure and the cadre, sex and or education level of the respondent.

Quantitative data showed that most injuries were due to needle pricks while giving an injection (see *Figure 2*). Similarly, qualitative data showed that the common type of occupational exposures were needle prick injuries. In addition, 13% (n=44) reported to have ever experienced a fluid splash in the past 12 months. The maternity ward registered all reported fluid splashes.

Figure 2 Distribution of procedures causing exposures (n=42)

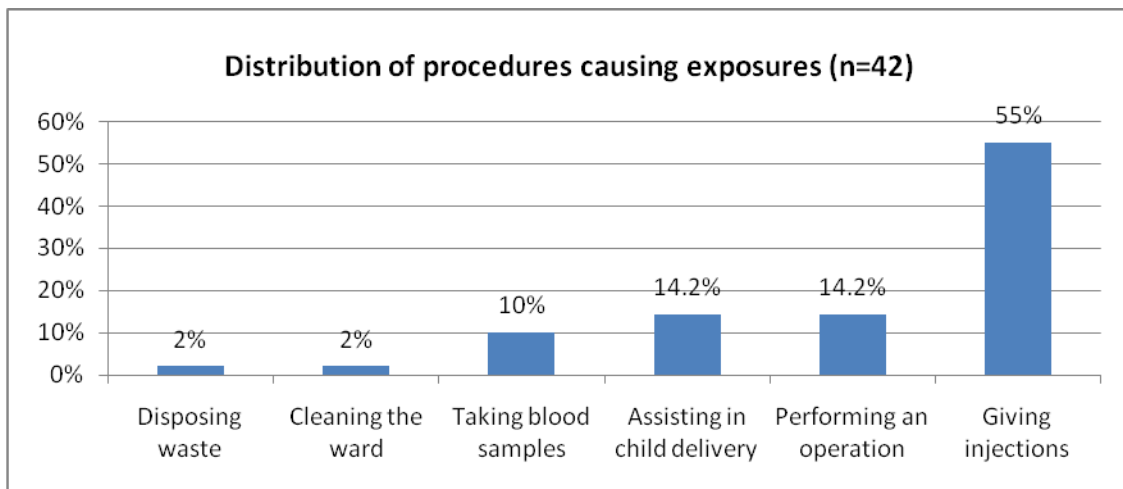


Figure 2 shows that most respondents experienced occupational exposures while giving an injection.

Furthermore, quantitative data shows that 56% (n=127) indicated that they knew of a health care worker who had ever experienced an occupational exposure in the past twelve months. Likewise in the qualitative interviews most respondents reported that they knew colleagues who had ever experienced an occupational exposure in the past twelve months (see Box 6).

Box 6

One maid came to me complaining, saying she had a needle prick when she was preparing the sharps to throw them into the incinerator. She came to me for help but I had nothing to say because I know nothing about it.

Dental assistant at Mchinji district hospital.

Actually she is a nurse so from what she told me she said she was injecting a patient so after she had finished, the tray which she had put all the instruments, was falling so she wanted it not to fall and it so happened that she touched the needle which she had used on the patient which was not covered [and she pricked herself]

HSA at Mchinji district hospital

4.6 Reporting and management of exposure

Both qualitative and quantitative data showed poor management and reporting of occupational exposures. Qualitative interviews showed that most respondents did not know where to report and were not conversant with the steps on what to do after occupational exposure. Only 13% (n=42) of those who experienced an occupational exposure indicated that they reported the exposure (see *Figure 3*). When the cadre, sex and age of the respondents were considered separately using chi square, there was no significant relationship on the management and reporting of occupational exposure (details not shown here).

Figure 3 Activity taken soon after occupational exposure (n=42)

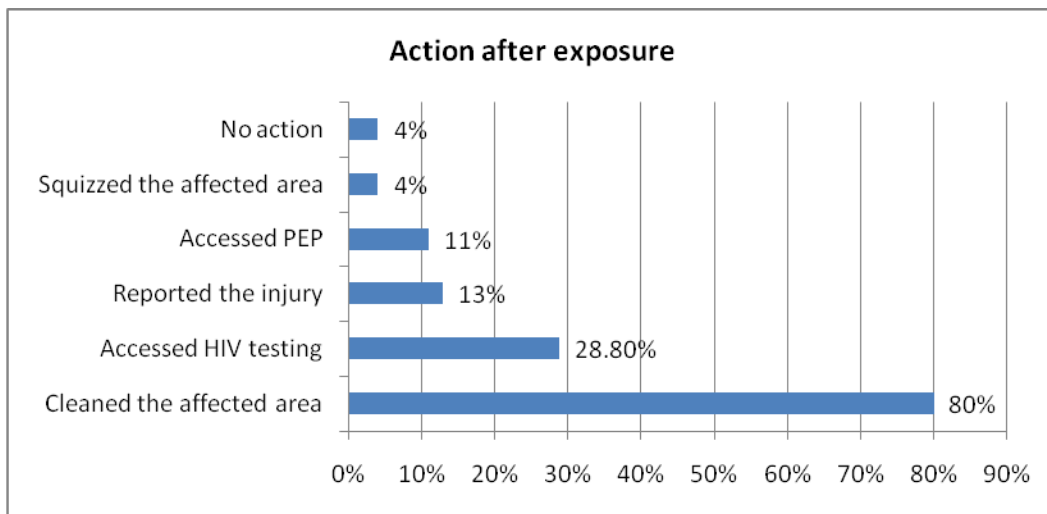


Figure 3 illustrates that cleaning of the exposure area was the most frequently performed first aid measure in most exposures. Eighty percent cleaned the exposure site with water.

Other measures of cleaning the affected area were rinsing with methylated spirit. However, four percent took no action after experiencing an occupational exposure.

The majority of respondents from the qualitative phase indicated that most HCWs did not report occupational exposures for fear that they will be asked to go for HIV testing. In addition, some respondents reported that there is no compensation after experiencing an occupational exposure. As such most HCWs did not see the importance of reporting an occupational exposure (see Box 7).

Box 7

There is no compensation that we get after experiencing an occupational exposure. Our friends (from other industries) receive something when they experience an injury while on duty. Even if you report then what do you get?

Nurse at Mchinji district hospital

4.7 HCW knowledge and perceptions about post exposure prophylaxis

Most respondents [88% (n=128)] knew post exposure prophylaxis and 83% noted that PEP was effective. However, 19% indicated that they could not use PEP after an occupational exposure. Most of the respondents who noted that they could not use PEP after occupational exposure (70%) reported that they did not know PEP. Eighty percent of those who indicated that they did not know PEP were HSAs; 13% were clinicians and 7% were nurses. Only one clinician in the quantitative phase reported that he could not access PEP for fear of negative side effects. Chi square test show that level of education influenced knowledge of PEP ($X^2 = 9.156$, $P = 0.027$). Some respondents in the qualitative phase reported that they could not access PEP because they were already HIV positive as such not eligible for PEP. Others noted that the procedures for accessing PEP did not offer confidentiality as such they could not access PEP for fear that other HCWs will know their HIV status. Quantitative data showed that there were no significant differences between study sites which had PEP and sites without PEP on knowledge, attitudes and perceptions about post exposure prophylaxis (details not shown).

Qualitative data shows that there were knowledge gaps on PEP. Only those respondents especially those working in the ART clinic displayed good knowledge of PEP.

Some qualitative interviews showed that there were mixed attitudes and perceptions amongst HCWs on post exposure prophylaxis. Most respondents believed that PEP is effective because it is the government which introduced and recommended it for HCWs. Others felt that PEP can effectively prevent transmission of the virus after occupational exposure. However, some argued that HIV has no cure and they doubted if PEP could be effective. In most cases those who were uncertain about PEP, had little or no knowledge about PEP (see *Box 8*).

Box 8

We just believe that PEP is effective. The government cannot give us something which is not effective.

Nurse at Mchinji district hospital

We are told that HIV has no cure. Then what about this PEP?

Technician at Mchinji district hospital

4.8.0 Challenges to access post exposure prophylaxis

Both quantitative and qualitative data showed that there were a number of challenges that HCWs face to access post exposure prophylaxis. During the time of the study, there were only two facilities providing PEP, namely, Kapiri Mission Rural Hospital and Mchinji District Hospital owned and run by CHAM and government, respectively. Unavailability of PEP, fear of a positive HIV result and lack of knowledge were the most frequently mentioned challenges HCWs faced to access PEP (see *Table 6*). The study showed that some respondents from health facilities that had PEP did not know that PEP was available or did not know PEP altogether. For example, 21% (n=24) of respondents from Kapiri reported that they did not know PEP; 13% (n=53) from Mchinji District Hospital mentioned that they did not know PEP and some other 13 % noted that there was no PEP at the district hospital. However, most challenges were similar across study sites in Mchinji (see *table 6*).

Table 6: Challenges health care workers face to access PEP (n= 128)

Challenge	Percentages
Unavailability of post exposure prophylaxis	23%
Afraid of negative side effects	22%
Lack of knowledge	16%
Unavailability of test kits	9%
Fear going for an HIV test	9%
Afraid of discrimination	8%
Lack of confidentiality	5%
Lack of compensation	2%
Other	6%

Table 6 above shows that most respondents perceived unavailability of post exposure prophylaxis as the major barrier to health care worker access to post exposure prophylaxis. Other challenges included the tedious process one has to follow to access PEP and unavailability of skilled staff to prescribe PEP.

Qualitative data showed that even though PEP was available at their place of work, some HCWs faced a number of challenges to access PEP. It was clear that availability of PEP did not translate into utilisation (see Section 4.8.1 to 4.8.5).

4.8.1 Unavailability of post exposure prophylaxis drugs

Most respondents complained about the unavailability of post exposure prophylaxis drugs in their workplaces. For example, a respondent from Nkhwazi health centre located 47 kilometres from the district hospital noted that most of the times HCWs used their own transport to go to the district hospital to access post exposure prophylaxis. She pointed out that this sometimes leads to delays to access post exposure prophylaxis (see Box 9).

Box 9

Lack of PEP prophylaxis is the major challenge as health care workers have to travel to the district hospital to access post exposure prophylaxis. These drugs have a time limit within which they can be accessed after occupational exposure. As such if the 72 hours elapse before reaching the district hospital then the health care worker cannot access treatment.

Nurse at Nkhwazi health centre

4.8.2 Lack of knowledge about post exposure prophylaxis

Qualitative data showed that there were many misconceptions about the function of PEP where some respondents especially HSAs mentioned that PEP is a cure for HIV. In some cases, even where PEP was available, some respondents did not know where to access PEP. Some respondents argued that HCWs lack access to reliable and up to date information not only on PEP but other developments in their profession. Some nurses and clinicians from the district hospital argued that not enough studies have demonstrated that PEP is effective. It was observed that that this lack of knowledge could contribute to stigma where some HCWs mistake PEP drugs with ART thinking that if a HCW is on PEP then he or she is HIV positive (see Box 10).

Box 10

Studies have not shown very clearly that after being pierced by a sharp object which was being used on somebody who is reactive and you receive post exposure prophylaxis you will not get the virus.

Nurse at Mchinji district hospital

We have the drugs here but they have even expired. It is not that HCWs are not being pricked. The thing is that they feel if they take PEP it is just for a short period of time and it ends there. The end result is not known. To them they feel it is useless.....

Nurse at the district hospital

... and also stigma. People feel that maybe this one is taking PEP then he or she is reactive.

Nurse at the district hospital

I don't have much knowledge (about post exposure prophylaxis) because I have not seen anyone here taking PEP. I don't know (PEP) exactly.... Even myself I don't even understand how this PEP works.

Nurse at Kapiri mission rural hospital

4.8.3 Lack of confidentiality

Most respondents explained that access to PEP does not offer confidentiality of HIV test results. Some trained cadres noted that some individuals in authority had access to the PEP register thereby compromising the confidentiality of the test results.

Most respondents especially nurses and clinicians complained that the process of accessing PEP itself does not offer confidentiality of test results. Other respondents noted that when a HCW who has experienced an occupational exposure to HIV, does not access PEP, people start to speculate that exposed HCW is HIV positive. Some respondents argued that sometimes a health care worker start PEP before testing especially where it is felt that testing for HIV before initiating treatment could delay starting of PEP. Some respondents noted that where the HCW discontinues PEP immediately after testing, fellow workers tend to gossip and think that the discontinuance of the PEP treatment is as a result of an HIV positive test result of the HCW (see Box 11).

Box 11

The thing is many people in authority have access to the post exposure prophylaxis register. In the register they also record the reason for starting and /or discontinuing with treatment (PEP). Some people cannot keep confidential HIV test results of some work mates.

Technician at district the hospital

Some people may not want their status to be known, so they just shun the service. They may get a finger prick and think 'I am ok'. So they don't want a third person to be involved... since we regard HIV as a stigmatised disease.

Clinician at Mchinji district hospital

4.8.4 Fear of testing for HIV

Most respondents indicated that the requirement of the provider to test for HIV is one of the challenges to access post exposure prophylaxis. Most respondents reported that most HCWs after experiencing an occupational exposure, tended to categorise their occupational exposure as low risk so as to skip HIV testing, consequently PEP. Apart from knowing the HIV status of the provider, it is also necessary to know the HIV status of the patient so as to determine if the provider is indeed at risk of occupational exposure.

It was clear that most HCWs did not feel comfortable to know their HIV status because of an occupational exposure fearing an HIV positive test which would prove that they were already HIV positive before the occupational exposure. Most nurses and clinicians feared going for HIV testing after occupational exposure because they were not comfortable to be tested by an HSA. These nurses and clinicians reported that they regarded HSAs as non medical personnel with little or no understanding of the importance of medical confidentiality. Some respondents resorted to test the patients only to establish if the patient was HIV positive or not so that they are sure whether they are at risk of occupational exposure to HIV. For example, a female nurse indicated that after experiencing an occupational exposure, she resorted to testing the blood of the source of infection (patient) secretly so as to exempt herself from going for HIV testing if the patient tests HIV negative (see Box 12).

Box 12

(After experiencing a needle prick)I took the blood sample of the child without the mother's knowledge and went to the lab with the child's blood. It was negative.

Nurse at Kapiri Mission Rural Hospital.

The clinician will say you have known the status of the patient now how about yourself? Then they don't go [to the clinician] again. That is why most of them do not go for PEP. That is where the problem with this PEP lies. And the PEP has been expiring here without HCW using it.

Nurse at the district hospital

But you know we are human beings. People are afraid to go there (for HIV testing) and test HIV positive. They are supposed to go but they are not going. I can say we are supposed to go but we are not going.

Nurse at the district hospital

4.8.5 Refusal of some patients to test for HIV

Some respondents also expressed concern over the challenge of convincing patients to go for testing to establish the HIV status of the source of infection (see box 13).

Box 13

You have to test the blood of the patient for HIV. But there are some patients who do not understand the implications so they tend to refuse to get tested.

Clinician at Mchinji district hospital

4.8.6 Absence of test kits

Some respondents explained that shortage of test kits is one of the challenges HCWs face to access PEP. The study was done during a period when the country was experiencing shortage of test kits. Most health centres had run out of test kits such that some HTC sites had temporarily closed (see Box 14).

Box 14

There is the challenge of the availability of test kits. We have been having problems with test kits .They have been out of stock... on and off. So with no test kits you can't test yourself and the patient

Clinician at Mchinji district hospital

4.9 Health care worker perception of effectiveness of HIV prevention methods

This study collected data on health care worker perceptions on different HIV prevention methods. Quantitative data shows that 87% (n=128) indicated that being faithful to one partner is the most effective method of preventing the HIV and AIDS epidemic (see Figure 4).

Figure 4 Effectiveness of HIV prevention methods

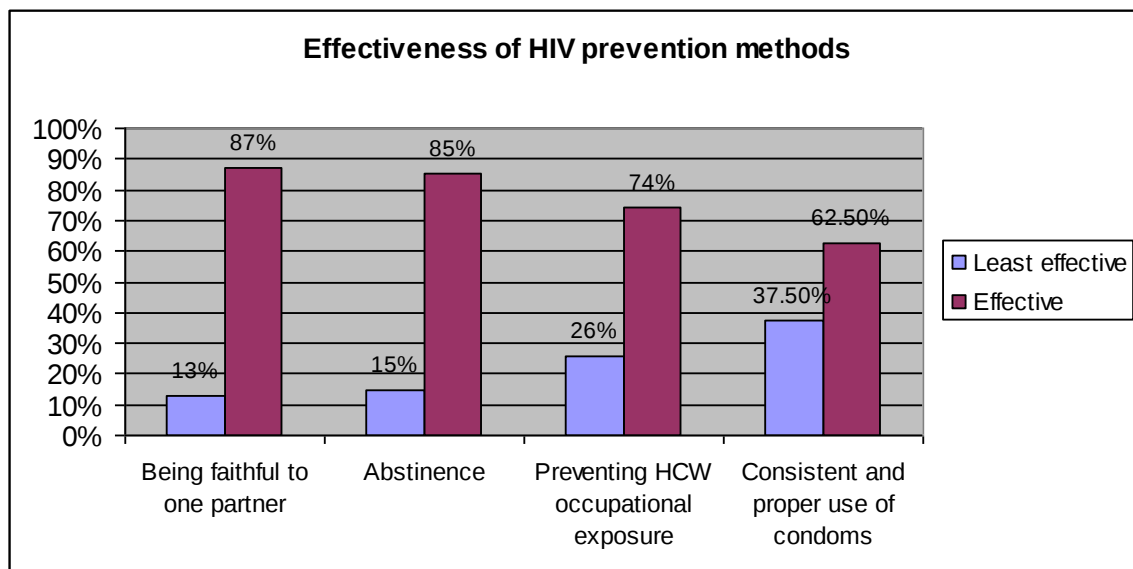


Figure 4 shows that on average most HCWs ranked consistent and proper use of condoms as the least effective HIV prevention method among HCWs.

Furthermore, most married respondents (62.5%) indicated that condoms were an effective HIV prevention method. Relatively more male respondents (56%) than female respondents noted that consistent and proper use of condoms was an effective method of HIV prevention. However, using chi square, data shows that there were no significant relationships between the sex, cadre and marital status of the respondent to ranking of the prevention methods. Although most respondents agreed that effective and proper use of condoms is an effective way of preventing HIV, some qualitative interviews showed that most HCWs do not use condoms although they engage in sexual relationships (see Box 15).

Box 15

....if you can take a health care worker and another person from the village you will see that those who indulge in unprotected sexual intercourse [more] are health care workers compared to people who don't know what they are doing. I don't know ... (laughs). May be it's a feeling of I don't care. May be it's the feeling that this disease if for everybody.
Clinician at Mchinji District hospital

In addition, most respondents thought that being faithful to one partner is the most effective and practical method to prevent HIV. However, some respondents noted that the major challenge with being faithful to one partner is that one cannot guarantee that the other partner is being faithful especially for those who are married. Some respondents indicated that condoms were the most effective method to protect oneself from HIV. However, there was consensus that consistent and proper condom use is not practical especially in marriage. In addition, some respondents indicated that they do not have access to condoms mainly because of the policies of the health facility with respect to the facility owners' opinion on condoms and condom use (see Box 16).

Box 16

At this hospital we don't put condoms in open places because it is a Roman Catholic institution; they don't encourage the use of condoms. The owners of the hospital are the Catholic sisters and they put condoms in the pharmacy, the same sisters are the ones working in the pharmacy.
Nurse at Kapiri rural hospital

4.10 Trainings respondents had attended

Most respondents indicated that they had never attended training on PEP. Only 13% (n=128) indicated that they had ever attended training on post exposure prophylaxis. Eighty one percent of those who had attended PEP training were male. On average, more clinicians 26 % (n=19) reported to have attended training on PEP than any other cadre. For example, only 8% (n= 61) of the HSAs had attended training on PEP; 22% (n=9) of the technicians was trained, lastly, 11% (n=38) of the nurses reported to have ever attended training on PEP. However, some respondents indicated that they had attended a number of other trainings⁵ (see *Figure 5*).

Figure 5 Types of trainings respondents ever attended

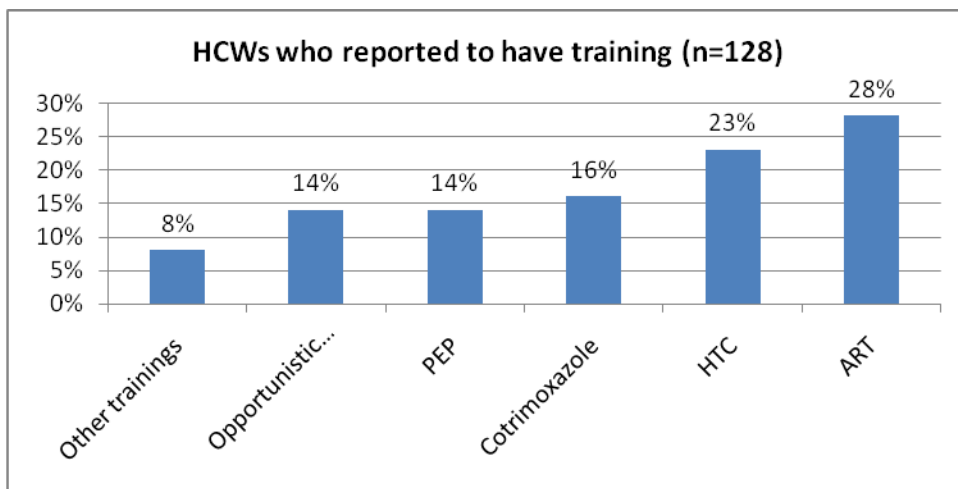


Figure 5 shows that some HCWs had attended more than one HIV and AIDS related training. A total of 14% reported that they had ever attended some training on opportunistic infections. Other trainings included sexually transmitted infections and home based care.

Qualitative data shows that although some respondents in the survey reported to have attended more HIV related trainings, a respondent working part time reported that most HCWs working part time were usually left out of training.

⁵ Other trainings included: Post exposure prophylaxis; Opportunistic infection (OI); Cotrimoxazole Prophylaxis Therapy (CPT); Voluntary Counselling and Testing (VCT); Antiretroviral Therapy (ART)

4.11 Health care worker practising of infection prevention guidelines.

Quantitative data show that HCWs did not always follow universal precaution guidelines when on duty as stipulated in the universal precautions guidelines (see *Table 7*).

Table 7: Level of practice of infection prevention guidelines (n=128)

IP guideline	Level of practice (%)			
	Always	Sometimes	Never	Total
Use of safety boxes	86	7	7	100%
Putting on closed shoes	64	31	5	100%
Hand Hygiene*	61	32	7	100%
Decontaminating instruments after use	48	5	47	100%
Wear gloves	41	38	20	100%
Putting on an apron	29.1	35.4	35.4	100%
Putting on mask	13	38	49	100%
Putting on goggles in theatre	6	24	70	100%

* Washing hands before and after attending to a patient using soap or hand rub

Table 7 above shows that there were differences in the way HCWs practised universal guidelines. Some guidelines were specific to some cadres for example, putting on goggles in theatre varied with respect to cadre ($X^2 = 34.11$, $P = 0.000$). On average, putting on goggles was common among nurses and clinicians. Furthermore, there were also differences among the different cadres in practising hand hygiene (see *Figures 6 and 7*).

Figure 6: Practising of hand hygiene before and after attending to a patient by cadre

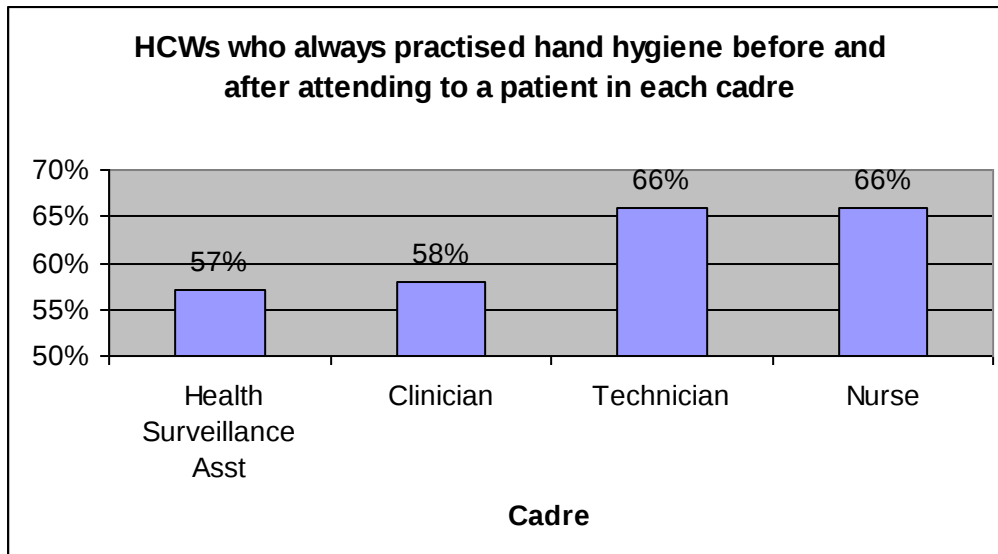


Figure 6 shows that not all cadres adhered to hand hygiene before and after attending to a patient. However, the difference was not significant ($X^2= 9.702$, $P= 0.138$).

Figure 7: HCWs who always put on closed shoes on duty in each cadre

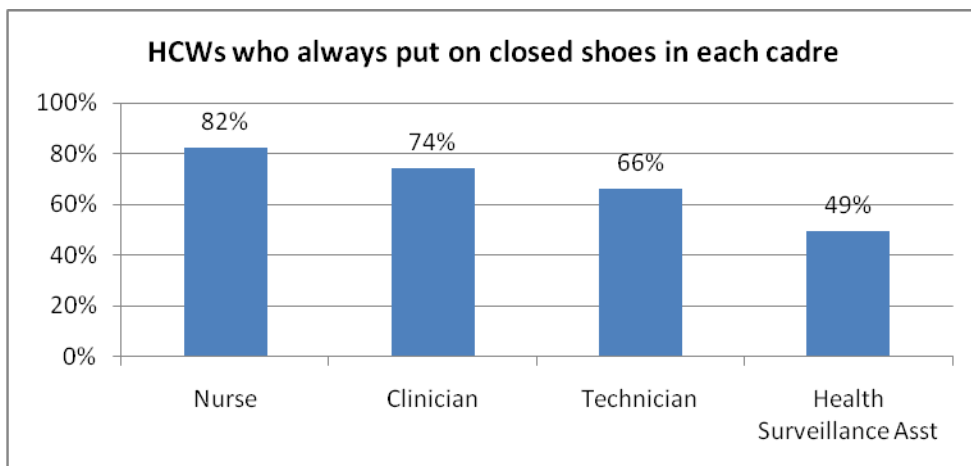


Figure 7 above demonstrates that few HSAs reported that they always put on closed shoes when they are on duty as stipulated in infection prevention guidelines. Most of the HSAs work in the community where supervision of infection prevention is rare.

Although there were differences in practising universal guidelines among the different cadres as shown in figures five and six, there were no significant differences between HCWs working in CHAM and government owned facilities in Mchinji.

In addition, qualitative data also shows that most respondents did not always follow the universal precautions when required. Some respondents reported that they did not know some of the procedures as stipulated in the universal guidelines. Other HCWs reported that they had come up with some strategies to protect themselves from exposure or skip guidelines. Some respondents indicated that HCWs tended to double their gloves when handling patients if they feel that the procedure might put them at risk of occupational exposure. Furthermore, some respondents indicated that they use intuition on whether to follow the universal precaution guidelines (see Box 17).

Box 17

As you know there are guidelines we have to follow. Of course there are other patients who are established to be HIV positive. Now when treating someone [whom you are 100% sure is HIV infected] you make sure you follow all the precautions. I talked about the work pressure that sometimes makes us not follow the precautions. But when dealing with people infected with HIV we make sure we follow all the precautions (unlike when treating patients without HIV signs and symptoms).

Clinician at Mchinji district hospital

4.12 Challenges to practice universal precautions from qualitative interviews

There were two major challenges HCWs faced to practice universal precautions. Firstly, most respondents mentioned lack of materials as one of the major barriers. Some respondents indicated that when protective materials are in short supply, there is a tendency to prioritise some wards such as maternity ward. This leaves other wards without or with few protective materials.

In addition, some respondents reported that some HCWs did not know how to use safety boxes thereby putting both the cleaners and other HCWs at risk of occupational exposure (see Box 18).

Box 18

We don't have a lot of safety boxes most of the times. Like in the injection room as I am talking now, we don't have the safety boxes. And a lot of people don't know how to use the safety boxes.

Nurse at Kapiri mission rural hospital

Secondly, some respondents noted that heavy work load at times prevents them from following universal precautions. It was noted that most HCWs tend to have many patients to attend to. In a bid to attend to every patient in time they tend to skip some guidelines (See Box 19).

Box 19

Sometimes we don't implement them due to pressure [workload], but we are supposed to be doing them. The rule is that we should wash hands after dealing with every patient. We are also told to use the hand rub. So one may not have the hand rub. But we have to deal with a lot of patients so you may not wash your hands..... We are supposed to be here, after that to be there, after that to be there in one day. So we do a lot of things in a short period of time. So you may just think that you didn't contaminate yourself and continue working.

Clinician at Mchinji district hospital

CHAPTER 5: DISCUSSION AND CONCLUSION

5.0 Discussion

This study collected data on health care worker occupational exposure and practice of universal precautions in Mchinji district. The findings indicate that there was poor compliance in practising universal precautions amongst most HCWs. There were a number of factors leading to inconsistent practising of universal precautions. Although the study was done for Mchinji district only, the views expressed are similar to those documented in other parts of sub Saharan Africa as documented by Talashek 2007 and Mkuye 1991 and in Latin America as reported by Garcia (1994). First, the high vacancy rates leading to high work load, unavailability of materials and insufficient supply of protective materials partly accounted for the poor compliance in practising universal precautions in Mchinji.

Secondly, there was a gap between knowledge and practice of universal precautions. Although most of them acknowledged the existence of guidelines to prevent occupational exposure, most of those HCWs interviewed did not always follow the guidelines. Research shows that both health system and individual HCW barriers hinder HIV prevention among HCWs (Talashek 2007). The issue of inadequate supply of materials is not peculiar to Mchinji district but to other districts of Malawi and other developing countries as well (Mkuye 1991). However, research shows that availability may not necessarily translate to use. Studies in Africa and Latin America showed that even where gloves were available they were not used in some cases because the health care worker felt that their use was not necessary or wasted their time (Anna 1990; Mkuye 1991; Garcia 1994). There is need to recognise the challenges HCWs face to practice universal precautions and address them as a strategy in response to HIV.

Some respondents reported selective practice of universal precautions where they felt not at risk of occupational exposure. Among the specific preventive recommendations made by the World Health Organisation (WHO) and Centre for Disease Control (CDC) is that gloves

be worn by all HCWs during all procedures where they may come into contact with patients blood and body fluids (WHO 1991; CDC 1988). Some respondents in Mchinji reported following universal guidelines such as putting on gloves on clients who are established to be HIV positive unlike when handling patients without symptoms of HIV infection. The use of intuition to practice universal guidelines not only exposes HCWs to occupational exposure but also the patients that they handle.

Selective practising of universal precautions has been documented in a number of studies in Malawi (Talashek 2007; Bongololo 2008; Bongololo 2007). Selective practice of universal precautions shows that most patients do not know their rights that they are supposed to make sure that a health care worker is using protective materials whenever required before handling them. In addition, this finding highlights a knowledge gap among most HCWs who are supposed to use protective materials before handling any patient regardless of the relationship with the patient. Although working under pressure with heavy workload, HCWs need regular supervision and infection prevention trainings to reduce selective practicing of the guidelines. HCWs need to understand that precautions are for the protection of both themselves as well as the patients. For the population under study more in depth studies are needed to develop strategies that can be implemented to improve health care worker knowledge and compliance of universal guidelines with respect to the importance to their health as well as the health of the patients they handle.

The study shows that most respondents felt that the commonest mode of HIV transmission among HCWs is unprotected sexual intercourse. Most respondents minimised health care worker HIV occupational risk exposure. This can partly explain the poor compliance to universal precautions. Apart from improving health care worker practice of universal precautions, there is need to strengthen the prevention of occupational exposure as well as on behaviour change both among HCWs.

Furthermore, the study shows that some low cadres perform some procedures in which they do not have any training. Some HSAs reported that sometimes nurses do shift some tasks to them.

In most instances, this practice of ‘task shifting’ is usually informal whereby some cadres give untrained cadres such as HSAs tasks on which they have no training. Another study in Malawi documented ‘informal’ task shifting (Bongololo 2008). This informal task shifting put these cadres at risk of occupational exposure as they have little knowledge on how best to do the procedures. The presence of some lower cadres doing technical procedures points to the health care worker crisis in Malawi as well as an opportunity to offer training to some HCWs from lower cadres who can go to school to upgrade their knowledge and skills. Most of the lower cadres acquire skills over time on the job. Low cadre HCWs need to have information on the importance of practising universal precautions procedures. The extent to which universal precaution procedures are incorporated into their training needs to be reviewed. This revision can offer the Ministry of Health in Malawi an opportunity to improve the quality of service delivery and address the health care worker shortage in Malawi.

The study results show that most HCWs in Mchinji were knowledgeable about HIV and AIDS, however, some respondents more especially HSAs displayed poor knowledge about PEP. Some respondents were sceptical on the efficacy of PEP and others displayed ignorance about PEP even where PEP was available within their workplace. This is a serious shortcoming in a country where 70% of all medical admissions in health facilities are related to HIV and AIDS (MoH 2005). A number of reasons may be responsible for the poor knowledge and perceptions about PEP. During the time of the study, PEP was available in only two facilities all of which were hospitals. In most health facilities there were no facilities such as internet and library to boost HCWs access information in the field of health. This is likely to reflect the very low levels of reported training on PEP among HCWs in Mchinji and poor knowledge of PEP.

All these challenges intertwine to complicate HCW access to PEP. These findings indicate a need for training and education of all HCWs on the availability and the function of PEP. The ‘Care of carer policy’ in Malawi stipulates that a HCW has a right to access PEP and other prophylaxis and ART for occupational exposure and infection respectively.

It is the duty of government and its development partners to make this right a reality. HCWs need to know their rights and consequently demand their rights as HCWs.

An aspect of post exposure management that was inadequate was the reporting of occupational exposures to relevant authorities. This is also reflected in the low numbers of HCWs who accessed PEP after occupational exposure. Research from other countries show that reporting of occupational exposures is low (Stewardson 2002; Kennedy 1999; Cutter 2004). There is a need to develop formal reporting structures and decentralise PEP to health centres. This can help to reduce the time between exposure and access to post exposure prophylaxis. Furthermore, there is need to emphasise the value of reporting occupational exposures in time among HCWs to relevant authorities. The study recommends that monitoring and evaluation of occupational exposures need to be on going in all health facilities in Mchinji district.

In addition, the study shows that HCWs are at risk of occupational exposure. Although only thirty six percent indicated to have ever experienced an occupational exposure, the risk cannot be underestimated. Moreover, this is likely to be an underestimation of the true incidence as respondents might not have recalled injuries sustained several months earlier especially where these were regarded as minor or might not have wanted to report them to the researcher. Unavailability of protective materials, severe understaffing, and high patient burden are likely to have contributed to the burden of occupational exposures. However, results from the study need to be approached cautiously as not all HCWs from Mchinji were interviewed. All the same, the sample size for the study was reasonable to draw conclusions for Mchinji district. Another category of HCWs at risk of occupational exposure to HIV are patient attendants. Although the study did not interview patient attendants, it assumes a similar situation. Patient attendants do most of the cleaning in health facilities in Malawi, however, in other instances they also perform some procedures albeit unofficially putting themselves and the patients they handle at risk of exposure to infection.

All these findings are in line with both the HBM and symbolic interactionism theory. Both these theories can help to explain the results from the study. For example, results showed that some respondents reported selective practice of universal precautions. It was noted that some HCWs did follow the guidelines when they felt that the clients they were to handle might be infectious. The HBM argues that individuals will adopt preventive measures against particular risks if they see themselves as susceptible to health threats perceived to have serious consequences. As such using this theory, the study can propose the need to have prevention strategies that clearly show HCWs susceptibility to infection within their workplaces and the need to prevent the infections. Furthermore, results show that some respondents did not follow universal guidelines even where the materials were available. Just by observing this it might be seen as irrational. The symbolic interaction theory argues for the need to go beyond observing actions to understand actions from the point of view of the actors. Therefore, going beyond observation to understand the actions from the actor's point of view, we see that some HCWs skipped universal precautions because they had long queues of clients such that they felt that if they practice universal precautions they might end up not seeing all the clients. By extension the symbolic interactionism theory can guide to develop strategies to improve HCW practice of universal precautions such as addressing issues of high vacancy rates which do have a bearing on heavy work load.

Furthermore, the study results show that even where some HCWs knew PEP and it was available within their workplaces they did not access it. Some respondents reported that there was no confidentiality when it came to test results of the HCW if he or she tests for HIV to start or to continue with PEP. The HBM argues that a person is more likely to take an action where the benefits of taking the preventive action is seen to outweigh the perceived costs. By extension it can be said that some HCWs felt it was beneficial not to access PEP than to compromise the confidentiality of their HIV test results.

5.1 Conclusion

In conclusion, the study has shown that HCWs in Mchinji are accessing PEP and practice infection prevention guidelines. However, they continue to face challenges to access post exposure prophylaxis and practice universal precautions.

Access to PEP takes place in an environment shrouded with fear, stigma and lack of confidentiality. The study findings concur with previous studies in Malawi (Talashek 2007; Van Oosterhout 2007; WHO 2008). It is most likely that some HCWs fail to access PEP for fear that their confidentiality will be compromised in the course of their accessing PEP. In addition, it is less likely that some HCWs practised universal precautions in cases where they felt that following the guidelines would delay them or attract negative comments from the client and or other people. For PEP to be an effective HIV prevention tool there is need to integrate it into a comprehensive HIV prevention programme.

Most HCWs in Mchinji continue to work in a challenging environment with little or no protective materials. They have devised their own ways in the face of HIV, scarcity of protective materials and heavy work load, for example, guessing the HIV status of a client just by how the patient looks and doubling of gloves. Data shows that double gloving is advocated as a number of studies have shown lower perforation rate for the inner glove of double gloved-personnel compared with the one glove of the single-gloved personnel (Dodds 1990; Matta 1988; Bennet 1991). Lack of consistent use of universal precautions as related to inadequate administrative support and heavy work load has also been documented in high resource countries like United States and Europe (Beekmann 2005; McCaughey 2006). In Malawi we have the care of carer policy as a guide to provision of services to HCWs. The government alone cannot manage to implement the policy. There is need for continued stakeholders support towards translating the policy into practice. Recruitment of low cadres should continue but it should be supported with regular trainings and monitoring and evaluation at all levels of health service delivery.

Acknowledgment from HCWs on the need for HCWs to have access to other sources of information and to have access to current information in the field of health is a finding that has not been reported previously. Resources for health in Malawi are needed for HCWs to protect themselves and their clients and or patients from HIV in the occupational setting. It would be retrogressive if HCWs contract HIV when handling patients, because of lack of materials or lack of knowledge or negligence.

It cannot be over emphasised that HCWs are a vital tool for a comprehensive response to HIV epidemic. The study has also illustrated the need for creation of a favourable environment for HCWs to develop a culture of practising infection prevention and reporting of occupational exposures. Programmes to assist HCWs deal with the challenging work environment need to be integrated into other related programmes on HIV targeting HCWs.

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6.0 APPENDICES

Appendix 1: Check list for health care worker study- qualitative phase

IDEAS ABOUT HIV TRANSMISSION

These next questions concern your ideas about how HIV is transmitted

- 1 What are the most common modes of transmission of HIV among health care workers?
- 2 Do you think there are some people who are more likely to get HIV than other people?
- 3 Who is more likely to get HIV, and why?
- 4 Do you think that it is difficult for HCW to protect themselves from HIV - Why?
- 6 Are health care workers in this hospital afraid of getting accidental injuries while at work?
- 7 Which cadre is most likely to suffer from occupational exposure?
- 8 Are you afraid of getting accidental injuries while at work and why?
- 9 Do health care workers discuss with their colleagues about their risks and fears?
- 10 Do you know the guidelines stipulated in the universal precautions?
- 11 Do you implement these universal guidelines on precautions?
- 12 What are the most important steps to protect HCW against occupational injury?
- 13 How difficult or easy is it to practice universal precautions?

POST EXPOSURE PROPHYLAXIS

The following questions are on your opinions, knowledge, understanding and experiences on PEP, occupational risk exposure to HIV and universal precautions.

- 1 Have there been instances in this facility when a health care worker(s) experienced an occupational injury - Can you tell me what happened?
- 2 Do health care workers report occupational injuries?
- 3 What structures are there where HCW can report injuries?
- 6 What happens to HCW who experience injuries at work?
- 7 What are your responsibilities as a HCW?
- 8 Have you ever experienced an injury while performing your duties in the past 12 months?
 - What was the type of the injury?

- What were the circumstances of the injury- what happened next?
- 9 Are there measures in this place to protect health care workers after they have an occupational injury?

PEP

1. Knowledge and understanding
2. Reporting structures for PEP
3. Steps to access PEP
4. Eligibility
5. Dosage
6. Regimens used
7. How PEP function in the body?
8. Side effects
9. Impact on prevention

10 Do you know of any health care worker who has accessed PEP at this facility?

12 Can you tell me about it and how did you hear about it?

13 What problems do health care workers face when they want to access PEP?

14 Do some HCW use own protective, or any other personal equipment here at the hospital? Why?

15 Where do health care workers access care i.e. when they fall sick? Why?

16 Does delegation of duties take place here?

- Circumstance
- Who usually delegates duties and to who?
- What kind of duties delegated?

5. DISCLOSURE AND STIGMA

I would like to ask you some questions about people living with HIV and AIDS and their access to health services.

1 Do you think that people living with HIV and AIDS generally keep their status a secret - why?

2 In your opinion do you think there are reasons why people around an individual with HIV must be told -Why?

4 Is there anyone you know in this health facility who has HIV but has not yet shown signs and symptoms of AIDS? How did you first know that he/she has HIV?

5 Have you ever come across people who have been badly treated because of their HIV/AIDS status? If yes what happened to them?

7 Are there HCW whom you know who disclose their HIV status?

- How do they disclose their status?
- Do they face any problems because of their status?

What would you say about the following statements?

1 HIV is punishment from God

2 HIV is punishment for bad behaviour.

3 PLHA are responsible for their situation

4 Promiscuous men are the ones who spread HIV in the community.

5 Women prostitutes are the ones spreading HIV in the community.

6 Do you feel that because of your work you are at a special risk of getting HIV?

7 Would feel ashamed if you were infected with HIV

8 Would feel ashamed if someone in your family was infected with HIV

6. GENERAL QUESTIONS ON HIV/AIDS COUNSELLING AND TESTING

The following questions are about your opinions and or experiences on HIV counselling and testing.

1 What are the main reasons why people go for HIV testing?

2 Do you think for HCW it is easier or more difficult to go for HCT than it is for other people? Why?

3 Do you know fellow HCW at this health facility or else where who have gone for testing

- what was their experience?
- how did you know about this?

4 Are there any challenges that HCW face to access HCT?

5 Do HCW prefer self HIV testing? Why?

6 Have you ever gone for CT? **IF YES TO Q 6 GO TO SECTION 7**

7. PERSONAL EXPERIENCE WITH HCT (For those who have indicated they have ever gone for CT in section 6 above)

I would like to ask you about your experiences concerning HIV testing and counselling

1 What motivated you to seek an HIV test? (Circle all that apply)

2 How many times have you accessed CT?

3 Where were you tested? Why that facility?

4 Can you tell me about what happened when you had a test, starting from how you decided, then where you went, whom you saw, how it took place, how you found out the results, and what happened afterwards?

5 Did you discuss your experience with someone, before or after you were tested?

6 Did you face any challenges in accessing HIV counselling and testing?
What were the challenges?

7 Disclosure of status

Who disclosed to

Why

Any problems/advantages following disclosure

8. GENERAL QUESTIONS ON ART

I would like to ask you questions concerning your knowledge on ARV drugs.

1. What do you understand about ART?

- How they knew about it.
- Treatment or cure
- How long/often it has to be taken
- Effects on the body/expected impact
- Side effects
- Importance
- Impact of ART on prevention

2. Why do people decide to be taking these drugs?

3. Do ARV drugs have a different effect depending on the person taking them?

4. Do you know any health care workers taking these drugs?

5. Can you tell me about that person's experience – any change(s)?

6 What are the barriers in general that HCWs face when they want to access ART?

7 Do health care workers prefer to consult at a facility away from their place of work?
Why?

8 What do you think could be done in order for more HCWs to access ART?
(Possible interventions/activities to encourage HCWs to access ART)

If participant has disclosed HIV-positive status under the previous sections, then it would be possible to explore his/her individual experience

Since you have mentioned that you are HIV positive, I am going to ask you some questions about treatment.

1 Are you eligible for ART?

2 where do you go to access ART?

3 What were the reasons that made you to access ART?

4 Are there particular problems that you face in accessing ART – what are they?

If the respondent has not yet started ART but has disclosed an HIV positive status

5 Why have you not started taking ART?

6 Do you have plans of starting ART in the near future?

9. RECOMMENDATIONS

Now I am going to ask you to give some recommendations based on the information you have given me in the sections above on how best to improve the uptake of HIV services by HCW the custodians of the health of our nation.

In your opinion what do you think can be done to improve HCW access to HIV services?
(Break the recommendations where possible i.e. PEP, CT and ART and how to address stigma)

Appendix 2: National Study team

Name	Position	Organisation
Dr Ann Phoya	Director	Ministry of Health, Sector Wide Approach
Ireen Makwiza-Namakhoma	Senior Social Scientist	REACH Trust
Mindy Hochgesang	Monitoring and Evaluation Officer	Centres For Disease Control
Dr Sam Phiri	Director	Lighthouse
Dr Carla Obermeyer	Scientist	WHO – HIV department
Lot Nyirenda	Researcher	REACH Trust
Grace Bongololo	Researcher	REACH Trust

Appendix 3: Questionnaire for health care workers- quantitative phase