Reporting of Accidental Occupational Exposures to Blood and Body Fluids by Doctors and Nurses in the Public Primary Health Care setting of sub district F of Johannesburg metropolitan district

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DECLARATION

I, Chukwuemeka Collins Mbah, declare that this research report is my own work. It is being submitted for the degree of Master of Medicine in Family Medicine in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

……..

Chukwuemeka Collins Mbah

15th day of May, 2014

DEDICATION

To My Wife

Ekpereamaka Blessing Mbah

And to my children

Favor Mmesoma Mbah

Chimmeerem Michelle Mbah

Chimnecherem Mbah

ABSTRACT

Background: Health Care Workers (HCWs) are at risk of many blood borne infections at the workplace following injuries from sharp instruments and also from exposure of skin and mucous membranes to contaminated blood and body fluids. While the risk of exposure to blood and body fluids (BBF) among first level HCWs can be extrapolated to some degree from the literature on secondary and tertiary level HCWs, the rate of reporting of exposures and the reasons for not reporting may be very different.

Objective: The objective of this study was to determine the rate of, and reasons for underreporting of blood and body fluid exposures by doctors and nurses working in the public primary health care setting of sub district F in the Johannesburg metropolitan district.

Methods: The study was a quantitative descriptive cross sectional survey using an 18-item, self administered, anonymous questionnaire.

Results: The study population included 515 health care workers (HCWs). The response rate was 90.1%. Most of the participants were nurses (87.4%) and female (88.1%). One hundred twelve (25.2%) of the participants reported having at least one BBF exposure in the preceding 12 months. The rate of BBF exposure was 80 per 100 HCWs per year. Two hundred ninety one exposures (82.0%) were not reported. Doctors were at increased odds for not reporting BBF exposures compared to nurses (OR = 2.146; P=0.011). The most common reason given for not reporting exposures was lack of time (42.7%).

Conclusion: There is a high rate of underreporting of BBF exposures in the primary health care setting mostly due to lack of time. The rate of BBF exposure underreporting at this care level is

comparable to that at secondary and tertiary levels. There is a need to improve BBF exposure reporting among workers at primary health care level.

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ABBREVIATIONS

ANC……Ante natal clinic

BBF…… Blood and Body Fluids

BBP…….Blood Borne Pathogen

BBV……Blood Borne Virus

CDC……Centers for Disease Control and Prevention

CHC……Community Health Centre

COIDA……Compensation for Occupational Injuries and Diseases Act

EWP……Employee Wellness Programme

HBV……Hepatitis B Virus

HCV……Hepatitis C Virus

HCW……...HealthCare Worker

HIV…….Human Immune deficiency Virus

HREC…….Human Research Ethics Committee

MOU……...Maternity and Obstetrics Unit

NIOSH……National Institute for Occupational Safety and Health

NSI…….Needlestick Injury

NSSI……...Needlestick and Sharps Injury

OH……..Occupational Health

OSHA…….Occupation Safety and Health Administration

PHC…….Primary Healthcare

UK……...United Kingdom

US……....United States

WHO……World Health Organization

GLOSSARY OF TERMS

Blood and body fluid exposure*: A specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other infectious materials that results from the performance of one`s duties.

Bloodborne pathogen*: Pathogenic micro-organisms that are present in human blood and can cause disease in humans. They include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV)

Contaminated*: The presence, or the reasonably anticipated presence, of blood or other potentially infectious materials on the surface of, or in an item such as needle, sharps or medical equipment.

Health Care Workers*: Workers employed at health care settings, with or without direct care to the patients.

Professional Nurse: A nurse who has completed a four year programme at university or a nursing college. He or she is educated and competent to practice comprehensive nursing and midwifery.

Enrolled Nurse or staff nurse: A nurse who has completed a two year programme, usually at a nursing college or exited after completing two years of the university four year programme. He or she is educated and competent to practice basic nursing.

Enrolled Nurse Assistant or auxiliary nurse: A nurse who has completed a year programme or a similar course at college, or exited after completing the first year of the university four year programme. He or she is educated and competent to practice elementary nursing.

Mucocutaneous exposure: Contact of the blood or body fluid of a patient with open wound, or non intact skin of a health care worker, or splash of a patient`s blood or body fluid to mucous membrane of a health care worker.

Needlestick injury/exposure*: An injury sustained at work and related to work involving any kind of needles.

Occupational exposure*: Reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee`s duties.

Percutaneous exposure: When there is a break in the skin of a health care worker in the course of his duty caused by a contaminated needle, instrument, or other sharp object or human bite.

Primary Health Care Setting: Comprises of the entry point into the health service where essential health care services are provided. In this project, it includes health facilities rendering primary level care namely Clinics, Community Health Centres and District hospitals, which also make up the District Health System. Family physicians and family medicine registrars work in these facilities.

Clinic: An appropriately permanently equipped health facility at which a range of primary health care services are provided. It is open at least 8 hours a day at least 4 days a week.

Community Health Centre: A health facility which is open 24 hours a day, 7 days a week, at which a broad range of primary health care services are provided incuding accident and emergency , and midwifery services, but not surgery under general anesthesia.

District Hospital: A health facility at which a range of outpatient and inpatient services are offered, mostly within the scope of general medical practitioners. It has a functional operating theatre in which operations are performed regularly under general anaesthesia.

Reporting of Blood and Body Fluid exposure: Notification by a health care worker of an incident of blood and body fluid exposure to a supervisor or designated health official including the completion of relevant injury report forms.

Sharps injury or exposure*: An injury sustained at work related to work involving any kind of medical sharp objects including blades, needles, glass item, and / or any other sharps.

Standard precautions/Universal precautions: An approach to infection control and measures to prevent direct contact to human blood and certain human body fluids which are known to be infectious for bloodborne pathogens.

Seroconversion: An infection of any bloodborne pathogen caused by a blood and body fluid exposure in a health care worker.

More clinical procedures: As used in this project refers to duty posts where high risk procedures are more likely to be performed. They include surgical/gynaecology unit, maternity and obstetrics unit (MOU), casualty/treatment room, theatre, dental clinic, maternity ward, medical ward and paediatric ward.

Less clinical procedures: In this project, refers to duty posts where high risk procedures are less likely to be performed. They include the outpatient posts namely ante natal clinic, PHC clinic, outpatients department, poly clinic, HIV clinic, Immunization clinic, STI clinic, mental health clinic and family planning clinic. .

Formal training: Learning that takes place in a situation where there is a prescribed learning framework; an organized learning event or package; the presence of a designated teacher or trainer; the award of qualification or credit and the external specification of outcomes.

*Definitions are in accordance with the OSHA Regulations (Standards-29CFR) Bloodborne pathogens - 1910.1030

CHAPTER 1

INTRODUCTION

1.1. Research Question

What is the rate of reporting of accidental occupational exposures to blood and body fluids by doctors and nurses in the public primary health care setting of sub district F in the Johannesburg metropolitan district? What are their reasons for not reporting exposures?

1.2. Background

In South Africa, the first point of entry to public health services is at primary level through primary health care (PHC) clinics and community health centers (CHCs). Patients seen at this care level who require hospital admission are referred to first level or district hospitals run by generalist staff.[1] Among the generalist staff are family medicine registrars undergoing specialist training. These registrars work in the primary health care facilities and first level or district hospitals during their training.

Johannesburg metropolitan district is divided into seven sub districts named A to G (figure 1). Sub district F has fifteen public PHC clinics, one CHC and one first level hospital. It also has a tertiary hospital which provides specialist and sub- specialist care.

Key: 1 and 2 = sub district **A**; 3 and 4 = sub district **B**; 5 = sub district **C**; 6 and 10 = sub district **D**; 7 = sub district **E**; 8 and 9 = sub district **F**; 11 = sub district **G**

Figure 1.1 Map showing the sub districts of Johannesburg metropolitan district

Healthcare workers (HCWs) in these facilities and elsewhere are at risk of many blood borne infections following injuries from sharp instruments and also from mucous membrane and non intact skin exposure to contaminated blood and body fluids.

The occupational health and safety policy of the National Department of Health, NDOH, requires that employees involved in an incident that may affect their health or cause an injury, report that incident to the employer and authorized person or Occupational Health and Safety (OHS) representative as soon as possible.[2]

1.3. Rationale

Over twenty blood borne pathogens may be transmitted as a result of percutaneous injuries from sharps and from exposure of mucous membranes and non intact skin to contaminated blood or body fluids, but these injuries are primarily associated with transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV).[3]

In South Africa, as in other parts of the world, the prevalence of percutaneous injuries among healthcare workers (HCWs) is high with rates as high as 23.35% reported among HCWs at Witbank hospital.[4] Consistent with international reports, doctors and nurses are the most affected professional groups in South Africa.[4]

In the past, the main injury preventive efforts were directed at discouraging recapping needles and improving the design of sharps containers. Today, there are many sharps safety devices on the market, but unfortunately they are expensive and the value of some of them has been questioned. Successful injury prevention programs require comprehensive reporting of injuries, meticulous follow up, thorough education in use of new devices, and accurate evaluation of their effectiveness.[3] Without adequate reporting of injuries, prevention programs may not be successful. Reporting of blood and body fluid exposures not only enables the employee to receive appropriate post exposure management and compensation, but also allows accurate tracking of the rates and nature of the incidents which in turn helps in the development and evaluation of effectiveness of prevention strategies.

Both locally and internationally, there are high rates of underreporting of percutaneous and mucocutaneous injuries among HCWs. The researcher has also come across colleagues who

experienced accidental exposures to blood and body fluids but failed to report the exposures to appropriate authorities citing low risk for HIV and Hepatitis B and C, and lack of time.

As well as having the highest prevalence of percutaneous and mucocutaneous injuries among HCWs, doctors and nurses also have the highest rates of underreporting of these injuries among HCWs.[4 5 6] Among all health professionals, nurses have the highest risk for sharps related injuries in the workplace[7] and have presented the highest HIV seroconversion rates with figures around two thirds of disease seroconversion following needlestick injury.[8] Much of the work done on reporting of percutaneous and mucocutaneous injuries has focused on healthcare workers at secondary and tertiary healthcare facilities.[4 9 10] Indeed, to the best of the researcher`s knowledge no such work has been done at any primary healthcare level facility in South Africa despite the peculiarities and challenges faced by workers at this service level.

This study was therefore done with the hope that it would bring to light the peculiarities of percutaneous and mucocutaneous injury reporting in primary healthcare setting, and provide evidence on ways of improving reporting behavior so as to obtain information on the nature of the injuries. This would in turn guide stakeholders in making recommendations for new practices and devices for prevention of blood and body fluid exposures.

This has been a brief introduction to the research including the rationale for the study. The next chapter will look at a review of relevant literature while chapter three outlines the methodology employed in the study. Chapter four presents the results of the analysis of the data obtained from the study. In chapter five, the results of the study and their implications are further discussed and compared with those of similar studies done in the past. Lastly, chapter six will conclude the report with a summary of the main findings and make recommendations based on those findings.

CHAPTER 2

LITERATURE REVIEW

This chapter discusses the relevant literature.

A review of the literature on reporting of blood and body fluid exposures was carried out using databases such as PubMed, Cochrane, Medline, MedlinePlus, Google Scholar and CINAHL. The search terms included blood and body fluid exposures, needlestick injuries, sharps injuries, blood and body fluid splashes, percutaneous exposures/injuries, mucocutaneous exposures/injuries, occupational injuries, reporting, underreporting, non reporting, occupational exposures, health care workers, doctors, nurses. The reference lists of relevant studies were also searched. The search showed that the literature is replete with studies on prevalence of occupational blood and body fluid exposures. However, the literature on underreporting of blood and body fluid exposures is scant. Even more scant is the literature on studies done in South Africa. No study done in a first level healthcare facility in South Africa was found.

2.1. Introduction

Healthcare workers are frequently exposed to infection with blood borne pathogens (BBPs) through percutaneous and mucocutaneous exposures. The risks of transmission of the primary blood borne infections after exposure to blood and body fluids are 0.3%, 6-30% and 0.5% for HIV, HBV and HCV respectively.[5] Most healthcare facilities have guidelines and protocols for managing staff with accidental occupational exposure to blood and body fluids. According to the protocol (appendix 5), the injured HCW is to report the incident to the immediate supervisor who will then document the incident and refer the HCW to a doctor for counseling, risk assessment and appropriate post exposure management. Forms to be completed are Employer`s report of an

accident, W.CI.2, (appendix 6), First medical report in respect of an accident, W.CI.4, (appendix 7), and the Final/Progress report in respect of an accident, W.CI.5, (appendix 8). Other forms that may need to be completed depending on the outcome of the injury include Employer`s report of an occupational disease, W.CI.1 (E), and Progress/Final medical report in respect of an occupational disease, W.CI.26.

2.2. Burden of occupational exposures to blood and body fluids

The World Health Organization, WHO, has estimated that three million healthcare workers worldwide experience needlestick and sharps injuries every year, and that exposure to sharps in the workplace accounts for 40% of infections with HBV and HCV and 2-3% of HIV infections among HCWs.[11] Globally, an estimated 320,000 workers die annually from infectious diseases.[12] In the year 2000, 16,000 HCV, 66,000 HBV and 1,000 HIV infections may have occurred worldwide among HCWs following needlestick and sharps injuries.[13] The CDC documented 54 HCWs who acquired HIV occupationally, along with 132 possible cases. Of the 54 cases, 25 employees developed AIDS.[14] In another CDC report on a study in which data were combined from HCWs who were exposed to HIV occupationally around the world, a total of 6,498 exposures were found with 21 resulting in HIV for an average transmission rate of 0.3%.[15] The situation is worse in developing regions where as many as 47% of HBV and 45% of HCV infections in healthcare workers are attributable to percutaneous occupational exposure. [13] Increasingly frequent use of invasive techniques, application of new therapeutic methods, increase in the number of persons infected with blood borne diseases , as well as longer survival of infected individuals , all combined, keep the occupational exposure of HCWs topical.[16]

The cost of percutaneous and mucocutaneous exposures to BBF among HCWs can be classified into direct costs and indirect costs. Direct costs include costs associated with the initial and follow up treatment of exposed healthcare/ personnel, which are estimated to range from 500 US dollars to 3,000 US dollars depending on the treatment provided.[17] Even when these exposures do not result in infections, the personal and professional consequences can be devastating.[18] The indirect costs include the emotional cost associated with fear and anxiety from worrying about the possible consequences of an exposure, the lost time from work, and the societal cost associated with seroconversion including the possible loss of a worker`s services in patient care, the economic burden of medical care, and the cost of any associated litigation.[3] It has been suggested that HCWs who have needlestick and sharps injuries, NSSI, could have higher levels of anxiety and depression during their work, and experience even higher level of stress and depression after the injury which in turn could increase the risk of further sharps injuries.[19] Indeed, a study by DN Fisman[20] found that workers who sustained sharps related injuries were willing to pay 850 US dollars to avert the injury, suggesting that the costs of "intangible" aspects of worker injury, such as anxiety and distress, may equal costs associated with medical evaluation of these injuries.

Although accurate estimates of the cost of occupational exposure to blood and body fluids among South African HCWs are not available, with the highest number of individuals living with HIV (over 6 million) and the endemicity of HBV[21], coupled with an estimated 60% of patients admitted to public sector hospitals being HIV infected[22], the situation can only be graver.

2.3. Need for Reporting of occupational exposures to blood and body fluids

Traditionally, the prevention of blood and body fluid exposures has been based on the hierarchy of controls.[23] This includes hazard elimination, engineering controls through the use of safer devices, administrative controls involving development of policies on training and educating HCWs on how to limit exposure to blood and body fluids, and work practice controls.[23]

In many countries, it has not been possible to implement preventive strategies because no supporting estimates of the disease burden associated with occupational exposure to BBPs have been available.[24] Only about 50% of HCWs do report their injuries.[3] In South Africa, information on the extent of work related infectious diseases is limited due to lack of comprehensive population based estimates and only a few occupational groups with evidence of exposure to infectious pathogens are reported.[25] This has led to the introduction of the concept of Evidence- Based Prevention (EBP).[26] EBP involves the use of Root Cause Analysis,[3] a process for identifying causal factors to use in injury prevention. The CDC[3] suggests that a healthcare facility's injury prevention committee ask key questions (what happened? how did it happen? why did it happen? what can be done to prevent it from happening in the future?). The answers to these questions help in getting to the 'root' of the situation resulting in injuries or exposures, thus identifying areas for change. Such information, including the circumstances of occupational transmission of blood borne pathogens, helps in targeting and evaluating interventions.

However, much of the available occupational blood and body fluid exposure statistics use data from officially reported incidents and this may not be a true reflection of workplace events. Reporting injuries and documenting all blood and body fluid exposures is therefore essential for providing the evidence necessary to analyze prevention strategies.

2.4. Underreporting of Occupational exposures to Blood and Body Fluids

Despite the foregoing, various studies both locally and internationally have reported high rates of underreporting of percutaneous and mucocutaneous injuries among HCWs. In the UK, Thomas and Murray,[27] and Kerr et al[28] reported injury reporting rates of 9% and 31% respectively among surgeons, while in the US, Makary et al[29] reported underreporting rate of 51% among surgeons in training. These studies, however, were restricted to the surgical specialty and the results may have been affected by the homogeneity of the participants and the fact that HCWs who have the highest rates of exposure tend to report less of their exposures.[30] Similar reporting rates have also been found among nurses. Burke and Madan[31] found reporting rate of 46% among midwives. Salelkar et al[32] found reporting rate of 32% among HCWs in a tertiary care hospital in India while Askarian and Malemakan[33] found that 82% of all injuries went unreported among HCWs at a university teaching hospital in Iran. Underreporting rates of 80% among physicians and 45% among registered nurses were found by Haiduven and his colleagues[34] at a Medical Center in California although this study elicited information on the number of percutaneous and mucocutaneous injuries experienced and reported in the five years preceding the survey and as a result may have been influenced by recall bias. Similarly, among HCWs and trainees in the acute care setting at the University of Illinois Medical Center, Kessler et al[35] found that 82.7% of mucocutaneous exposures and 33% of sharps exposures were not reported. In New Zealand, an overall underreporting rate of 33% among HCWs was reported by Fullerton and Gibbons[36]

Few studies are found in the literature on occupational exposure to blood and body fluids among HCWs in South Africa. Zungu,[37] while studying nursing students at a Gauteng university found that only 8.3% of injuries had been reported. Interns in Johannesburg reported only 64% of percutaneous injuries from HIV infected patients.[38] However, these two studies are limited by

the small sample sizes of 96 and 98 respectively. Additionally, they were limited to one category of participants in a single tertiary institution. These limitations affect the generalization of their results. On the contrary, a high injury reporting rate of 86% was found by Karani[39] in a study of interns in Durban. Here also, a small sample size of 64 means that one should be careful in interpreting the results of the study. Having said that, it is also noteworthy that in the hospital surveyed by Karani there is a comprehensive orientation program for interns and strict implementation of policy and guidelines. It is not clear to what extent these limitations affected the outcome of the study though.

2.5. Reasons for not reporting occupational exposures to blood and body fluids

Several reasons have been given by HCWs for not reporting blood and body fluid exposures. Among them are lack of time, perceived low risk of the source patient`s blood, not knowing who to report to, not knowing that they have to report, dissatisfaction with reporting and follow up procedures, unwillingness to get tested, perception that the process is not confidential, perception that they could be blamed for the accident as well as stigma. In South Africa as in the rest of Africa, the issue of stigma is pervasive. Where a BBF exposure has been reported by a HCW, it is usually spoken about by colleagues in the facility and if the affected staff is not receiving PEP, inferences can easily be made about his HIV status. In a qualitative study by Marion Stevens and David Dickinson[40] in South Africa, the issue of confidentiality and stigma were quite prominent. 'I am not going to go for pre-test counseling with someone I know and work with everyday, all the results go to the infection control sister – I am not going to do this process; there is no privacy and nurses gossip' said one participant. 'I don`t want to know my status in this hospital because then everybody will know it' said another. Some HCWs stigmatized colleagues who might be HIV positive. 'If nurses are positive, I don't want to be nursed by them; that HIV

positive colleague must go home, I don`t want her here. What am I going to do in the toilet, and sharing cups?'

The studies by Haiduven et al[34] and Kessler et al[35] found that the most common reason for not reporting was the belief that the exposure was not significant. Makary et al found lack of time as the most common reason for not reporting exposures while doctors and midwives in the study by Burke and Madan[31] reported that the reporting process was too time consuming. Kennedy and his colleagues[41] found that the main reasons given by surgeons in the UK for failure to report a NSI were 'low transmission risk' and 'too time consuming'.

Common to all these studies is the fact that they were conducted among participants involved in patient care at secondary or tertiary care levels. Although a few studies have been done overseas in non hospital settings, to the researcher`s knowledge no such study has been done in a primary healthcare setting in South Africa. The risk of exposure to blood and body fluid among HCWs at this care level can be extrapolated, to some degree, from the literature on HCWs at secondary and tertiary levels. However, rates of reporting or/and underreporting of such exposures, reasons for underreporting and the awareness of reporting procedure may be very different for PHC workers. A large number of the PHC facilities in sub district F of Johannesburg metropolitan district, and indeed other sub districts, have fewer than ten employees. This results in lack of on-site infection control and employee wellness programs in these facilities which in turn may serve as a barrier to training, access, availability of safety devices, and rapid post exposure assessment and treatment. Additionally, stigma may play a bigger role here as staff members know each other too well. This leaves a gap in our knowledge on the topic. This knowledge gap is very crucial particularly in South Africa where there is an ongoing decentralization of services resulting in increased risk of BBF exposure in the PHC setting. This study was therefore aimed

at addressing this knowledge gap. To this end, the researcher hypothesized that there is a high rate of underreporting of occupational exposures to blood and body fluids by doctors and nurses in the public PHC setting in sub district F, mainly because of perceived low risk of transmission of infection and the effect of stigma.

CHAPTER 3

METHODS

This chapter presents the methodology employed in this research.

3.1. Study Aim

To determine the rate of, and reasons for underreporting of accidental occupational exposure to blood and body fluids by doctors and nurses working in public PHC facilities of sub district F of Johannesburg metropolitan district.

3.2. Study Objectives

1. To describe the socio-demographic characteristics of doctors and nurses working in public PHC facilities in sub district F of Johannesburg metropolitan district.

2. To determine the annual occurrence of accidental occupational exposure to blood and body fluids among the study participants.

3. To determine the proportion of accidental occupational exposures to blood and body fluids not reported annually.

4. To determine the participants` reasons for not reporting exposures.

5. To determine any possible association between the participants` socio-demographic characteristics and underreporting of exposures.

3.3. Study Design

The study was a quantitative descriptive cross sectional study

3.4. Study site

The study was carried out in the public PHC setting of sub district F of Johannesburg metropolitan district. The facilities (appendix 1) include fifteen local clinics, one community health center and one district hospital. These facilities provide primary level healthcare services in the sub district. All the facilities have written protocols or guidelines on reporting of accidental occupational exposures to blood and body fluids by HCWs.

3.5. Study Population

The study population included medical doctors, dentists and all categories of nurses working in the facilities. There were 56 doctors, 4 dentists and 484 nurses, giving a total study population of 544 HCWs. The nurse population included the professional nurses, the staff or enrolled nurses, and the enrolled nurse assistants otherwise known as auxilliary nurses.

3.6. Study sample

The sample size required for the study was calculated using the formula: $n = Z^2 \underline{x\ P\ x\ (1-P)}\ / C^2$ where n= minimum sample size required, P= prevalence of underreporting of blood and body fluids exposure which is 50% or 0.5 (based on report of previous studies[29 31 34 38 39]), C= significance level or acceptable error level which is 5% or 0.05 with a 95% confidence level, and Z= standard normal deviation which for 95% confidence level is 1.96 SD. Minimum sample size therefore was found to be $\underline{1.96 \times 1.96 \times 0.5 \times (1-0.5)}\ / 0.05 \times 0.05 = 384$. However, attempts were made to distribute the questionnaires to the entire study population.

3.7. Inclusion criteria

All medical doctors and dentists working in the public PHC facilities in sub district F who agreed to participate in the study.

All nurses working in the public PHC facilities in sub district F who agreed to participate in the study.

3.8. Exclusion criteria

Medical doctors and dentists working in the public PHC facilities in sub district F who were on leave at the time of the survey.

Nurses working in the public PHC facilities in sub district F who were on leave at the time of the survey.

All Allied health workers, administrative staff and other non clinical staff.

3.9. Measuring instrument

A self administered questionnaire was used to collect the required data. The questionnaire (appendix 3) was adapted from an existing CDC design[3] with demonstrated external validity[36] made for carrying out such survey (appendix 4). It has three parts.

Part 1(questions 1 to 10) collected data on the socio demographic characteristics of the participants. Part 2 (questions 11 to 15) collected information on the reporting of occupational exposures to blood and body fluids by the participants and Part 3 (questions 16 to 18) collected information on the post exposure experience of the participants who had reported an exposure to a supervisor or health official.

3.10. Pilot study

Measurement instruments are usually evaluated for validity and reliability.[42] Validity refers to the extent to which a measurement instrument actually measures what it is meant to measure.[42] It tells how close a measurement is to the truth, in other words its truthfulness or accuracy. Content validity refers to whether the instrument addresses the aim and objectives of the study. The questionnaire used in this study is a pre validated questionnaire developed by the CDC for studies as this one, hence content validity was ensured. Reliability deals with a measurement instrument`s dependability.[43] It tells whether the same result would be obtained if measurements were taken over and over again. A reliable or dependable instrument elicits the same response each time it is applied.

Part 1 of the original CDC design was modified to suit the context of the study. Socio demographic characteristics of interest were added to the questionnaire. They include gender, occupation, years of experience, place of work, current duty post, period spent on current duty post, usual work shift, training on infection control, and training on occupational health or employee wellness. The choice of these characteristics was informed by the researcher`s findings on review of relevant literature.

A pilot study was carried out at Chiawelo CHC in sub district D to determine the reliability of the adapted questionnaire, the clarity of the questions and the questionnaire completion time. Chiawelo CHC, like one of the studied facilities (Hillbrow CHC), is an outpatient public health facility run by the Gauteng provincial health department. Similar range of services and similar categories of medical and nursing staff are seen in these facilities. Data from this pilot study were not part of the final data analysis. Fifteen respondents (5 doctors and 10 nurses including 3

professional nurses, 4 enrolled nurses and 3 enrolled assistant nurses) were given the questionnaires to answer. After the questionnaires were completed, the researcher looked at the responses and interrogated the respondents. The experience of the pilot study led to further modification of part 2 of the questionnaire. The modifications included replacing the term 'our organization' with 'your facility' (question 3 in original CDC design, question 11 in the revised questionnaire) and replacing the term 'skin' with 'non intact skin' (question 6 of original CDC design, question 14 of the revised questionnaire). Additionally, more options on the reasons for not reporting exposures were included (question 7 of original questionnaire, 15 of the revised questionnaire), and HIV was separated from hepatitis. The last respondent to finish answering the questionnaire took 16 minutes to complete the questionnaire. According to Neuman,[43] there is no absolute proper length of a questionnaire – the length depends on the survey format and on the respondents` characteristics. A short (18 item) questionnaire used in this study was deemed appropriate for the study population.

3.11. Data Collection

The researcher distributed the questionnaires himself. With the exception of the district hospital and the CHC, the average number of participants in most of the facilities was about 7. The researcher visited each clinic two times. The first visit was for distribution of the questionnaires while the second was for collection of the questionnaires. Timing of the visits was pre arranged with the facility heads. Each visit was preceded by a phone call to the facility head reminding him/her of the scheduled visit. During each first visit, the researcher introduced himself to the participants, explained the aim of the study to them, answered their questions and addressed any concerns raised. He would then hand them the cover letter/participant information letter (an introduction/motivation letter containing the researcher`s personal and contact details as well as

the purpose of the study, appendix 2) and the questionnaire (appendix 3), and inform them that completion of the questionnaire implied consent. He would tell them that the questionnaire would take only a few minutes to complete and that he would be back in a few hours to collect the completed questionnaires. They were also informed that the information from their questionnaires would be grouped so as to ensure that facilities or individuals were not recognized, and that they could withdraw from the survey any time. They were told that the survey was anonymous, and as such information they provided would be treated with utmost confidentiality. They were requested to drop the answered questionnaires in a sealed drop-off box provided by the researcher. The drop-off box was placed at a central location which was shown to the participants. The researcher then proceeded to another facility and returned to the previous one a few hours later to collect the completed questionnaires.

For the district hospital and the CHC, the researcher briefed the participants in small groups of between 8 and 15 participants based on their work section with the involvement of the sectional heads. Enquiries were made regarding participants who were not present at the briefing and they were subsequently seen, briefed and handed the questionnaires during their work shift. Participants were encouraged to keep their responses confidential and to place the answered questionnaires in the drop box as soon they were answered.

3.12. Data Analysis

Data were analyzed with the help of a statistician. Information was extracted from the questionnaire with Microsoft excel spreadsheet for data cleaning and coding purposes. Data were then imported to Epi Info 7 statistical software for analysis. Descriptive and Inferential statistics were carried out. Descriptive analysis of categorical data was done and results presented as

frequencies and percentages, whereas for continuous variables, means and standard deviations are presented. Inferential statistics for associations and comparisons between groups on categorical data was done with the use of chi- square test or Fisher`s exact test where there are less than 5 counts in at least 20% of the cells. A Student`s t-test was used for a comparison between a binary categorical and a continuous variable. Significant levels were set at $p < 0.05$.

3.13. Ethical Issues

Ethical approval for the study was granted by the Human Research Ethics Committee (HREC) of University of the Witwatersrand- Ethics clearance certificate number M121150 (appendix 9). Permission was also granted by the Johannesburg metro health district and the City of Johannesburg local government health department. The participants were informed that participation in the study was voluntary, that completion of the questionnaire implied consent and that they could withdraw from the survey at any time. Consent was implied because a high degree of anonymity was maintained throughout the study and because information collected was not perceived to be very personal or sensitive. The study was not thought to pose any specific or added risk to the participants. To ensure anonymity and confidentiality, names of the participants were not requested on the questionnaires. Names of the facilities were also not requested on the questionnaires because some clinics had as few as 5 or 6 participants. Questionnaires were collected from several small clinics the same day. Additionally, because there were only 4 dentists among the participants, they were not identified as dentists in the questionnaire but were merged with doctors instead.

3.14. Funding

The study was fully funded by the researcher.

CHAPTER 4

RESULTS

A summary of the results obtained from analyzing the collected data is presented in this chapter.

4.1. Study Population

4.1.1 Response Rate

The entire study population of 544 was targeted to participate in this research. However, 29 of these, including 2 doctors and 27 nurses were on various forms of leave during the study period. Consequently, 515 questionnaires were distributed to 58 doctors and 457 nurses. A total number of 466 questionnaires were returned, 56 from doctors and 410 from nurses. The response rate therefore was 90.1%. Twenty two answered questionnaires were excluded from the analysis due to incompleteness and various inconsistencies leaving 444 questionnaires eligible for analysis.

Figure 4.1 Flow chart showing the study protocol, n = number of participants

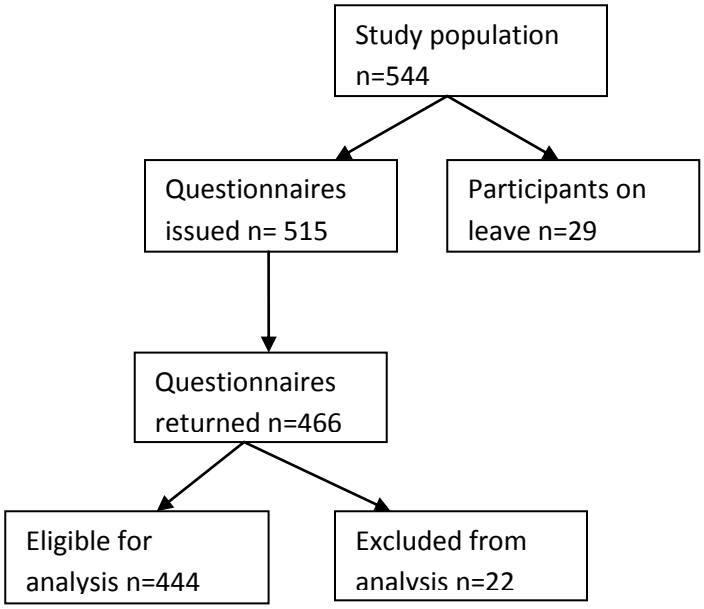


Table 4.1. Occupation and workplace of participants excluded from analysis				
	Medical doctor/dentist	**Professional nurse**	**Enrolled nurse**	**Enrolled nurse assistant**
Clinic	0	1	0	0
CHC	1	3	1	0
Hospital	2	8	4	2

Table 4.1 shows the occupation and workplace of the participants excluded from the analysis.

Table 4.2 shows the response rate by occupation and table 4.3 shows the response rate by work place.

Table 4. 2. Response rate by occupation			
	Questionnaires given	**Questionnaires returned**	**Response Rate**
Doctors	58	56	96.6%
Enrolled Nurses	89	71	79.8%
Enrolled Nurse Assistants	102	87	85.3%
Professional Nurses	266	252	94.7%
All Nurses	457	410	89.7%
All participants	515	466	90.1%

Table 4.3..Response rate by workplace

	Questionnaires given	**Questionnaires returned**	**Response Rate**
Clinic	108	108	100%
CHC	103	94	91%
Hospital	304	264	86.8%
Total	515	466	90.1%

4.1.2. Socio-demographic characteristics of the study participants

Table 4.4. Socio-demographic characteristics of the study participants

Characteristic	Number of participants n	Percentage
Gender		
Female	391	88.1%
Male	53	11.9%
Age groups		
< or = 30years	100	22.5%
31-40years	158	35.6%
41-50years	112	25.2%
>50years	74	16.7%
Occupation		
Medical Doctor/Dentist	56	12.6%
Enrolled Nurse	69	15.5%
Enrolled Nurse Assistant	81	18.3%
Professional Nurse	238	53.6%
Work Experience groups		
< or = 10years	257	57.9%
11-20years	105	23.6%
21-30years	54	12.2%
>30years	28	6.3%

Table 4.4 contd. Socio-demographic characteristics of the study participants		
Work place		
Clinic	109	24.6%
Community Health Centre	92	20.7%
Hospital	243	54.7%
Current Duty Post		
More clinical procedures	198	44.6%
Less clinical procedures	246	55.4%
Duration on current duty post		
<2years	90	20.3%
>or=2years	354	79.7%
Work shift		
Day only	276	62.2%
Night only	5	1.1%
Both Day & Night	163	36.7%
Formal Training on Infection Control		
No	205	46.2%
Yes	239	53.8%

Table 4.4 contd. Socio-demographic characteristics of the study participants		
Formal Training on OH/EWP		
No	287	64.6%
Yes	157	35.4%
Facility has protocol for Injury Reporting		
No	8	1.8%
Yes	398	89.6%
Don`t know	38	8.6%
Familiar with protocol N=398		
No	28	7.0%
Yes	370	93.0%
First contact in case of exposure		
Supervisor	367	82.7%
Occupational /Employee Health Officer	29	6.5%
Infection control	13	2.9%
Emergency Room	24	5.4%
Personal Physician	1	0.2%

Table 4.4 contd. Socio-demographic characteristics of the study participants		
First contact in case of exposure		
Don`t know	3	0.7%
Would not contact anyone	0	0.0%
Other	7	1.6%

Table 4.4 above shows the socio-demographic characteristics of the study participants. The majority of the participants were female (88.1%). The male to female ratio was 1:7.4. The ages of the study participants ranged from 19 years to 74 years with a mean of 39.8 years. The most frequently occurring age and age groups were 30 years and 31 to 40 years respectively.

Regarding occupation, nurses were the majority, making up 87.4% of the participants while doctors constituted 12.6%. More than half of the participants (53.6%) were professional nurses. The mean work experience of the participants in years was 11.7 years. More than half of the participants (57.9%) had worked for 10 years or less.

Over half of the participants (54.7%) were based at the district hospital and 55.4% were at duty posts that involved less clinical procedures. Majority of the participants (79.7%) have been in their current duty post for at least 2 years.

On their usual work shift, 276 participants (62.2%) were on day shift only, 5(1.1%) on night shift only and 163 on both day and night shifts.

Over fifty percent (53.8%) of the participants had a formal training on Infection control while 35.4% had been through a training program for Occupational Health and Employee Wellness.

Nearly 90% of the participants reported that their facilities have procedure or protocol for reporting exposures to blood and body fluids. However, only 93% of these said they were familiar with the protocol.

Asked who they would contact first if they were injured by a needle or sharp object, or if they were exposed to blood or body fluid, over 80% said they would report to their supervisor.

4.2. Exposure to blood and body fluids

4.2.1 Proportion of study participants exposed to blood and body fluids

One hundred and twelve participants (25.2%) including 27 medical doctors and 85 nurses, were exposed to blood and body fluids during the preceding twelve months. The total number of exposures was 355 including 159 sharps exposures and 196 non sharps exposures giving a rate of 80 exposures per 100 HCWs per year in the study population and 3 exposures per HCW per year among the exposed participants.

Table 4.6 shows the proportions of the study participants exposed and unexposed to blood and body fluids with respect to their occupation. The proportions of doctors and nurses exposed to blood and body fluids were 48.2% and 21.9% respectively.

Table 4.5..Frequency of BBF exposures	
Exposure type	**Number of exposures n (%)**
Sharps	159 (44.8)
Non sharps	196 (55.2))
Total	355 (100)

Table 4. 6. Frequency of BBF exposures by occupation					
	Doctors n (%)	**All Nurses n (%)**	**Enrolled Nurses n (%)**	**Enrolled Nurse Assistants n (%)**	**Professional Nurses n (%)**
Exposed n=112 (25.2)	27 (48.2)	85 (21.9)	6 (8.7)	12 (14.8)	67 (28.2)
Unexposed n=332 (74.8)	29 (51.8)	303 (78.1)	63 (91.3)	69 (85.2)	171 (71.8)
Total N=444 (100)	56 (100)	388 (100)	69 (100)	81 (100)	238 (100)

4.2.2 Comparison of socio-demographic characteristics of exposed and unexposed participants

The mean ages of participants exposed to blood and body fluids and those not exposed to blood and body fluids were 38.8 years and 40.1 years respectively. There is no statistically significant difference between the mean ages of the two groups (Student t test = 1.1277, p = 0.26).

Table 4.7 (below) shows that there is a statistically significant difference in exposure rate among the participants with regard to gender, occupation, work place, current duty post, work shift, and training on infection control. Male participants are more likely to be exposed to blood and body fluids (p=0.025). Doctors are more likely to be exposed than nurses (p < 0.001), participants working at the hospital are more likely to be exposed than those working in non hospital setting (p=0.033). HCWs doing night shifts (p=0.001) and those working at duty posts that are more likely to involve performing procedures (p=0.015), are also more likely to be exposed to BBF. Finally, participants who have had a formal training on infection control are less likely to be exposed to blood and body fluids (p=0.013) than those who had no such training.

On the other hand, there is no statistically significant difference in exposure rate among the participants with regard to age, work experience or training on OH/EWP.

Table 4.7. Comparison of socio-demographic characteristics of participants exposed to blood and body fluids and those not exposed to blood and body fluids

Characteristic	**Total Number of participants**	**Participants exposed to blood and body fluids n (exposure rate per 100 participants)**	**Participants not exposed to blood and body fluids n (non exposure rate per 100 participants)**	**Odds Ratio and P value**
Gender				P = 0.025
Female	391	92 (23.5)	299 (76.5)	
Male	53	20 (37.7)	33 (62.3)	OR=1.97
Age groups				P = 0.81
< or =40 years	258	64 (24.8)	194 (75.2)	
>40 years	186	48 (25.8)	138 (74.2)	OR=1.05
Occupation				P < 0.001
Medical Doctor/Dentist	56	27 (48.2)	29 (51.8)	
Nurse	388	85 (21.9)	303 (78.1)	OR=3.32
Work Experience				P = 0.635
< or = 20 years	362	93 (25.7)	269 (74.3)	OR=1.15
>20 years	82	19 (23.1)	63 (76.9)	

Table 4.7 contd. Comparison of socio-demographic characteristics of participants exposed to blood and body fluids and those not exposed to blood and body fluids

Characteristic	**Total Number of participants**	**Participants exposed to blood and body fluids n (exposure rate per 100 participants)**	**Participants not exposed to blood and body fluids n (non exposure rate per 100 participants)**	**Odds Ratio and P value**
Work place				P = 0.033
Hospital	243	71 (29.2)	172 (70.8)	OR=1.61
Non hospital	201	41 (20.4)	160 (79.6)	
Current duty post				P = 0.015
More clinical procedures	198	61 (30.8)	137 (69.2)	OR=0.59
Less clinical procedures	246	51 (20.7)	195 (79.3)	
Work shift				P = 0.001
Day only	276	55 (19.9)	221 (80.1)	OR=0.49
Night only or Day and Night	168	57(33.9)	111 (66.1)	

Table 4.7 contd. Comparison of socio-demographic characteristics of participants exposed to blood and body fluids and those not exposed to blood and body fluids

Characteristic	**Total Number of participants**	**Participants exposed to blood and body fluids n (exposure rate per 100 participants)**	**Participants not exposed to blood and body fluids n (non exposure rate per 100 participants)**	**Odds Ratio and P value**
Formal training on infection control				P = 0.013
No	205	63 (30.7)	142 (69.3)	
Yes	239	49 (20.5)	190 (79.5)	OR=0.58
Formal training on Occupational Health/ Employee Wellness Program				P = 0.293
No	287	77 (26.8)	210 (73.2)	OR=0.78
Yes	157	35 (22.3)	122 (77.7)	

4.3. Reporting of blood and body fluids exposures

4.3.1. Proportions of exposures reported and unreported

Table 4.8. Proportions of exposures reported and unreported

Type of exposure	**Total number of exposures N (%)**	**Exposures Reported n (%)**	**Exposures not reported n (%)**
Sharps	159 (100%)	50 (31.4%)	109 (68.6%)
Non sharps	196 (100%)	14 (7.1%)	182 (92.9%)
Total	355 (100%)	64 (18.0%)	291 (82.0%)

Pearson`s chi square = 35.033, P < 0.001; OR = 5.963, (95% confidence interval = 3.15-11.30)

The table shows a higher underreporting rate for non sharps exposures compared to sharps exposures. Nearly 93% of non sharps exposures and 68.6% of sharps exposures were not reported. This association between type of exposure and underreporting rate is statistically significant, ($p<0.001$). Non sharps exposures are at significantly increased odds for being unreported relative to sharps exposures (OR = 5.963, 95% C.I.= 3.15 – 11.30)

4.3.2 Comparison of participants reporting all of their exposures and those not reporting all of their exposures

The mean ages of participants reporting all their exposures and those not reporting all of their exposures were 41 years and 38 years respectively. There is no statistically significant difference in the mean ages (Student`s t test = 1.5185, P = 0.1318)

4.3.2.1. Comparison of socio-demographic characteristics of participants reporting all of their exposures and those not reporting all of their exposures

Table 4.9.Comparison of Socio-demographic characteristics of participants reporting all their exposures and those not reporting all their exposures

Characteristic	**Participants exposed to blood and body fluids n (%)**	**Participants reporting all exposures n (%)**	**Participants not reporting all exposures n (%)**	**Odds Ratio and P value**
All participants	112 (25.2%)	23 (20.5%)	89 (79.5%)	
Gender				P = 1.000*
Female	92 (82.1%)	19 (20.7%)	73 (79.3%)	OR=0.96
Male	20 (17.9%)	4 (20.0%)	16 (80.0%)	
Age groups				P = 0.137
< or = 40years	64 (57.2%)	10 (15.6%)	54 (84.4%)	OR=2.01
> 40years	48 (42.8%)	13 (27.1%)	35 (72.9%)	
Occupation				P =0.059*
Medical Doctor/Dentist	27 (24.1%)	2 (7.4%)	25 (92.6%)	
Nurse	85 (75.9%)	21 (24.7%)	64 (75.3%)	OR=4.10
Work Experience groups				P = 0.494
< or = 20years	93 (83.0%)	18 (19.4%)	75 (80.6%)	OR=1.49
>20years	19 (17.0%)	5 (26.3%)	14 (73.7%)	

Table 4.9. contd. Comparison of Socio-demographic characteristics of participants reporting all exposures and those not reporting all of their exposures

Characteristic	**Participants exposed to blood and body fluids n (%)**	**Participants reporting all exposures n (%)**	**Participants not reporting all exposures n (%)**	**Odds Ratio and P value**
Work place				P = 0.714
Clinic	26 (23.2%)	6 (23.1%)	20 (76.9%)	OR=0.51
Community Health Centre	15 (13.4%)	2 (13.3%)	13 (86.7%)	OR=0.89
Hospital	71 (63.4%)	15 (21.1%)	56 (78.9%)	
Current Duty Post				P = 0.098
More clinical procedures	61 (54.5%)	9 (14.8%)	52 (85.2%)	OR=2.19
Less clinical procedures	51 (45.5%)	14 (27.5%)	37 (72.5%)	
Work shift (N = 111)				P = 0.452
Day only	55 (49.6%)	13 (23.6%)	42 (76.4%)	OR=0.702
Day and Night	56 (50.4%)	10 (17.9%)	46 (82.1%)	
Formal Training on Infection Control				P = 0.658
No formal training	63 (56.3%)	12 (19.0%)	51 (81.0%)	OR=1.23
Had formal training	49 (43.7%)	11 (22.4%)	38 (77.6%)	

Table 4.9. contd. Comparison of socio-demographic characteristics of participants reporting all exposures and those not reporting all of their exposures

Characteristic	**Participants exposed to blood and body fluids n (%)**	**Participants reporting all exposures n (%)**	**Participants not reporting all exposures n (%)**	**Odds Ratio and P value**
Formal Training on OH/EWP				P = 0.544
No formal training	77 (68.8%)	12 (15.6%)	65 (84.4)	OR=2.48
Had formal training	35 (31.2%)	11 (31.4%)	24 (68.6%)	
Familiarity with protocol for reporting exposures (N=99)				P =0.510*
Not familiar with protocol	15 (15.2%)	2 (13.3%)	13 (86.7%)	OR=2.03
Familiar with protocol	84 (84.8%)	20 (23.8%)	64 (76.2%)	
First contact person in event of exposure				P =0.273*
Supervisor	85 (75.9%)	20 (23.5%)	65 (76.5%)	OR=0.406
Not supervisor	27 (24.1%)	3 (11.1%)	24 (88.9%)	

*Fisher`s exact

Table 4.9 above shows that most of the participants exposed to blood and body fluids underreported their exposures. Only 20.5% of participants exposed to blood and body fluids

reported all their exposures. The remainder, (79.5%), reported some or none of their exposures. There is no statistically significant association between the socio-demographic characteristics and reporting of all exposures as shown by the P values.

4.3.3. Comparison of participants reporting none of their exposures and those reporting at least one of their exposures

The mean age of participants reporting none of their exposures was 38.4 years while that of participants reporting at least one of their exposures was 39.6 years. There is no statistically significant difference between the mean ages (Student t test = 0.6866, P=0.4938).

4.3.3.2. Comparison of socio-demographic characteristics of participants reporting none of their exposures and those reporting at least one of their exposures

Table 4.10. Comparison of socio-demographic characteristics of participants reporting none of their exposures and those reporting at least one of their exposures

Characteristic	**Number of Participants exposed to blood and body fluids n (%)**	**Participants reporting none of their exposures n (%)**	**Participants reporting at least one of their exposures n (%)**	**Odds Ratio and P value**
All participants	112 (25.2%)	68 (60.7%)	44 (39.3%)	
Gender				P = 0.563
Female	92 (82.1%)	57 (62.0%)	35 (38.0%)	OR=0.75
Male	20 (17.9%)	11 (55.0%)	9 (45.0%)	
Age groups				P = 0.219
< or = 40years	64 (57.2%)	42 (65.6%)	22 (34.4%)	OR=0.62
> 40years	48 (42.8%)	26 (54.2%)	22 (45.8%)	
Occupation				P = 0.529
Medical Doctor/Dentist	27 (24.1%)	15 (55.6%)	12 (44.4%)	
Nurse	85 (75.9%)	53 (62.4%)	32 (37.6%)	OR=1.33

Table 4.10. contd. Comparison of socio-demographic characteristics of participants reporting none of their exposures and those reporting at least one of their exposures

Characteristic	**Number of Participants exposed to blood and body fluids n (%)**	**Participants reporting none of their exposures n (%)**	**Participants reporting at least one of their exposures n (%)**	**Odds Ratio and P value**
Work Experience groups				P = 0.811
< or = 20years	93 (83.0%)	56 (60.2%)	37 (39.8%)	OR=1.13
>20years	19 (17.0%)	12 (63.2%)	7 (36.8%)	
Work place				P = 0.578
Clinic	26 (23.2%)	17 (65.4%)	9 (34.6%)	
Community Health Centre	15 (13.4%)	11 (73.3%)	4 (26.7%)	OR=1.46
Hospital	71 (63.4%)	40 (56.3%)	31 (43.7%)	OR=0.68
Current Duty Post				P = 0.445
More clinical procedures	61 (54.5%)	39 (63.9%)	22 (36.1%)	
Less clinical procedures	51 (45.5%)	29 (56.9%)	22 (43.1%)	OR=0.744
Work shift				P = 0.756
Day only	55 (49.6%)	34 (61.8%)	21 (38.2%)	
Day and Night	56 (50.4%)	33 (58.9%)	23 (41.1%)	OR=0.89

Table 4.10. contd. Comparison of socio-demographic characteristics of participants reporting none of their exposures and those reporting at least one of their exposures

Characteristic	**Number of Participants exposed to blood and body fluids n (%)**	**Participants reporting none of their exposures n (%)**	**Participants reporting at least one of their exposures n (%)**	**Odds Ratio and P value**
Formal Training on Infection Control				P = 0.922
No formal training	63 (56.3%)	38 (60.3%)	25(39.7%)	
Had formal training	49 (43.7%)	30 (61.2%)	19 (38.8%)	OR=1.04
Formal Training on OH/EWP				P = 0.917
No formal training	77 (68.8%)	47 (61.0%)	30 (39.0%)	OR=0.96
Had formal training	35 (31.2%)	21 (60.0%)	14 (40.0%)	
Familiarity with protocol for reporting exposures N=99				P = 0.591
Not familiar with protocol	15 (15.2%)	8 (53.3%)	7 (46.7%)	
Familiar with protocol	84 (84.8%)	51 (60.7%)	33 (39.3%)	OR=1.35

Table 4.10. contd. Comparison of socio-demographic characteristics of participants reporting none of their exposures and those reporting at least one of their exposures				
Characteristic	**Number of Participants exposed to blood and body fluids n (%)**	**Participants reporting none of their exposures n (%)**	**Participants reporting at least one of their exposures n (%)**	**Odds Ratio and P value**
First contact person in event of exposure				P = 0.529
Supervisor	85 (75.9%)	53 (62.4%)	32 (37.6%)	
Not supervisor	27 (24.1%)	15 (55.6%)	12 (44.4%)	OR=0.76

Table 4.10 above shows that 60.7% of participants exposed to blood and body fluids reported none of their exposures while only 39.3% reported at least one exposure. There is no statistically significant association between the socio-demographic characteristics and reporting of at least one exposure.

4.3.4. Association between socio-demographic characteristics and underreporting of blood and body fluid exposures.

4.3.4.1. Gender and underreporting of blood and body fluid exposures

Table 4.11. Gender and underreporting of blood and body fluid exposures

Gender	**All exposures N = 355**	**Exposures reported n (%)**	**Exposures not reported n (%)**
Female	251	48 (19.1)	203 (80.9)
Male	104	16 (15.4)	88 (84.6)

Pearson chi square = 0.695, P = 0.404

This result indicates that there is no statistically significant association between gender and underreporting of exposures (Pearson chi square = 0.695, p=0.404)

4.3.4.2. Age groups and underreporting of blood and body fluid exposures

Table 4.12. Age groups and underreporting of blood and body fluid exposures

Age group	**All exposures N = 355**	**Exposures reported n (%)**	**Exposures not reported n (%)**	**Odds Ratio**
< or = 30 years	73	12 (16.4)	61 (83.6)	1.000
31-40 years	103	20 (19.4)	83 (80.6)	0.816
41-50 years	122	28 (23.0)	94 (77.0)	0.660
> 50 years	57	4 (7.0)	53 (93.0)	2.607

Pearson chi square = 6.086, P= 0.014

The result (table 4.12) shows that there is a statistically significant association between age and underreporting of exposures. Participants who are more than 50 years old are at increased odds for not reporting their exposures compared to those aged 30 years or less. (OR=2.607, P= 0.014)

4.3.4.3. Occupation and underreporting of blood and body fluids exposure

Table 4.13. Occupation and underreporting of blood and body fluid exposure

Occupation	**All exposures N**	**Exposures reported n (%)**	**Exposures not reported n (%)**	**Odds Ratio**
Doctor/Dentist	176	22 (12.5)	154 (87.5)	2.146
Nurse	179	42 (23.5)	137 (76.5)	1.000

Pearson chi square = 6.496, P = 0.011, OR = 2.146, (95% C.I= 1.22-3.76)

This result (table 4.13) indicates that there is a statistically significant association between occupation and underreporting of accidental exposures to blood and body fluids (Pearson chi square = 6.496, P = 0.011). Medical doctors and dentists are at increased odds for not reporting their exposures compared to nurses (OR= 2.146, 95% confidence interval = 1.22-3.76)

4.3.4.4. Work experience and underreporting of blood and body fluid exposure

Table 4.14. Work experience group and underreporting of blood and body fluid exposure

Work experience (years)	**All exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**	**Odds Ratio**
< or = 20 years	262	54 (20.6)	208 (79.4)	1.000
> 20 years	93	10 (10.7)	83 (89.3)	2.155

Pearson chi square = 3.8711, P = 0.049, OR = 2.155, (95% C.I =1.0477-4.4320)

This result (table 4.14) indicates that there is a statistically significant association between work experience and underreporting of blood and body fluid exposures (Pearson chi square = 3.8711, P= 0.049). Participants who have worked for more than 20 years were at increased odds for not reporting exposures relative to those who have worked for 20 yrs or less (0R= 2.155, 95% C.I = 1.0477-4.4320)

4.3.4.5. Workplace and underreporting of blood and body fluid exposure

Table 4.15..Workplace and underreporting of blood and body fluid exposure

Work place	**All exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**
Clinic	67	12 (18.0)	55 (82.0)
CHC	53	5 (9.4)	48 (90.6)
Hospital	235	47 (20.0)	188 (80.0)

Pearson chi square= 1.9837, P= 0.159

The result indicates that there is no statistically significant association between work place and underreporting of blood and body fluid exposures (Pearson chi square= 1.983, P = 0.159)

4.3.2.6. Duty post and underreporting of blood and body fluid exposure

Table 4.16…Duty post and underreporting of blood and body fluid exposure

Duty post	**All exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**
More clinical procedures	226	37 (16.4)	189 (83.6)
Less clinical procedures	129	27 (21.0)	102 (79.0)

Pearson chi square= 0.8669, P= 0.352

This result indicates that there is no statistically significant association between duty post and underreporting of blood and body fluid exposures (Pearson chi square= 0.8669, P=0.352).

4.3.2.7. Work shift and underreporting of blood and body fluid exposure

Table 4.17… Work shift and underreporting of blood and body fluid exposure

Work shift	**All Exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**
Day only	139	26 (18.7)	113 (81.3)
Night only and Day and Night	216	38 (17.6)	178 (82.4)

Pearson chi square = 0.0697, P = 0.792

The result indicates that there is no statistically significant association between work shift and underreporting of blood and body fluid exposures (Pearson chi square = 0.0697, P = 0.792).

4.3.2.8. Training on Infection Control and underreporting of blood and body fluid exposure

Table 4.18..Training on Infection Control and underreporting of blood and body fluid exposures

Infection Control Training	**All exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**
Had training on infection control	121	28 (23.1)	93 (76.9)
Did not have training on infection control	234	36 (15.4)	198 (84.6)

Pearson chi square = 2.7429, P = 0.098

The result indicates that there is no statistically significant association between training on infection control and underreporting of blood and body fluid exposures (Pearson chi square = 2.7429, P= 0.098).

4.3.2.9. Training on Occupational Health or Employee Wellness and underreporting of blood and body fluid exposure

Table 4.19..Training on occupational health or employee wellness and underreporting of blood and body fluid exposures

Training on OH/EWP	**All Exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**
Had training on OH/EWP	81	17 (21.0)	64 (79.0)
Did not have training on OH/EWP	274	47 (17.2)	227 (82.8)

Pearson chi square = 0.3896, P = 0.533

The result shows that there is no statistically significant association between training on Occupational health or Employee Wellness Program and underreporting of blood and body fluid exposures (Pearson chi square = 0.3896, P = 0.533).

4.3.2.10. Familiarity with protocol for reporting exposures and underreporting of exposures

Table 4.20…Familiarity with protocol for reporting exposures and underreporting of exposures

Familiarity with protocol N=290	**All exposures**	**Exposures reported n (%)**	**Exposures not reported n (%)**
Familiar with protocol	260	47 (18.1)	213 (81.9)
Not familiar with protocol	30	8 (26.7)	22 (73.3)

Pearson chi square = 0.793, P=0.373

This result indicates that there is no statistically significant association between being familiar with protocol for reporting of blood and body fluid exposures and underreporting of such exposures (Pearson chi square = 0.793, P = 0.373).

4.4. Reason for not reporting exposures

Table 4.21. Reason for not reporting exposures given by 89 participants who had an exposure they did not report (more than one response allowed)

Reason for not reporting exposure (n=89)	**Frequency**	**%**
I did not have time to report	38	42.7
I did not know the reporting procedure	14	15.7
I was concerned about confidentiality	20	22.5
I thought I might be blamed or get in trouble for having the exposure	11	12.4
I thought the source patient was low risk for HIV	22	24.7
I thought the source patient was low risk for Hepatitis B or C	9	10.1
I thought the type of exposure was low risk for HIV	19	21.3
I thought the type of exposure was low risk for Hepatitis B or C	9	10.1
I did not think it was important to report	15	16.9
I did not want to know my HIV status	1	1.1
I did not want staff of this facility to know my HIV status	12	13.5
I already knew my HIV status	5	5.6
Other	0	0

Eighty nine participants who had an exposure to blood and body fluids that they did not report answered this section of the questionnaire. There were no additional reasons given by the participants other than the ones on the questionnaire. Participants could indicate more than one reason for not reporting exposures. From table 4.24 above, the most frequent reason given by the

participants for not reporting blood and body fluid exposures is perceived lack of time. Over forty percent (42.7%) of the participants who had an exposure they did not report said they did not have time to report. This is followed by perceived low risk of source patient for HIV (24.7%). Twenty percent of the participants were concerned about confidentiality and 13.5% did not want staff of the facility to know their HIV status.

4.4.1. Reason for not reporting exposure by occupation

Table 4.22. Reason for not reporting exposure by occupation (more than one response allowed)

Reason for not reporting exposure	**Frequency n**	**Doctors N=25 n (%)**	**Nurses N=64 n (%)**
I did not have time to report	38	14 (56.0%)	24(37.5%)
I did not know the reporting procedure	14	4 (16.0%)	10(15.6%)
I was concerned about confidentiality	20	4 (16.0%)	16(25.0%)
I thought I might be blamed or get in trouble for having the exposure	11	0	11(17.2%)
I thought the source patient was low risk for HIV	22	9 (36.0%)	13(20.3%)
I thought the source patient was low risk for Hepatitis B or C	9	4 (16.0%)	5(7.8%)
I thought the type of exposure was low risk for HIV	19	8 (32.0%)	11(17.2%)
I thought the type of exposure was low risk for Hepatitis B or C	9	4 (16.0%)	5(7.8%)
I did not think it was important to report	15	6 (24.0%)	9(14.1%)

Table 4.22 contd. Reason for not reporting exposure by occupation (more than one response allowed)			
Reason	**Frequency n**	**Doctors N=25 n (%)**	**Nurses N=64 n (%)**
I did not want to know my HIV status	1	0	1(1.6%)
I did not want staff of this facility to know my HIV status	12	1(4.0%)	11(17.2%)
I already knew my HIV status	5	0	5(7.8%)
Other	0	0	0

In table 4.22, the most frequently reported reason for not reporting exposures was perceived lack of time for both doctors and nurses although a greater percentage of doctors than nurses reported this (56.0% versus 37.5%). A greater percentage of nurses (25%) were concerned about confidentiality whereas a greater percentage of doctors did not report exposures due to perceived low risk of infection.

4.4.2 Reason for not reporting exposure by workplace

Table 4.23. Reason for not reporting exposures by workplace (more than one response allowed)

Reason for not reporting exposure	**Frequency**	**Clinic N=20 n (%)**	**CHC N=13 n (%)**	**Hospital N=56 n (%)**
I did not have time to report	38	11(55.0%)	5(38.5%)	22(39.3%)
I did not know the reporting procedure	14	1(5.0%)	0	13(23.2%)
I was concerned about confidentiality	20	1(5.0%)	5(38.5%)	14(25.0%)
I thought I might be blamed or get in trouble for having the exposure	11	6(30.0%)	2(15.4%)	3(5.4%)
I thought the source patient was low risk for HIV	22	2(10.0%)	4(30.8%)	16(28.6%)
I thought the source patient was low risk for Hepatitis B or C	9	2(10.0%)	3(23.1%)	4(7.1%)
I thought the type of exposure was low risk for HIV	19	6(30.0%)	4(30.8%)	9(16.1%)
I thought the type of exposure was low risk for Hepatitis B or C	9	3(15.0%)	3(23.1%)	3(5.4%)
I did not think it was important to report	15	4(20.0%)	2(15.4%)	9(16.1%)
I did not want to know my HIV status	1	0	0	1(1.8%)
I did not want staff of this facility to know my HIV status	12	0	2(15.4%)	10(17.9%)

Table 4.23 contd. Reason for not reporting exposures by workplace (more than one response allowed)				
Reason for not reporting exposure	**Frequency**	**Clinic N=20 n (%)**	**CHC N=13 n (%)**	**Hospital N=56 n (%)**
I already knew my HIV status	5	1(5.0%)	1(7.7%)	3(5.4%)
Other	0	0	0	0

Regarding workplace, lack of time was still the most frequently reported reason for not reporting exposures with the greatest proportion seen at the clinics where more than half the participants (55.0%) reported this. A greater percentage of participants working in the CHC and hospital were concerned about confidentiality (38.5% and 25.0% respectively). This is further indicated by the fact that no participant from the clinics reported not wanting staff at their facility to know their HIV status as a reason for not reporting exposures.

4.5. Post Exposure Experience

4.5.1. Place of care after reporting exposure to blood or body fluids

Table 4.24..Place of care after reporting exposure to blood and body fluid

	OH/EWP	**Infection control**	**Emergency room**	**Personal physician**	**Outpatient clinic**	**Did not receive care**	**Other (colleague)**
Clinic (n=9)	5(55.6%)	0	3(33.3%)	0	0	0	1(11.1%)
CHC (n=4)	0	0	1(25.0%)	1(25.0%)	2(50.0%)	0	0
Hospital (n=31)	15(48.4%)	4(12.9%)	9(29.0%)	0	3(9.7%)	0	0
Total (n=44)	20(45.5%)	4(9.0%)	13(29.5%)	1(2.3%)	5(11.4%)	0	1(2.3%)

Table 4.24 shows that the most frequently reported place of care after an exposure is the occupational health /employee wellness program followed by the emergency room.

4.5.2. Participants` rating of services at the place where they received care after exposure to blood and body fluids

Table 4.25. Responses of participants reporting exposures to Likert-type questions on post exposure experience

Question	**Strongly Disagree n (%)**	**Disagree n (%)**	**Neither Agree nor Disagree n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
(1) I was seen in a timely manner	1(2.3%)	4(9.1%)	13(29.6%)	17(38.6%)	9(20.4%)
(2) I was given sufficient information to make a decision about post exposure treatment	0(0%)	4(9.1%)	14(31.8%)	16(36.4%)	10(22.7%)
(3) My questions were answered to my satisfaction	0(0%)	2(4.6%)	19(43.2%	16(36.4%)	7(15.9%)
(4) I was encouraged to call or come back if I had any concerns	3(6.8%)	6(13.6%)	13(29.6%)	16(36.4%)	6(13.6%)
(5) Staff made me feel that it was important to report my exposure	0(0%)	5(11.4%)	12(27.3%)	23(52.3%)	4(9.1%)
(6) I did not feel rushed during my visit	0(0%)	3(6.8%)	14(31.8%)	20(45.5%)	7(15.9%)
(7) The place where I received treatment was convenient for me	4(9.1%)	7(15.9%)	4(9.1%)	17(38.6%)	12(27.3%)

Overall, the participants` rating of services at their place of care after exposure to blood and body fluids was favorable. The frequencies of their responses to the individual items on the Likert-type scale are shown in table 4.25. As seen from the table, 38.6% of the participants rating these services agreed that they were seen in a timely manner. Nearly 30% neither agreed nor disagreed and 20.4% strongly agreed. Only 9.1% and 2.3% disagreed and strongly disagreed respectively that they were seen in a timely manner. Figure 4.2 shows that the most frequent response to the questions was "agree" with the exception of question 3 ("my questions were answered to my satisfaction") to which the most frequent response was neither agree nor disagree (43.3%) closely followed by agree (36.4%).

Figure 4.2.Bar chart showing the post exposure experience of participants who reported their exposures

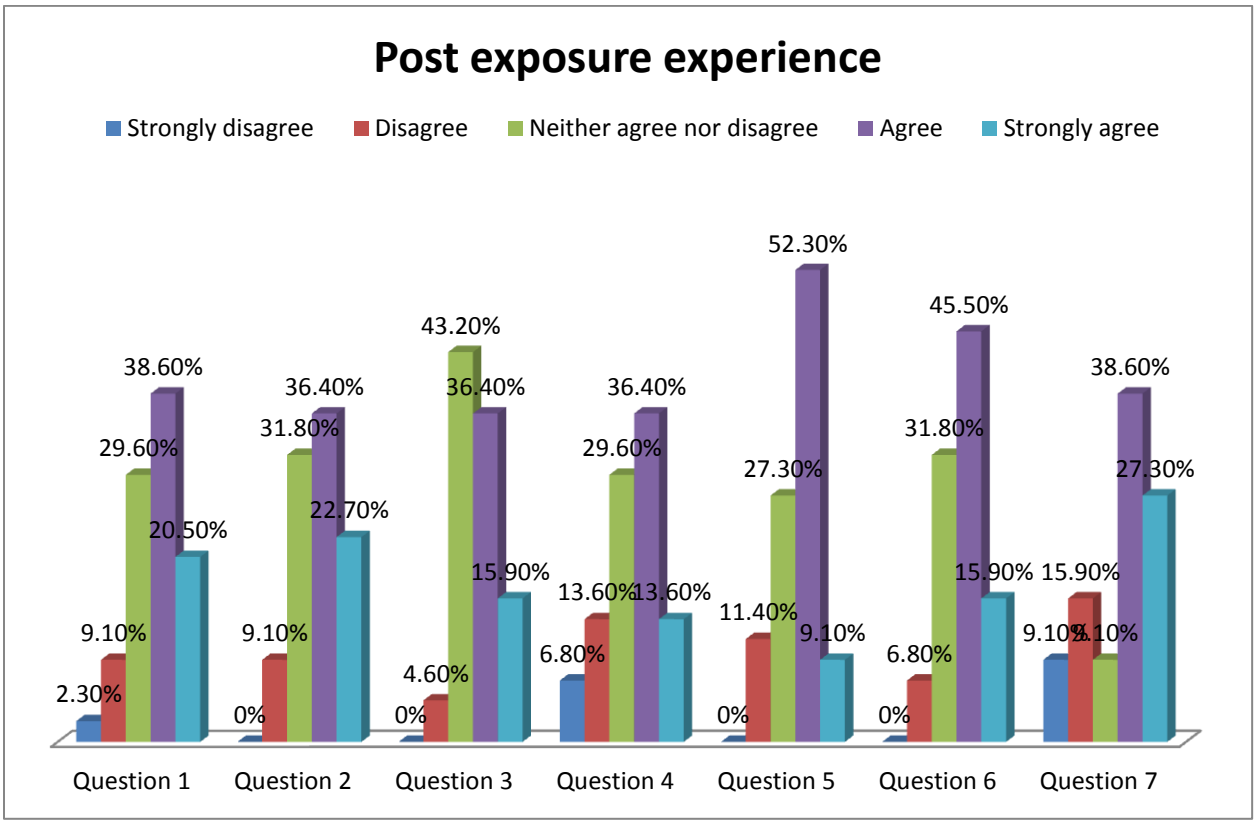
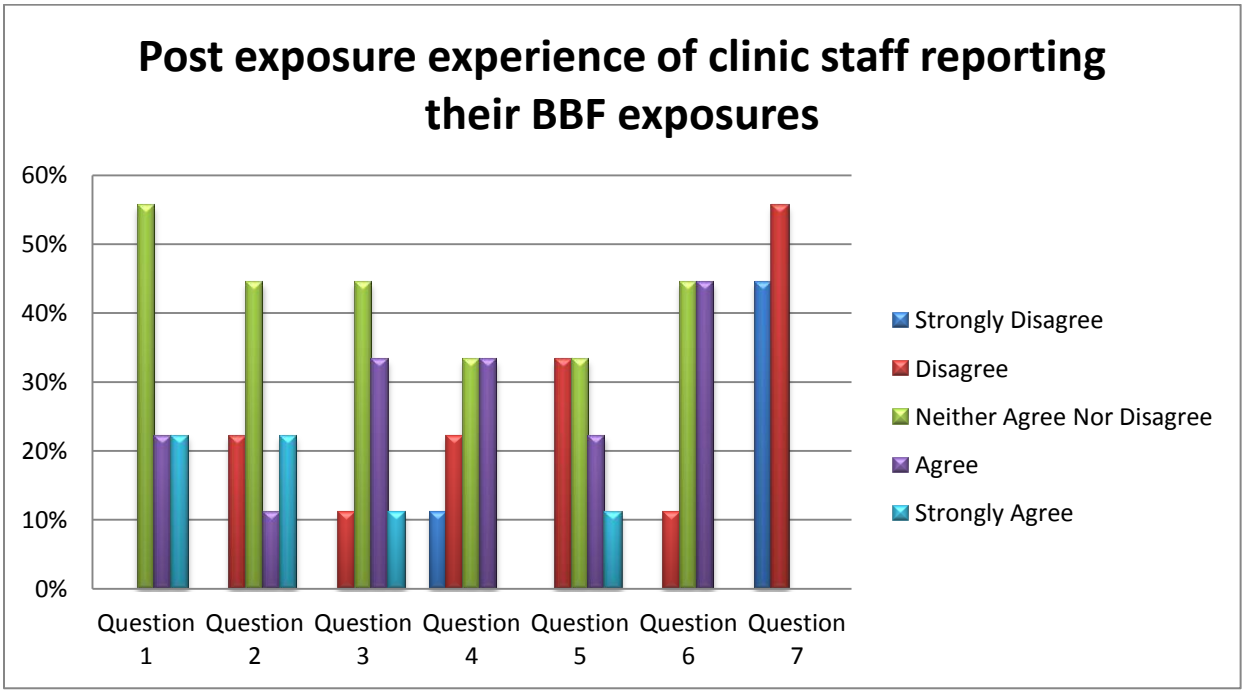


Table 4.26. Responses of clinic staff reporting exposures to Likert-type questions on post exposure experience

Question	**Strongly Disagree n (%)**	**Disagree n (%)**	**Neither Agree nor Disagree n (%)**	**Agree n (%)**	**Strongly Agree n (%)**
(1) I was seen in a timely manner	0%	0%	5(55.6%)	2(22.2%)	2(22.2%)
(2) I was given sufficient information to make a decision about post exposure treatment	0(0%)	2(22.2%)	4(44.4%)	1(11.1%)	2(22.2%)
(3) My questions were answered to my satisfaction	0(0%)	1(11.1%)	4(44.4%)	3(33.3%)	1(11.1%)
(4) I was encouraged to call or come back if I had any concerns	1(11.1%)	2(22.2%)	3(33.3%)	3(33.3%)	0%
(5) Staff made me feel that it was important to report my exposure	0(0%)	3(33.3%)	3(33.3%)	2(22.2%)	1(11.1%)
(6) I did not feel rushed during my visit	0(0%)	1(11.1%)	4(44.4%)	4(44.4%)	0%
(7) The place where I received treatment was convenient for me	4(44.4%)	5(55.6%)	0%	0%	0%

However, of note in table 4.26 as well as in figure 4.3 is the fact that the rating by participants working at the clinics, of the services at their place of care after exposure to blood and body fluids, was not as favorable. Majority of these participants received care at the OH/EWP which is only available at the CHC or hospital. Most frequently, the participants were ambivalent in their rating of the questions with "neither agree nor disagree" as the most frequent response to all but one question. However, all the participants working at the clinics either disagreed (55.6%) or strongly disagreed (44.4%) that the place where they received care was convenient for them.

Figure 4.3.Bar chart showing the post exposure experience of clinic staff reporting their BBF exposures



CHAPTER 5

DISCUSSION

In this chapter, the results of the study are discussed and compared with those of similar studies that had been done on the subject matter.

5.1 Response Rate

The overall response rate for this study was 90.1%. Interestingly, there was a response rate of 100% from the clinics and contrary to most studies doctors had a higher response rate than nurses (96.6% versus 89.7%). Several factors are known to increase response rates in research surveys. They include: time it takes to complete the survey, use of incentives, increasing the number of contacts with participants, and perceived benefit from participating in the survey.[44] The high response rate in this study may be due to a number of reasons namely:

(1) The research involved a topic that staff cared much about as it is about their safety and welfare.

(2) The familiarity of the researcher with the study participants as the researcher had worked in most of the facilities at some point during his training.

(3) The facility managers were telephonically contacted prior to each visit to their facilities by the researcher. These telephone calls increasingly personalized the interaction with the managers as well as with the rest of the participants.[44]

(4) The questionnaire was relatively short with only 18 items. It took the last participant in the pilot study 16 minutes to answer the questionnaire.

5.2. Socio-demographic characteristics

Just over 88% of the study participants were female. This compares with the findings of a similar study done in Switzerland[5] in which 73% of the participants were female. The mean age of the study participants was 39.8 years. Again this compares with 40.2 years found in the Swiss study above. Of particular interest is the relatively high proportion of participants who were more than 50 years old (16.7%). This may be due to the policy of recruiting retired HCWs by the provincial and local health authorities to address skills shortage in the health sector.

The majority of participants in this study were nurses (87.4%) as was reported by Sabbah et al[45] in a similar study in India (82%), although Guo[46] and his colleagues reported a nurse – doctor ratio of 2.3:1 in Taiwan. Over 50% of the participants were professional nurses contrary to the report by Wildschut et al[47] in 2008 that 43.86% of nurses in South Africa were professional nurses. This increase in the proportion of professional nurses working in the primary public health care setting may be accounted for by the current salary dispensation for specialist PHC nurses and the fact that lower cadre nurses are now being encouraged to undertake bridging courses to become professional nurses.

The median work experience was 8.5 years compared to 7 years reported by Janjua et al.[48] Nearly 80% of the participants have worked in their current duty post for at least 2 years. This means that in the majority of cases, BBF exposures sustained by the participants in the previous 12 months would have been sustained in their current duty posts. More than fifty three percent (53.8%) and 35.4% of the participants reported having had formal training on infection control and employee wellness program respectively. This is comparable to 50.8% found by Mbaisi[49] in Kenya.

5.3. Exposure to blood and body fluids

This study shows that 25.2% (112) of the participants had at least one incident of exposure to blood or body fluid during the preceding twelve months. The number of exposures per participant varied from 1 to 10, with a total number of 355 BBF exposures, giving a rate of 80 exposures per 100 HCWs per year among the study participants, and 3 exposures per HCW per year among participants exposed to blood and body fluids. These findings indicate that HCWs in the PHC setting are at high risk of occupational exposure to BBF and that this risk approximates that of HCWs at secondary and tertiary health care settings.[4 5 28 31 34 50]

Regarding the type of exposure, 159 sharps exposures (44.8%) and 196 non sharps exposures (55.2%) were recalled by the participants in the preceding twelve months giving a sharps exposure rate of 35.8 per 100 HCWs and non sharps exposure rate of 44 per 100 HCWs. A sharps exposure rate of 19.3 per 100 HCWs per year was reported among non hospital based nurses in New York by Gershon et al[51] while Butshashvili et al[52] reported 46 non sharps exposures per 100 HCWs in Georgia. The lower sharps exposure rate in New York may be due to the use of safety engineered medical devices following the introduction of the Needlestick Safety and Prevention Act in 2001. The implementation of the act was associated with a 36% decrease in the rate of injury from hollow-bore needles.[53] In Witbank hospital South Africa, Lachowicz[4] found that 74.5% of exposures recalled were sharps and only 25.5% were non sharps exposures. As earlier mentioned the respective figures for this study are 44.8% (sharps exposures) and 55.2% (non sharps exposures). Witbank hospital is a level 2 hospital in Mpumalanga province of South Africa. It is a referral hospital for primary health care facilities around the area. It is therefore probable that the higher rate of recalled sharps exposures there is attributable to the higher rate of performance of surgical procedures in the hospital.

5.4. Determinants of exposure to blood and body fluids.

Varied rates of exposure to blood and body fluids have been reported by various studies both locally and internationally. The reported rates range from 0.9 exposures per 100 HCWs per year to 284 exposures per 100 HCWs per year.[54] This study shows a rate of 80 exposures per 100 HCWs per year among the participants. Several factors have been identified as determinants of blood and body fluid exposure. Some studies have shown that doctors have higher blood and body fluid exposure rates than nurses.[5 30 31 35 55] On the other hand, there have been a number of studies reporting higher rates among nurses. [56 57 58 59 60 61] However, in South Africa, there seems to be some consistency in the reports with doctors having higher exposure rates than nurses.[4] This is further supported by this study in which 48.2% of doctors reported having at least one incident of exposure to blood and body fluid in the preceding 12 months compared to 21.9% of nurses ($p<0.001$). Whether this reflects the scope of duty or the population sizes of the groups in this study is uncertain.

This study also shows that female HCWs are more likely to be exposed to blood and body fluids ($p=0.025$) as previously reported by Voide C et al[5] and Naderi et al[62] although Dement et al[50] reported higher rates among male HCWs. However, this finding may be due to a higher proportion of females in the study sample.

Other factors shown by this study to be associated with exposure to blood and body fluids are workplace, duty post, work shift and formal training on infection control. Hospital based HCWs were found to be more likely to be exposed to blood and body fluids than non hospital based HCWs ($p=0.033$). Staff working at duty posts where more clinical procedures are done are also more likely to be exposed to BBF ($p=0.015$) as previously reported by Hosoglu et al[63] in Turkey.

Similarly staff involved in night shift are more likely to be exposed to BBF than those involved with day shift alone (p=0.001). This association has also been previously reported by Mbaisi[49] and by Patrician et al.[69] It is not clear though whether this is related to the workload of the HCWs as night shifts are known to be less staffed than day shifts. Formal training on infection control was also found to correlate with exposure to blood and body fluids. HCWs who had formal training on infection control were less likely to be exposed to blood and body fluid (p=0.013) as has been reported previously[48] This perhaps is due to a higher compliance rate with universal precautions or standard precautions or improved awareness and skills. Strikingly, this study did not show a significant association between work experience and exposure to blood and body fluids. Staff members who had worked for more than 20 years were no more likely to be exposed to BBF than those who had worked for 20 years or less (p=0.635). This is contrary to findings of studies done in secondary and tertiary care facilities. Gershon et al[51] had reported that highly experienced nurses (>22 year tenure in the field) were more likely to sustain needlestick injury. Nwankwo and Aniebue[64] reported that senior registrars were more likely than junior registrars and medical officers to be exposed to BBF.

5.5. Underreporting of BBF exposures

Reporting of BBF exposures is vital in the fight against blood borne pathogens. It allows the staff to receive appropriate, prompt, medical assessment, counseling and treatment including post exposure prophylaxis which has been shown to reduce the risk of HIV seroconversion by 79%.[38] This way, the staff, their families and the public will be protected. In the event that a HCW becomes infected through accidental BBF exposure, reporting enables him to get appropriate compensation based on the Compensation for Occupational Injuries and Diseases Act (COIDA).

Underreporting of exposures results in underestimation of the overall occupational risk of acquiring BBP infection.[65] Through documenting of exposures, it is possible to identify causes of BBF exposures and prevent them from occurring again. This way, staff members are kept on the job and costs are reduced on the long run. Reporting of exposures is necessary to provide the evidence that is required to analyze preventive measures that have been put in place.

Underreporting of BBF exposures is well documented in the literature with rates between 22% and 82% reported.[66] [67] [68] In this study, 82% of BBF exposures among the study participants were not reported to a supervisor or appointed person. Nearly 93% of non sharps exposures and over 68% of sharps exposures were not reported and this difference in underreporting rates between sharps and non sharps exposures was statistically significant ($p<0.001$, OR=5.963, 95% C.I. = 3.15- 11.30) as was found by Kessler et al.[35] Only 20.5% of HCWs exposed to BBF reported all their exposures compared to 73.1% reported in Switzerland.[5] This study also showed that more than 60% of the participants did not report any of their exposures to BBF while less than 40% reported at least one exposure.

The only socio-demographic characteristics of the participants in this study that were found to have statistically significant association with underreporting rates were age, occupation and work experience. HCWs aged 30 and less were more likely to report exposures than participants aged 50 and above (OR=2.607, $p=0.014$). It is unclear whether this is due to a lower overall motivation to maintain health on the part of older HCWs or due to the phenomenon of "desensitization": the more a HCW is exposed to BBF-exposure prone activities and the more BBF exposures are sustained, the more relaxed the HCW becomes with respect to reporting. The latter seems more likely as it could explain why the three variables are associated with underreporting since the variables are also associated with high BBF exposure rates. This

association has been previously reported in the literature among health care workers in secondary and tertiary care levels.[5 31]

Although not statistically significant, the association between training on infection control and underreporting of BBF exposures is quite an important one. Twenty three percent of exposures among participants who had training on infection control were reported compared to only 15.4% among those without training on infection control. The association is even more important when one considers the fact that there is a significant association between training on infection control and occurrence of BBF exposures possibly due to more compliance with standard precautions. It is therefore hoped that the more educated staff are about infection control, the less likely they are to experience BBF exposure and the more likely they are to report any exposures experienced.

5.6. Reason for underreporting of blood and body fluid exposures

Reasons for underreporting of exposures to BBF have also been studied extensively in the secondary and tertiary care settings and include lack of time, perceived low risk of infection either because of the nature of the exposure or the source patient, lack of confidentiality, poor knowledge of reporting procedure, and fear of being blamed for the exposure among others. The most commonly reported reasons in the literature are perceived low risk of infection and lack of time.[5 31 34]

This study found that the most frequent reason for not reporting BBF exposure among PHC workers is lack of time as reported by 42.7% of the participants. It must be noted however, that each participant could give multiple reasons. The ongoing decentralization of health services by the department of health, if not matched with increased staffing, means that the work load at these PHC facilities can only increase. This increase in workload, coupled with the emphasis on

productivity, causes HCWs to work faster, which in turn limits their attention to their own safety.[69] This is evident in the high frequency of the reason of "lack of time" among staff working at the clinics (55.0%). These clinics do not have on-site infection control or employee wellness officer. Furthermore, there may not be a doctor at these facilities for immediate assessment of staff with BBF exposure. The result is that workers are expected to report their BBF exposures to their immediate supervisor, who may not be at the clinic depending on the position or grade level of the staff, and then proceed to another facility (CHC or hospital) for assessment and further management of their exposure.

Additionally, staff members often complain about the lengthy forms they have to fill out and the amount of time it takes them to get the required signatures of their supervisors when they report their BBF exposures. They are therefore away from work for prolonged period of time due to these logistic issues. This has a heavy impact on their colleagues and patients in facilities with only a few staff members. Indeed, services may temporarily grind to a halt in these facilities.

Over twenty-four percent (24.7%) of the participants giving reasons for not reporting exposures said that they thought the source patient was low risk for HIV and 21.3% said they thought the type of exposure was low risk for HIV. Similarly, 10.1% of the participants said they thought the patient was low risk for Hepatitis B or C and another 10.1% thought the exposure was low risk for Hepatitis B and C. This perceived low risk of infection has also been documented among HCWs in secondary and tertiary care levels.[5 31 34] It has also been shown that there is a great deal of underestimation of risks of infection following self evaluation after a BBF exposure. Burke and Madan[31] reported that 52% of doctors underestimated their risk of acquiring HIV infection, and 70% underestimated their risk of contracting Hepatitis B. Similarly, only 34% of anesthetists correctly recognized the risk of seroconversion of HIV following a NSSI[70] .

Additionally, in a study by Patterson et al[71] on knowledge of surgeons about seroconversion rates following exposure to blood infected with HIV, HBV and HCV, the authors reported correct responses in respectively 50.5%, 14.2% and 19.4% of individuals. In South Africa, more HIV positive patients are being cared for in the primary health care setting. An elderly patient can no longer be considered a low HIV infection risk because of improved medication since HIV/AIDS patients are now living longer. Standard precautions should therefore be practiced at all times by HCWs and all patients should be treated as if they presented a risk with respect to BBPs. It may also be that a sharps injury perceived as clean or sterile is not, depending on the circumstances example someone pricked by a clean needle but wearing blood stained gloves.

The issue of confidentiality is yet another big one with respect to HCWs reasons for not reporting BBF exposures and is closely linked to the issue of stigma. It has previously been reported in other studies.[28 60] In this study, 22.5% of the participants giving reasons for not reporting exposures said they were concerned about confidentiality and 13.5% said they did not want staff in their facility to know their HIV status. This is more obvious among CHC and Hospital staff. At the CHC, 38.5% of the participants giving reasons for not reporting exposures were concerned about confidentiality and 15.4% said they did not want staff in the facility to know their HIV status, and at the hospital, the corresponding figures were 25.0% and 17.9% respectively. In these facilities, reporting of BBF exposures and the necessary documentations are done at the same facility and staff members here know themselves very well. It is not surprising thus that confidentiality is a bigger issue here than at the clinics. Clinic staff exposed to BBF may have to go to a bigger facility which is different from theirs for assessment, management and documentation of the exposure. Another aspect of confidentiality that staff may be worried about is the fact that these exposure reports get into their files or records in the

department of health, and they fear that as the reports increase in number, they may be used against them during performance evaluation.

Often, people get blamed for having a BBF exposure, albeit unofficially and this is mostly seen among the lower cadre of staff. Over seventeen percent (17.2%) of nurses said they did not report exposures because they thought they might be blamed or get in trouble for having the exposure. Again, the figures are higher among clinic staff (30.0%) whose productivity is mostly judged by the number of patients they attend to. They may be blamed for not adhering strictly to standard precautions or for being "careless". As a result, they may not report exposures because this would mean abandoning their work which in turn affects their performance evaluation scores and the latter are linked to their productivity. Considering that 367 participants (82.7%) stated that they would contact their supervisor first in case of exposure, it was not expected that lack of awareness of the reporting procedure would be a frequent reason for not reporting exposures as reported by Kakizaki et al[72] in Mongolia. However, as the results show, 14 out of a total of 89 participants giving reasons for not reporting exposures (15.7%) stated that they did not report BBF exposures because they did not know the reporting procedure. Surely more needs to be done in educating staff on the reporting procedure.

Clearly, the reason for failing to report a particular BBF exposure may be multi factorial and each factor could serve to compound another. The final decision of the HCW depends on the balance of the weights of the factors in the particular circumstance for the particular HCW: if an exposure is probably low risk but the HCW has plenty of time, he is more likely to report the incident than if time is limited. A high risk exposure may not be reported by a staff member who does not have time or who is very worried about confidentiality.

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5.7. Post exposure experience of HCWs reporting a blood and body fluid exposure

There was a great deal of variation in the place of care for the participants reporting BBF exposures with 45.5% of them receiving care at the occupational health/employee wellness program. This is followed by the emergency room (29.5%), and the outpatient clinic (11.4%). This variation in place of care reflects perhaps an ambiguity or inconsistency or lack of understanding of the procedure.

Although not a direct objective of the study, generally speaking however, the rating of their post exposure experience by the participants who reported exposures was favorable. This is evidenced by their responses to the Likert-type questions on post exposure experience. Of note however, is the poor rating by clinic staff of the convenience or otherwise of the place where they received care after reporting their exposure. All the participants working at the clinics either disagreed (55.6%) or strongly disagreed (44.4%) that the place where they received care was convenient for them. Over fifty five percent (55.6%) of these clinic staff received care at the OH/EWP which is at the hospital or CHC. This means they had to abandon work at their facilities to go and report their exposures. This may have discouraged staff in the clinics from reporting BBF exposures.

5.8 Limitations

There are some limitations to bear in mind while interpreting the results of this research.

Firstly, the study relied on self report of blood and body fluid exposures by the participants. This can be affected by recall and recollection hence, recall bias is a limitation here even though BBF exposure is a significant event, and one that it is unlikely a HCW would forget. Unlike in the studies by Haiduven et al[34] and Kessler et al[35], the recall period in this study was limited to the

preceding twelve months to reduce recall bias. In the study by Haiduven et al, the recall period was the preceding five years while Kessler et al requested the participants to recall all exposures in their career.

Secondly, there may have been a selection or non response bias due to the fact that participants who had BBF exposures may be more or less likely to answer the questionnaires. However, a high response rate of 90.1% means that any effect on the results caused by non response bias would be minimal. Thirdly, the study was limited to only one sub district and to only doctors and nurses. In other sub districts and districts, the distribution of doctors and nurses between clinics, CHCs and hospitals may be quite different. Additionally, the exposure reporting policies may differ. To what extent these research findings can be generalized is therefore uncertain.

Lastly, there was no attempt to compare the findings with the actual records in the Occupational Health or Employee Health records. Notwithstanding these limitations, the study has shown the rate of, and reasons for, underreporting of blood and body fluid exposure in a primary health care setting.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

Conclusions drawn from the findings of this study and recommendations based on these findings are presented here.

6.1. Conclusions

This study has shown that accidental occupational exposure to BBF is common among doctors and nurses in the primary health care setting with rates comparable to those reported among secondary and tertiary health care settings.

A number of factors were found to be associated with increased exposure to BBF among doctors and nurses and they include being a female, working in the hospital, working at duty posts where more clinical procedures are done, working night shift, and having no formal training on infection control.

The study also showed that there is a high rate of underreporting of accidental exposure to blood and body fluids among doctors and nurses in the primary health care setting and that the rates are comparable to those seen at secondary and tertiary health care levels. Age, occupation and work experience were found to be associated with underreporting of BBF exposures. It also shows that the most common reasons for not reporting BBF exposures are lack of time, low risk perception due to nature of exposure or the source patient, and perceived lack of confidentiality.

6.2. Recommendations

A study done by Tabak et al[73] in New Zealand found that the best predictors of compliance to reporting of blood and body fluid exposures were the perceived severity of acquiring a disease, perceived efficiency of the reporting system and overall motivation to maintain health. On the basis of this and also based on the findings of this study, a three pronged approach to improving reporting of BBFs is hereby recommended.

Continuous and targeted education of doctors and nurses on the risks of percutaneous and mucocutaneous injuries including the acquisition of bloodborne pathogens should be embarked on. As previously noted, one of the most common reasons given for not reporting BBF exposure is low risk perception, despite compelling evidence of underestimation of risk following self evaluation.[31 70 71] HCWs must be made to understand the risks associated with self assessment of exposures. The importance of reporting exposures including objective risk assessment, post exposure treatment, compensation, and implementation and evaluation of new preventive measures or strategies should be continuously explained. This could be incorporated into formal infection control training which could be made mandatory for all staff by including it as part of the performance evaluation requirements.

There is a need to standardize the reporting system so as to eliminate inconsistencies that have been brought to light by this study and decrease the time spent reporting exposures. The inconsistencies result in staff members exposed to BBF seeking care at different places, example OH/EWP, Infection control and Outpatient clinic during working hours, with additional use of emergency room or casualty during after hours. Furthermore, the most common reason given for not reporting exposures is lack of time and employees may not be released from work to go to

the appropriate place of care after an exposure. A 24 hour central, or possibly, national telephone hotline could be established to handle BBF exposure reporting. This has been shown to improve reporting compliance significantly.[74] It will provide consistency, confidentiality and eliminate the problem of lack of time as staff may be able to report exposures even if busy.

Finally, employees should be educated on the benefits of maintaining their health and retaining their jobs. Awareness on suitability of HBV vaccination should be promoted.[75] They must be educated on the need to evaluate their long-term risks in terms of possible seroconversion or infection rather than the short-term impact on their work.

Appendix 1: Surveyed health facilities

Public Primary Health Care Facilities in sub district F of Johannesburg metropolitan district

Facility	No of Doctors	No of Dentists	No of Professional Nurses	No of Enrolled Nurses	No of Assistant Nurses
South Rand Hospital	39	2	135	65	77
Hillbrow Community Health Centre	15	2	60	22	14
17 Esselen Street Clinic	0	0	10	0	1
80 Albert Street Clinic	0	0	6	2	0
Joubert Park Clinic	0	0	6	0	2
Jeppe Clinic	0	0	4	0	2
Bez valley Clinic	0	0	5	0	1
Mayfair Clinic	0	0	5	0	1
Malvern Clinic	1	0	9	0	1
Yeoville Clinic	1	0	11	2	2
Rosettenville Clinic	0	0	5	0	0
South Hills Clinic	0	0	4	1	1
Eikenhoff Clinic	0	0	8	1	1
Kibler Park Clinic	0	0	4	0	1
Bellavista Clinic	0	0	4	0	1
Crown Gardens Clinic	0	0	4	0	1
Glenanda Clinic	0	0	4	0	1
Total	56	4	284	93	107
Grand total= 544					

Appendix 2: Participant information letter

Participant information letter

Department of Family Medicine
University of the Witwatersrand
Johannesburg
15/02/2013

Good Day,

I am Dr Collins Mbah, a year 4 postgraduate student of Family Medicine in the University of the Witwatersrand. As part of the requirement for the award of the degree of MMED Family Medicine, I am expected to submit a research report.

As a result, I am conducting a research project on **REPORTING OF ACCIDENTAL OCCUPATIONAL EXPOSURE TO BLOOD AND BODY FLUIDS BY DOCTORS AND NURSES IN THE PUBLIC PRIMARY HEALTH CARE SETTING OF SUB DISTRICT 'F' OF JOHANNESBURG METROPOLITAN DISTRICT.**

I am therefore inviting you to volunteer to participate in the project which is aimed at determining the rate of underreporting of occupational exposures to blood and body fluids by doctors and nurses working in the public Primary Health Care facilities in sub district F, as well as the reasons for not reporting exposures.

I would like you to complete the attached questionnaire which contains questions on your gender, age, occupation, work experience, exposures to blood and body fluids, reporting of such exposures, and post exposure experience. It would take about fifteen (15) minutes to complete

Please turn over

the questionnaire. You are requested to drop the answered questionnaires in a sealed drop-off box that will be provided and shown to you.

I will return a few hours later to collect the questionnaires from the drop-off box and keep them in a safe place. All of your responses will be kept **confidential** by grouping them so as to prevent recognition of individuals or facilities. There will be no way to connect you or your facility with the questionnaire you answered. Your responses will be combined with others in order to determine how we can improve our services and the outcome of the survey may be published.

PLEASE **DO NOT** WRITE YOUR NAME OR THE NAME OF YOUR FACILITY ON THE QUESTIONNAIRE. Answering the questionnaire implies that you have consented to take part in the research. Your participation in this study is voluntary. There are no consequences for not participating and you may withdraw from the study any time without consequence.

If you need help completing this questionnaire or have any questions, do not hesitate to contact me on the contact details below. You may also contact the Chairman of the Human Research Ethics Committee (HREC) of University of the Witwatersrand on the contact details below for any queries or complaints.

Thank you in advance for providing this information.

Yours truly,

Dr Collins Mbah (Family Medicine Registrar)

Cell: 0728139894

Fax: 0865113234

e-mail: emekambah@yahoo.com

Prof Cleaton Jones

Chairman HREC

University of the Witwatersrand

PHONE: 011 7172301

Appendix 3: Revised Questionnaire

Questionnaire for Reporting of Accidental Occupational Exposure to Blood and Body Fluids by Doctors and Nurses in the Public Primary Health Care Setting of Sub district 'F' of Johannesburg metropolitan district

If you have questions or problems completing this form, please ask for help.

Answering this questionnaire implies consent

Part 1. (Socio demographic characteristics)

Please tick the most appropriate box for each question and give your answers to questions 2,4 and 7

1. Gender ☐ Male ☐ Female

2. What is your age?.....years

3. What is your occupation?

☐ Medical Doctor/Dentist

☐ Professional Nurse

☐ Enrolled Nurse

☐ Enrolled Nurse Assistant

4. For how long have you been working since you obtained your qualification? .....years

5. Where are you working? ☐ Clinic ☐ Community Health Centre ☐ Hospital

6. Which of the following **best describes** your current duty post?

☐ Maternity and Obstetrics Unit (MOU)
☐ Antenatal clinic
☐ Maternity ward
☐ Primary Health Care (PHC) clinic
☐ Outpatients Department (OPD)
☐ Poly clinic
☐ HIV clinic
☐ Immunization clinic
☐ Sexually Transmitted Infections (STI) clinic
☐ Casualty/Treatment Room
☐ Theatre
☐ Surgical/Gynae ward
☐ Medical ward
☐ Paediatrics ward
☐ Dental clinic
☐ Family planning clinic
☐ Other (specify....

(1)

Please go to the next page

7. For how long have you been working at your current duty post?.....years

8. Which shift do you usually work? ⊔ Day ⊔ Night ⊔ Both

9. Have you had any formal training on Infection Control? ⊔ Yes ⊔ No

10. Have you had any formal training on Occupational Health or Employee Wellness? ⊔ Yes ⊔ No

Part 2. Reporting Occupational Exposures

The following questions are about exposures to blood or body fluids, including injuries from sharp objects such as needles or blood or body fluid contact to the eyes, mouth, or skin.

Please tick the most appropriate box for each question and give your answers to questions 13(ii), 13(iii), 14(ii) and 14(iii)

11(i). Does your facility have a procedure/protocol for reporting exposures to blood and body fluids?

⊔ No ⊔ Yes ⊔ Don`t know

(ii). If yes, are you familiar with how to report these exposures?

⊔ No ⊔ Yes

12. Who would you contact first if you were injured by a needle or sharp object, or if you were exposed to blood or body fluid?

⊔ Supervisor

⊔ Occupational/employee health officer

⊔ Infection Control

⊔ Emergency room

⊔ Personal physician

⊔ Don`t know

⊔ Would not contact anyone

⊔ Other (please explain.....

Please go to the next page

13 (i). In the **past 12 months**, have you been injured by a sharp object, such as a needle or scalpel that wa previously used on a patient?

☐ No ☐ Yes ☐ Don`t know if the object was previously used on a patient

(ii). If yes, how many contaminated sharps injuries did you sustain during this time period? .....

(iii). For how many of these exposures did you complete/submit a blood/body fluid exposure report?.....

14 (i). In the **past 12 months**, did blood or body fluids come in direct contact with your eyes, mouth, or non intact skin? ☐ No ☐ Yes

(ii). If yes, how many blood/body fluid exposures did you sustain during this time period? _____

(iii). For how many of these exposures did you complete/submit a blood/body fluid exposure report ?----

15. If you had an exposure that you did not report, please indicate the reasons for not reporting:

(Tick all that apply.)

☐ I did not have time to report

☐ I did not know the reporting procedure

☐ I was concerned about confidentiality

☐ I thought I might be blamed or get in trouble for having the exposure

☐ I thought the source patient was low risk for HIV

☐ I thought the source patient was low risk for hepatitis B or C

☐ I thought the type of exposure was low risk for HIV

☐ I thought the type of exposure was low risk for hepatitis B or C

☐ I did not think it was important to report

☐ I did not want to know my HIV status

☐ I did not want staff of this facility to know my HIV status

☐ I already knew my HIV status

☐ Other .....

Please go to the next page

Part 3. Post exposure Experience

Please answer the following questions **only if you had an exposure to blood or body fluids that you reported** to a supervisor or health official.

Tick the appropriate box

16. Where did you go to receive care after you were injured by a needle or other sharp object, or were exposed to blood or body fluid?

☐ Employee wellness program/occupational health service

☐ Infection control

☐ Emergency room

☐ Personal physician

☐ Outpatient clinic

☐ Did not receive care

☐ Other (please explain.....

Please go to the next page

17. If you received treatment for your injury or splash, **please circle** the number that best describes your experience with the health service where you received care.

	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**
A. I was seen in a timely manner	1	2	3	4	5
B. I was given sufficient information to make a decision about post exposure treatment	1	2	3	4	5
C. My questions were answered to my Satisfaction	1	2	3	4	5
D. I was encouraged to call or come back if I had any concerns	1	2	3	4	5
E. Staff made me feel that it was important to Report my exposure	1	2	3	4	5
F. I did not feel rushed during my visit	1	2	3	4	5
G. The place where I received treatment was convenient for me	1	2	3	4	5

18. Please add any additional comments below.

.....
.....
.....
.....

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

Kindly place the completed questionnaire in the sealed drop-off box provided in your facility

(5)

Appendix 4: Original CDC Questionnaire

Sample Survey of Healthcare Personnel on Occupational Exposure to Blood and Body Fluids

If you have questions or problems completing this form, please ask for help.

1. Which of the following best describes your occupation/work area? *(Check one.)*

- ☐ Nursing staff
- ☐ Non-Surgical medical staff
- ☐ Surgical medical staff
- ☐ Laboratory staff
- ☐ Dental staff
- ☐ Phlebotomy team
- ☐ IV team
- ☐ Technician
- ☐ Clerical/Administrative staff
- ☐ Transport Service
- ☐ Central Supply staff
- ☐ Maintenance/engineering staff
- ☐ Housekeeping/Laundry Services
- ☐ Other Staff
- ☐ Security
- ☐ Medical student
- ☐ Other student

2. Which shift do you usually work? ☐ 1st ☐ 2nd ☐ 3rd

Part A. Reporting Occupational Exposures

The following questions are about exposures to blood or body fluids, including injuries from sharp objects such as needles or blood or body fluid contact to the eyes, mouth, or skin.

3. Does our organization have a procedure/protocol for reporting exposures to blood and body fluids?

☐ No ☐ Yes ☐ Don=t know

If yes, are you familiar with how to report these exposures?

☐ No ☐ Yes

4. Who would you contact first if you were injured by a needle or sharp object, or if you were exposed to blood or body fluid?

- ☐ Supervisor
- ☐ Occupational/employee health
- ☐ Infection Control
- ☐ Emergency room
- ☐ Personal physician
- ☐ Don=t know
- ☐ Would not contact anyone
- ☐ Other (please explain _____)

5. In the past 12 months, have you been injured by a sharp object, such as a needle or scalpel that was previously used on a patient?

☐ No ☐ Yes ☐ Don=t know if the object was previously used on a patient

If yes, how many contaminated sharps injuries did you sustain during this time period? ____
For how many of these exposures did you complete/submit a blood/body fluid exposure report? ____

6. In the past 12 months, did blood or body fluids come in direct contact with your eyes, mouth, or skin?

☐ No ☐ Yes

If yes, how many blood/body fluid exposures did you sustain during this time period? _____
For how many of these exposures did you complete/submit a blood/body fluid exposure reports? _____

Please go to the next page.

7. If you had an exposure that you did not report, please indicate the reasons for not reporting: *(Check all that apply.)*

- ☐ I did not have time to report
- ☐ I did not know the reporting procedure
- ☐ I was concerned about confidentiality
- ☐ I thought I might be blamed or get in trouble for having the exposure
- ☐ I thought the source patient was low risk for HIV and/or hepatitis B or C
- ☐ I thought the type of exposure was low risk for HIV and/or hepatitis B or C
- ☐ I did not think it was important to report
- ☐ Other (please explain _____)

Part B. Postexposure Experience

Please answer the following questions **only if you had an exposure to blood or body fluids that you reported** to a supervisor or health official.

8. Where did you go to receive care after you were injured by a needle or other sharp object, or were exposed to blood or body fluid?

- ☐ Employee/occupational health service
- ☐ Infection control
- ☐ Emergency room
- ☐ Personal physician
- ☐ Outpatient clinic
- ☐ Other (please explain _____)
- ☐ Did not receive care

9. If you received treatment for your injury or splash, please circle the number that best describes your experience with the health service where you received care.

	Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
A. I was seen in a timely manner.	1	2	3	4	5
B. I was given sufficient information to make a decision about postexposure treatment.	1	2	3	4	5
C. My questions were answered to my satisfaction.	1	2	3	4	5
D. I was encouraged to call or come back if I had any concerns.	1	2	3	4	5
E. Staff made me feel that it was important to report my exposure.	1	2	3	4	5
F. I did **not** feel rushed during my visit.	1	2	3	4	5
G. The place where I received treatment was convenient for me.	1	2	3	4	5

10. Please add any additional comments below.

THANK YOU FOR COMPLETING THIS SURVEY.

Appendix 5: Protocol for managing accidental Blood and Body Fluids exposure

SOUTH RAND HOSPITAL
Rosettenville
2130

health and
social development
Department: Health and Social Development
GAUTENG PROVINCE

Internal Protocol on (PEP) Post Exposure Prophylaxis.

Definition: Accidental injury due to sharps, needle pricks and splash of blood through the membranes.

Procedure: To be taken by the HCW after a Fluid exposure injury has occurred.

1. Immediate management of wound.
   I. Wash the area with an antiseptic soap under running water
   II. .Allow the wound to bleed without squeezing.
   III. Flush the involved mucus membranes vigorously with clean water where a splashes occurred.
2. Report the incident to your immediate supervisor and nursing manager.
3. You are then to go to casualty for medical assessment and treatment. OHS/EWP coordinator to be notified, during office hours or if the incident occurs after hour then the next working day.
4. Counseling to be done and written consent given before bloods are taken. Baseline blood tests that are to be done: -
   a) Rapid HIV
   b) Hep B and C (surface antigens)
   c) Full blood count (FBC)
   d) Renal test (U&E)
   e) Liver function test (LFT)
   f) Rapid Plasmin Reagent (RPR/Syphilis)
   g) Glucose.
   h) Pregnancy test (BetalHCG)
5. Establish the HIV status of the source, by counseling and taking blood of the patient/source.
6. PEP Medication should be commenced as soon as possible, within one to two hours post exposure.
   a) If the client has tested negative, post counseling will be provided.
   b) If the client refuses to have their blood test for HIV you can not start PEP. Client to go for counseling.

(1)

e) If the source is negative the staff member with the doctor can decide if to take PEP for 28 day or not. (This is because of the 6 week window period).

7. All Documentation for IOD to be completed and submitted as soon as possible to the HR and notify the OHS co-coordinator.
   - W.CI.4 First medical report in respect of an accident
   - W.CI.2 Employers report of an accident.
   - Staff are to bring a certified copy of the Identity document (ID)
8. Monitoring of client post incident:-
   Follow up at 2weeks, 4weeks for side effect of treatment.
   6weeks, 12 weeks (3months) and 6 months for serology tests.
   Clients that test Positive for HIV should be followed up for management
   Hep b Prophylaxis is to be given as per guidelines.

9. In case of client presenting with Post exposure after condom bust or other forms of exposure; Patients are give PEP treatment after HIV test and counseling has been done.
10. If the client should sero convert further steps need then to be taken and WCL 3 forms are to be completed.

Reviewed and compiled By Sr. Christy Griffiths
Employee Wellness Co-coordinator

Date: 25./.10./2011

Reviewed By: Mrs. L. N. Maphipha
Area Manager/Chairperson of OHS

03/11/2011

Date: 03/11/2011

Approved By: Mrs. E.K. Kgomongwe
Nursing Service Manager

Date: 27./11./2011

(2)

Appendix 6: Form for Employer`s report of an occupational accident

W.CI.2

labour

Department:
Labour
REPUBLIC OF SOUTH AFRICA

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993
Section 6(A) – Annexure 13

EMPLOYER'S REPORT OF AN ACCIDENT

(For official use only)
Claim No.: .....
Provincial Office
.....
Date .....

DIRECTIONS FOR COMPLETING OF FORM BY EMPLOYER

This form must be completed:
(1) Whenever an employee meets with an accident arising out of and in the course of his/her employment resulting a personal injury for which medical treatment is required, or death.
(2) Whenever an employee reports any personal injury to his/her employer, if in making the report the employee alleges that such injury arose out of land in the course of his/her employment.

(Where the accident has caused death, unconsciousness or amputation or where the injured employee is presumed unable to work for a period of at least 14 days, the Provincial Executive Manager of Labour must ALSO be notified by telephone or fax, without delay).

Step 1 Complete "Part A", page 1 of the form by giving full details, sign and date form where indicated.

Step 2 Detach "Part B" (an automatic copy of "Part A", page 1) by tearing it at the perforation, hand "Part B" to the employee and request him/her to hand it to the medical practitioner/chiropractor or the hospital concerned. **In serious cases "Part B" must be forwarded to the medical practitioner/chiropractor or the hospital without delay.**

Step 3 Complete "Part A", page 2 of the form by giving full details.

Step 4 **Forward the completed report of an accident together with a certified copy of the employee's ID and the First Medical Report (W.CI.4) (If available) to:**

THE COMPENSATION COMMISSIONER
COMPENSATION HOUSE
CNR. SOUTPANSBERG AND HAMILTON ROAD
P.O. BOX 955
PRETORIA
0001

Call Centre 086 010 5350
Fax (012) 323-8627
(012) 325-6686
(012) 326-7889
(012) 323-6986

e-mail • cf-info@labour.gov.za
Website • http://www.labour.gov.za

N.B.:

1) Complete a separate form in respect of each injured employee.
2) This form must be delayed in expectation of the employee resuming employment or awaiting medical reports.
3) An employer who fails to report any accident within 7 days to the Compensation Commissioner on this form, shall be guilty of an offence in terms of the Compensation for Occupational Injuries and Disease Act, 1993 and may held liable for the full amount of compensation payable in respect of such accident.
4) An employer who fails to report accidents that have caused death, unconsciousness or amputation or cases where the injured employee is presumed unable to work for a period of at least fourteen days to the Provincial Executive Manager of Labour by telephone or fax, shall be guilty of an offence in terms of the occupational Health and Safety Act, 1993.
5) Use the appropriate form or the reporting of occupational diseases. (W.CI.1).
6) If an injured employee should leave your employ, please keep record of the address where he/she can reached so that monies which might be payable to him/her from the Compensation Fund, can be sent to him/her with your assistance.
7) Minor injuries where no medical attention was required should not be reported, however a record should be kept of such injuries.

EMPLOYER'S REPORT OF AN ACCIDENT

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993
Section 6(A) (b) – Annexure 13

Instructions:
Complete the form in block letters and mark appropriate areas (X)

(For official use only)
Claim No.: .....
Provincial Office
.....
Date .....

DECLARATION BY EMPLOYER OR AUTHORISED PERSON

I hereby declare that the particulars, shown in items 1 to 62 of this report, of an alleged injury on duty, are to the best of my knowledge and belief true and accurate.

Signed on this ..... day of ..... year..... → Signature .....

EMPLOYER

1. Registered name with the Compensation Commissioner .....
2. Registered number of this business with the Compensation Commissioner
3. Contact person .....
4. Street address ..... 5. Postal code .....
6. Postal address ..... 7. Postal code ..... 8. Tel. no. (.....) .....
9.1 Fax no. (.....) ..... 10. Situation of business/farm .....
9.2 E-mail address .....
11. Nature of business, trade or industry .....

EMPLOYEE (CERTIFIED COPY OF IDENTITY DOCUMENT TO BE ATTACHED)

12. Is the injured person a | working director | working member of a CC | owner of | partner in the business? | Not applicable |
13. Surname ..... 14. First names .....
15. ID no. ..... 16. Date of birth ...../...../..... 17. Sex | Male | Female |
18. Marital state | Married | Single | 19. Citizen of .....
20. Personnel no. ..... 21. Occupation .....
22. Street address ..... 23. Postal code .....
24. Postal address ..... 25. Postal code .....
26. Tel. No. (.....) .....
27. Period in your employ (years/months) ...../..... 28. Expected period of disablement (days) | 0-13 days | 14 & more |

ACCIDENT

29. Date of accident ...../...../..... 30. Time .....
31. Place of accident ..... 32. District .....
32.2 Province .....
33. Date employee reported accident ...../...../..... 34. Time .....
35. What task was the employee performing at the time of the accident? .....
36. Period of experience in the task performed (years/months) ...../.....
37. Was his action at the time of the accident in connection with your trade or business? | YES | NO |
(If "no" state reasons on reverse side Part A page 3)
38. Short description of how the accident occurred. (**ALSO** mark the applicable items on the reverse side of Part A Page 3 and use same for a full description) .....
.....
(Refer the machine/process involved, whether the injured person fell or was struck and all the factors contributing to the accident).
39. Was the accident a traffic accident on a public road? | YES | NO |
40. Nature of injury sustained (e.g. index finger of right hand crushed) .....
Mark any of the following when applicable: | Killed | Amputation | Unconsciousness |
41. Are you satisfied that the employee was injured in the manner alleged by him? | YES | NO | If not, give reasons.
(If "no" state reasons on reverse side Part A page 3)
.....

PART A PAGE 2 MUST ALSO BE COMPLETED

Please complete in detail to ensure early finalisation.

PART A PAGE 2

(COMPULSORY TO COMPLETE)

Employer: ..... **Date of accident:** .....

Employee: ..... **Employee's ID No:** .....

FURTHER PARTICULARS OF EMPLOYEE

42. Earnings of employee at the time of accident:
Attach copy of payslip as at time of accident.

	R/Week	R/Month
Gross cash earnings: (Including average payments for overtime and/or commission of a constant character)		
Allowances of a recurrent nature:		
a) Bonuses (i.e. 13th cheque)		
b) Other allowances (specify nature)		
Cash value of:		
Free food		
Free quarters		
Other payment in kind (specify nature)		

43. In terms of section 47 of the Act an employer is obliged to pay an employee full compensation for the first three months of absence

44. Are you prepared to make further compensation payments after the first three months from the date of the accident? YES / NO

45. If you have already paid cash (earnings) to the employee, state the total amount R .....

46. For what period were such payments made? From ...../...../..... To ...../...../.....

47. Number of days per week worked by the employee .....

48. Date on which the employee ceased work due to accident ...../...../..... 49. Time .....

50. Did the employee complete his shift on the day that he ceased work? YES / NO

51. Date on which the employee resumed work ...../...../..... 52. Time .....

(If the employee will be off duty for an extended period, an Interim Resumption Report (W.CI.6) must be submitted monthly).

53. If the employee was killed in the accident, state name and address of dependant of the employee. .....

.....

FURTHER PARTICULARS

54. Should the employee have any physical defect, have suffered from any serious disease prior to the accident or has previously received compensation for permanent disablement, give full particulars. .....

55. Was first aid given in this case? YES / NO

56. State the name of the medical practitioner/chiropractor who treated the employee. .....

57. If the employee received treatment at a hospital, state name of hospital. .....

58. Was the accident caused by the employee's: a) Deliberate non-compliance with directions? YES / NO

b) Reckless disregard of the terms of any law or statutory regulation designed to ensure the safety or health of employees or the prevention of accidents? YES / NO

c) Action while under the influence of liquor or drugs? YES / NO

(N.B. If any reply is in affirmative, the employee must furnish an explanatory statement which must then be attached hereto together with your comments thereon).

59. Name and address of anybody: a) Who witnessed the accident .....

b) Who was aware of the accident at the time .....

60. How many other employees were injured in the same accident? .....

61. If the accident was investigated by the SA Police, state name of Police Station and docket number applicable .....

.....

62. If motor vehicles were involved, furnish registration number/s. .....

ANY ADDITIONAL DETAILS CAN BE SUPPLIED ON PART A PAGE 3

PART A PAGE 3

Employer: ..... **Date of accident:** .....

Employee: ..... **Employee's ID No:** .....

38. Continuation of point 38 of the previous page. Contributing factors/causes applicable. (Mark the applicable item/s at A and B).

A)

Defective plant	
Defective machine	
Unfavourable conditions of work	
Fault of employer	
Fault of injured employee	
Fault of supervisor	

B)

Railway	
Building work	
Electricity	
Chemicals	
Poisoning	
Burns	

Explosions	
Rotating machine	
Press/Rollers	
Woodworking machine	
Lifting machine	
Hand tools	

Other machinery (Specify): .....

Any other contributing factors, not mentioned above (Specify): .....

The rest of this page may be used for any additional details or comments regarding the accident.

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EMPLOYER'S REPORT OF AN ACCIDENT

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993
Section 6(A) (b) – Annexure 13

Instructions:
Complete the form in block letters and mark appropriate areas (X)

(For official use only)
Claim No.:
Provincial Office
Date

DECLARATION BY EMPLOYER OR AUTHORISED PERSON
I hereby declare that the particulars, shown in items 1 to 62 of this report, of an alleged injury on duty, are to the best of my knowledge and belief true and accurate.

Signed on this ..... day of ..... 20..... → **Signature** .....

EMPLOYER

1. Registered name with the Compensation Commissioner .....
2. Registered number of this business with the Compensation Commissioner
3. Contact person .....
4. Street address ..... 5. Postal code .....
6. Postal address ..... 7. Postal code ..... 8. Tel. no. (.....) .....
9.1 Fax no. (.....) ..... 10. Situation of business/farm .....
9.2 E-mail address .....
11. Nature of business, trade or industry .....

EMPLOYEE (CERTIFIED COPY OF IDENTITY DOCUMENT TO BE ATTACHED)

12. Is the injured person a | working director | working member of a CC | owner of | partner in the business? | Not applicable |
13. Surname ..... 14. First names .....
15. ID no. ..... 16. Date of birth ...../...../..... 17. Sex | Male | Female |
18. Marital state | Married | Single | 19. Citizen of .....
20. Personnel no. ..... 21. Occupation .....
22. Street address ..... 23. Postal code .....
24. Postal address ..... 25. Postal code .....
26. Tel. No. (.....) .....
27. Period in your employ (years/months) ...../..... 28. Expected period of disablement (days) | 0-13 days | 14 & more |

ACCIDENT

29. Date of accident ...../...../..... 30. Time .....
31. Place of accident ..... 32. District .....
32.2 Province .....
33. Date employee reported accident ...../...../..... 34. Time .....
35. What task was the employee performing at the time of the accident? .....
36. Period of experience in the task performed (years/months) ...../.....
37. Was his action at the time of the accident in connection with your trade or business? | YES | NO |
(If "no" state reasons on reverse side Part A page 3)
38. Short description of how the accident occurred. (**ALSO** mark the applicable items on the reverse side of Part A Page 3 and use same for a full description) .....
(Refer the machine/process involved, whether the injured person fell or was struck and all the factors contributing to the accident).
39. Was the accident a traffic accident on a public road? | YES | NO |
40. Nature of injury sustained (e.g. index finger of right hand crushed) .....
Mark any of the following when applicable: | Killed | Amputation | Unconsciousness |
41. Are you satisfied that the employee was injured in the manner alleged by him? | YES | NO | If not, give reasons.
(If "no" state reasons on reverse side Part A page 3)
.....

PART A PAGE 2 MUST ALSO BE COMPLETED

Please complete in detail to ensure early finalisation.

PART B PAGE 2

DIRECTIONS TO MEDICAL PRACTITIONER/CHIROPRACTOR/HOSPITAL

(a) Only the Compensation Commissioner shall decide whether liability in respect of an accident should be accepted in terms of the provisions of the Act.

(b) If liability is not accepted by the Compensation Commissioner medical expenses cannot be paid from the Compensation Fund.

(c) The FIRST MEDICAL REPORT (W.CL4) must be completed in ***duplicate*** and care must be taken to ensure that the full names of the employee and employer and the employee's ID number as shown on this form, appear thereon. The original must be sent to the employer as soon as possible whilst ***the duplicate must be kept by the medical practitioner/chiropractor or hospital together with this form.***

(d) The medical practitioner/chiropractor or hospital must send a specified account to the employer. if the account is still ***unpaid after 2 months this form together with the duplicate FIRST MEDICAL REPORT (W.CL4)*** and specified account must be sent under cover of an ***Enquiry Regarding Unpaid Account (W.CL20)*** to:

THE COMPENSATION COMMISSIONER
COMPENSATION HOUSE
CNR. SOUTPANSBERG AND HAMILTON ROAD
P.O. BOX 955
PRETORIA
0001

Call Centre 086 010 5350
Fax (012) 323-8627
(012) 325-6686
(012) 326-7889
(012) 323-6986

e-mail • cf-info@labour.gov.za
Website • http://www.labour.gov.za

PROVINCIAL OFFICES : DEPARTMENT OF LABOUR

TOWN	POSTAL ADDRESS	STREET ADDRESS	TELEPHONE	FAX
Durban	PO Box 940	Salmon Grove Chambers 407 Smith Street	031 - 366 2191/00 031 - 366 2097/98	031 - 305 7560
Cape Town	PO Box 872	4th Floor Westbank House Cnr. Riebeeck and Long Street	021 - 441 8000	021 - 441 8048
Bloemfontein	PO Box 522	Laboria House 43 Maitland Street	051 - 505 6248 051 - 505 6200	051 - 447 9353
Kimberley	P/Bag X5012	Laboria House No. 43 Cnr. Compound & Pniel Roads	053 - 838 1500 053 - 838 1616	053 - 832 8167
Pretoria	PO Box 393	Concillium Building 239 Skinner Street	012 - 309 5282	012 - 309 5142
Johannesburg	PO Box 4560	Annuity House 18 Rissik Street	011 - 497 3086 011 - 497 3283 011 - 497 3136	011 - 497 3293
Mmabatho	P/Bag X2040	Provident House, 2nd Floor University Drive	018 - 387 8100	018 - 384 2597
Witbank	P/Bag X7263	Labour Building Cnr Hofmeyer & Beatty Avenue	013 - 655 8700	013 - 690 2622
Polokwane (Pietersburg)	P/Bag X9368	Boland Bank Building 42a Shoeman Street	015 - 290 1740	015 - 290 1692
East London	P/Bag X9005	Laboria Building Cnr Church & Oxford Streets	043 - 701 3297 043 - 701 3000	043 - 743 2047

Call Centre No.: 086 010 5350 - Fax No.: (012) 323-8627 or (012) 323-6986
E-mail: cf-info@labour.gov.za - Website: www.labour.gov.za

Appendix 7: Form for First medical report in respect of an accident

W.Cl.4

labour

Department:
Labour
REPUBLIC OF SOUTH AFRICA

Claim Number: .....

FIRST MEDICAL REPORT IN RESPECT OF AN ACCIDENT

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993 (Act No. 130 OF 1993)

[Section 6A(b) – Commissioner's rules, forms and particulars – Annexure 15]

Names and Surname of employee .....

Identity Number ..... Address: .....

..... Postal Code .....

Name of employer .....

Address .....

..... Postal Code .....

Date of accident .....

1. Date of your first consultation .....
2. How did the alleged accident happen? .....

.....

3. Full clinical description of injury (ies) **(not symptoms, signs or syndromes)** .....

.....

.....

.....

4. Describe briefly any <u>pre-existing</u> defect disease .....

.....

.....

.....

5. X-rays Date ..... By whom .....
(Attach report if available)
6. Surgical Procedures: Date ..... By whom .....
Brief description .....

.....

7. Anaesthetics: General / Local ..... Duration .....
6. (a) Consultation Yes / No ..... With whom ..... Date .....
(b) Was the employee referred for physiotherapy? Yes / No ..... Physiotherapist .....
6. (a) Is the employee unfit for work? Yes / No .....
(b) Possible date fit for: Light duty ..... Normal duty .....

I certify that I have by examination, satisfied myself that the injury(ies) of the employee is the result of the accident as described above.

Signature of Medical Practitioner/Chiropractor .....

Name (Printed) ..... Date (important) .....

Address .....

..... Postal Code ..... Practice number .....

N.B.: This report must be handed to the injured employee or sent to the employer within 14 days from the date of first consultation.

Call Centre No.: 086 010 5350 - Fax No.: (012) 323-8627 or (012) 323-6986
E-mail: cf-info@labour.gov.za - Website: www.labour.gov.za

Appendix 8: Form for Final or Progress medical report in respect of an accident

W.Cl.5

labour

Department:
Labour
REPUBLIC OF SOUTH AFRICA

*FINAL / PROGRESS MEDICAL REPORT IN RESPECT OF AN ACCIDENT

(*Delete which is not applicable)

COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT, 1993 (ACT NO. 130 OF 1993)
[Section 6A(b) – Commissioner's rules, forms and particulars – Annexure 169]

Claim Number: .....

Names and Surname of Employee .....

Identity Number ..... Address .....

..... Postal Code .....

Name of Employer .....

Address .....

..... Postal Code .....

Date of Accident: .....

1. Describe any operation(s)/procedure(s)/test(s) carried out and date(s):

.....

.....

.....

.....

2. Prognosis and further treatment? .....

.....

.....

.....

.....

3. (a) From what date has the employee been fit for his/her normal work? .....

(b) On what date is he/she likely to be fit for his/her normal work?

4. Has the employee's condition become stabilised?

If so, describe in detail any present permanent anatomical defect and/or impairment of function as a result of the accident: (Loss of movement, if any, must be indicated in degrees at each specific joint).

.....

.....

.....

.....

I certify that I have by examination, satisfied myself that the injury(ies) of the employee is the result of the accident.

Signature of Medical Practitioner/Chiropractor .....

Name (Printed) ..... Date (important) .....

Address .....

..... Practice number .....

N.B.: Progress reports must be submitted on a monthly basis to the employer until the employee's condition has become stabilised when a final medical report should be submitted.

Call Centre No.: 086 010 5350 - Fax No.: (012) 323-8627 or (012) 323-6986
E-mail: cf-info@labour.gov.za - Website: www.labour.gov.za

Appendix 9: Ethics Clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr CCE Mbah

CLEARANCE CERTIFICATE	**M121150**
PROJECT	Reporting of Accidental Occupational Exposures to Blood and Body Fluids by Doctors and Nurses in the Public Primary Health Care Setting of Sub-District "F" of Johannesburg Metropolitan District
INVESTIGATORS	Dr CCE Mbah.
DEPARTMENT	Department of Family Medicine
DATE CONSIDERED	30/11/2012
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 25/01/2013 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr Zuberu Elabor

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix 10: Certificate of approval by Johannesburg metro health district

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

JOHANNESBURG METRO HEALTH DISTRICT

Enquiries:
Hillbrow CHC
Private Baxg X21, JHB, 2001
Tel:011 694 3710
Fax: 011 694 3826
E-mail :
Johannesburg.research@gmail.com

31 January 2013

Dr Collins Mbah
Department of Family Medicine Johannesburg Metro District
E-mail: emekambah@yahoo.com

Dear Dr Mbah

Your letter dated 19 th November 2012 refers.

This letter serves as an in-principle approval to grant you permission to access the Districts Health facilities in Region F "to determine the rate of, and reasons for underreporting of accidental occupational exposure to blood and body fluids by doctors and nurses working in these facilities".

We are pleased to grant permission to conduct the above research in our health facilities subject to the following conditions:

- These facilities will be visited from February 2013 to August 2013.
- Participants' rights and confidentiality will be maintained all the time.
- No recourses (Financial, material and human resources) from the above facilities will be used for the study.
- The study will comply with Publicly Financed Research and Development Act, 2008 (Act 51 of 2008) and its related Regulations.
- The District must be acknowledged in all the report/publication generated from the research and a copy of these reports/publications must be submitted to the District.

Please feel free to contact us, if you have any further queries.

Regards,

Public Health Unit
Johannesburg Health District office
E-mail: Johannesburg.research@gmail.com

Appendix 11: Certificate of approval by the City of Johannesburg

Joburg

a world class African city

ENQUIRIES: C. Fraser
Tel. +27(0) 11 407 7437
Tel. +27(0) 11 407 6840

4th Floor B Block
Metropolitan Centre
158 Loveday Street
Braamfontein

PO Box 31244
Braamfontein
SouthAfrica
2017

Tel +27(0) 11 407 7513
Fax +27(0) 11 339 2865

14 March 2013

Dear Dr. Mbah

APPROVAL TO CONDUCT RESEARCH WITHIN HEALTH IN THE CITY OF JOHANNESBURG

Permission has been granted to you to conduct research in the Health Department within the City of Johannesburg.

Topic: To determine the rate of Under Reporting of Accidental Exposure to blood and body fluids by Doctors and Nurses in Region F.

Please contact the following person(s) before you commence with your project and to gain access to the clinics:

Regional Health Manager: Region F: Mr. Oupa Montsioa
Tel. No.: 011 681 8130/082 467 9423

Should you have any queries please do not hesitate to contact our department.

We look forward to your Final Research Report.

Thank you

pp

DR. R. BISMILLA
Executive Director
City of Johannesburg
Health Department

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