

**HIV INFECTION AS AN OCCUPATIONAL
HEALTH PROBLEM AMONG MINIBUS AND
TAXI DRIVERS IN LUSAKA URBAN:**

**PREVALENCE AND RISK FACTORS
ASSOCIATED WITH HIV INFECTION**

BY

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THE
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**A dissertation submitted to the University of Zambia in partial fulfilment of the
requirements for the Masters degree in Public Health (MPH)**

**The University of Zambia
Lusaka**

May 2006



DECLARATION

This dissertation is the original work of Yoram K. Siulapwa. It has been presented in accordance with the guidelines for MPH dissertation of the University of Zambia. It has not been submitted elsewhere for a degree at this or another university.

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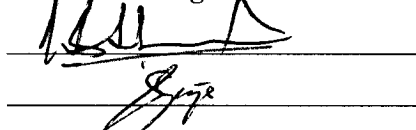
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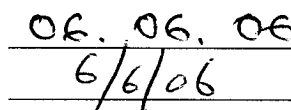
APPROVAL

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Examiner's Signature

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ABSTRACT

This is a descriptive cross-sectional study designed to investigate HIV prevalence and risk factors associated with HIV infection among minibus and taxi drivers (MBTDs) in Lusaka urban. The study was conducted at three main bus stations situated at town centre through which nearly all bus routes in Lusaka are directly connected and at University Teaching Hospital bus station. The most influential MBTDs were selected to assist in recruiting other drivers for the study. Respondents were then made to voluntarily sign a consent form to participate in the study, and thereafter answered a structured questionnaire with both open-ended and closed-ended questions. Each respondent was then given a number, written on the request form, which he took to University Teaching Hospital (UTH) Voluntary Counselling and Testing (VCT) Centre, requesting to be HIV tested. The recruitment of respondents was therefore done through self-selection and voluntary participation (Convenient Sampling).

Respondents were paid K15,000 as transport and loss of business allowance which was incurred when participating in the study. As no female minibus and taxi drivers were present in the study group, they were not included in this study. All respondents were counselled before the test and before being told their HIV status. Blood was collected by venipuncture using vacutainers and tested for HIV-1 antibodies by using Bio-Rad Genie II HIV-1/HIV-2 test kit and any presence of antibodies to HIV-1 in the tested specimen was confirmed by using the Abbott Determine™ HIV-1/2 confirmatory assay

Collection, counselling, testing and management of data was carried out according to Research Ethics Committee requirements of University of Zambia (UNZA). The data was analysed using Epi-info software version 6.3 for socio-demographic factors, sexual behavioral practices, perception of risk of HIV infection, reported sexually transmitted infections (STI) and STI preventive and treatment seeking behaviors associated with HIV infection.

The study established HIV prevalence rate of 33.4% for MBTDs in Lusaka. The study also showed that there was no significant association between residence ($p = 0.690$), education ($p = 0.655$), or mobility ($p = 0.835$) of respondents and HIV infection. Those who were married were however found to be 1.12 (0.32, 3.95) times more likely to be HIV infected than those who were single, widowed or divorced. Those who had lived in Lusaka for more than 10 years tended to be HIV positive ($p = 0.001$). Religious devoutness showed different levels of association with HIV infection. There was no significant association between respondents who reported attending church ($p = 0.860$) or were baptized ($p = 0.463$) and HIV infection. However, there was significant association between being born again and HIV infection ($p = 0.015$). The born agains were found to be 3.59 (1.61, 8.00) times more likely to be HIV infected than those who were not born again. Absence of circumcision was a crucial factor in the spread of HIV infection among respondents as those who were not circumcised tended to be HIV positive ($p = 0.025$).

Drivers who gave free rides to women some of whom became sexual partners and having sex with non-cohabiting partners during the last 12 months preceding to the study had no significant association with HIV infection. However there was significant association between condom use and HIV infection ($p = 0.013$). Respondents who used a condom at last sexual act tended to be HIV negative than positive. The study also established that majority of respondents (81.3%) drank alcohol and 47.3% partook un.injected drugs. Drinking of alcohol and visiting pubs daily was a cofactor to HIV infection ($p = 0.041$). Those who did so were found to be 2.24 (1.21, 4.13) times more likely to be HIV infected than those who drank alcohol and visited pubs less frequently. Uptake of un-injected drugs was not significantly associated with HIV infection ($p = 0.449$).

Perception of risk of HIV infection among the workgroup was found to be very poor because 86.6% of those who did not use a condom during the last sexual act did so because they trusted their sexual partner, some of whom were non-cohabiting. In addition, of the 21.2% of respondents who perceived they had no risk of HIV infection, 21.7% were found to be HIV positive

Repondents who reported having had an STI during the last 12 months tended to be HIV positive than negative ($p = 0.001$) and majority of them (67.2%) visited a traditional healer for advice or treatment. In addition, those who were infected and sought advice and treatment from a doctor, hospital or clinic were found to be 3.53 (1.90, 6.57) times more likely to be HIV infected than those who sought advice or treatment from a traditional healer.

Interventions which are tailored and targeted at self-efficacy through promotion of positive behavioural practices and interpersonal support for safer sex have been formulated and included in the study.

DEDICATION

This study is dedicated to my wife Mundia and my children and grandchildren, namely Inonge, Chinakila, Lubasi, Carol, Flavia, Helen, Linda, Kay, Godfrida and kazumba for your love and prayers and for being there for me all the time. And to the Almighty God, whose love and grace abounds.

ACKNOWLEDGEMENT

This thesis is a product of a great many people and organisations for which mere thanks seems absolutely inadequate. First and foremost many thanks go to my supervisor Professor S. Siziya, who read my numerous revisions and helped make some sense of the confusion. Also thanks to my co-supervisor Mr Thomas Glover-Akpey who gave appropriate guidance and support.

Thanks to the University and in particular Research Ethics Committee for providing guidance and necessary facilities. Deep thanks to Zambia-US Research Partnership on HIV Prevalence and Care of UNZA for awarding me financial support for this research project and Professor K.S. Baboo for successfully supervising my Research Proposal for funding and the late Professor G.J. Bhat for proficiently supervising the research funding. Warm and very special thanks go to Pastor C. Mwanashiku and Maranatha Bible Church of Lusaka for sponsoring my trip to UK, to go and attend Lancaster Symposium Conference, 2005, and present the Eric Foskett Memorial Lecture on this study after being invited by the Chartered Institute of Environmental Health (CIEH) of UK. My presentation was briefly published in the Environmental Health NEWS, UK. (Vol. 20 No. 26 of 8th July 2005, - for details see appendix 10.8). Additional thanks go to Evelyn Hone College for granting me one year paid study leave. Without financial support from these organisations successful completion of this study would not have been possible.

I am especially indebted to Mr A. Mbewe and Mr Chintu for many hours of valuable and encouraging contributions and to Liseli and the Mactribouy family for letting me use their laptops and a printer over long periods of time. Finally many thanks go to my wife for providing backup facilities and an enabling environment necessary for this type of work and also I extend my thanks to all Executive Members of Zambia Institute of Environmental Health plus numerous friends who endured this long process with me, always offering support and love.

LIST OF ACRONYMS

AIDS	: Acquired Immuno-deficiency Syndrome.
CBoH	: Central Board of Health.
CSO	: Central Statistics Office.
CIDRZ	: Centre For Infectious Disease Research In Zambia
DNA	: Deoxyribonucleic Acid
GRZ	: Government of the Republic of Zambia.
HAART	: Highly Active Anti-Retroviral Therapy.
HIV	: Human Immuno-deficiency Virus.
IDU	: Injection Drug Use
ILO	: International Labour Organisation.
MBTDs	: Minibus and Taxi Drivers.
MoH	: Ministry of Health.
MoLG	: Ministry of Local Government
NAC	: National HIV/AIDS/STI/TB Council.
PLWHA	: People Living With HIV/AIDS
STI	: Sexually Transmitted Infection.
TB	: Tuberculosis.
UNAIDS	: Joint United Nations Programme on HIV/AIDS.
UNZA	: University of Zambia.
UTH	: University Teaching Hospital.
VCT	: Voluntary Counselling and Testing.
ZDHS	: Zambia Demographic Health Survey.
LDHMT	: Lusaka District Health management Team
LCC	: Lusaka City Council

PREFACE

The devastating impact of HIV on all sectors of the economy, on communities, household and at the individual level will continue to be enormous unless urgent targeted interventions among critical groups are put in place. The World Bank, UNAIDS and other agencies have suggested that interventions that specifically target high-risk groups are more cost-effective than interventions that target whole populations as the unit of intervention. This is because high-risk groups contribute disproportionately to STI and HIV transmissions. Targeted interventions should therefore be encouraged and be seen as an essential component to the national control programmes that target the whole population

Several studies have recognised HIV/AIDS as a workplace issue, and should therefore be treated like any other serious illness or condition in the workplace (ILO, 2001). This is necessary not only because it affects the workforce, but also because the workforce, being part of the local community, has a role to play in the wider struggles to limit the spread and effects of the epidemic. In many instances, work influences behaviour of the workforce, because it provides accessible income and an environment, which influences the workforce to practice risky behaviours, which make them vulnerable to HIV infection.

This study is designed to not only assist in determining whether or not MBTDs are a vulnerable workgroup to HIV infection, but also to assess and identify risky factors associated with HIV infection. It will also result in formulating tailored and targeted interventions, which are aimed at self-efficacy through promotion of positive behavioural practices and interpersonal support for safer sex.

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CHAPTER ONE

1.0 INTRODUCTION

The gravity of HIV/AIDS in the world and Africa in particular is serious and deserves special consideration.

According to UNAIDS/WHO in 2003 reported that there were “5 million new HIV infections worldwide of which 3.2 were from Sub-Sahara Africa and total deaths worldwide of 3 million of whom 2.3 were from Africa”. In that vein, according to Randy Tobin (US Global AIDS Coordinator) “the number of new infections underscores the urgency of developing more effective strategies to reduce the transmission because if we do the math; we’re losing the war”.

In respect to Sub-Sahara Africa and Zambia in particular, Dr Stella Goings (UNICEF Country Representative) described “HIV/AIDS in Sub-Sahara Africa as Africa’s present day holocaust”. She further observed that because of HIV/AIDS pandemic, “many children have been orphaned. By 2010, 15 million children under the age of 15 will be orphans due to HIV/AIDS in Sub-Sahara as compared to 13 million during the World War II” (The Post (Zambia), Monday June, 2004).

The above two quotations and the comment from Randy Tobin, sum up the HIV/AIDS crisis facing Africa. But in the very act of recognizing the gravity of the threat of HIV/AIDS, it also leads to the possibility of overcoming it. It is with this in mind that as part of the study of HIV/AIDS as an occupational health problem among minibuses and taxi drivers (MBTDs) in Lusaka Urban, a detailed overview of how HIV is transmitted and how it can be controlled have been included in the study.

1.1 AN OVERVIEW OF HIV/AIDS TRANSMISSION

The overview has covered areas which give a good base of knowledge of what HIV/AIDS is and how it is transmitted and prevented and is therefore useful in this study.

1.1.1 WHAT IS HIV?

The acronym “HIV” stands for human immuno-deficiency virus and is the virus that causes AIDS. The HIV is $1/10,000^{\text{th}}$ of a millimetre in diameter. It is a retrovirus, thus difficult to treat because it can easily change, mutate, or combine with another one. It is therefore not one virus but a family of many similar viruses. There are two major strains of HIV, namely HIV-1 and HIV-2. The two strains have similarities and differences. HIV-1 is found in all parts of the world while HIV-2 is mostly found in West Africa (Park, 2001). Since the spread of both viruses is prevented in the same way both are referred to as HIV.

HIV damages cells of the immune system thus progressively destroying the body's ability to fight infections and certain cancers. Normally the body has special cells, CD4 T-cells (also known as T-helper cells), a subset of the human T-lymphocytes that protect it against diseases. These cells are the immune system's key infection fighters and are found in all the body fluids, with the concentration being higher in the blood, semen and vaginal secretions. When a person is infected, the HIV enters these T-helper cells of the immune system destroying the genetic material thus causing permanent damage. Without the T-helper cells, the body of an HIV infected person is unable to fight disease germs and the person later develops AIDS (Reuben et al., 1999)

1.1.2 HIV MULTIPLICATION:

There are two ways in which HIV can reproduce itself.

The first way is when the HIV enters the body and searches for the CD4 cells. When it locates a CD4 cell it attaches itself to the cell and enters it. Once inside, the HIV finds the DNA in the cell nucleus. It then duplicates itself from DNA building materials in the cells. This duplicate copy then hides in the CD4 cell's DNA. Even under a microscope, the cell's DNA appears normal despite its being polluted with HIV/DNA. Once safely hidden in the cell's DNA, the HIV can either remain quietly in the cell or turn on to the cell's DNA and use the cell's machinery to multiply itself. To multiply itself it uses a specific protease enzyme in the infected cell to reconstruct the virus and produce more HIV/RNA cells. These new viruses leave the cell and enter other CD4 cells and the process continues. As the HIV/DNA lies inside of the cell's DNA there is no way for the body to eliminate it (Reuben et al., 1999).

Most people do not develop symptoms when they first become infected with HIV. It could take 2- 10 years or more for an HIV infected adult with HIV infection to develop AIDS. This period of "asymptomatic" infection is therefore highly variable. Some people may begin to have symptoms within a few months, whereas others may be symptomatic free for more than 10 years. During the asymptomatic period, however, HIV is actively infecting and killing cells of the immune system. HIV's effect is most noticeable in the decline in the blood levels of the T4 cells. Initially, the virus disables or destroys these cells without causing symptoms. However the infected person can spread the infection during this period. Usually a person becomes infectious about two weeks after acquiring the infection (Reuben et al., 1999).

1.1.3 WHAT IS AIDS?

The term AIDS stands for Acquired Immuno-deficiency Syndrome and applies to most advanced stages of HIV infection. Acquired, because it is something one “acquires” or gets from someone else, or from the effects of the environment. “Immuno”, because it attacks the body’s natural defence system (immune system) against diseases. “Deficiency”, because it keeps the immune system from working properly and “syndrome” because it causes several kinds of medical problems or group of illnesses originating from one cause.

The official criterion for defining the immune system was developed by the USA Centre for Disease Control and Prevention (CDC) in Atlanta, Georgia. In 1993, the CDC revised its definition of AIDS to include all HIV-infected people who have fewer than 200 CD4+ T cells (Healthy adults usually have CD4+ T cells counts of 1000 or more). In addition, the definition includes 26 clinical conditions that affect people with advanced HIV disease. These AIDS-defining conditions are mostly opportunistic infections, which rarely cause harm in healthy individuals. But in people with AIDS, these infections are often severe and sometimes fatal because the immune system is so destroyed by HIV that the body is unable to fight off certain bacteria, viruses and other microbes (ECSACON and PRIME/INTRAH, 1999).

1.1.4 MODE OF HIV TRANSMISSION

HIV is most frequently spread when blood, semen or vaginal or cervical secretions of an infected person comes into contact with the blood or mucous membrane of a none-infected person. Therefore the virus is spread by:

(a) Sexual intercourse (homosexual or heterosexual or orally (UNAIDS Fact Sheets 1999). In order to gain entry into the body, the virus enters through broken skin or mucous membrane. It then attaches itself to specific target cells, that is receptors called CD4 receptors e.g. macrophages, dendritic cells and T4 lymphocytes. The receptor cells are abundant in the lining of the genital tract and the ano-rectal area.

(b) Parenteral transmission by transfusion of infected blood and blood products. The use of contaminated needles, syringes, razor blades and skin piercing instruments can also transmit HIV. This means that HIV-infected blood becomes a high risk when passed on the body through blood transfusion and intravenous drug use, via blood contaminated needles, razor blades and open wound caused by traditional practices such as circumcision, scarification or ear piercing with unsterile instruments.

(c) Surgical procedures (modern or traditional). In modern surgical procedures, HIV can be transmitted through contaminated surgical instruments or blood and blood products. HIV could also be transmitted through the use of acupuncture needles if they are not sterilised before re-use (ECSACON and PRIME/INTRAH, 1999).

(d) Mother-to-child HIV transmission. HIV positive mothers can pass on the HIV to their children during pregnancy, child birth or during breast feeding. HIV spread through breast milk depends on the stage of infection in the mother. Thus transmission through breast-feeding is more likely if under the following circumstances:

- Mother becomes pregnant soon after HIV infection;
- Mother is infected with HIV at the time when she is still breast-feeding;
- Mother is in the late stage of HIV disease (low CD4 counts, symptoms of opportunistic infections, weight loss etc);
- Mother has cracked nipples or sores around the nipples;
- Infant has disease or sores in the mouth, pharynx or oesophagus.

Studies have shown that if the drug AZT is taken during pregnancy, the chance of transmitting HIV to the unborn child is reduced (ECSACON and PRIME/INTRAH, 1999).

1.1.5 HIV INFECTIVITY

Infectivity is the probability of transmission from an infected to an uninfected person. Infectivity is potentially affected by both host resistance factors and viral factors and by interventions such as the use of condoms, spermicides or antiretroviral treatment (Cohen et al., 1999).

The infectivity of HIV is low compared with sexually transmitted bacterial infections (STIs) such as gonorrhoea, chlamydia, chancroid and syphilis and it is less easily transmitted sexually than the hepatitis B virus, (Kingsley et al., 1998).

There is apparent large variation in individual susceptibility to HIV infection. Sexual transmission of HIV studied experimentally in animal models and epidemiologic studies of HIV infection in heterosexual couples and homosexual men have shown large variations in individual susceptibility to infection (Cohen et al., 1999). In addition to variations attributable to specific sexual behaviours and the use of barrier contraceptive methods, the probability of infection is altered by differences in the host factors and by the infectiousness of the carrier.

HIV has been isolated from blood, seminal fluids, pre-ejaculate, vaginal secretions, cerebrospinal fluids, and breast milk of infected individuals. HIV-DNA sequences have also been detected in pre-ejaculation fluid (Ilaria et al., 1992). Demonstration by Semprini et al., 1992, showed that removal of infected cells from semen allowed artificial insemination without seroconversion in 29 women suggested that infected spermatozoa are not a common source of transmission.

Transmission could theoretically occur from sexual behaviour involving contact with any of the fluids in which HIV has been found, but concentration of HIV found in saliva and tears is extremely low unless if mixed with blood. Infectious virus is rarely recovered from saliva. Studies by HO et al., 1985 and Barr et al., 1992, recovered virus from 1 in 100 saliva samples from HIV-infected persons. Moreover, no cases of HIV infection have been traced to saliva or tears. Rare cases of transmission by human bites have been reported, but saliva from infected person probably contained HIV infected blood. The Centre for Disease Control and

Prevention (CDC) has attributed transmission in one case from an HIV-infected man who had bleeding sores in his mouth, to his female sexual partner by exposure to man's blood-contaminated saliva during deep kissing (CDC, 1997).

Individuals have been identified who were infected by a single unprotected sexual act, where as others have remained uninfected after hundreds of unprotected sexual acts or years of frequent high-risk sexual behaviour with probable exposure to many infected individuals (Redfield et al., 1985; Padian et al., 1991). These observations suggest that behaviour alone does not explain variations in infectivity. They suggest a wide variation in the infectiousness of the carrier and/or host resistance to infection.

Host Resistance to Infection can influence HIV infectivity. Several laboratory and epidemiologic observations suggest significant variation in host resistance to infection. Groups of individuals with multiple exposures to HIV infected sexual partners over periods of many years that nevertheless remain uninfected, such as prostitutes in Kenya and homosexuals in the USA have been cited as indirect evidence of host resistance to infection (Willeford et al 1993; Detels et al., 1994). Host immunity to HIV infection could result from protection by an immune mechanism (this role has been proposed for CD4 cells), from encountering only defective virus from the source or from the absence or reduced susceptibility of the target cells in the host. The strongest evidence exists in the latter.

1.1.6 ANTIRETROVIRAL THERAPY AND HIV TRANSMISSION

Use of Zidovudine (AZT) under laboratory observation was associated with decreased detection of HIV-1 in semen (Anderson et al., 1992) and in a prospective study of male-to-female transmission, controlling for disease stage, men taking AZT were less likely to transmit HIV to their female partners than were men not receiving antiretroviral therapy (Musicco et al., 1994). Antiretroviral therapy thus may reduce infectiousness of HIV. Current multidrug regimens of antiretroviral therapy, which include drugs active against both the reverse transcriptase and the protease enzymes of HIV, can reduce HIV viremia to below the level detectable by current quantitative assays (down to a few virions per microliter) (Vernazza et al., 1997). Vernazza et al

found that the blood plasma levels of HIV RNA correlated with HIV RNA levels from seminal plasma, which in turn correlated with detecting HIV in seminal cell culture. In this study, current antiretroviral therapy was an independent predictor of undetectable levels of HIV RNA in semen.

Recent development of highly active antiretroviral therapies (HAART) has resulted in a new optimism for many HIV- infected patients. As efforts to develop even more effective treatments continue, it is critical to continue aggressive prevention efforts as a vital component of the battle against HIV. Although HAART can result in dramatic reductions in HIV viral load, it is not yet a cure for HIV disease, thus prevention should still be the first line of defence. In addition, no evidence indicates that HAART reliably eliminates all the potential for transmitting HIV to another person. Therefore even individuals receiving HAART should initiate and maintain strategies to prevent HIV transmission. Lastly HAART is available for a small proportion of the world's HIV infected population. Thus prevention remains the main line of defence for these individuals (Cohen et al., 1999).

1.1.7 POST-EXPOSURE PROPHYLAXIS TO PREVENT SEXUAL TRANSMISSION

Post-exposure prophylaxis (PEP) has been proposed as a possible means of preventing sexual transmission. PEP can be any of a number of different possible treatment regimens using multiple antiretroviral drugs administered for a short time when initiated very soon (within 72 hours) after unprotected exposure to an infected person. A study of PEP in health workers with a recent needle-stick or other exposure found that those who took AZT had a lower incidence of infection than those who did not take AZT (CDC, 1995). This and other findings (Grob et al., 1997) are the bases in support of PEP after sexual exposure. Opponents of PEP however are concerned that it may lead to an increase in risky sex in the belief that a "morning after pill" is available to prevent infection or that it may lead to an increase in HIV strains resistant to antiretroviral therapy. The efficacy, the effect of sexual behaviour and the effect on development of resistant strains of PEP all

remain to be determined and the role of PEP in HIV prevention will depend on results of these determinations (Cohen et al., 1999).

1.1.8 OTHER HIV TRANSMISSION COFACTORS

The table below summarises risk factors that have been associated with sexual transmission of HIV in epidemiological studies.

Table1: Factors associated with increased or decreased risk of sexual transmission of HIV

Factor associated with increased risk of transmission	Male-to-female	Female-to-male	Male-to-male
Anal intercourse	Yes	Unknown	Yes
No. of sexual contacts	Yes	Yes	Yes
Advanced HIV disease	Yes	Yes	Yes
Primary HIV infection	Yes (1)	Yes (1)	Yes (1)
Genital sores/infections	Yes	Yes	Yes
Sex during menses	No	Yes	N/A
Lack of male circumcision	Probably	Yes	Unknown
Cervical ectopy	Yes	Possibly	N/A
Oral contraceptives(2)	Yes	Unknown	N/A
Pregnancy(3)	Unknown	Possibly	N/A
Factors associated with decreased risk of transmission			
Condom use	Yes	Yes	Yes
Antiretroviral therapy	Possibly	Possibly	Possibly
Spermicide use (2)	Possibly	Unknown	N/A

Evidence for increased infectiousness during primary infection is based on mathematical modes

Whether oral contraceptives and spermicides are protective or increase the likelihood of transmission is controversial

Evidence is based on increased cervical HIV shedding in pregnant women

Source: The AIDS Knowledge Base, Third Edition, 1999.

In addition to the above, other cofactors have been identified to be important factors in changing the probability of transmission. These include:

1) Sexually transmitted infections and HIV transmission

STI may increase susceptibility to infection by causing genital lesions that facilitate viral entry or by increasing the number of target cells for HIV (Activated lymphocytes or monocytes). Genital ulcers in particular have been identified as a risk factor in Africa (Cameron et al., 1989; Greenblat et al., 1998; Plummer et al., 1991). In studies conducted in African STI clinics, these ulcers are often caused by *Hemophilus ducreyi* infection (chancroid), which is less frequent in western countries. Syphilis and herpes simplex infection, STIs that cause genital ulceration have also been reported as possible cofactors for infection (Holmberg et al., 1988; Kingsley et al., 1990). In one African study, both chlamydia trachomatis infection and the presence of genital ulcers were risk factors for HIV infection and were independently significant in multivariate analysis (Plummer et al., 1991). Increased viremia in the infected partner resulting from STI may also be an important factor for sexual transmission.

A study of 135 HIV infected men in Malawi found that those who contracted an STI had eight times as much HIV in their semen as those who did not, but that after two weeks of STI treatment, the levels in the two groups were the same (Cohen et al., 1997). The strongest demonstration to date of the potential importance of STI in amplifying the HIV epidemic comes from a randomised controlled trial of improved treatment of STI in rural Tanzania. HIV incidence over a two year period was reduced by 40% (1.2% versus 1.9% per year) in six villages randomised to case management of STI at the primary health care level compared with six villages in the same geographic region randomised to regular care (Grosskurth et al., 1995). This study suggests that interventions using STI control may also have a significant effect of HIV sexual transmission.

2) Oral contraceptives and intrauterine devices and HIV transmission

Oral contraceptives cause both a thickening of both vaginal and cervical mucus, which could inhibit transmission. Use of an intrauterine device has been associated with a higher rate of transmission from male to female (Lazzarin et al., 1992).

3) Spermicides and HIV transmission

Spermicides in conjunction with a vaginal sponge are not reliable protection against HIV infection (Stone et al., 1992). There is however conflicting evidence about whether they reduce HIV transmission. Results of African studies revealed both reduced and increased incidence of HIV infection with nonoxyl-9 use (Kreiss et al., 1992; Hira et al., 1997). An increase in risk may be mediated by irritation of vaginal mucosa. A significant proportion of men and women are allergic to spermicides, and they may increase the likelihood of developing urinary tract infection in some women (Hooten et al., 1993)

4) Other associations with HIV transmission

Risk of infection to the women in penile-vaginal intercourse may be mediated in part by changes in the acidity of vaginal secretions and by changes in the cervix. Cervical ectopy has been associated with increased risk of infection (Holmes et al., 1988). Normal vaginal pH is between 3.5 and 6.0, an acidic environment that is protective against infection. Conditions raising vaginal pH tend to be lower in younger women, thereby raising the risk of HIV infection in young girls engaged in sexual intercourse.

Stage of menstrual cycle has also been associated with risk of infection. Nutritional status may also play a role. Moore et al., 1993, reported that weight loss was a significant cofactor for infection in Rwandan women after controlling for other risk factors, including socio-economic status and genital ulcer disease. Mostad et al., 1997, found an association in HIV positive women between vitamin A deficiencies and increased shedding of HIV in cervical and vaginal secretions. Increased risk to the male has been associated with an intact foreskin (Cameron et al., 1989). This is because circumcised men appear to be less susceptible to abrasions and tearing and are therefore less prone to ulcerative STIs, all of which facilitate transmission of the virus (NAC, 2004).

1.1.9 WAYS IN WHICH HIV CANNOT BE TRANSMITTED

HIV cannot be transmitted by the following ways (ECSACON and PRIME/INTRAH, 1999):

- Airborne route such as coughing, sneezing, laughing or talking
- Simple skin contact such as hand shaking, hugging, touching, using telephone etc
- Through food, water, or plates, spoons, toilet seats, swimming pools, showers, towels, bedding etc
- Insect such as mosquito bites
- Work or school contact

Though some researches in the USA have detected HIV in the saliva of infected individuals, it is yet to be confirmed that the virus can be spread by contact with saliva.

1.1.10 DIAGNOSTIC APPROACHES

Many laboratory methods are available to screen blood, diagnose infection and monitor disease progression in individuals infected by HIV. These tests can be classified into those that can detect antibody, identify antigens, detect or monitor viral nucleic acids and provide an estimate of T-lymphocyte number cell phenotyping. Here we shall review on (a) Antibody detection tests, which are the most widely used and most effective way of identifying HIV infection and (b) Tests, which indicate how far the disease has progressed and how rapidly it is progressing, (Cohen et al., 1999).

1) Anti body testing

Tests to detect antibody to HIV can be classified into two groups:

- i) Screening Assays which are designed to detect all infected individuals
 - ii) Confirmatory (supplemental) Assays, which are designed to identify only those individuals who are infected and who have reactive screening test results.
- Screening Tests possess a high degree of sensitivity, whereas Confirmatory

Assays have a high specificity. Tests with high sensitivity produce few false-negatives results, whereas tests with high specificity produce few false-positive results. These classes of assays, performed in tandem, produce results that are highly accurate, reliable and appropriate to protect the blood supply or assist in the diagnosis of HIV infection. Technical errors do occur, however, and biological factors can limit the accuracy of HIV tests. Therefore, along with the testing process, is the requirement for an ordinary and dedicated quality assurance (Constantine et al., 1992). Regardless of the results, because laboratory results are not perfect, they are meant to be a supplementary for clinical diagnosis. There are many types but the most commonly used ones are the ELISA (for screening) and Western blot assay (for confirming the ELISA test). Their merits and demerits are listed in table 2 below.

Table 2: Common screening and confirmatory assays

Merits and Demerits	Screening Method	Confirmatory Method
	ELISA (Enzyme-linked immuno- absorbent assay)	Western Blot
Cost and Accessibility	<ul style="list-style-type: none"> - Cheap and simpler than Western blot 	<ul style="list-style-type: none"> - The cost of this test is higher than ELISA - It is often not available in low resources areas thus creating a need for a second ELISA to confirm the diagnosis
Accuracy	<ul style="list-style-type: none"> - Good for screening purposes - *Very sensitive in detecting those who are positive - *Less specific in detecting those who are truly negative 	<ul style="list-style-type: none"> - This a highly specific method of testing
Skills and Facilities	<ul style="list-style-type: none"> - Trained staff required - Laboratory facilities required 	<ul style="list-style-type: none"> - Trained staff required - Laboratory facilities required

* This means that occasionally false positive or false negative results may occur. Ideally, a Western blot or a repeat of the ELISA should confirm a positive ELISA

Source: HIV/AIDS. A guide for Nurses/Midwives and other Health Care Workers, ECSACON 1999.

2) Tests for diagnosing and monitoring the disease

These are tests, which indicate how far the disease has progressed and how rapidly it is progressing. Two main types of tests are used, namely CD4+ T- Cell counts and HIV RNA levels tests or viral load assays

(i) **CD4+ T- Cell counts:** The plasma CD4+ lymphocyte count (CD4 + count, T-helper cell count) is used to indicate disease stage, though it has some limitations (Centre for Disease Control prevention, 1997; Molone et al., 1990). Some limitations arise because individual determinations may vary significantly. Further, the CD4+ cell numbers reflect only one aspect of immuno-competence. Normal CD4+ counts are in the range of 500 to 1300 cells/mm³. In addition, treatment with potent antiretroviral therapy often results in return of CD4+ counts to high levels that probably mask other immune system defects, thus somewhat complicating staging of the disease (Cohen et al., 1999).

(ii) **HIV RNA Levels: Viral Load Assays.** The words “HIV Viral Load” are used in several different ways. HIV viral load or ‘HIV Viral burden” is sometimes used to mean the quantity of HIV in the body tissues and fluids or the number of HIV particles in the plasma, usually by determining plasma HIV RNA. Evidence indicates that if this quantity is lower, there is less HIV replication and less risk of short-term progression of the disease. It is however difficult to measure the true total body viral load. However accumulating evidence supports the assumption that the quantity of HIV in the blood reflects the total body viral load (Haase et al 1996; Wong et al., 1997).

The following are some of the factors which need consideration for the above mentioned tests:

1. The use of CD4+ T-Cells counts for Highly Active Antiretroviral Therapy (HAART)

Normal CD4+ T-cell counts are in the range of 500 to 1300 cells/mm³ but as the disease progresses, CD4+ T-cell count declines. Although recent evidence (Mellors

et al., 1997) now makes it clear that HIV RNA level is a better predictor of risk of progression, numerous epidemiological studies have demonstrated the prognostic significance of the CD4+ T-cell count, and the combination of CD4+ T-cell count and HIV RNA level gives improved prognostic value compared with HIV RNA level alone.

Persons with CD4+ T-cell count greater than 500 cells are at very low risk for the development of serious opportunistic infections in the next 3 years. Persons with counts below 200 cells, in the absence of antiretroviral treatment, are at very high risk for progression in the next 3 years. Individuals with counts between 200 and 500 cells are at immediate risk. A patient's CD4+ T-cell count should be checked every 3 to 6 months, depending on whether a patient is near a value that should result in a change in prophylaxis or antiretroviral regimen (Cohen et al., 1999).

2. The "Set Point" of viral load during HIV infection.

HIV RNA becomes detectable in a patient's blood within weeks of infection and precedes the appearance of HIV antigen and HIV antibody. Over the following weeks, the level rises to a peak and then tapers to a relatively stable level that is now referred to as the "set point" (Pedersen et al., 1997; Mellors et al., 1996). For individuals, this level tends to change relatively slowly over the following months and possibly years. The actual level is very different in different patients and its magnitude predicts the risk of disease progression. Plasma HIV-RNA levels may range from undetectable to more than one million copies per mm³. The 'undetectable' HIV RNA in the blood indicates the limits of the assay being used, usually 20 to 500 RNA copies/mm³. In general, a value less than 500 copies/mm³ indicates lower risk of disease progression in the coming 5 years, whereas a value of 50,000 copies/mm³ indicates a high risk (Cohen et al., 1999).

There are some limitations to Viral Load Assays. Viral load may increase when HIV infected patients have other infections such as 'the flu', bacterial pneumonia etc or when they are immunised (Havlir et al., 1998; Bush et al., 1996). Therefore viral load assays should not be done until at least one week after clinical resolution of

such an event. In addition, plasma HIV RNA measurements are not direct measurements of the HIV replication rate. They are measurements of the steady-state level of plasma HIV RNA. In theory, a particular steady state level of plasma HIV RNA could occur in a patient with replication rate that is very high, very low or anything in between, as long as the rate of destruction of HIV RNA is comparable with the rate of replication. Despite these theoretical limitations of HIV RNA measurements there is however strong evidence that these assays accurately predict risk progression of untreated HIV disease and accurately reflect the short-term efficacy or ineffectiveness of anti-HIV drug regimens (Mellors et al., 1997; Marschner et al., 1998).

3. Who and When to Treat

When to recommend initiation of antiretroviral therapy is clearly a key management decision. Equally important is what the patient wants and is able to do. In theory, the earlier therapy is initiated, the more damage – some potentially irreversible – that can be prevented. Tempering with this view therefore is the lack of long-term experience with HAART (Cohen et al., 1999). Most experts agree on initiating therapy in some stages, particularly symptomatic disease, decreasing CD4 T-cell counts, high viral load and primary HIV infections. Experts disagree on the best course in other settings. In ambiguous situations, ‘conservative’ experts tend to wait, and ‘aggressive’ experts recommend initiating therapy for patients with any detectable plasma HIV RNA at any stage of the disease. When clinicians and patient decide to wait to initiate antiretroviral therapy, regular monitoring (e.g. every 2 to 4 months) of CD4+ T-cell counts and HIV RNA levels is needed to detect evidence of disease progression. Whatever the option, the doctor should involve the patient in making the decision.

4. Arguments against early treatment

In ambiguous cases ‘conservative’ clinicians and patients may support waiting to initiate therapy with arguments that include the following:

- Increased potential for adherence failures with longer duration of therapy.
 - Longer exposure to unknown long-term adverse effects of medication
 - Impact on quality of life imposed by unpleasant adverse effects and the need to adhere to a regimen
 - Possible earlier selection of drug-resistant HIV strains
 - Decreases future options for changing medication if resistance develops
 - Possible exhaustion of benefit from current therapy because the duration of efficacy of disease suppression is unknown
 - Increased cost
-
- **Early detection and the ‘Window Period’**

Usually it takes 6-12 weeks after infection with HIV for the antibodies to appear in the blood. This is called “window period”. Thus “window period” is the state during which the person is infected and the HIV antibody test is still negative. The virus, however, can be passed on to others (ECSACON and PRIME/INTRAH, 1999)

Specific antibody to HIV is produced shortly after infection, but the exact time depends on several factors, including host and viral characteristics. Importantly, antibody can be present at low levels during early infection but not present at the detection limit of some assays. In early generation tests, antibody could be detected in most individuals by 6 to 12 weeks after infection. In newer generation assays, including the third generation antigen sandwich assays, can detect antibody at about 3 to 4 weeks after infection (Constantine et al., 1994). The window period before the detection of antibody can, however be shortened by several days using antigen tests, and by several more days using nucleic acid detection method (Feinberg et al., 1996). Therefore in most individuals, the window period may only be 2 to 3 weeks if an all-inclusive testing strategy is used. Where necessary therefore, especially in developing countries where resources are limited, it may be advisable to request for another test after 6 to 12 weeks more.

1.1.11 ALTERNATIVES TO THE CLASSIC TESTS AND TESTING STRATEGIES

Several alternative tests and testing strategies have been made. Each offers one or more attractive features that may simplify collection, testing or interpretation of results. These include: (a) Saliva Tests (b) Urine Tests and (c) Home collection for testing (Cohen et al., 1999).

1) Saliva Tests

Non-invasively collected specimens such as oral fluids (saliva) have been used for HIV testing as an alternative to blood samples. These fluids contain crevicular fluid from capillaries beneath the tooth-gum margin, transudates of blood. They therefore include the same fluid (plasma) that is used for serum-based testing. The concentration of antibodies in oral fluids is about 1/400 of that in plasma. The testing technology to detect these low quantities is available and oral fluids tests, both ELISA and rapid test, are accurate (Saville et al., 1997). The use of oral fluids for testing offers advantages such as ease of collection, group collection from persons in whom blood is difficult to obtain and an increase in collection compliance (Majors et al., 1991).

2) Urine Tests

Intact IgG antibodies are found in urine, but their exact origin is unknown. Urine collection is simple, non-invasive and inexpensive and the sample can be stored at room temperature for extended period of time. The use of urine for testing is appropriate for physician's office, health clinics, and in developing countries where health care personnel may not be professionally trained or where clean needles for drawing blood may not always be available. Food and Drugs Administration (FDA) of USA have approved both ELISA and Western blot to test urine for antibodies to HIV-1 (Cohen et al., 1999).

3) Home collection for testing

Home collection, but not home testing, has been approved by the FDA for HIV testing. These collection devices are filter paper for the collection of whole blood via finger-stick. The samples are mailed to a laboratory, eluted and used for ELISA testing. Results and counselling are made available by telephone (Cohen et al., 1999).

1.1.12 SOME HIV DIAGNOSTIC DILEMMAS

Some problems have been encountered in HIV testing procedures and include the following:

1) Indeterminate Western Blot results

These are samples that show inconclusive results in the test. It is recommended that a follow-up specimen in 1 to 3 months is taken to effectively confirm the result. At this interval of time, serum from individuals who are infected will show an increase in the reactivity by serologic assay (Cohen et al., 1999).

2) Minimally reactive confirmatory test results from non-infected individuals

A minimally reactive Western blot result can occur occasionally. It may be caused by early infection (seroconversion) when antibody levels have not yet peaked or on rare occasions, for unknown reasons in individuals who are later found not to be infected with HIV. Where aware, submission of a new specimen in several weeks is recommended for verification (Cohen et al., 1999).

3) Inconsistent results when repeating specimens or testing follow-up specimen

An inconsistent result when repeating specimens or testing new specimens from the same individual is rare but real occurrence. Explanation includes mislabelling of

specimen, technical errors in the laboratory, use of different test systems, or problems with components of the test system. Such cases should be thoroughly investigated (Cohen et al., 1999).

4) False-negative results owing to HIV group O viruses

False-negative results by HIV serologic assays have been verified when testing some individuals infected by HIV group O viruses (Loussert-Ajaka et al., 1994). This group of HIV, found primarily in Cameroon and Gabon, has been reported in both Europe and the United States. Several “acceptable” routine HIV screening assays have been documented to produce false-negative results in up to 20% of sera from individuals infected with group O viruses (AM, Assoc., 1996; Schable et al., 1994). Ministry of Health and Health Care providers should anticipate occurrence of such problems and be ready to deal with them.

1.1.13 CONFIDENTIALITY AND ANONYMOUS TESTING

Although attempts to maintain confidentiality should be legalized and respected, it is misleading to suggest that confidentiality can be guaranteed. In reality, confidentiality can be violated in many ways:

- i. Discussion among personnel acquainted with a clinical case or laboratory result.
- ii. Access to records by those other than the person ordering the test.
- iii. Discussion about a case when several services are consulted or the case is presented at a conference.
- iv. Inferences drawn by observers such as friends, family members, other patients or employers and other employers as well.
- v. Subpoena of records for a legal proceeding.
- vi. Requirements for supporting AIDS and HIV to public health departments.

Anonymous testing systems were developed to guarantee confidentiality. The person being tested is identified in records by a code such as a number, so that even the person administering the test cannot associate the result with a name. The person

being tested is then free to divulge or keep secret the test results. Anonymous testing is useful if the patient requires medical management or if the fears of violated confidentiality keep a person from obtaining the test. Anonymity of the test may also serve as an emotional bridge for people at high risk who are not yet willing to be tested in a confidential setting, but who will benefit from the knowledge of their test result and the associated counselling and referrals (Cohen et al., 1999).

1.1.14 COMMUNICATION

HIV infection and AIDS have produced new type of health and social problems that disrupt families, communities and societies. Few other diseases have demanded such medical and psychosocial support for affected individuals and their families, friends and close associates. Since knowledge about HIV virus and the disease of AIDS are new and growing, the disease therefore poses a challenge to health care personnel at all levels of HIV/AIDS care and requires appropriate communication and counselling strategies as follows:

Strategies of Communication

To obtain maximum effectiveness, health education and communication strategies should take into account the characteristics of the different groups, their knowledge and attitudes, their capacity of understanding and selection of suitable strategies that would ensure adequate dissemination of information to the target group. Health educators should also acknowledge that target groups have experiences on which to build health education messages. Strategies of communication may include the use of:

- i. Public Media, the main of which are radio, television and newspapers.
- ii. Special publication – journal, magazines, pamphlets, etc.
- iii. Education posters in public places such as bus terminals, airports, public toilets, market places, bars, hostels and car stickers with slogans.
- iv. Theatre shows – drama, poems, songs, folklore (story telling and traditions).
- v. Community meetings.

- vi. School health programmes.
- vii. Churches and mosques.
- viii. Political rallies.
- ix. Invited HIV positive clients to give life testimony.
- x. Women groups.
- xi. Youth organisations, clubs and peers.
- xii. Workplace or occupational health programmes.

In general, it is important to use participatory methods of communication and health belief models in order to effectively use any of the above strategies or approaches (ECSACON and PRIME/INTRAH, 1999).

1.1.15 COUNSELLING

Counselling approaches applied by health care providers need to facilitate or bring about preventive behaviours and practices which help to cope with AIDS among all persons affected, infected and the worried as well. Counselling efforts therefore aim not only to deter new infections, but also to limit these destructive social effects of HIV (Max et al., 1994)

Counselling is a special form of interpersonal communication through which trust is established and a person is helped with the feelings, attitudes and behaviour. It is a confidential dialogue, which involves listening, offering emotional support and correct information according to that person's needs, at any given moment. Counselling is an ongoing, long-term process as well as an immediate crisis intervention (ECSACON and PRIME/INTRAH, 1999). The personal intervention between counsellor and patient therefore enables individuals understand better their personal risks to make informed decision and to take appropriate action.

Counselling operates at two levels of prevention: primary and secondary. Primary prevention aims to deter people from becoming infected. In this case counselling plays a crucial role in helping people identify their own risk behaviours and to take responsibility for their own health. Secondary prevention has a dual objective: to prevent people infected with HIV from transmitting the virus further and to help

them find psychological support. With proper counselling and care people with HIV may avoid feeling alienated from society and therefore feel more accountable to it, adopting practices that minimise the risk of infecting others.

HIV positive results may have strong psychological impact on the individual. Most people on learning that they are HIV positive may experience a number of reactions, a process of adjusting to the reality of being HIV infected. The process is similar to the grieving process and includes the following (ECSACON and PRIME/INTRAH, 1999):

1. **Shock:** The client may experience physical or emotional shock on learning he/she is HIV positive. He/she may be mute or violent, may cry or laugh uncontrollably or feel numb, confused and unable to think clearly.
2. **Denial:** This may come in the form of disbelief or scapegoat, thus the client may think that it is someone else's result or take it for granted and say he knew that he would be positive so it does not matter.
3. **Anger:** This reaction is often in the form of blame, envy, resentment of others who are healthy or HIV negative. He/she may even go to the extent of stating "I am not going to die alone".
4. **Bargaining:** This may be the first step towards coping with the news of HIV infection. The person may try to rid himself/herself of the disease by "help me God and I will be good" or he may look for a miracle or magical cure resulting in wasting a lot of money that will be needed in the future. Bargaining is often done privately and at spiritual level.
5. **Fear:** People with HIV fear many things like pain, losing jobs, other people knowing that they are infected, rejection, isolation, divorce, leaving their children and death. These fears become less when they talk to someone who understands.
6. **Loneliness:** A person with HIV/AIDS might feel lonely. Such a feeling may come and go for a long time and depends on the support given by the family and friends. Anyone with HIV/AIDS should feel that they are not alone and that the family, friends and the community are with them.
7. **Self-consciousness:** An HIV person might think that everyone is looking or talking about them. This may make them want to hide because they feel

unworthy of friendship. This can be overcome by encouraging them to stay active and loved and that everyone is vulnerable to death.

8. **Depression:** This may come about as a result of feeling utterly helpless or as a response to experiencing repeated illness. As a result the person experiences a loss of hope that negatively affects their long-term coping mechanism.
9. **Acceptance and Coping:** This indicates acceptance of certain responsibilities associated with being HIV positive such as not spreading the virus to others by informing current and past partners. In coping a person comes to terms with many of the uncertainties in being HIV positive. This includes seeking help and making the “BEST” of life and planning for his/her family’s future. During this phase a person gains self-esteem thereby gaining independence and living positively and this includes:
 - Seeking medical attention promptly for any illness
 - Eating a well balanced diet
 - Exercising when physically well
 - Getting enough sleep
 - Resting when tired
 - Avoiding hazardous health habits such as smoking, unwarranted use of drugs and alcohol
 - Being able to continue with productive life
 - Working towards preparing for his family after he/she dies.

An HIV/AIDS patient may not necessarily experience all the above reactions. The reactions may not also follow each other in the above sequence.

- 10 **Hope:** During this stage the HIV patient may have many hopes:
 - Hope that he/she will live a long time
 - Hope that his/her baby will be healthy
 - Hope that each sickness will be treated as it comes
 - Hope that he/she is loved and accepted for who he/she is
 - Hope that scientists will find a cure
 - Hope because of belief in life after death

It is important to have hope. Hope lifts spirit and gives strength to face each situation. Hope can help each person fight HIV and AIDS to live positively and to live longer.

There are four components of counselling relating to HIV/AIDS: Pre-test counselling, post-test counselling, on-going support counselling and group counselling (ECSACON et al., 1999).

1) Pre-test Counselling

This takes place before a person's blood is drawn and tested for antibodies, regardless of reason for the test. The key element of pre-test counselling is to understand the patient's needs, strengths and weaknesses. The patient's strengths include psychological and social skills, support within the family and solidarity within the community. The reasons for pre-test counselling therefore include:

- i. To make the person make an informed decision whether to take the test or not. Informed consent ensures that the patient agrees to be tested for their own interest and that of their families, sexual partner and unborn baby. Depending upon the nation's laws, consent may be explicit i.e. conveyed in writing or speech or it may be implicit if people know in advance that they will be tested for HIV during a specialised diagnosis and when donating blood. HIV test without a patient's knowledge raises ethical concerns and misses the potential of public health benefits of counselling.
- ii. To ensure that the person understands the basic facts about infection and AIDS.
- iii. To assist the person in understanding the test and what the results mean and to prepare him/her to receive the result willingly.
- iv. To consider and explore what he/she might do if the test is positive or negative.
- v. To explore potential support from loved ones, family and friends etc and also identify other people, who will be affected by the test result such as sexual partners, off springs exposed to HIV or those economically dependent on the person being tested.

- vi. To understand if he/she is positive, whether there will be medical care or monitoring which will help him/her to keep healthier for longer period.
- vii. To establish confidentiality between counsellor and patient
- viii. To advice on safer sexual practices
- ix. To make assessment of any risk of possible HIV infection.

2) Post-test Counselling

This counselling should take place before the test results are given to an individual. The reasons for post-test counselling include:

- i. To help convince the patient about the reality of the situation if the test is positive.
- ii. To ensure the person understands the meaning of the result.
- iii. To help the person cope with the result especially in the days or weeks to follow (if the result is positive).
- iv. To make a follow up plan for the ongoing care of the person if he/she is HIV positive.
- v. To avoid re-infection.
- vi. To ensure that the person is aware of the danger of spreading HIV (if the results are positive) or of preventing infection (if the result is negative). Information on safer sexual practices should also be discussed during post-test counselling.
- vii. To understand the need for careful consideration about having children or use of family planning method if HIV positive.
- viii. To explain the need of re-testing if he/she is considered to be in the 'window' period.
- ix. To access care and support
- x. To access support groups

Points for consideration when revealing HIV test results:

i. HIV Negative Results

Telling people that they are seronegative is a unique opportunity to encourage them to take responsibility for their behaviour and to change their lifestyles, especially in high prevalence areas where a sense of fatalism about becoming infected might exist. A study in Uganda showed the powerful impact that negative test result can have on reducing risk behaviour and seroconversion rates (Muller et al., 1992). This therefore reinforces the importance of further avoidance of infection and transmission

ii. HIV Positive Results

Telling people that they are seropositive is more difficult if pre-test counselling has not been properly done. No HIV positive result should be given before a reliable confirmation test has been conducted. Many issues arise with the revelation of seropositivity which includes:

- Notification of any sexual partner
- Relationships with partners
- Serostatus and future of existing children and unborn children
- Contraception
- Employment
- Financial support, cost of care, stigmatisation and discrimination.

On the whole HIV positive results enable one to explore the importance of avoiding further infections and transmissions. It offers opportunity for further counselling care and support in general (Muller et al., 1992).

3) On-going Support Counselling

This is used to encourage individuals with HIV infection to maintain control over their lives and helps the person live positively. It also includes counselling to help one cope with dying and death for the person concerned as well as the family.

4) Group Counselling

By “group” we mean a “group of people” or “members of an organisation or workplace” who have similar problems, issues or activities which in the long run influence values and behaviour of its members. Such groups include families, teachers, soldiers, drivers etc.

Group counselling involves being with clients, listening to them talk about their problems and fears, helping them to increase their own self esteem and when necessary giving correct and useful information base on what they need to know at that point in time (ECSACON et al., 1999).

The counsellor should first explore and come to terms with his/her own perception of the problem so that he/she can manage the situation at hand by offering appropriate counselling. Some reasons for conducting group counselling are that since the group members have similar problems and issues, it saves time and reaches more people. It provides peer support for individual decision making and individuals benefit from each other, group experience and their interaction with the counsellor.

In workgroups, certain types of work situations are more susceptible to HIV infection than others because of lack of protective equipment, great exposure to infected blood fluids and needle sticks. Other work situations make workers susceptible to the risk of HIV infection because the work environment entices them to get involved in risky behavioural activities like having many sexual partners; such work situations include musicians, truck drivers, minibuses and taxi drivers security personnel, teachers and economically advantaged groups in a society. The problem here therefore is one of behaviour not occupational (ILO, 2001).

1.2 STATEMENT OF THE PROBLEM

All groups of people are exposed to HIV infection; however some groups are more vulnerable than others. This applies to work situations as well. Certain types of work situations are more susceptible to the risk of infections than others, although the main issue for HIV/AIDS is one of behaviour, not occupational. Such work groups

are normally involved in work which makes them come in close contact with a large cross section of the public such as musicians, politicians, including minibuses and taxi drivers and work involving mobility such as truck drivers and one dominated by men or where women are in small majority (ILO, 2001).

Work involving MBTDs cannot be equated to that of truck drivers who frequently drive long distances for several days leaving their wives/partners. MBTDs work involves extensive mobility within Lusaka and surrounding areas for short periods only. The occupational health problems relating to HIV/AIDS of MBTDs and long distance truck drivers are therefore different. The main problem with MBTDs is that their work involves giving essential transport service to Lusaka residents during which they get in close contact with them including women and girls. The majority of these people are poor and consequently in many instances, drivers offer transport favours to women and girls (school girls included) which in many cases lead to sexual bartering or relationships. In addition, these drivers handle large amounts of un-receipted money everyday which they may direct and give to their sexual partners. This results in many drivers having multiple sex partners, which ultimately increases the risk of STI and HIV infection. The issue here therefore is not strictly occupational but that of behaviour and thus the importance of determining the HIV prevalence in the work group and risk factors associated with HIV infection among the work-group.

CHAPTER TWO

2.0. LITERATURE REVIEW

This study has been conducted because at present no study has been documented on the prevalence and risk factors associated with HIV infection among MBTDs. This literature review is therefore restricted to general risk factors associated with HIV infection and it slightly covers the global aspect, African and Zambian in particular.

2.1 GLOBAL CONTEXT

Within two decades of its recognition in the United States, acquired immunodeficiency syndrome (AIDS) had become a pandemic disease. AIDS cases have been diagnosed in most regions of the world, and the spread of human immunodeficiency virus (HIV) infection to some of the most populous areas of the world threatens future numbers of AIDS cases far greater than totals reported to date (Cohen et al., 1999). The United Nations Programme for AIDS (UNAIDS) and United Nations Children's Fund (UNICEF) 2003 report states that by the end of 2002 worldwide, over 20 million had died of AIDS, another 42 million were infected with HIV, and over 5 million more were being newly infected annually, about half of them young people between the ages of 15 – 24. Of those infected 30 – 50% are expected to die within 5 – 10 years of acquiring the disease. By 2010, this cumulative toll is expected to double. Due to high fatality rate and lack of curative treatment or vaccine, the HIV/AIDS pandemic is one of the most serious health problems in the world.

2.2 TRENDS OF HIV/AIDS IN AFRICA

People in every region and every country are affected. Dozens of countries are already deep in the grip of the HIV/AIDS epidemic. Sub-Sahara Africa is the region with the fastest growing epidemic in the world with 17 million people dead and nearly 30 million people infected. In a report involving four countries, every third adult is infected (UNICEF/UNAIDS 2003). UNAIDS Global HIV/AIDS epidemic

and update, December 1999 stated that 83% of the world's AIDS related deaths have been in this region. Unprotected sex between men and women accounts for most of new HIV infections among the adults in Sub-Sahara Africa. In most African countries, the number of women with HIV is equal to that of men. This is because HIV is transmitted heterosexually. In addition, high fertility combined with poor access to information and services for the prevention of mother-to-child transmission resulted in some 530,000 infected children being born to mothers with HIV forming around 90% of the world total.

The UNAIDS 1999 report also stated that Republic of South Africa continues to be part of the continent's worst affected by HIV. Approximately 2.9 million South Africans were thought to be living with HIV at the beginning of 1998, over 700,000 of them infected in 1997 alone. In Botswana, by 1998, the proportion of the adult population living with HIV had doubled over the past five years. In Zimbabwe, infection was estimated at one in four adults in 1997. Uganda, in East Africa, was among the first to respond with open and concerted effort to prevent the spread of the virus and the effort by the government and people of Uganda seemed to be paying off. Data collected in 1997 showed that the proportion of Ugandan adults infected with HIV had dropped to levels of 5% to 9%, representing a decrease of about one fifth of 1996 rates.

AIDS is systematically cutting down life expectancy in the countries where the disease is very prevalent. HIV will in some places cancel out the gains achieved over the last few decades in much of the developing world. In Namibia, HIV causes nearly twice as many deaths across all ages as malaria, the next most common cause of death. (UNAIDS Fact Sheets, 1999).

2.3 THE ZAMBIAN CONTEXT OF HIV/AIDS

Zambia is a landlocked country covering 752,612 square kilometres in South Central Africa. It shares its borders with the Democratic Republic of Congo and Tanzania to the north; Malawi and Mozambique to the east; Zimbabwe and Botswana to the south; Namibia to the south-west and Angola to the west.

Currently the Zambian population is estimated at 10.3 million people and continues to grow at an annual rate of 2.9%. The first AIDS case was reported in Zambia in 1984. Initially, the concentration of HIV/AIDS cases was in urban areas, but it soon became clear that all parts of the country were affected (Central Statistical Office (CSO), 2002).

The 2000 National Census reported that more than 50% of the Zambia's population is less than 20 years of age and they constitute the most vulnerable group to HIV/AIDS. This compounded by urban migration characterized by movement from smaller towns and villages to bigger cities. The survey also found that 10% of Zambians had lived in their present location for less than five years. These types of movements increase the likelihood that sexual activity with non-regular partners will occur.

The 2001-2002 Zambia Demographic and Health Survey (ZDHS) and NAC Intervention Strategic Plan 2002-2005 indicated that nearly 16% of the adult population aged 15-49 is living with HIV. By June 2000 there were 830,000 people over the age of 15 reported to be living with AIDS. Of these 450,000 were women while 380,000 were men. The peak ages for HIV among females are 20 to 29 while that of males are 30 to 39 years. Young women aged 15-19 are about 4 times more likely to be infected, compared to males in the same age group. It is estimated that 25% of pregnant women are HIV positive and that approximately 39.5 % of babies born to HIV positive mothers are infected with the virus.

The report further indicated that HIV/AIDS has contributed to the profound reversal of development gains made in Zambia over the past 40 years. HIV/AIDS is the most critical development and humanitarian crisis Zambia faces to day. Some of the social economic reversals due to HIV/AIDS epidemic include:

- Drastically eliminating the active age group required for economic growth of the country, thus leading to loss of productivity
- Life expectance without HIV/AIDS which was projected at 60 years at birth, is now projected at only 37 years

- The increasing number of orphans, estimated at 600.000 in 2000 was projected to reach over one million by 2002.
- The increasing burden of disease has overwhelmed the health care delivery system.

The other health impact is that since the advent of HIV/AIDS epidemic, tuberculosis (TB) case rate in Zambia had increased nearly five fold from 100 to over 500 per 100,000 people in 1996. There are now in excess of 40,000 TB cases reported every year and this was expected to rise by 10% annually over the next few years. The TB co-infection has also brought with it an increased mortality rate of TB patients on treatment by over 15% and accounts for 10% of all documented out of patient attendances in public health facilities. In addition, more than 50% of people with a history of STD become infected with HIV. STDs form ulcers and sores that facilitate the transfer of the virus (NAC, 2003).

However despite this grim picture the report indicated some improvements in the control of HIV/AIDS. The prevalence of HIV positive results in the country among 15-19 youth showed a drop during 1994 to 2002 period. In Lusaka the rate was 28% in 1993; by 2000 it had dropped to 22%. However the current burden of infection will continue to impact Zambia negatively for many years.

2.3.1 PROJECTIONS

No one knows for certain the future course of the epidemic in Zambia will be, but the future direction of the epidemic is in the hands of the Zambian people and institutions. The MOH/CBoH 1999 report projected that if HIV prevalence drops gradually between 1999 and 2014, then the number of HIV infected persons will rise from about 1,000,000 in 1999 to 1,260,000 in 2014. This indicates that a large number of people will die from the disease and be removed from the HIV infected population. This is why the number of infected persons does not grow at an even pace and could even show a reduced prevalence rate. AIDS cases therefore are only a tip of the pyramid because many more people are infected with HIV but have not yet developed AIDS and, with the increase in death rate, the number of infected persons can continue to rise without corresponding rise in the HIV prevalence rate.

2.3.2 MINIBUS AND TAXI DRIVERS: RISK FACTORS RELATING TO HIV INFECTION

A number of occupational groups in Zambia and many different countries have been studied and show higher than average HIV infection because of particular risk factors, which the work environment provides. These include long distance truck drivers, miners, security personnel, teachers, health workers, and seasonal workers in agriculture, construction and tourism (NAC. 2000). Certain risks are common to most of them and these include mobility resulting in long absences they spend from home such as long distance truck drivers the temporary migration of mine workers.

The pattern of work of MBTDs however is quite different from that of long distant truck and bus drivers. Their work mainly involves daily extensive mobility within Lusaka only. The major problem with the work group is that their work enables them to handle large sums of un-receipted money as they provide essential service to a large cross-section of the public some of them women from poor families. In many instances therefore drivers offer transport favours to women and girls (schoolgirls included) in exchange for sexual relationships, a risk behaviour which enhances HIV infection to both parties.

No other study has been documented on the prevalence and risk factors associated with HIV infection among MBTDs. This literature review therefore is restricted to general risk factors associated with HIV transmission. Some of these issues have been extensively covered under an overview of HIV/AIDS in the first chapter.

2.4. GENERAL RISK FACTORS ATTRIBUTED TO HIV TRANSMISSION

This section reviews socio-demographic and sex-related factors, which might be linked to an elevated risk of contracting HIV/AIDS. The first risk factor arises from not knowing the HIV status of oneself and the second from not knowing HIV status of your partner. In high HIV prevalence areas, not knowing your sex partner's HIV status is a risk factor worth noting (National Research Council (NRC), 1996). An

HIV status will usually be known from an HIV voluntary and counselling test result. The second set of risk factors arises from proxy markers of risks that have been determined by clinical studies. Only risk factors pertaining to this study have been reviewed here and include: high numbers of sex partners, selection of sex partners, and risk factors associated with age, education, marital status, residence, mobility or migration, circumcision, incidence of STIs, alcohol and drugs uptake and none-use of condoms.

2.4.1 HIGH NUMBERS OF SEX PARTNERS AND CHOOSING SEX PARTNERS

World Health Organisation and Global Programme on AIDS (WHO/GPA) survey data defines a 'risk behaviour' as having one or more non-regular partners in the last 12 months, while a 'high-risk behaviour' is having commercial sex in that time period (NRC, 1996). Most studies in Africa have suggested that partaking in non-monogamous sexual relationships were a risk factor for HIV transmission. However it was the selection of partners, not the absolute numbers, which affected the risk for acquiring the virus. Each new sexual contact carries with it a risk that depends on the aggregate of the sexual experience of all previous partners. An increase in the number of partners overall, then, will increase the risk of acquiring HIV as one increases the risk of encountering an infected partner (Paula et al., 1994)

For an individual, the slope of the increasing risk of contracting HIV infection will change based on the society and the type of sexual partner chosen. The sexual network defines the risk. A polygamous man with three wives, none of whom stray outside marriage, was at lower risk for HIV acquisition than a man who was married to one woman yet regularly visits prostitutes. The protracted asymptomatic period of HIV infection has however complicated the strategy of choosing low-risk partners. Choosing low-risk partners has also been weakened by some people's misconception that they could not become infected from a healthy looking sexual partner.

2.4.2 AGE

Several studies have shown that risk behaviour was associated with age. Studies conducted in Central African Republic, Guinea Bissau and Kenya showed that half of all those aged 15 to 19 were already sexually experienced (Carael 1995). In contrast, in other societies such as Burundi, around 90% of those aged 15 to 19 were still virgins. However by the age of 20, the level of sexual experience was close to 90% among most of the populations studied in the WHO/GPA surveys. Other studies have also shown that seroprevalence rates increased with age in most of the areas studied. A rapid increase of prevalence was observed among people 40 years or older in Congo, Gabon and Zaire (Kayembe et al., 1990)

2.4.3 EDUCATION

In the comparable national WHO/GPA studies, more education was associated with more casual sex everywhere except Lesotho. The effect, which was more powerful when secondary education and primary or no schooling was compared, remains when the effects of other variables were controlled. It was likely that the effect was confounded by the fact that for men, education opens the door to resources, and resources can make it easier to acquire access to commercial or casual sex. In Rakai, Uganda, seropositivity showed linear rise with education and with occupational status for both sexes, with the exception of female bar and hotel workers (Kivimbi, 1993)

2.4.4 MARITAL STATUS

In all sub-Sahara African societies, sexual contact forms part of an exceedingly complex network of relationships that may involve formal or informal marriage resulting in permanent support of a woman or her children, regular or occasional gifts or a single event. Some men choose to seek extramarital partners as a result of long periods of post partum abstinence (Orubuyole et al., 1991). Moreover in certain African societies premarital sex was an acceptable practice, particularly for men. A study in Yoruba Nigeria, found that members of either sex who did not engage in

such relationships could be accused of being timid, sick or afraid of disease (Orubuyole et al., 1990).

In Rwandan study, Lindan et al, 1991, reported that among women, the unmarried were found more likely to be seropositive. In Rakai, Uganda and Nairobi, Kenya, the same pattern was found (Serwadda et al., 1992). In Nairobi, single sexually active women were found twice as likely and, formerly married women three times as likely as married women, to be HIV positive. In high prevalence areas the formerly married could well be AIDS widows and therefore at extremely high risk of exposure. In terms of behaviour, Rutenberg et al., 1994 study showed that in Tanzania, single women had the highest rate of partner change, with formerly married just behind, while men for the two groups were roughly the same. Among men, marital status in Rwanda, Kenya and Uganda appeared to be less important influence on risk behaviour of casual sex

2.4.5 RESIDENCE

WHO/GPA survey in Sub-Sahara Africa, in every case, reported more casual sex in urban than in rural areas. Another report by Carael et al., 1994, showed men reporting commercial sex, the mean number of partners were higher in urban area than in rural. However in another study by Cleland and Ferry 1995, they showed little support for the hypothesis that sexual life-styles were divided merely across urban and rural lines. Instead, sexual behaviour in towns and cities appeared culturally linked to sexual behaviour in rural areas, and risk behaviour was present in both urban and rural areas.

2.4.6 MOBILITY AND MIGRATION

A widening rural-urban gap in income and availability of social services and a sub-regional variability in development have generated large movements of people in Africa. The migration often takes the form of people leaving their villages on a seasonal or temporary basis in search of work, hoping to move back eventually to

their place of origin. In this pattern of migration, an infected individual may spread HIV/AIDS to others at both the sending and receiving ends of the cycle.

One hypothesis for the emergence of the HIV epidemic in Sub-Saharan Africa is that the migration of individuals from areas of low endemicity to new, uninfected areas was instrumental in eventual dissemination of HIV into larger more congregated populations (Quinn, 1994). Mining or industrial centres often have particularly high concentrations of young men who have migrated to seek employment and these sites are usually vulnerable to the spread of HIV infection (Anarfi, 1993). Truck drivers, the military and female commercial workers are all well recognised as high risk populations for infection and are highly mobile (Smallman-Raynor and Cliff, 1991).

2.4.7 SEXUALLY TRANSMITTED INFECTIONS (STIS)

Responses about symptoms of STIs over the past 12 months in the WHO/GPA surveys have shown a strong correlation between reported risk behaviour and venereal infection. In many nations, those reporting STI symptoms were two to three times as likely to report casual sex as those apparently unaffected. The correlation grows stronger as partner numbers increase and stronger yet with a history of contact with commercial sex workers. Messersmith et al., 1994, reported a 12-fold increase in STI history for respondents with five or more lifetime partners and previous contact with a prostitute as compared with those having a single lifetime non-commercial partner.

Treatment, often of both partners, was crucial in limiting the importance of STIs as a cofactor for HIV transmission. Although high proportion of those reporting STI symptoms in the WHO/GPA survey said they obtained treatment, only half reported telling their regular partner. In Cameroon, one-quarter of STI patients in one study continued sexual relations during their illness, and of those nearly two-thirds stated that they used condoms on every occasion (IRESCO, 1994). Caldwell et al., 1993, asserted that much sex in Sub-Saharan Africa takes place in the dark without hand-to-genital contact, making it difficult for people to ascertain whether their partner was infected with an STI.

In a Nigerian study, a sizeable majority of STI sufferers said they had sought treatment in hospitals or with private doctors, though turning to traditional healer and self-medication was not uncommon. It was also found that the high cost of treatment, lack of available services, fear of being stigmatised and the attitude of the staff towards the client were some of the reasons which deterred women from attending STI clinics (O'Toole Erwin, 1993).

2.4.8 CIRCUMCISION

Generally male circumcision is thought to be protective against HIV transmission and female circumcision a risk factor, although some dispute these claims. Lack of male circumcision has been associated with some STI, including chancroid, syphilis and gonorrhoea (Cook et al 1994). Those who have disputed these claims have intimated that further research was needed to illuminate not only the association between male circumcision status and acquisition of HIV, but also the causal factors and specific mechanisms involved (Mertens and Carael, 1995). To that end, other studies have shown that the foreskin has a large number of HIV target receptor cells. These are cells to which the virus can more readily attach itself and gain entry to the body. With circumcision, these receptor cells are removed. Circumcised men also appear to be less susceptible to abrasions and tearing and therefore less prone to ulcerative STIs, all of which facilitate transmission of the virus as a port of entry (NAC, 2004).

2.4.9 ALCOHOL AND DRUG UPTAKE

Analysis of WHO/GPA surveys data conducted in Sub-Sahara Africa established that alcohol consumption was common in this region and that it was positively associated with risk behaviour, even when other factors were held constant (Ferry, 1995b; NRC, 1996). Alcohol and drug uptake are associated with lower self-control and greater risk taking behaviour with regard to sex (Olowo-Freers and Barton, 1992). Drinking was particularly heavy among students and urban slum dwellers. In

one study of urban slum dwellers in Kampala, over 60% of heads of households drank alcohol daily (Kayobosi, 1988)

Injection drug use (IDU) has been substantially found to account for growing percent of the total cases of HIV in the United States of America. Injection drug use has also been found to be a cofactor in the rapid spread of HIV in parts of Europe and Asia. Risk factors for HIV infection among IDUs include demographic characteristics and practices associated with more frequent injection, more frequent needle sharing with greater number of partners and greater use of alcohol and cocaine (Schoenbaum, 1989). However, only use of uninjected drugs such as dagga is common in Sub Sahara Africa.

2.5 METHODS TO PREVENT SEXUAL TRANSMISSION OF HIV/AIDS

These may be divided into three categories, namely barrier methods, use of vaginal microbicides and application of highly active antiretroviral therapies (HAART).

2.5.1 BARRIER METHODS

Three barrier methods are discussed here: male condom, female condom and dental dams.

i. Male Condom

The male condom has long history both as a contraceptive and a barrier against STI. Ancient Egyptians used sheaths of animal membrane to prevent pregnancy and in the 16th century Italy, the anatomist Fallopius designed a linen sheath to protect against syphilis. The device itself is said to derive its name from a Dr Condom who made sheaths for King Charles II of England in the 17th century (WHO, 1994). Recently, polyurethane male condoms have been added to the previously available latex and natural skin condoms. Other recent changes in condom production include the introduction of extra thick latex condoms. Only water-based lubricants should be used with latex condoms, because petroleum-based lubricants greatly weaken latex.

Several laboratory experiments have been conducted to test the ability of condoms to provide an effective physical barrier against HIV. Of the two types – those made from latex material or natural skin material, no leakage of HIV across latex condoms was demonstrated. Latex condoms were also found to be impermeable to herpes simplex virus and hepatitis B virus (Judson et al., 1989; Minuk et al., 1987). However in vitro studies provided evidence that condoms made from natural skin do not provide a consistently effective physical barrier against a number of viruses. Leakage of HIV, hepatitis B virus and herpes simplex virus across natural skin condoms was observed (Van de Perre et al., 1987; Minuk et al., 1987)

On epidemiologic evidence for condom efficacy, several transmission studies demonstrated a statistically negative association between condom use and risk of HIV infection (Detels et al., 1989; Fischl et al., 1987), whereas others did not (Padian et al., 1987; Lazzarin et al., 1991). There are however many reasons for condom failure. Even though some condoms are made of impermeable material to HIV, e.g. latex condoms, during real-life usage of condoms may not provide complete protection. Condoms can fail to provide complete protection for a variety of reasons, including failure to use them consistently, failure to use them properly, condom breakage and condom slippage (Trussel et al., 1992)

Several factors have been found to discourage many people from using condoms. In strongly pronatalist societies, the fact that condoms prevent conception may weigh heavily against their use to prevent transmission of HIV/AIDS/STI. Other barriers to condom use, expressed both in and more clearly in qualitative studies, are many. The single most common feeling expressed was that condoms reduce sexual pleasure (Mehryar, 1995). Annoyances such as the interruption of spontaneity especially among those professing a habit of serial ejaculation and the problem of disposal contributed to distaste for condom use (Konde-Lule, 1993 and Preston-Whyte, 1994).

There is a general association of condoms with prostitutes and promiscuity. Both women and men say asking a partner to use a condom was tantamount to admitting one's own promiscuity or accusing one's partner of sleeping around (Irwin et al,

1991) or getting a reputation as a prostitute (Konde-Lule, 1993). Not surprisingly, the percent of people reporting that condoms were suitable for use within marriage or a regular partnership was correspondingly low, and not more than a third of male condom users. Those who had never used a condom were consistently less likely to think that use of a condom with a regular partner was appropriate. Some people also believed that condom use might encourage promiscuity, especially among the young (Irwin et al., 1991; Preston-Whyte, 1994).

Condoms are useful only if they are within people's means. In WHO/GPA Surveys in Sub-Saharan Africa, cost was considered a barrier to regular use by less than one-quarter of men who had never used them. In Rakai district, Uganda, the availability and affordability of condoms was found to have little effect on the decision to use them (Kivumbi, 1993)

ii. Female Condom

Female condom made of two flexible polyurethane rings and a loose-fitting polyurethane sheath is approved for contraception and HIV prevention. Studies have shown that between 50-70% of women respondents liked female condoms better than male condom (Ruminjo et al., 1996). Acceptance was somewhat less among their male partners, with only 44% liking the female condom (Sapire, 1995)

iii. Dental dams

Latex dental dams can be placed over the labia and genitalia, or over the anal area, for protection during cunnilingus (oral vaginal sex) and anilingus (oral-anal sex). These can be purchased at condom speciality stores or some drugstore (available in different flavours) or can be made by cutting a latex condom or latex glove (Cohen et al., 1999)

2.5.2 VAGINAL MICROBICIDES

Nonoxynol-9 is the leading candidate in the search for vaginal microbicides against HIV, which women can use with or without the knowledge of their sexual partners (Pauwels et al., 1996). Studies have shown that nonoxynol-9 reduces the risk of HIV transmission in some cases but not in others (Jeffries et al., 1988). In addition, an association between use of nonoxynol-9 and development of genital ulcers or epithelial inflammation (which in turn could theoretically increase transmission of HIV) has been shown in some cases and not in others (Ward et al., 1996).

Safety and effectiveness study of vaginal microbicides buffer gel for the prevention of HIV infection in women is being carried out at the moment in selected countries and in particular Zambia by Centre For Infectious Disease Research In Zambia (CIDRZ).

2.5.3 USE OF HIGHLY ACTIVE ANTIRETROVIRAL THERAPY (HAART)

Recent development of highly active antiretroviral therapies (HAART) has resulted in a new optimism for many HIV-infected patients. As efforts to develop even more effective treatment continue, it is critical to continue aggressive prevention efforts as a vital component of the battle against HIV. Although HAART can result in *dramatic reduction in HIV viral load*, it is not yet a cure for HIV disease; thus prevention should still be the first line of defence. In addition, no evidence indicates that HAART reliably eliminates all the potential for transmitting HIV to the other person: Therefore even individuals receiving HAART should initiate and maintain strategies to prevent re-infection with resistant strains (Cohen et al., 1999).

2.5.4 SAFER SEX RECOMMENDATIONS

On the bases of the evidence just summarised, the following general risk-reduction and specific risk-reduction strategies should be discussed between individuals to reduce the risk of sexual transmission of HIV (Cohen et al., 1999)

There are three main strategies which can be used in reducing HIV infection and these are as follows:

i. Sexual Activity Decisions

Because sexual contact is the major transmission route of HIV infection, eliminating sexual contact eliminates risk of transmission by this route. Abstinence may be neither desirable nor practicable for many people. Nevertheless it is an important option to consider, as some persons may feel that at least limited period of abstinence may be the best choice under certain circumstances. In addition, because it is not always possible to know with certainty if a sexual partner is infected, additional approaches is to choose a partner who is at low risk of being HIV infected and then practice a safer-sex technique with that partner.

ii. Use of Specific Sexual Practices

Evidence shows that some sexual practices are associated with a greater risk of transmission than others e.g. use of herbs in the vaginal to enhance sexual satisfaction results in bruising of vaginal mucosa and increased risk of HIV transmission. On the other hand, use of the barrier method can reduce the risk of transmission of HIV. Thus, decision-making about safer sex involves choices about specific sexual practices in addition to choices about partner selection.

iii. Specific Risk-Reduction Strategies

Having knowledge to help one distinguish sexual practices that carry a high risk of sexually transmitted HIV infection from practices that do not is extremely important.

The following recommendations of specific safer-sex practices are designed to assist one in distinguishing safer sexual practices to those with a greater risk of HIV transmission (Cohen et al, 1999):

1. Practices with extremely low or no risk of HIV transmission
 - Self-masturbation
 - Touching, massaging, hugging and caressing
 - Social (dry) kissing
2. Practices with very low-risk of HIV transmission (probably safe)
 - French or wet kissing
 - Mutual masturbation (if no cuts on hands, or ulcers or lesions on genital of either partner)
 - Vaginal sex with male or female condom (put latex or polyurethane condom in place before any penetration)
 - Fellatio with condom (place latex condom on partner's penis before oral contact)
 - Cunnilingus with dental dam (place latex dam over partner's vaginal area before oral contact)
 - Contact with urine (water sports; only with intact skin, avoid contact with mouth)
 - Using one's own sex toys (no sharing of any toys that contact body fluids)
 - Anal sex with condom (place latex condom on penis prior to penetration, probably safer with use of ample water-based lubrication)
- 3 Practices that have no strong proof but some evidence that transmission can occur (probably unsafe)
 - Fellatio (sucking partner's penis and swallowing semen)
 - Cunnilingus (oral contact with partner's genital area and vaginal secretions)

4 Practices that have high-risk of transmission of HIV

- Anal intercourse without a latex condom (highest risk is to the receptive partner)
- Anal penetration with the hand (fisting or other rectal trauma without a latex glove or fisting followed by anal intercourse)
- Anal douching (jet or spray water in the anus) in combination with anal intercourse
- Vaginal intercourse without male or female condom

5 Proper Use of Barrier Methods

a) Proper Use of Male Condoms:

To maximise protection and to minimise chances of condom breakage or spillage the following guidelines should be followed (Centre for Disease Control (CDC) 1988): -

- Use only condom made of latex
- Use each condom only once
- Store condom in a cool dry place that is out of direct sunlight
- Do not use any condom that is in a damaged or obviously aged package (brittle, sticky or discoloured)
- Handle condoms carefully to avoid puncture
- Ensure that no air is trapped in the tip of the condom once it is in place
- Place condom on an erect penis before any genital or anal contact. Hold the tip of the condom between two fingers and unroll it into the penis. Leave a space at the tip (without air in it) to collect semen.
- Withdraw the penis while still erect after ejaculation. Grasp the base of the condom and hold it before and during withdrawal of the penis to ensure the condom does not come off.
- If a condom breaks or slips off during sex, replace it with a new condom immediately or seek post exposure prophylaxis.
- It is not necessary to use a male and female condom concurrently.

b) Proper Use of Female Condom:

Guidelines for proper use of female condoms (Anastasi, 1993): -

- Insert the condom into the vagina 8 hours or less prior to intercourse
- Use additional water-based lubrication, if necessary
- Use each female condom only once
- Squeeze the inner ring and insert the closed end of the condom into the vagina as far as it will go
- Using the index finger, check that the inner ring is just past the pubic bone
- Leave the outer ring and about 25mm (1 inch) of the sheath lying against the labia, outside the vagina
- Ensure that the penis is inserted inside the sheath (not underneath or beside it)
- Ensure that the outer ring is not pushed into the vagina during intercourse
- If the penis slips under or beside the sheath, remove the condom and insert a new one
- Squeeze and twist the outer ring to keep sperm inside the sheath during removal

c) Proper Use of Dental Dams:

- Hold the latex square over the vaginal area or anal area prior to and during the time of oral contact with the area
- Use each dental dam only once

CHAPTER THREE

3.0 STUDY OBJECTIVES

The study objectives for this study are divided into general and specific objectives and these are as follows:

3.1 GENERAL OBJECTIVE

To establish HIV prevalence and risk factors associated with HIV infection among MBTDs in Lusaka Urban and formulate appropriately tailored intervention strategies

3.2. SPECIFIC OBJECTIVES

1. To establish the prevalence of HIV infection among MBTDs in Lusaka Urban
2. To determine associations between social demographic factors and HIV infection among MBTDs in Lusaka Urban
3. To determine associations between respondents' sexual behavioural practices and HIV infection.
4. To identify associations between reported STIs, preventive and treatment seeking behaviour and HIV infection.
5. To recommend appropriate targeted intervention strategies for MBTDs in Lusaka Urban.

CHAPTER FOUR

4.0 RESEARCH METHODOLOGY

The methodology used in this study included among other activities the following; research setting, study design, study population, sample size, sampling procedure, data collection, plan for data processing and analysis, pre-testing, ethical considerations and study limitations.

4.1. RESEARCH SETTING

Lusaka, the capital City of Zambia, has a population of slightly over 2 million (Lusaka City Council Information Booklet, 2004). The city is divided into three main areas, namely: Low, Medium and High Density areas. Nearly all buses pass through City Centre during their daily transportation of the passengers. The majority of its residents reside in High Density areas seconded by those who reside in Medium Density areas. The number of Minibus and Taxi drivers in Lusaka was estimated to be about 5,000 (Road Traffic Department, 2003). The research was conducted at three main bus stations situated around town centre and UTH bus station. The three bus stations situated at town centre were City Market, Millennium and Kulima Tower. Nearly all Lusaka minibuses utilize the three town centre bus stations. Taxi ranks on the other hand are scattered throughout Lusaka, but only taxi drivers operating around town centre were included in the study.

It took three months, from April to June 2004, to have all respondents HIV tested and to collect all necessary data.

4.2 STUDY DESIGN

This is a cross-section study carried out to determine the prevalence and risk factors associated with HIV infection among minibus and taxi drivers in Lusaka urban.

4.3 STUDY POPULATION

The Road Traffic Department of the Ministry of Communication Transport and reported that there were an estimated 5,000 MBTDs working in Lusaka Urban in 2004. During the study no female minibus or taxi driver were identified for inclusion in data collection. Age categorisation was applied in the study resulting in not calculating the mean age of respondents.

4.4. SAMPLE SIZE

The sample size was calculated as follows:

$$n = \frac{P(100-P)}{D^2} \times (1-\alpha)$$

Where n = sample size

P = proportion of HIV cases (50%)

D² = the desired width of confidence level

(1-alpha) = Confidence level (3.842)

A 95% confidence level was used with designed width of 5 and proportion of 50% for HIV infections in Lusaka urban.

$$\frac{50 \times 50 \times 3.842}{5^2} = 384$$

This was further adjusted for finite population of 5,000 as follows:

$$n_i = \frac{n}{1 + \frac{n}{N}}$$

Where n_i = Adjusted sample size

n = the calculated sample size 384

N = the population size being studied, 5,000.

$$n_i = \frac{384}{1 + \frac{384}{5000}} = \frac{384}{1.0768} = 357$$

A non-response rate of 0.9% was used to bring the sample size to 360 of which one was lost during data entry bringing the final total sample size to 359

4.5. SAMPLING PROCEDURE

A randomly self-sampled (volunteers) consisting of 360 minibus and taxi drivers was taken. Only those who had worked as minibus or taxi drivers for not less than six months were included in the study. Respondents were selected from three bus stations and taxi ranks situated around the town centre and UTH bus station. Selection of participants was voluntary and therefore self-selected (Convenient Sampling). Sampling was distributed according to the size of the bus station as follows:

Sample sites	Bus drivers	Taxi drivers	Total
• City Market bus station	150	20	170
• Millennium bus station	70	15	85
• Kulima Tower bus station	50	10	60
• UTH bus station	40	5	45
Total	310	50	360

4.6 DATA COLLECTION

A structured questionnaire was used to determine association between socio-demographic factors, sexual behavioural practices, reported STIs, and treatment seeking patterns during STI in the past 12 months and HIV infection. Thereafter respondents were taken for voluntary counselling and HIV testing at UTH VCT Centre. Collection, testing and management of this data were carried out according to Research Ethics Committee of UNZA guidelines. By the end of data collection, 23 (6.4%) subjects who managed to answer the questionnaire decided not to proceed

for HIV testing. Other willing respondents were immediately and randomly self-selected to replace them. The research team consisted of my self as Principal Research Fellow, a mentor, Professor S. Siziya, co-mentor Mr T. Glover-Akpey and seven Research Assistants.

4.7 PLANS FOR DATA PROCESSING AND ANALYSIS

After data collection all questions were coded and entered into a computer using Epi Info software version 6.3 for analysis. Analysis was done using chi-square association between qualitative factors and HIV infection. T-test was also used to determine whether the means were significantly different. Adjustment of confounding factors was done using logistic regression. The significant level was set at 5%.

4.8 PRE-TEST

The questionnaire was pre-tested at UTH bus stop during which research assistants interviewed a total of 10 min-bus and taxi drivers. After the pre-test, any identified shortcomings of the questionnaire were corrected in order to answer the objectives of the study.

4.9 ETHICAL CONSIDERATIONS

The Research Ethics Committee of UNZA approved the study. To that end, an “informed consent form” was prepared according to Research Ethics Committee guidelines in order to guarantee voluntary participation, confidentiality, benefits and maintenance of privacy of all participants in this research. Thus, only those who volunteered to participate were included in this study.

4.10 STUDY LIMITATIONS

Two major limitations were observed. Sample was self-selected. Objectives of the study were explained after which respondents volunteered to take part in the study. The second limitation was that fewer older drivers participated in the study. Absence of older drivers among this workgroup was very evident throughout the study. Only 6.4% of respondents were above the age of 35 years.

CHAPTER FIVE

5.0. ANALYSIS AND PRESENTATION OF DATA

Two sets of data were collected from 360 self-selected respondents. The first set of data was collected by having respondents answer a questionnaire with prompted questions on: (a) Socio-demographic factors associated with HIV infection (b) Sexual behavioural practices associated with HIV infection and (c) History of STIs and treatment seeking behaviour. The other set of data was collected by having all respondents voluntarily counselled and HIV tested at UTH VCT Centre. Both sets of data were coded and entered into the computer, using Epi-info software version 6. The data was analysed to determine any correlation between these two sets of data.

The data is presented in four sections (a) Prevalence of HIV infection among MBTDs (b) Socio-demographic factors associated with HIV infection (c) Sexual behavioural practices associated with HIV infection and (d) Association between history of HIV infection among the respondents in the past 12 months preceding the study and HIV infection and (e) Results of multivariate analysis.

5.1 PREVALENCE OF HIV INFECTION AMONG MBTDs IN LUSAKA URBAN

A total of 120 respondents tested positive for HIV out of 359 MBTDs who participated in study giving a prevalence rate of 33.4%. Only 59 (16.3%) reported to have been HIV tested prior to this test and 307 (85.5%) wanted to know their HIV status.

5.2 ASSOCIATION BETWEEN “SOCIO-DEMOGRAPHIC FACTORS” AND “HIV INFECTION”.

Several questions were asked to determine association between socio-demographic factors and HIV infection among MBTDs in Lusaka Urban. These included factors

which could have some influence on HIV transmission and included age groups, residence, level of education, marital status, mobility, how long one had worked as MBTDs, religion, circumcision and work involved in driving minibuses out of Lusaka and sleeping there.

5.2.1 ASSOCIATION BETWEEN “AGE OF RESPONDENTS” AND “HIV INFECTION”.

There was a significant association between “age of respondents” and “HIV infection”. Those who were HIV positive tended to be older ($p = 0.009$). The data showed that by the time respondents started to work as MBTDs at 20 to 24 years of age, the HIV infection rate was 21.7% and thereafter more than doubled to 45% among the 25 to 29 age group and then drastically fell to 25% among the 30 to 34 years age group, as shown in Table 3.

5.2.2 ASSOCIATION BETWEEN “RESIDENCE OF RESPONDENTS” AND “HIV INFECTION”.

No significant association was observed between “respondents’ residence” and “HIV infection” ($p = 0.690$). Overall most respondents (46.8%) resided in high-density areas, followed by those who lived in medium density (38.2%) and a few who resided in low-density areas (15%), as shown in Table 3.

5.2.3 ASSOCIATION BETWEEN “HOW LONG RESPONDENT LIVED IN LUSAKA” AND “HIV INFECTION”.

There was a significant association between “how long respondent had lived in Lusaka” and “HIV infection”. HIV positive respondents tended to be those who had lived in Lusaka for 10 or more years ($p = 0.001$). Majority of respondents (45.5%) had lived in Lusaka for less than 9 years, as shown in Table 3 below.

5.2.4 ASSOCIATION BETWEEN “LEVEL OF EDUCATION” AND “HIV INFECTION”

No significant association was observed between “education of respondents” and “HIV infection” ($p = 0.685$). Overall, most respondents (43.5%) were secondary school dropouts and only 9.2% had completed secondary education, as shown in Table 3 below.

5.2.5 ASSOCIATION BETWEEN “MARITAL STATUS” AND “HIV INFECTION”.

The data revealed that respondents who were married, divorced or widowed tended to be HIV positive ($p = 0.15$). Overall 49.3% of respondents were married seconded by 44.8% who were single and 5.9% who were divorced or widows, as shown in Table 3 below.

Table 3: Association between “respondents’ socio-demographic factors” and “HIV infection”

Variable	HIV status		Total =359 n(%)	p value
	HIV positive Total =120 n(%)	HIV negative Total =239 n(%)		
Age group				
20 – 24	26 (21.7)	93 (38.9)	119 (33.1)	0.009
25 – 29	54 (45.0)	92 (38.5)	146 (40.7)	
30 – 34	30 (25.0)	41 (17.2)	71 (19.8)	
35+	10 (8.3)	13 (5.4)	23 (6.4)	
Residence				
High density	60 (50.0)	108 (45.0)	168 (46.8)	0.690
Medium density	43 (35.8)	94 (39.3)	137 (38.2)	
Low density	17 (14.2)	37 (15.5)	54 (15.0)	
How long lived in Lusaka				
0 – 9	47 (39.5)	111 (48.7)	158 (45.5)	0.001
10 – 19	39 (32.8)	61 (26.8)	100 (28.8)	
20 – 29	23 (19.3)	46 (20.1)	69 (19.9)	
30+	10 (8.4)	10 (4.4)	20 (5.8)	
Level of education				
Primary incomplete	18 (15.0)	27 (11.3)	47 (12.5)	0.655
Primary complete	30 (25.0)	59 (24.7)	89 (24.8)	
Secondary incomplete	52 (43.3)	104 (43.5)	156 (43.5)	
Secondary complete	20 (16.7)	50 (20.5)	69 (19.2)	
Marital status				
Single	41 (34.2%)	120 (50.2)	161 (44.8)	0.015
Married	70 (58.3%)	107 (44.8)	177 (49.3)	
Divorced/Widowed	9 (7.5)	12 (5.0)	21 (5.9)	
When last had sexual intercourse				
1 week ago	68 (56.8)	134 (56.1)	202 (56.2)	0.798
4 weeks ago	30 (25.0)	69 (28.9)	99 (27.6)	
6 months ago	11 (9.1)	17 (7.1)	28 (7.8)	
More than one year	11 (9.1)	19 (7.9)	30 (8.4)	

5.2.6 ASSOCIATION BETWEEN “WHEN LAST RESPONDENT HAD SEXUAL INTERCOURSE” AND “HIV INFECTION”

More than half of respondents (56.2%) indicated that they had sexual intercourse within the past one week preceding the study, followed by 27.6% who had sex within the past one month of the study. However no significant association was observed between when last respondent had sexual intercourse and HIV infection ($p = 0.798$), as shown in Table 3 above.

Table 4: Association between “mobility” and “how long had worked as MBTD” and “HIV infection”

Variable	HIV status		Total n(%)	p value
	HIV positive Total n (%)	HIV negative Total n (%)		
Migrated to Lusaka from:				
Other cities	15 (16.9)	28 (15.0)	43 (15.6)	0.835
Towns	64 (71.9)	140 (74.9)	204 (73.9)	
Villages	10 (11.2)	19 (10.1)	29 (10.5)	
How long worked as MBTDs (years)				
0 – 4	63 (52.5)	144 (60.3)	207 (57.7)	0.275
5 - 9	38 (31.7)	67 (28.0)	105 (29.2)	
10 - 14	11 (9.2)	21 (8.8)	32 (8.9)	
15 >	8 (6.6)	7 (2.9)	15 (4.2)	

5.2.7 ASSOCIATION BETWEEN “MOBILITY OF RESPONDENT” AND “HIV INFECTION”.

Majority of respondents (89.5%) who resided elsewhere before living in Lusaka came from other cities and towns. Only 10.5% migrated from villages. However, no significant association was observed between respondents’ mobility and HIV infection ($p = 0.835$) as shown in Table 4 above.

5.2.8 ASSOCIATION BETWEEN “HOW LONG WORKED AS MBTD” AND “HIV INFECTION”.

No significant association was observed between “how long a respondent had worked as a MBTD” and “HIV infection” ($p = 0.275$). The data also showed that majority of respondents (57.7%) had worked as MBTDs for less than 4 years seconded by 29.2% who had worked for 5 to 9 years. Only 8.9% had worked for 10 to 14 years and very few (4.2%) had worked for more than 15 years as MBTDs as shown in Table 4 above.

5.2.10: ASSOCIATION BETWEEN “RESPONDENT’S RELIGIOUSNESS (DEVOUTNESS)” AND “HIV INFECTION”

Majority of respondents (59.60%) attended church and of those, 56.6% were baptized and 26.2% “born again”. The data revealed that there was no significant association between “respondents who attended church” and “HIV infection” ($p = 0.994$) nor between those who “attended church and were baptized” and “HIV infection” ($p = 0.303$). There was however, a significant association between respondents who “attended church and were born again” and “HIV infection” ($p = 0.012$). The “Born again” respondents tended to be “HIV positive” than those who “attended church and were baptized” or those who just “attended church”, as shown in Table 5 below.

Table 5: Association between “church attendances”, “being baptized” or “born again” and “HIV infection”

Variable	HIV status		Total n (%)	P value
	HIV positive Total n (%)	HIV negative Total n (%)		
Attendance church				
Yes	72 (60.0)	142 (59.4)	214 (59.6)	0.994
No	48 (40.0)	97 (40.6)	145 (40.4)	
Baptized				
Yes	36 (50.0)	83 (58.5)	119 (55.6)	0.303
No	36 (50.0)	59 (41.5)	95 (44.4)	
Born again				
Yes	27 (37.5)	29 (20.4)	56 (26.2)	0.012
No	45 (62.5)	113 (79.6)	158 (73.8)	

5.2.11: ASSOCIATION BETWEEN “CIRCUMCISION” AND “HIV INFECTION”.

Majority of respondents (63%) were aware of circumcision but very few (20.7%) reported being circumcised. The results revealed significant association between being circumcised and HIV infection ($p = 0.025$). None-circumcised respondents tended to be HIV positive than those who were circumcised, as shown in Table 6 below.

Table 6: Association between “circumcision of respondents” and “HIV infection”

Variable	HIV status		Total=358 n%	P value
	HIV positive Total=119 n%	HIV negative Total= 239 n%		
Aware of circumcision				
Yes	106 (89.1)	220 (92.1)	226 (63.1)	0.464
No	13 (10.9)	19 (7.9)	132 (36.9)	
Circumcised				
Yes	16 (13.6)	58 (24.6)	74 (20.7)	0.025
No	103 (86.4)	181 (75.0)	284 (79.3)	

5.2.12: ASSOCIATION BETWEEN RESPONDENTS WHO “DROVE MINIBUSES OUT OF LUSAKA AND SLEPT THERE” AND “HIV INFECTION”.

No significant association was observed between respondents “who drove minibuses out of Lusaka and slept there” and “HIV infection” ($p = 0.329$). There was also no significant association between respondents who drove buses weekly or monthly outside Lusaka and slept there and HIV infection ($p = 0.118$). Overall, only a few respondents (24%) drove minibuses out of Lusaka and slept there, and of those who drove minibuses out, majority (80%), did so weekly, as shown in Table 7 below.

Table 7: Association between “respondents driving minibus outside Lusaka and sleeping there” and “HIV infection”

Variable	HIV status		Total n(%)	P value
	HIV positive Total n(%)	HIV negative Total n(%)		
Drove out	25 (20.8)	62 (26.2)	87 (24.4)	0.329
Did not drive out	95 (79.6)	175 (73.8)	270 (75.6)	
Drove out weekly	17 (70.8)	53 (83.9)	70 (80.5)	0.118
Drove out monthly	8 (29.2)	9 (16.6)	17 (19.5)	

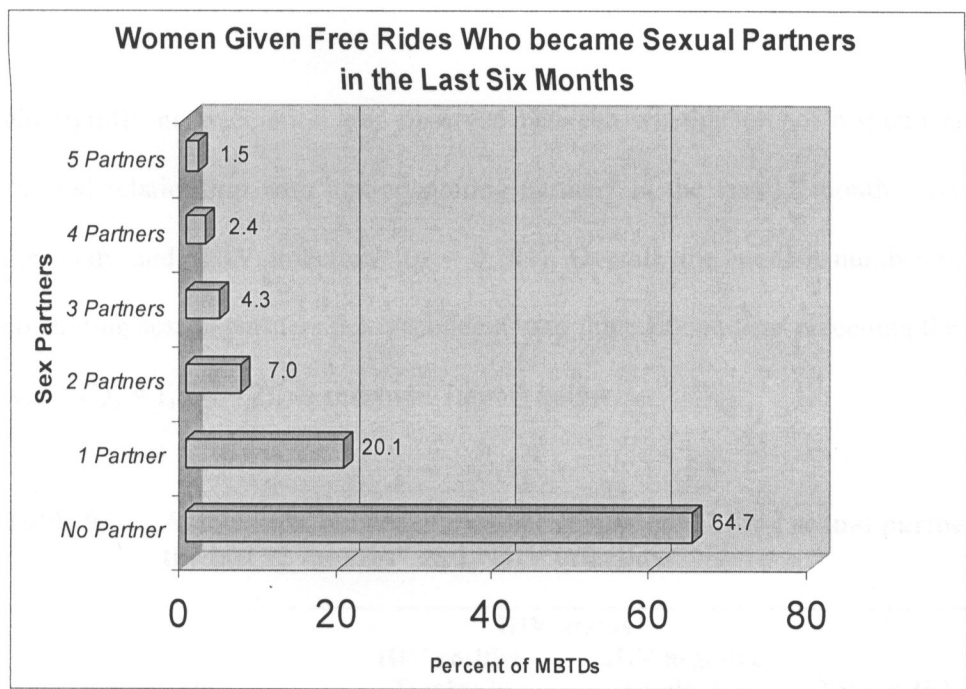
5.3 ASSOCIATION BETWEEN RESPONDENTS' "SEXUAL BEHAVIOURAL PRACTICES" AND "HIV INFECTION"

Several questions were asked to determine association between "sexual behavioural practices" and "HIV infection" among respondents. These included sexual practices which exposed either partner to the possibility of HIV infection and included sex bartering through giving women free rides, having multiple sexual partners, condom use, having long sexual relationships with non-cohabiting partners, alcohol and drugs uptake and perception of risk of setting infected with AIDS virus as shown in Tables 8 to 12 and Figure 1 and 2.

Table 8: Association between respondents "who gave free rides to women some of who became sexual partners" and "HIV infection"

Variable	HIV status		Total n(%)	p value
	HIV positive Total n(%)	HIV negative Total n(%)		
Gave free rides to women				
Yes	102 (85.0)	204 (85.4)	306 (85.2)	0.946
No	18 (15.0)	35 (14.6)	53 (14.8)	
Number who became sexual partners	Median (Q1, Q3) 0(0.0,1)	Median (Q1, Q3) 0 (0.0,1)		0.089
Type of women given free rides:				
Marketers				
Yes	51 (50.0)	91 (44.6)	142 (46.4)	0.441
No	51 (50.0)	113 (59.4)	164 (53.6)	
School girls				
Yes	60 (58.8)	122 (59.8)	182 (59.5)	0.967
No	42 (41.2)	82 (45.8)	124 (40.5)	
Professionals				
Yes	22 (21.7)	56 (27.5)	78 (25.5)	0.330
No	80 (78.3)	148 (72.5)	228 (74.5)	

Figure 1: Percent of women given free ride who become sexual partners in the last six months



5.3.1 ASSOCIATION BETWEEN “RESPONDENTS WHO GAVE FREE RIDES TO WOMEN WHO BECAME SEX PARTNERS” AND “HIV INFECTION”.

Majority of respondents (85.2%) gave free rides to women. Most of the MBTDs (59.5%) preferred giving free rides to schoolgirls and the rest preferred giving free rides to marketers and professionals. However, no significant association was observed between “the number of women given free rides and enticed to become sexual partners” and “HIV infection” ($p = 0.089$). Overall 35.3% of drivers who gave free rides to women enticed between 1 to 5 women to become sexual partners during the past six months preceding the study as shown in figure 1 above.

5.3.2 ASSOCIATION BETWEEN “HAVING NON-COHABITING SEX PARTNERS IN THE LAST 12 MONTHS” AND “HIV INFECTION”

No significant association was observed between whether or not respondents had “sexual relationship with non-cohabiting partner” in the last 12 months preceding the study and “HIV infection” ($p = 0.281$). Overall, the median number of non-cohabiting sexual partners per respondent over the past one year preceding the study was 1 ($Q_1 = 1, Q_3 = 2$), as shown in Table 9 below.

Table 9: Association between “number of non-cohabiting sexual partners in the last 12 months” and “HIV infection”

Variable	HIV status		Total = 358 n(%)	p value
	HIV positive Total=120 n(%)	HIV negative Total= 238 n(%)		
Whether had sex with non-cohabiting partners in the last 12 months				
Yes	68 (56.7)	151 (63.2)	219 (61.3)	0.281
No	52 (43.3)	87 (36.8)	139 (38.7)	
Number of non-cohabiting partners in last 12 Months	Median (Q1, Q3) 1 (1, 2)	Median Q1, Q3) 1 (1, 2)		0.507

5.3.3 ASSOCIATION BETWEEN “CHARACTERISTICS OF RESPONDENT’S LAST SEXUAL ACT” AND “HIV INFECTION”.

1) Association between “condom use” and “HIV infection”

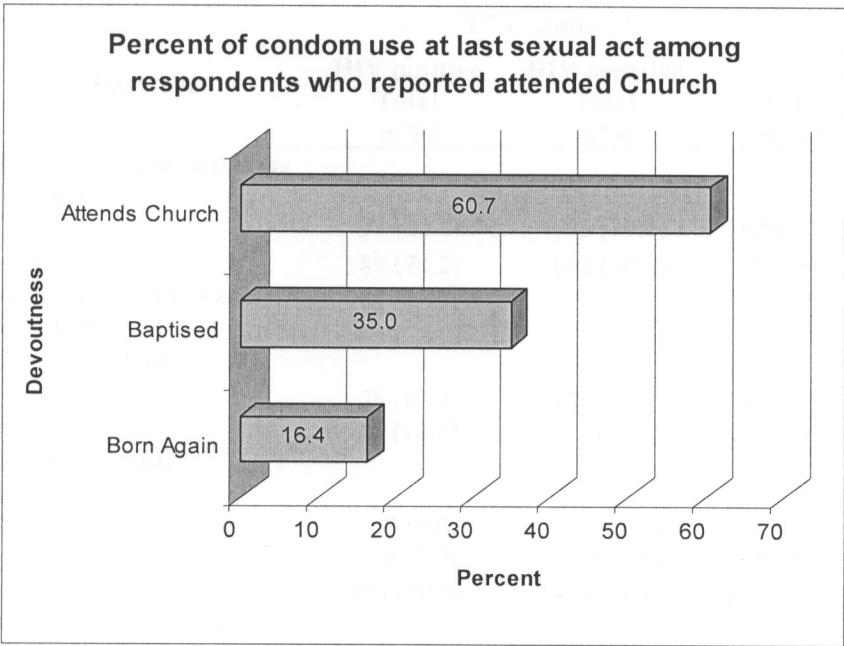
Only 35.1% of respondents used a condom during last sexual act. Those who reported, “not using a condom” during the last sexual act tended to be “HIV positive” ($p = 0.013$). No significant association was observed between respondents who reported, “not using a condom” during the last sexual act because they “trusted

the partner” ($p = 0.253$) or because “partner was HIV negative” ($p = 1.000$) or because “partner did not like using condom” ($p = 0.980$) and “HIV infection Majority of respondents (88.6%) who did not use a condom during the last sexual act were those who trusted their sexual partner. The study also showed that all respondents did not know the HIV status of their sexual partners as shown in table 10 below. A few (7.7%) respondents did not use a condom during the last sexual act because it was not available and some (3%) because their partner did not like using it.

“Condom use” was also different among 214 (59.6%) respondents who reported “attended church” of whom 55.6% were “baptized” and 26.2% “born again” as follows:

- Of those who “attended church” 60.7% reported to have “used a condom” during their last sexual act.
- Of those who were “baptized”, 35% reported to have “ used a condom” during their last sexual act and
- Of those who were “born again” only 16.4% “used a condom” during their last sexual act as shown in figure 2 below.

Figure 2: Percent of condom use at last sexual act among respondents who reported to have attended church



2) Association between “sexual relationship with partner at last sexual act” and “HIV infection”

Majority of respondents (53.6%) had sexual intercourse with non-cohabiting partner, 39.1% with a wife and a few (7.3%) with a commercial sex worker during last sexual act. There was however no significant association between respondents who had sexual intercourse with “a non-cohabiting partner or a commercial sex worker or a wife” and “HIV infection” ($p = 0.129$) as shown in table 10 above.

3) Association between “whether respondent thought his sexual partner had other sexual partner” and “HIV infection”.

Overall, 34.8% of respondents thought that their sexual partner at last sexual act had other sexual partner. However, no significant association between “whether respondent thought that his sexual partner, at last sexual act, had other sexual partner” and “HIV infection” ($p = 0.161$) as shown in Table 10 below.

Table 10: Association between “characteristics of respondents’ last sexual act” and “HIV infection”

Variance	HIV status			p value
	HIV positive Total n(%)	HIV negative Total n(%)	Total n(%)	
Used a condom last time had sex				
Yes	31 (25.8)	95 (39.7)	126(35.1)	0.01
No	89 (74.2)	144 (60.3)	233 (64.9)	
If no, why did not use Condom?				
Trusted partner				
Yes	76 (85.4)	130 (90.3)	206 (88.6)	0.357
No	13 (13.6)	14 (9.7)	27 (11.4)	
Partner tested HIV negative				
Yes	0 (0.0)	0 (0.0)	0 (0.0)	1.000
No	0 (0.0)	0 (0.0)	0 (0.0)	
Don't know	89 (100.0)	144 (100.0)	233 (100.0)	
Condom not available				
Yes	6 (6.7)	12 (8.3)	18 (7.7)	0.850
No	83 (93.3)	132 (91.7)	215 (92.3)	
Partner did not like it				
Yes	3 (3.4)	4 (2.8)	7 (3.0)	0.890
No	86 (96.6)	140 (97.2)	226 (97.0)	
What was your relationship with woman had sex with				
Wife	55 (45.8)	85 (35.7)	140 (39.1)	0.129
Non-cohabiting partner	60 (50.0)	132 (55.2)	192 (53.6)	
Commercial sex worker	5 (4.2)	21 (8.8)	26 (7.3)	
Thought sexual partner had other sexual partner				
Yes	35 (29.4)	89 (37.6)	124 (34.8)	0.161
No	84 (70.6)	148 (62.4)	232 (65.2)	
Length of sexual relation with this partner				
One week	18 (15.5)	41 (18.1)	59 (17.3)	0.475
Four weeks	29 (25.0)	44 (19.5)	73 (21.3)	
Six months	16 (13.8)	42 (18.6)	58 (17.0)	
Over one year	53 (45.7)	99 (43.8)	52 (44.4)	

4) Association between “Length of sexual relationship with non-cohabiting partner at last sexual act” and “HIV infection”.

No significant association was noted between “respondent’s length of sexual relationship with non-cohabiting partner” and “HIV infection” ($p = 0.475$) as shown in Table 10 above.

Overall majority of respondents (44.4%) had sexual relationships with partner at last sexual act which was over one year long as shown in table 10 above.

5.3.4 ASSOCIATION BETWEEN “ALCOHOL CONSUMPTION” AND “HIV INFECTION”.

Altogether 101 (84.2%) out of 120 HIV positives and 191 (79.9%) out of 239 negatives drank alcohol. No significant association was observed between respondents “who drank alcohol occasionally or at weekends” and “HIV infection” ($p = 0.406$). However a significant association was observed between respondents who drank alcohol (visited pubs) daily and HIV infection ($p = 0.041$). Respondents who drank alcohol (visited pubs) daily tended to be HIV positive, as shown in Table 11 below.

5.3.5 ASSOCIATION BETWEEN “PARTAKING ALCOHOL OR DRUGS BEFORE SEXUAL INTERCOURSE” AND “HIV INFECTION”.

The study showed that 51.6% of respondents preferred to take alcohol or drugs before sexual intercourse. However there was no significant association between respondents “who preferred to partake alcohol or drugs before sexual intercourse” and “HIV infection” ($p = 0.906$), as shown in Table 11 below.

Table 11: Association between respondents' "alcohol consumption" and "uptake of un-injected drugs" and "HIV infection"

Variable	HIV status		Total n(%)	p value
	HIV positive Total n(%)	HIV negative Total n(%)		
Drank alcohol				
Yes	101 (84.2)	191 (79.9)	292 (81.3)	0.406
No	19 (15.8)	48 (20.1)	67 (18.7)	
How often drank alcohol				
Daily				
Yes	48 (45.5)	66 (34.6)	112 (33.8)	0.042
No	53 (54.5)	125 (65.4)	180 (66.2)	
Occasionally				
Yes	25 (24.8)	67 (35.1)	92 (31.5)	0.094
No	76 (75.2)	124 (64.9)	200 (68.5)	
Weekend				
Yes	19 (18.8)	40 (20.9)	59 (20.2)	0.780
No	82 (81.2)	151 (79.1)	233 (79.8)	
Took Drugs (non-injected)				
Yes	52 (43.3)	117 (49.0)	169 (47.1)	0.371
No	68 (56.7)	122 (51.0)	190 (52.9)	
Preferred taking alcohol or drugs before sex				
Yes	144 (51.6)	50 (41.7)	94 (39.3)	0.755
No	70 (58.3)	145 (60.7)	215 (48.4)	

5.3.6. ASSOCIATION BETWEEN "DRUG UPTAKE" (NON-INJECTED) AND "HIV INFECTION".

No significant association was observed between respondents who partook "un-injected drugs" and "HIV infection" ($p = 0.449$). Many (47.3%) respondents however reported to take part un-injected drugs as shown in Table 11 above.

5.3.7. ASSOCIATION BETWEEN “RESPONDENT’S PERCEIVED RISK OF HIV INFECTION” AND “HIV INFECTION”

Several questions were asked to determine whether “respondent’s perception of risk of HIV infection” was associated with “HIV infection”. The questions included “whether one would reduce his chance of getting HIV infected by using a condom every time he had sex”, “whether a healthy looking person could have AIDS virus”, “whether he could protect himself if his wife/partner had HIV/AIDS”, “whether he has been HIV tested” and “the way the respondent lived, what was his chance of getting infected with AIDS virus”. No significant association was observed between “the answers given to all above questions” and “HIV infection”. However, the following points were observed from the answers:

- 9.7% of respondents did not know that one can protect himself by using a condom every time he had sexual intercourse
- 6.4% did not know that a healthy person could have AIDS virus,
- 11.5% did not know that one can protect himself if his wife had HIV/AIDS,
- 83.6% had never been HIV tested and
- Of the 21.2% respondents who rated themselves that they had no risk of getting infected with AIDS virus, 21.7% were HIV positive as shown in Table 12 below.

Table 12: Association between “respondents’ perceived risk of HIV infection” and “HIV infection”

Variable	HIV status		Total n(%)	p value
	HIV positive Total n(%)	HIV negative Total n(%)		
Can reduce chance of getting HIV by using a condom every time you have sex?				
Yes	103 (85.8)	221 (92.5)	324 (90.3)	0.135
No	17 (14.2)	18 (7.5)	35 (9.7)	
Can a healthy looking person have AIDS virus?				
Yes	113 (94.2)	223 (93.3)	336 (93.6)	0.835
No	5 (4.2)	13 (5.4)	18 (5.0)	
Don't know	(1.7)	3 (1.3)	5 (1.4)	
Can one protect himself if his wife has HIV/AIDS?				
Yes	104 (87.4)	213 (89.1)	317 (88.5)	0.460
No	15 (12.6)	26 (10.9)	41 (11.5)	
Have you ever been HIV tested				
Yes	18 (15.0)	41 (17.2)	59 (16.4)	0.712
No	102 (85.0)	198 (82.8)	300 (83.6)	
The way you live what are your chances of getting infected with HIV?				
Low	21 (17.5)	50 (21.8)	71 (19.8)	0.750
Moderate	56 (46.7)	112 (47.1)	168 (47.0)	
High	17 (14.2)	26 (10.9)	43 (12.0)	
Has no risk	26 (21.7)	50 (21.0)	76 (21.2)	

5.4 ASSOCIATION BETWEEN “REPORTED STIs”, “PREVENTIVE AND TREATMENT SEEKING BEHAVIOUR” AND “HIV INFECTION”

This section deals with issues related to associations between respondents being aware of STIs, and treatment seeking behaviour with HIV infection.

5.4.1 ASSOCIATION BETWEEN “RESPONDENTS BEING AWARE OF STI” AND “HIV INFECTION”.

No significant association was observed between “respondent’s awareness of STI” and “HIV infection” ($p = 0.263$). However, nearly all respondents (98.6%) had heard of STIs as shown in Table 12 above.

5.4.2 ASSOCIATION BETWEEN “REPORTED STIS AMONG RESPONDENTS” AND “HIV INFECTION”

There was a significant association between “having an STI in the past 12 months preceding the study” and “HIV infection” ($p = 0.001$). Respondents who reported having had STI in the past 12 months (34.6%) tended to be HIV positive, as shown in Table 12 above.

Table 13: Associations between respondents “being aware of STIs”, “reported STIs” and “treatment seeking behaviour” and “HIV infection”

Variable	HIV status		Total n(%)	P value
	HIV positive Total n(%)	HIV negative Total n(%)		
Had heard of sexually transmitted disease				
Yes	120 (100.0)	234 (97.9)	354 (98.6)	0.263
No	0 (0.0)	5 (2.1)	5 (1.4)	
Has had STI during last 12 months				
Yes	62 (51.7)	62 (26.1)	124 (34.6)	< 0.001
No	58 (48.3)	176 (73.9)	234 (65.4)	
Where sought advice or treatment last time had STI				
Doctor/Clinic	46 (47.9)	32 (20.3)	78 (30.7)	<0.001
Traditional healer	50 (52.1)	126 (79.7)	176 (69.3)	

5.4.3 ASSOCIATION BETWEEN “RESPONDENTS TREATMENT SEEKING BEHAVIOUR DURING STI” AND “HIV INFECTION”

Respondents who reported STI episode in the last 12 months preceding the study were asked about their treatment seeking behaviour. Majority of respondents

(67.2%) who reported having had STI sought advice and or treatment from a traditional healer followed by 29.8% who went to a doctor or clinic as shown in Table 13 above. There was a significant association between “where respondents sought advice or treatment for STI” and “HIV infection”. Respondents who “sought advice or treatment from a doctor or clinic” tended to be “HIV positive” than those who “sought advice or treatment from a traditional healer” ($p = <0.001$).

5.5 RESULTS OF MULTIVARIATE ANALYSIS

All significant factors at the 5% level of confidence were included into the step forward logistic regression model using SPSS system. Table 12 shows results of the analysis after adjusting for confounding factors of data that showed significant association.

Table 14: Multivariate logistic regression results

Variable	OR (95%)
Marital status	
Single	0.50 (0.14, 1.82)
Married	1.12 (0.32, 3.95)
Divorced/Widowed	1
Religiosity / Devoutness	
Born again	
Yes	2.24 (1.21, 4.13)
No	1
Drank alcohol daily	
Yes	3.59 (1.61, 8.00)
No	1
Where sought treatment/advice when last had STI	
Doctor/clinic	3.53 (1.90, 6.57)
Traditional healer	1

5.5.1 MULTIVARIATE ANALYSIS OF ASSOCIATION BETWEEN “MARITAL STATUS” AND “HIV INFECTION”

When all confounding factors were included at 5% confidence level, MBTDs who were married were found to be at higher risk of getting infected with HIV/AIDS. Those who were married were 1.12 (0.32, 3.95) times more likely to be HIV

infected than MBTDs who were divorced, widowed or single as shown in table 14 above.

5.5.2 MULTIVARIATE ANALYSIS OF ASSOCIATION BETWEEN MBTDS WHO “DRANK ALCOHOL AND VISITED PUBS DAILY” AND “HIV INFECTION”

MBTDs that “drank alcohol and visited pubs daily” were found to be at higher risk of “HIV infection”. These were found to be 2.24 (1.21, 4.13) times more likely to be “HIV infected” than those who “drank alcohol and visited pubs less frequently” as shown in table 14 above.

5.5.3 MULTIVARIATE ANALYSIS OF ASSOCIATION BETWEEN “MBTDS WHO WENT TO CHURCH AND WERE BORN AGAIN” AND “HIV INFECTION”

Of the 214 MBTDs who reported “attended church”, those who were “born again”, (26.2%), were at higher risk of “HIV infection”. Those who were “born again” were found to be 3.59 (1.61, 8.00) times more likely to be “HIV infected” than those “who went to church but were not born again” as shown in table 14 above.

5.5.4 MULTIVARIATE ANALYSIS ON THE CHOICE OF TREATMENT

MBTDs who “reported having had an STI and sought treatment/advice from doctor/clinic” were found to be at higher risk of “HIV infection”. Those who “sought treatment or advice from a doctor or clinic” were found to be 3.53 (1.90, 6.57) times more likely to be “HIV infected” than those who “sought treatment or advice from a traditional healer” as shown in table 14 above.

CHAPTER SIX

6.0. DISCUSSION OF FINDINGS

This chapter presents the discussion of the main findings from the study of "HIV infection as an occupational health problem among MBTDs in Lusaka Urban: prevalence and risk factors associated with HIV infection". The discussion is presented under the following sub-headings: HIV prevalence, association between socio-demographic factors and HIV infection, association between sexual behavioural practices and HIV infection and association between reported STIs and preventive and treatment seeking behaviour and HIV infection.

6.1 HIV PREVALENCE AMONG MBTDS

Of the 359 MBTDs who participated in the study, 120 (33.4%) tested positive for HIV. This rate is more than double that of the national HIV prevalence of 15.6% and much higher than 19.2% recorded for urban men and 18.7% for Lusaka Province men (CSO, 2003). Overall, the proportion of HIV positive among respondents rose with age, from 21.7% among 20 - 24 age groups to an alarming 45% in the 25 - 29 age groups before falling to 25% among the 30 - 34 age group. This result indicates that MBTDs were involved in risk sexual behavioural practices and, more likely to be HIV infected from the time they began to work as MBTDs at the age of about 20 and above. The work environment of MBTDs therefore impacts and increases risky sexual behavioural practices amongst them. An increased risky sexual behavioural practice was therefore most likely to be the crucial cofactor in the identified high HIV infection rate among the workgroup.

The evidenced sharp drop in HIV infection rate from 45% (in the 25 to 29 years age group) to 25% (in the 30 to 34 years age group) could be attributed to the relatively small number of respondents in the 30+ year's age group who participated in the study. The other reason could be due to high death rate of those infected with HIV/AIDS in the older age group. This is equivalent to about 10 years HIV/AIDS incubation period for those aged 20 to 29 years since starting to work as MBTDs.

Low participation of the older age group, 30+ years, in the study, was supported by very evident physical absence of older MBTDs in the study group.

6.2 “SOCIO-DEMOGRAPHIC FACTORS” AND “HIV INFECTION”

Socio-demographic factors included residence, marital status, mobility, sexuality, religiosity and circumcision. “Residence” was not significantly associated with “HIV infection” among MBTDs. There was also no significant association between “education” and “HIV infection”. This suggested that HIV infection was evenly distributed among all Lusaka residential areas. Given the current levels of health education programmes aimed at HIV prevention in Lusaka and the whole country, it appeared that MBTDs options for self-efficacy could not be a function of their level of education but rather other factors such as absence of HIV/AIDS preventive facilities at the workplace, which would enhance safer sexual practices

6.2.1 “MARITAL STATUS”, “MOBILITY” AND “HIV INFECTION”

“Marital status” was significantly associated with HIV infection since those married tended to be HIV positive. Multivariate analysis results showed that MBTDs who were married were 1.12 (0.32, 3.95) more likely to be HIV infected than those who were single. This could be due to the fact that a large number of MBTDs (61%) reported to have multiple sexual partners. However, in studies conducted in Rwanda, Kenya and Uganda, marital status of men appeared to be less important influence on risk behaviour of casual sex (Rutenberg et al., 1994). In certain African societies premarital sex is an acceptable practice, particularly for men (Orubuyole et al., 1990). This belief, plus frequent handling of large sums of un-receipted money and high intake of alcohol (daily visit to pubs) could be crucial cofactors of the high level of casual sex and HIV infection among married MBTDs. “Mobility of respondents from other areas” did not seem to have any significant association with HIV infection.

6.2.2 "HOW LONG LIVED IN LUSAKA" AND "HIV INFECTION"

The data showed that respondents who had lived in Lusaka for more than 10 years tended to be HIV positive. This suggested that respondents who were born and or had lived in Lusaka for over 10 years were more likely to be HIV infected than other respondents who lived elsewhere before coming to live in Lusaka. Lusaka is an urban centre in Zambia with many social factors, which influence the behaviour of its residents. The study showed that majority of respondents (81.3%) drank alcohol and 47.3% used none-injectable drugs, behaviours of which were common in Lusaka and were associated with casual sex and HIV infection. Other studies have shown more casual sex in urban than in rural areas (WHO/GPA Sub-Sahara Africa surveys and Carael et al., 1994).

6.2.3 "RELIGIOSITY" AND "HIV INFECTION"

The study showed that majority of respondents (60%) attended church. Of the respondents who attended church, 34% were "baptized" and 26% were "born again". Data also revealed that of those who attended church, 60% used a condom during their last sexual act and of those who were "baptized", 35% used a condom during the last sexual act. Of those who were "born again", very few (16%) reported to have used a condom during last sexual act. The data also showed that respondents who were "born again" tended to be HIV positive than negative.

This was supported by multivariate analysis results which showed that respondents who were "born again" were 3.59 (1.61, 8.00) times more likely to be HIV infected than those who were not. These findings suggest that respondents who were earnestly religious have been influenced by the church to only use "abstinence" in preventing HIV infection. The belief that promotion of condoms would encourage casual sex has influenced negative attitude of the church towards promotion of condom use. The consequence of this is that when devoted members of the church, especially those who are "born again", fail to abstain they are unprepared to use a condom. Given high levels of church attendance in Zambia and its influence in

people's lives, the church's' potential to promote constructive behaviour change for HIV prevention has not been fully coordinated and therefore under utilized. Churches, especially those who are adamantly against the use of condoms to prevent HIV infection, should therefore be availed with this data to show that promoting "abstinence only" is not the most effective way of preventing the deadly HIV infection amongst its folk and the public.

It is true that some people might misuse the availability of condoms to engage in sexual behaviour that violates God's desire for sexual purity and sanctity of marriage. However this should not stop the church from promoting responsible use of condoms. Condoms when used correctly and persistently significantly reduce HIV transmission and prevent unnecessary loss of life. Life is sacred to God. As Christians therefore we should also fulfil sanctity of life by promoting not only abstinence but also promote responsible and appropriate use of condoms in situations where abstinence is not chosen, so that human life is protected (World Vision, 2003 and Mwanashiku, 2002)

6.2.4 "CIRCUMCISION" AND "HIV INFECTION"

The findings of the study showed that respondents who were not circumcised tended to be HIV positive and majority of respondents (79.3%) were not circumcised and therefore prone to HIV infection. Several prospective studies in Africa have also found that a lack of circumcision of men was a risk factor for HIV transmission (Cameron et al., 1989). Reasons attributed to this were that in part, the foreskin has a large number of HIV target-cells to which the virus can more readily attach it and gain entry into the body. With circumcision, these receptor cells are removed. Circumcised men also appear to be less susceptible to abrasion and tearing and therefore less prone to ulcerative STIs, all of which facilitate transmission of the AIDS virus at port of entry (NAC, 2004).

6.3 ASSOCIATION BETWEEN “SEXUAL BEHAVIOURAL PRACTICES” AND “HIV INFECTION”

HIV is primarily transmitted by certain unsafe sexual behaviours and work influences behaviour of many workers including MBTDs. MBTDs have easy access to disposable income and their work makes them more mobile and frequently partake alcohol and visit pubs which are frequented by people looking for casual sex. All these make them vulnerable to casual sex and HIV infection. The behaviours, which expose them to HIV infection through casual sex, include:

6.3.1 “GIVING FREE RIDES TO WOMEN SOME OF WHOM BECAME SEXUAL PARTNERS” AND “HIV INFECTION”

The findings showed that majority of MBTDs (85%) gave free rides to women some of whom became sexual partners. Sixty percent of the women given free rides were schoolgirls. Although no significant association was observed between the numbers of women given free rides, some of whom became sexual partners, and HIV infection, this practice posed high risk of HIV transmission to both partners, especially to young girls. Young girls were more vulnerable and easy prey because of poverty. This practice encourages early timing of first sex in young girls and increases the chances of having many sexual partners during the girl's lifetime (Carballo et al., 1988 and Keeter et al., 1988). The risk of schoolgirls being infected with AIDS virus was even higher considering that condom use among MBTDs was very low. Only 35% of respondents indicated to have used a condom at last sexual act.

6.3.2 “MULTIPLE SEXUAL PARTNERS IN THE LAST 12 MONTHS” AND “HIV INFECTION”

No significant association was observed between respondents who had “multiple non-cohabiting sexual partners” and “HIV infection”. However, majority of respondents (61.3%) reported to have had sex with non-cohabiting partner in the last 12 months. This suggested high levels of casual sex among respondents, which was

a risk factor for HIV infection. Other studies have shown that in areas with rapidly increasing infection rates, (given high numbers of non-cohabiting sexual partners, despite dramatic decrease in numbers of sexual contact over time) an individual may still be at higher risk of coming in contact with an HIV infected partner than several years earlier when the infection was less prevalent (Paula et al., 1994).

6.3.3 "CONDOM USE DURING LAST SEXUAL ACT" AND "HIV INFECTION"

The study showed that HIV infection was significantly associated with non-use of condoms during last sexual act. Condom use among respondents was very low because only 35.1% of respondents used a condom during last sexual act. Other similar studies in Africa have demonstrated that currently, the only "barrier method" that had practical usefulness to protect against STI/HIV in the African context was the use of a male condom. It is therefore not only important to promote condom use among MBTDs but also to provide facilities at their place of work, which make condoms easily available and accessible.

6.3.4 "LENGTH OF SEXUAL RELATIONSHIP WITH NON-COHABITING PARTNER" AND "HIV INFECTION"

Majority of respondents (44%) had over one year relationship with a non-cohabiting partner, followed by 21% who had "four weeks" relationships. No significant association was observed between length of casual sex relationships and HIV infection. However other studies have shown that people often use prevention methods such as condoms less often with "steady" or "long lasting relationships" than with "casual" partners (Paula et al., 1994). This comes about from increased growth of intimacy and trust between the two partners with steady relationships resulting in non-use of condoms and risk of HIV infection. Trusting of non-cohabiting sexual partner resulting in non-use of condoms should therefore be discouraged among MBTDs.

6.3.5 “ALCOHOL CONSUMPTION”, “DRUGS UPTAKE” AND “HIV INFECTION”

Of the 81.3% of respondents who reported drank alcohol, 33.8% of them drank and visited pubs daily. In addition, 47.3% of respondents reported used un-injectable drugs. Further more, 51.6% of respondents preferred taking alcohol or drugs before sexual intercourse. “Daily consumption of alcohol” was found to be significantly associated with HIV infection while “occasional consumption of alcohol” was not. Multivariate analysis results indicated that respondents who drank and visited pubs daily were 2.24 (1.21, 4.13) times more likely to be HIV infected than those who drank alcohol and visited pubs less frequently.

While uptake of un-injectable drugs was not significantly associated with HIV infection, the practice of taking drugs or alcohol before sexual act has many implications. Studies have shown that drinking was often associated with lower self-control and greater risk-taking behaviour with regard to sex. Bars and nightclubs that sell alcohol are often popular meeting places and are frequented by people looking for commercial sex. Some studies in Sub-Saharan Africa have examined the effects of alcohol consumption on sexual behaviour and have shown that alcohol consumption was common in Sub-Saharan Africa and that it was positively associated with risk-behaviour, even when other factors were held constant (Ferry, 1995 b). Similar studies on psychoactive substances especially drugs during sexual activity, have found drugs to be strongly associated with increased frequency of HIV infection, most likely because users of these drugs were more often engaged in high-risk sexual practices - such as non-use of condoms (Greenblatt et al., 1987)

6.3.6 “PERCEPTION OF RISK OF HIV INFECTION” AND “HIV INFECTION”

Respondents’ perception of chance of getting infected with AIDS virus was found to be poor because of the following observations: 9.7% thought they could not reduce chance of getting infected with AIDS virus by using a condom every time had sex, 6.4% did not know that a healthy looking person could have HIV/AIDS, 11.5% did

not know that one can protect himself if his wife was HIV positive, 83.6% were not HIV tested and most of all, 21.2% of those who thought they had no risk of getting infected with AIDS virus, 21.7% were found to be HIV positive. In addition, 86.6% did not use a condom during their last sexual act because they trusted their sexual partner, some of whom were non-cohabiting. Trusting a sexual partner, who is non-cohabiting, is common in sexual relationships which are steady and long lasting and this has been found to be a co-factor to none use of condoms and increased HIV transmission (Paula, eds, 1994).

6.4 “REPORTED STIs”, “PREVENTIVE AND TREATMENT SEEKING BEHAVIOUR” AND “HIV INFECTION”

This section covers discussions of relationships between “reported STIs” and “treatment seeking behaviour” and “HIV infection” among respondents.

6.4.1 “REPORTED STIS” AND “HIV INFECTION”

Both STI and HIV/AIDS are sexually transmitted diseases and that is one of reasons why self-reported history of STIs during the last 12 months was significantly associated with HIV infection. This finding was supported by the data, which showed that the reported infection rate of STI of 34.6% in the last 12 months among respondents was nearly the same as HIV infection rate of 33.4% in the same group. This finding indicates the importance of putting up effective STI control programme among the workgroup as part of targeted prevention strategy.

6.4.2 “TREATMENT SEEKING BEHAVIOUR DURING AN STI” AND “HIV INFECTION”

The study on treatment-seeking behaviour during STIs showed that only 30.7% sought advice or treatment from doctors or health centres. Majority of those infected with STIs (69.3%) sought advice and treatment from traditional healers, the treatment of which is not reliable. However respondents who sought

treatment/advice from traditional healers tended to be HIV negative than those who sought treatment/advice from doctors or clinic. Multivariate analysis of data showed that respondents who sought treatment/advice from doctors, hospitals or clinics were 3.53 (1.90, 6.57) times more likely to be HIV infected than those who sought treatment/advice from traditional healers. Several co-founding factors could contribute to this finding. Traditional healers in Zambia have been trained to promote biomedical models of disease transmission for example by referring their clients to hospitals or clinics if they suspect AIDS/STI (National Research Council (USA) 1996) so that only most serious cases of STIs end up with doctors, hospitals or clinics. This may also suggest that many MBTDs fail to seek prompt treatment at hospitals, or clinics or by doctors for many reasons including stigma attached to STIs, negative attitudes on the part of the health care providers, and lack of confidence in the service delivery system and high service charges, all of which contribute to making STI treatment not accessible to many of them. This supported by similar studies in Zambia (NAC September 2004).

The other co-founding factor which could be attributed to the finding that respondents who sought treatment from doctors, hospitals or clinics were 3.53 (1.90, 6.57) times more likely to be HIV infected than those who sought treatment from traditional healers could be that STIs cases presented to traditional healers were promptly and successfully treated. Prompt and successful treatment of STIs could reduce HIV transmission among those who become infected with STI.

CHAPTER SEVEN

7.0 CONCLUSION

HIV/AIDS is one of the health problems associated with workplace issue, such as MBTDs, and should be treated like any other illness or condition in the workplace. This is necessary not only because it affects the workplace, but also because the workplace, being part of the local community, has a role to play in the wider struggles to limit the spread of the epidemic.

This study has shown that work influences the behaviour of MBTDs in many ways. It influences their behaviour because it provides them with disposable income, which in the long run makes them adopt unsafe sexual behaviours. The study has shown a 33.4% HIV infection among this work-group, which is higher than 18.7% infection rate among men in Lusaka Province. It has also showed that among 25 to 29 year olds within the work-group, infection was a massive 45%. The incidence was higher among the 49.3% as those who were married as many of them had multiple sexual partners and were found to be 1.12(0.32, 3.95) times more likely to be HIV infected than those who are single divorced or widowed. The incidence was also higher among the 33.8% of those who drank alcohol and visited pubs daily and were therefore found to be 2.24 (1.12, 4.13) times more likely to be HIV infected than those who drank and visited pubs less frequently. The incidence was also higher among 64.9% of those who did not use a condom during their last sexual act and among 79.3% of those who were not circumcised. The study also found that the "born again Christians" surveyed were at higher risk of infection because of their churches dismissal of condom use. This attitude by the church leads many "born agains" to shy away from using condoms and when they fail to abstain they are not equipped to protect themselves. As a consequence of this, the "born agains" were found to be 3.59 (1.61, 8.00) times more likely to be HIV infected than those who were not.

The study also showed that 34.6% of MBTDs who reported to have had STI during the past 12 months preceding the study tended to be HIV positive. HIV infection was also higher among the 30.7% of those who had STI and sought treatment/advice from doctors, hospitals or clinics. This suggested that MBTDs who got STI tended to go to doctors or hospitals/clinics when the illness was severe and was most likely HIV positive. Most of all, majority of drivers (85.2%) admitted offering free rides to women, most of whom were schoolgirls, in return for sex. Young girls or school girls are vulnerable to HIV infection due to physiological factors and high levels of poverty (NAC, 2004).

Lastly but not the least, there was also lack of knowledge of critical ways by which HIV is transmitted. This was evidenced by very poor perception of individual's risk of getting infected with AIDS virus. Of the 19.8% who said their chance of getting infected with HIV was low, 17.5% were HIV infected and of the 21.2% who said they had no risk of getting infected, 21.7% were infected with the virus. The study also showed that a massive 83.6 percent of MBTDs were not HIV tested and all of them did not know the HIV status of their sexual partner. In addition, 86.6% of respondents who did not use a condom at the last sexual act said they did not use a condom because they trusted their sexual partner, some of who were non-cohabiting. All these were unsafe sexual behaviour, which were primarily responsible for HIV transmission among the workgroup and can therefore be prevented by changes in these same behaviours. The fact that very few MBTDs were HIV tested and very few used a condom at last sexual act suggested that their workplaces did not have facilities such as provision of condoms and VCT services that would enhance reduction of risk behavioural practices among the work-group.

There is therefore need to formulate targeted HIV/AIDS intervention programme at their places of work that would enhance behaviour change. The programme should include education that would improve individual's perception of risk of HIV infection, make condoms available and easily accessible and provide VCT, HAART and home based care services for MBTDs and their families who are living with HIV/AIDS, and stop churches from issuing confusing messages on condom use.

CHAPTER EIGHT

8.0 INTERVENTIONS

Studies have shown that providing people with information about how to protect themselves against HIV infection has proven to be insufficient. The compelling argument for this has been that high-risk behaviour may be governed by situations than by attitudes (Zwi, et al., 1991). Thus, the recommended interventions for the workgroup are tailored to specific realities and needs of MBTDs and their spouses/partners. However, successful implementation of interventions and their sustainability requires putting in place a programme, which objectives are, harmonised into existing prevention activities. Combined simultaneous intervention programmes have shown dramatic decrease and in the incidence and prevalence of HIV infection (MOH/CBoH, 1999). However the common factor for the combined interventions is that HIV is primarily transmitted by unsafe sexual behaviours and can therefore be prevented by changes in those same behaviours. The programme should therefore fulfil the following guiding principles for behaviour change, which are consistent with behaviour change and developed with experiences in Africa (National Research Council (USA) 1996) and Family Health International / AIDSCAP Project, 1995):

- 1) Targeting – Interventions should be targeted and well characterised for the workgroup
- 2) Support – Should put in place a supportive social environment that fosters HIV prevention and reinforces behaviour change efforts.
- 3) Maintenance – The HIV interventions should include strategies that foster maintenance of behaviour changes over time.
- 4) Collaboration – The programme should be designed to collaborate with the employer, worker, ministries and workers' organisations such as drivers associations and local religious organisations and local community health committees.

- 5) Monitoring and evaluation – That the programme must be monitored and evaluated to determine intervention implementation integrity, effectiveness, and cost-effectiveness
- 6) Sustainability – As resources are limited and donor support intermittent, the programme should be designed for sustainability by building capacity to pursue alternative resources.

Based on identified risk factors among MBTDs the recommended interventions should be implemented in two parts.

- (a) Firstly, tackle factors based on individual behaviour change that directly affect the individual and that the individual has some control in the change.
- (b) Secondly, tackle structural or workplace factors that directly or indirectly facilitate the spread of HIV, and over which the individual has very little control.

8.1 INTERVENTIONS ON INDIVIDUAL RISK BEHAVIOUR

Interventions on identified individual risk behaviours that the individual MBTD has some control in changing, which require changing are as follows:

- a) Having multiple sex partners seemed common and should therefore be discouraged or stopped. MBTDs who were married were found to be 1.12 (0.32, 3.95) times more likely to be HIV infected because many of them had multiple sexual partners. Because of this practice, marriages among MBTDs were also inherently unstable. A high proportion of regular partnerships were non-cohabiting and non-cohabitation is associated with casual sex contacts and HIV infection

- b) Frequent change of sex partners. This should be stopped, as it is also associated with casual sex contacts and HIV infection.
- c) Level of condom use was low and most likely incorrect. In addition, AIDS awareness has been focussed on use of condoms with strangers and casual sex partners. This focus may have jeopardized the use of condoms with regular partners as well as with acquaintances that may belong to high-risk group. This should also be addressed in the programme.
- e) Poor perception of risk of HIV infection due to poor knowledge of critical ways of HIV transmission. This is as a result of ineffective HIV/AIDS awareness campaign, which the workgroup has been receiving. Tailored behaviour change communication (BCC), should therefore be used to transfer information and skills to help MBTDs change or avoid unsafe sexual behaviour practices. Misconceptions should be addressed, for example, the concept of infection by an apparently healthy person is poorly understood and should be addressed. BCC should also include peer education programme among the workgroup. The programme should be linked to condom use, VCT, ART, etc, so that MBTDs know what concerted steps they should take to respond to BCC messages.
- f) Daily alcohol consumption accompanied by visits to pubs. The study found that MBTDs who drank alcohol and visited pubs daily were 2.24 (1.21, 4.13) times more likely to be HIV infected than those who did not have that habit. This is because people who are looking for commercial or casual sex frequent pubs and taking alcohol is often associated with lower self-control and greater risk-taking behaviour with regard to sex. It is therefore recommended that frequent uptake of alcohol and visits of pubs among MBTDs should be discouraged or stopped.
- g) Lack of male circumcision. This has been found to be a cofactor in increased risk to HIV infection. Circumcision should therefore be encouraged

- h) Sex with commercial sex workers (CSWs). This is a very high-risk group. Although only a few MBTDs (7.3%) reported having had sex with CSWs, the work group should be taught risk avoidance skills
- h) Lack of knowledge of one's HIV status and that of sexual partner. Very few MBTDs knew their HIV status and all of them did not know the HIV status of their sexual partner. This is one issue, which has made MBTDs vulnerable to HIV infection. The workgroup should be counselled on the importance of knowing one's HIV status and that of the partner. Evidence exist that knowledge about HIV status is often translated into behaviour change. When people know their HIV status they respond accordingly. If a person is negative he/she can take active measures to protect that status. The group should also be taught that trusting one's sexual partner should only be based on knowledge of the HIV status of that partner.
- i) The study showed high infection rate of STIs among MBTDs and lack of knowledge to recognise signs and symptoms of STIs and therefore seek early appropriate treatment. This made MBTDs more vulnerable to HIV infection. The programme should include teaching MBTDs how to recognise signs and symptoms of common STIs so that they can seek early treatment.
- j) Coercive sex or sex bartering through giving free rides to women, especially schoolgirls who are especially vulnerable. In a Lusaka environment where STI and HIV/AIDS are prevalent, this is a public health issue, which should be discouraged strongly among MBTDs.

issuing conflicting messages on condom use. The churches' negative attitude on condom use has made those who are devoted not to be ready to use a condom when they fail to abstain resulting in unnecessary loss of lives among believers.

- c) Poor availability and accessibility of condoms at place of work. This scenario contributes to low usage of condoms among MBTDs. The intervention programme should therefore make condoms available and easily accessible, preferably free, at the place of work. All MBTDs should be encouraged to consistently and correctly use condoms. Means of assessing whether those collecting condoms are using them should be included in the programme.
- d) Treatment seeking behaviour for STIs. Majority of MBTDs visited traditional healers for STI treatment most likely because this service is easily available within the community, accessible and affordable and even more private. The study showed that MBTDs who had an STI and sought treatment from a doctor, hospital or clinic, were 3.53 (1.90, 6.57) times more likely to be HIV infected than those who sought treatment from a traditional healer. This finding suggests that many MBTDs preferred to seek treatment from a traditional healer first and only went to hospital/clinic when the illness was very serious. Traditional healers' STI treatment sequel is not well documented and therefore not very reliable. Hospitals and Health Centres should therefore be made more accessible and affordable to MBTDs. MBTDs should be encouraged to seek prompt and early treatment of STI at hospitals or clinics or doctors.

The programme should include provision of easily available and acceptable STI services for the workgroup. It should improve diagnosis and treatment of STIs through strengthening service delivery, provision of drugs, behaviour change communication and if necessary presumptive treatment of STIs among the workgroup

- e) Provision of VCT Services for the workgroup. This is another intervention as individual needs to volunteer for testing and no one should be coerced. VCT should be taken before testing to discuss advantages and disadvantages and after wards, before a person knows his or her HIV status. VCT is a form of interpersonal communication through which trust is established and a person is helped with the feelings, attitudes and behaviour. VCT brings about preventive behaviours and practices, which help to cope with HIV/AIDS amongst those who are infected or affected. The VCT programme should address the “window period” as well.

- g) Provision of HAART services and treatment of opportunistic infections. Expanded use of HAART will play a big role in the battle against HIV/AIDS. HAART can enable HIV infected MBTDs to live healthier and longer lives. It works by suppressing HIV replication and is designed to reduce viral load to lowest possible level for as long as possible. This slows down the progression of HIV and infected person is able to live a healthier and longer life. HAART should include treatment of opportunistic infections. However those who will be on therapy will need to receive the treatment for the rest of their lives and this entails that equipment and trained personnel, laboratory technologists and counsellors for example will also be needed constantly.

- h) Absence of HIV policy at workplaces results in workers often avoiding learning about or admitting of being infected with HIV because of stigma attached to the disease and fear of discrimination. Such avoidance limits diffusion of knowledge about HIV/AIDS in the workgroup and increases the risk of transmission to spouses and others. It may also lead to restrictions relating to promotion, job location or employment benefits. It may also lead to dismissal from work. All these lead to members of the workgroup not wanting to learn or admit their status because of fear of economic consequences. Employers and or organisations of MBTDs should be assisted in formulating HIV policies at their places of work.

- i) Promotion of partnership with other sector in the implementation of BCC and care and support of those who are infected or affected with HIV/AIDS among MBTDs. The “other sector” includes not only the employers and workers’ associations’ but also organisations such as churches, governmental and non-governmental organisations and community-based groups, which care and promote positive living and well being. Multi-sectoral response requires working together to harmonise individual and group efforts into coordinated response. Identification and collaboration with these social networks such as churches, which exist in every community, will offset weaknesses in the programme and the health system and in so doing help people living with HIV/AIDS (PLWHA), cope better with HIV/AIDS effects. For example some churches could be integrated into the programme by:

- Providing psychosocial counselling to those who are infected or affected by the disease,
- Disseminating messages on the ABC of HIV prevention – abstinence; be faithful to one partner; or, in the absence of the first two, use condoms.
- Discouraging acts of discrimination or stigmatisation against PLWHA and persons living in AIDS-affected households
- Develop a programme of care and support for orphans, widows and widowers
- Provide pastoral services and spiritual strength which influences positive behavioural change

8.3 OUTCOME OF INTERVENTIONS

Expected outcome of behaviour change after implementing the recommended interventions are also divided into two parts:

8.3.1 EXPECTED OUTCOME INTERVENTIONS FOR INDIVIDUAL MBTD

The following are the expected outcome interventions for MBTDs on risk behaviours that an individual has some control:

- a) MBTDs shall abstain from sexual intercourse until they are married, and if married abstain during postpartum period
- b) Each MBTD should be faithful to his wife or partner
- c) If the MBTD is young (below 25 years of age) and or not married should delay onset of sexual activity as long as possible or until they get married.
- d) Each MBTD shall know dangers of having multiple sexual partners and reduce number of sexual partners
- e) They should reduce or stop frequent changes of sexual partners
- f) They should stop having sex with commercial sex workers
- g) They should reduce or stop daily consumption of alcohol and visits to pubs where people looking for commercial or casual sex frequent.
- h) They should know how to correctly use condoms and be able to consistently use condoms, except with a faithful partner who is HIV negative.
- i) They should develop risk-avoidance skills such as always having or knowing where to get condoms.
- j) The workplace should have facilities, which enhance risk-reduction motivation such as providing free condoms, and friendly and acceptable counselling facility.
- k) All MBTDs should get to know the HIV status of self and that of sexual partner by proving easily accessible and friendly VCT services
- l) They should have adequate knowledge of critical ways by which HIV is transmitted. They should also reduce misconceptions of HIV transmission such as that a healthy looking person would not have AIDS virus and should not trust a partner whose HIV status is not known. The workgroup should stop stigmatisation and discrimination of fellow workers living with HIV/AIDS.

- n) Each should be made able to recognise STI signs and symptoms and seek early treatment when has an STI
- o) Each should be made able to seek STI treatment from reliable health provider (hospital, health centre, doctor or well-known traditional healer) and avoid self-treatment.
- p) MBTDs should stop sex bartering through giving free rides to women, especially schoolgirls. They should also know community health repercussions of coercing young girls into sex.
- q) They should accept circumcision as one of the ways of preventing HIV infection and encourage and let their children or relations be circumcised

8.3.2 EXPECTED OUTCOME INTERVENTIONS AT WORKPLACE AND IN THE COMMUNITY

The following are the expected outcome interventions at workplace and in the community that directly or indirectly facilitate the spread of HIV and over which an individual MBTD has very little control:

- a) MBTDs and community in which they live should not accept or tolerate the notion or belief that allows men to have multiple sexual partners
- b) All churches and MBTDs should change their negative attitude on condom use. All three methods i.e. ABC, should equally be accepted in the control of HIV infection. Avail data on susceptibility of church folk to HIV infection, such as that, those who were “born again” were 3.59 (1.61, 8.00) times more likely to HIV infected than those who were not. The study showed that believers tended not to use condoms when they fail to abstain. This was a result of conflicting messages on condom use by some churches to its folk and the community. All churches within the community should encourage and promote condom use when people fail to abstain in order to avoid unnecessary loss of life from HIV/AIDS.

- c) Should set up quality STI services for the workgroup. This could effectively be done by involving LDHMT through which easily accessible Health Centres with proper infrastructure, equipment, including trained personnel, laboratories and drugs could be selected for use by the workgroup. The programme should if necessary strengthen STI management skills of health workers at the Health Centre and increase the percentage of STI infected patients who have been appropriately diagnosed, treated and counselled. If appropriate, initiate a syndromic approach of treatment of STIs for the workgroup. Syndromic approach involves identifying constellations of STI symptoms and signs in order to categorise by groups of possible etiologic cause and then provide treatment most likely to cure the causative infection (Zambian Integrated Health Programme, 2002). The strategy should also include putting in place a hybrid approach of strengthening service delivery, behavioural change communication and condom promotion among the workgroup.
- d) The expected outcome for providing VCT services at the workplace is positive behaviour change and prevention of HIV transmission among MBTDs and their spouses. This will contribute to improved health and medical treatment because those who are HIV positive will take active measures to avoid infecting others. Those who are infected shall also follow health and positive lifestyles, including good nutrition and treatment of opportunistic infections that will help them avoid developing full blown AIDS as long as possible. Those who know their HIV status shall make informed decision on their sexual lives and fundamental issues such as whether to have children and how to provide for them. VCT services at the workplace shall also provide psycho-social support because when MBTDs know their HIV status they shall more likely join support groups and participate in care and prevention programmes. VCT shall also play an important role in reducing stigma within their workgroup and communities. Studies have shown that persons who have undergone HIV testing and who come out to talk about HIV/AIDS issues have been important contributors to

stigma reduction within communities (NAC, 2004). VCT shall also play an important entry point to other HIV-related services such as HAART, TB treatment, STI treatment and home-based services.

However there are many challenges for VCT provisions. These include funding and staffing, fear of loss of confidentiality, as it will be difficult to guarantee it, and fear of stigma, discrimination and rejection by those who are HIV positive. Provision of support services is crucial in strengthening of VCT services. This should include treatment of opportunistic infection, counselling, access to laboratory facilities and introduction of ARV therapy services (NAC, 2004). There is presently a structure under the Ministry of Health, health delivery system, to accommodate this scheme.

- c) Provision of HAART services. Although HAART is expensive, the expected clinical and economic gains of running a strong and effective ART programme for the workgroup are many. ART delays disease progression and therefore prolongs life. In doing so, it reduces the incidence of opportunistic infections. It also reduces hospital stays and other health costs associated with HIV-related illnesses. Most AIDS patients who use ARVs are able to return to productive work, which reduces the economic impact of the epidemic and contributes to improved productivity and reduced poverty. By prolonging life, ART shall reduce the potential number of HIV/AIDS orphans among the workgroup.

Several major constraints will be expected when administering ARTs. There is the risk that the virus may develop resistance to the drugs. There is also possibility of treatment failure, side effects, toxicities and drug interactions thereby needing frequent monitoring. In addition, patients frequently encounter practical difficulties in adhering to the drug regimens due to side effects, palatability, scheduling, daily burden, and dietary restrictions leading to treatment failure, accelerated sickness and death (NAC, 2004)

- d) Enactment of good workplace HIV/AIDS policy which encourages MBTDs to be HIV tested and encourage provision for care and support to those infected with the disease will have many positive results towards control of HIV/AIDS among MBTDs and their spouses. It will reduce fear of being stigmatised and discriminated against at the place of work and will protect right to freedom of expression and information. It will impart openly on HIV related prevention and care information. By protecting rights and working against stigma and discrimination, the Drivers' Union and employer will promote openness and tolerance and involvement of drivers and family members living with HIV/AIDS in HIV prevention and care programme. Unfortunately, only FLASH and BABA Transport Companies have big enough fleet of buses and drivers to be involved in this programme.
- e) Provision of community or home based care and support by churches and other community organisations. This will assist in psychological support, spiritual strengthening through family and pastoral counselling and material support. Support groups will also assist in basic nursing through bathing and promotion of oral hygiene and ambulation (exercises) and also in nutritional support.

8.4 RECOMMENDED IMPLEMENTATION PLAN

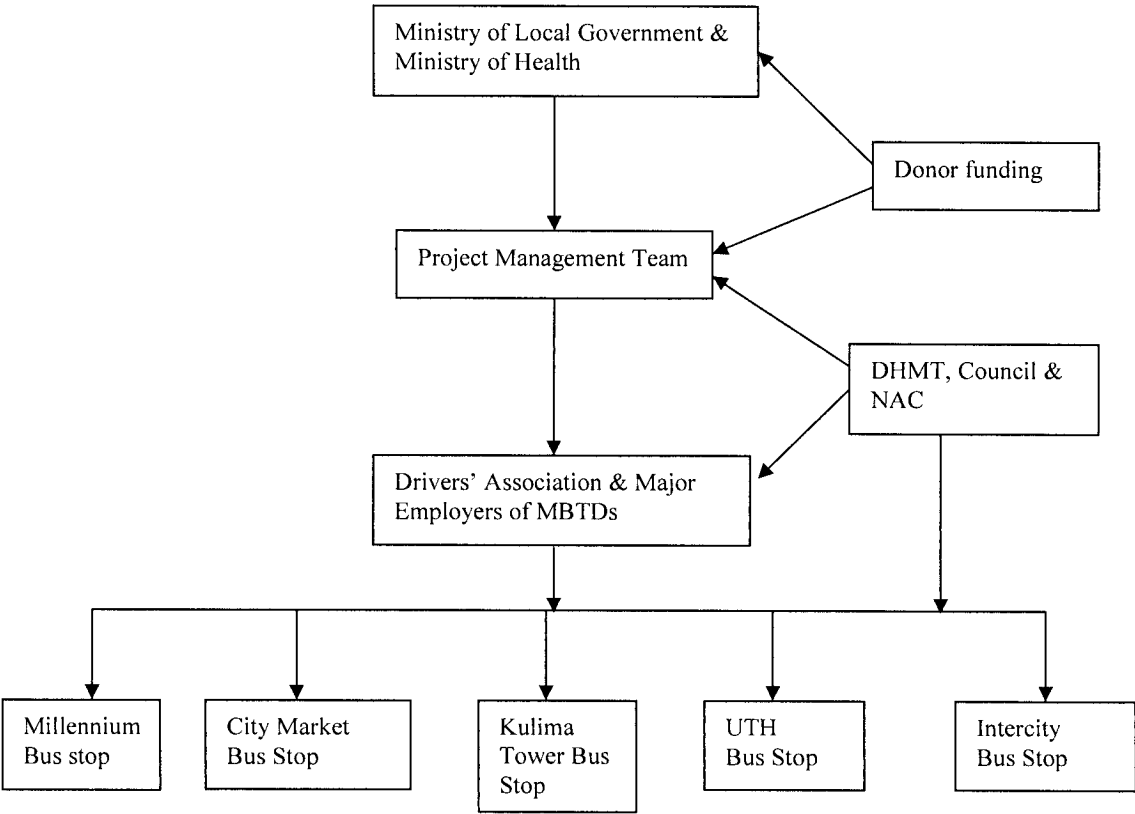
Many studies have shown that in populations with high HIV infection, general control measures of HIV/AIDS should run concurrently with targeted intervention strategies for high risk groups in the society, in order for the control programme to be effective and successful. This study has identified MBTDs in Lusaka Urban to be a high risk group for HIV infection. The main contributing factor for this scenario is that the work of MBTDs influences their behaviour because it provides them with easily accessible and disposable income, which in the long run makes them adopt unsafe sexual behaviours.

The work environment for MBTDs in Lusaka Urban is common to all MBTDs in other towns in the country, and most likely to other MBTDs in the Sub-Saharan African countries. The recommended intervention strategies for this work group in Lusaka should therefore be applied to MBTDs in all other big towns in the country and if possible should share this study with other countries in the Sub-Saharan countries.

In order for these interventions to be successful and sustainable, the objectives of the recommended plan should be harmonised into existing HIV/AIDS prevention activities in each town

Basing on the structures and services of the Ministry of Local Government (MoLG) and Ministry of Health (MoH), these two ministries should be given the task to implement this HIV/AIDS prevention programme for MBTDs in Lusaka and all other big towns in the country. The structure and organisation of this programme in all towns should be as shown in the flow chart shown in figure 3 below.

Figure 3: Flow chart of an HIV/AIDS intervention programme



The responsibilities and tasks of MoLG, MoH, Project Management Team and other stake holders will be as follows:

1) Ministry of Local Government

This ministry controls the operation of minibuses in all towns through its City or Municipal Councils. The MoLG should therefore play the major task of forming the proposed Project Management Team (PMT) in all major towns through its City and Municipal Councils. It should also play the major role of involving the MoH and other stakeholders involved in the control of HIV/AIDS in each town. Its major tasks will therefore include:

- Ensure that each Local Authority Council forms PMT.
- Spearhead the sourcing of donor funding for the project.
- Participate in the monitoring and evaluation of the programme

- Ensure dissemination of the results of this study to relevant organisations/institution that do not support or promote the use of condoms in the prevention of HIV/AIDS.

Through Municipal Councils the following tasks shall be carried out:

- Form Project Management Team
- Select representatives of MBTDs and employers with large fleet of buses and taxis in the community and include them in the PMT at each bus station in town.
- Provide facilities for the project at each bus station for the PMT and where the Bus Station is owned by a private company, assist the company in providing the facilities for the team.

2) Ministry of Health

The MoH has DHMTs in each town and should make them to be involved in implementing some of the recommended interventions with the PMT. DHMTs may perform the following tasks:

- Select Health Centres in each town which should provide easily accessible and available VCT, STI and HAART services for programme.
- Ensure formulation and implementation of support groups in the provision of health promotion and home based care for MBTDs living with HIV/AIDS
- Ensure provision of behaviour communication change (BCC) materials and any other necessary facilities to PMT through NAC.

The responsibilities and tasks of Project Management Team will be as follows:

- Participate in the formation of HIV Policy at each bus station
- Ensure formulation of HIV/AIDS Prevention Committee at each bus station which will be responsible for running the programme at each bus station
- Train selected MBTD peer educators and psychosocial counsellors who *should be involved in running the HIV/AIDS Intervention Programme at each bus station*

- Provide facilities which enhance risk-reduction motivation such as providing free condoms and acceptable counselling facility at each bus stop.
- Involve local churches to assist in spiritual strengthening and material support to MBTDs living with HIV/AIDS

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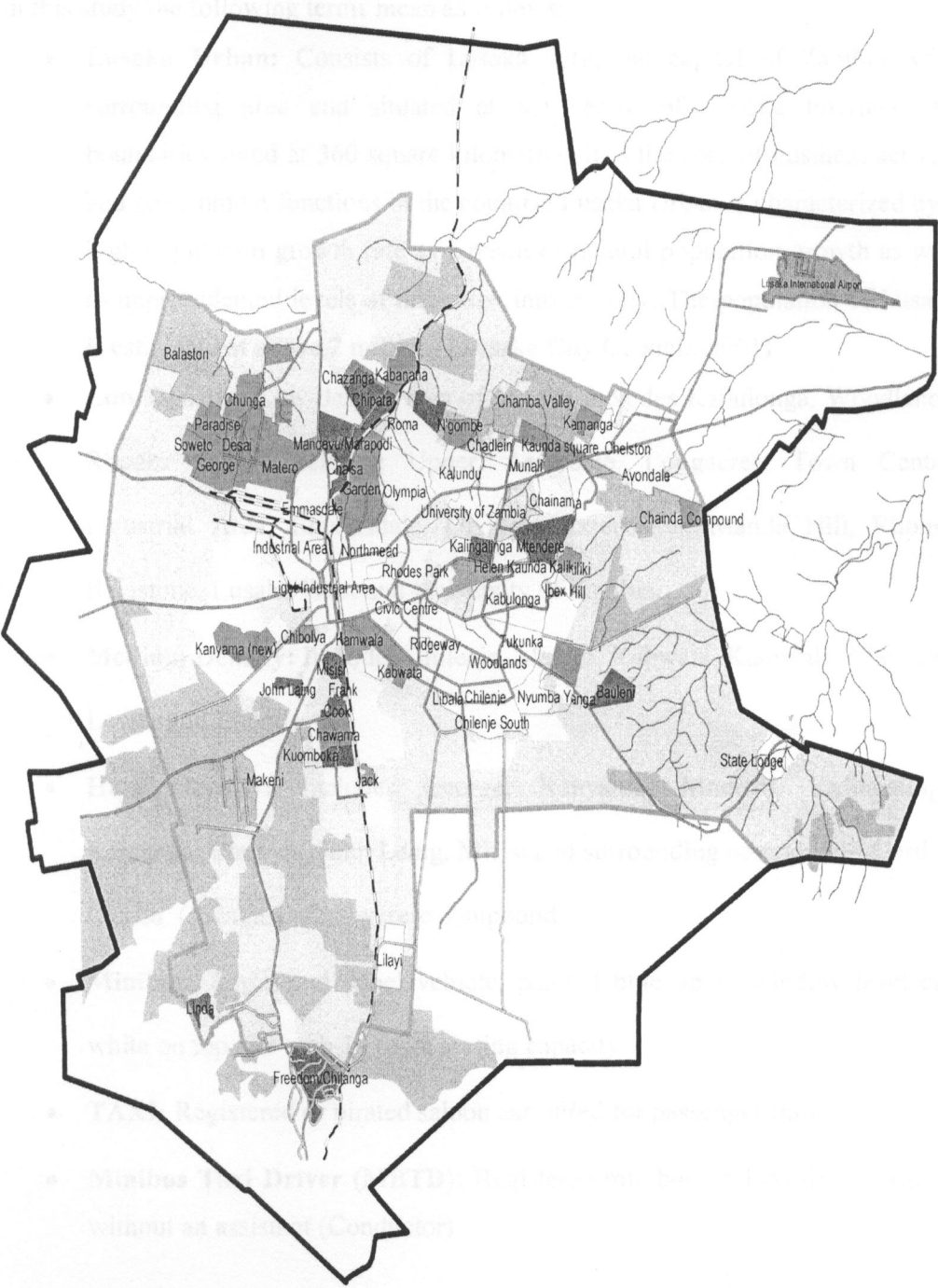
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10.0: APPENDICES

10.1: MAP OF LUSAKA URBAN



10.2 GLOSSARY

In this study the following terms mean as follows:

- **Lusaka Urban:** Consists of Lusaka City, the capital of Zambia, with surrounding area and situated at the centre of Lusaka Province. Its boundaries stand at 360 square kilometres. It is the core of business activity and government functions in the country. Lusaka Urban is characterized by a high population growth rate as a result of natural population growth as well as unprecedented levels of migration into the city. The population of Lusaka is estimated at above 2 millions (Lusaka City Council, 2001)
- **Low Density:** Low-density area of Lusaka includes Kabulonga, Woodlands, Rhodes Park, Chelstone Upper, Avondale, Longacres, Town Centre, Industrial Area, Emmasdale, Olympia Extension, Manda Hill, Rhoma, Balastone, Lusaka West and University of Zambia.
- **Medium Density:** Includes Chilenje, Matero, Kabwata, Kamwala, Chelstone Lower and Lilanda
- **High Density:** Includes George, Kanyama, Mndevu, Kalingalinga, Kamanga, Chainda, John Leing, Misisi and surrounding compounds, Garden, Chaisa Chunga and Ngwerere compounds
- **Minibus:** Registered panel vehicle, painted blue up to window level and white on top and with 14 to 28 seating capacity
- **TAXI:** Registered or pirated saloon car, hired for passenger transport
- **Minibus Taxi Driver (MBTD):** Registered minibus or Taxi driver with or without an assistant (Conductor)
- **T4 Helper-Cells:** Important types of white blood cells which are essential for the body to fight against infection. HIV gradually destroys T4 Helper cells.