

**ADHERENCE TO UNIVERSAL PRECAUTIONS WITH
REFERENCE TO HIV INFECTION AMONG MIDWIVES AND
TRAINED TRADITIONAL BIRTH ATTENDANTS DURING HOME
AND HEALTH CENTRE DELIVERIES IN SIAVONGA AND
MAZABUKA DISTRICTS.**

**BY
LEODA HAMOMBA
BSc Nursing, RM, RN**

17/11/05
17/11/05
17/11/05
17/11/05
17/11/05

**Dissertation submitted to the University of Zambia in partial fulfillment of the
requirement for the degree of Master in Public Health**

**(School of Medicine)
THE UNIVERSITY OF ZAMBIA
LUSAKA**



DECLARATION

I declare that this dissertation represents my own work and that it has not previously been submitted for a degree, diploma or other qualification at this or another University. It has been prepared in accordance with the guidelines for MPH dissertations of the University of Zambia.

Signed *D. Banda*

Candidate

Date 6/6/06

Signed *[Signature]*

Supervisor

Date 6/6/06

CERTIFICATE OF COMPLETION OF DISSERTATION

I..... LEODA HAMOMBA hereby certify that this dissertation is the product of my own work and, in submitting it for my MPH programme, further attest that it has not been submitted in part or in whole to another university.

Signature:..... [Signature] Date:..... 6/06/06

I/we..... Seter Siziye

Having supervised and read this dissertation, am/are satisfied that this is the original work of the author under whose name it is being presented. I/we confirm that the work has been completed satisfactorily and is ready for presentation to the examiners.


Signature/Supervisor:..... [Signature] Date:..... 6/6/06

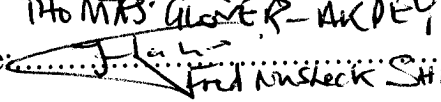
Chairman:..... [Signature] Dr G. B. Swankwa Date:..... 07.06.06

DEPT. OF COMMUNITY MEDICINE
Department:..... SCHOOL OF MEDICINE
UNIVERSITY OF ZAMBIA
P.O. BOX 50110, LUSAKA.

CERTIFICATE OF APPROVAL

The University of Zambia approves this dissertation of Leoda Hamomba in partial fulfillment for the requirements for the award of the degree in master of public health

Examiner's Signature:  Date: 06-06-2006
THOMAS GLOVER AKPEY

Examiner's Signature:  Date: 06/06/06.
Fred Nsiback SHIKALA

Examiner's Signature: Date:

ABSTRACT

A cross sectional study was undertaken in both Siavonga and Mazabuka Districts. The general objective of the study was to determine if Universal Precautions were adhered to, and the reason for non-adherence among midwives, nurses who perform deliveries in the health centres and trained traditional birth attendants who perform deliveries in homes. It was hypothesised that trained traditional birth attendants (tTBAs) and midwives adhere to Universal Precautions (UPS) during deliveries performed at home and health centres.

A convenient sampling method was used. A total number of 63 midwives including nurses and 64 trained traditional birth attendants were interviewed for the study. Data was collected using two semi-structured questionnaires during a face-to-face interview. Questionnaire one was for the practicing midwives and nurses, while questionnaire two was for the practicing tTBAs. Two Focus Group Discussions (FGDs) were held; one for the midwives and nurses and the other for the trained traditional birth attendants. A checklist was used to observe routine deliveries for the midwives and nurses as well as tTBAs, although it was not possible to observe any routine deliveries for tTBAs because of poor communication and transport to the delivery sites. Epi-info 6 and SPSS were used to analyze data. The Chi-square was used to measure association between qualitative factors, and the cut off point for statistical significance was set at 5 percent. Regression analysis was also done to determine the value of the independent variables, which are the factors associated with adherence to Universal Precautions.

The study findings revealed that the proportion of midwives and nurses adhering to Universal Precautions was 63.5%, while that of the trained traditional birth attendants was 67.2%. The most significant factors related to adherence for the midwives and nurses were the availability of medical supplies and the inclusion of UPS in their training. Respondents who were trained in UPS were 24.89 (95% CI 1.63, 380.59) times more likely to have adhered to UPS. Respondents who received weekly medical supplies were 11.86 (95% CI 2.10, 67.03) times more likely to adhere to UPS compared to respondents who received monthly supplies. Trained traditional birth attendants who had heard of

Universal Precautions were 5.61 (95% CI 1.90, 16.55) times more likely to have adhered to Universal Precautions.

Focus Group Discussions conducted among midwives and nurses revealed that they had knowledge of the standard Universal Precautions (UPS) through their training, but could not apply that knowledge because of the unavailability of medical supplies. Focus Group Discussions conducted among trained traditional birth attendants revealed that they have heard of Universal Precautions through their training, but they needed more knowledge through workshops, and, refresher courses. Adequate medical supplies and refresher courses would enhance adherence to Universal Precautions.

Observations of routine deliveries for the midwives and nurses showed that 63.9% adhered to Universal Precautions. This confirms the responses made through the use of the questionnaire.

TABLE OF CONTENTS

	PAGE
Title page	i
Declaration	ii
Certificate of completion of Dissertation	iii
Certificate of Approval	iv
Abstract	v
Dedication	vii
Acknowledgements	viii
Table of Contents	ix
List of Tables	xi
List of Abbreviations	xii
Appendix	xiii
CHAPTER 1	
1.0 Background Information	1
1.1 Statement of the Problem	4
1.2 Justification	6
1.3 Hypothesis	7
1.4 Research questions	7
1.5 General Objective	7
1.6 Specific Objectives	7
1.7 Operational definition of terms	8
1.8 Variables	9
CHAPTER 2	
2.0 Literature review	10
2.1 Introduction	10
2.2 Overview	10
2.3 Universal Precautions	12
2.4 Prevalence of Adherence to Universal Precautions	13
2.5 Factors Associated with Non-Adherence to Universal Precautions	15
CHAPTER 3	
3.0 Methodology	19
3.1 Research design	19
3.2 Research setting	19
3.3 Sample size and sampling	19
3.4 Data collection tools	20
3.5 Data analysis and management	20
3.6 Ethical consideration	21
3.7 Limitations	21

DEDICATION

This study is dedicated to my only beloved son **Luyando**.

ACKNOWLEDGEMENTS

This project would not have been possible without the support of many people.

I wish to thank Ministry of Health for granting me permission to undertake the studies for the Masters degree in Public Health at the University of Zambia. Thanks to the University of Zambia, School of Medicine for providing the necessary facilities. I would also like to thank USAID for awarding me the scholarship, including the financial support for this project.

I sincerely wish to thank the Partnership Project for financially supporting this project and in a special way thank the late Professor Bhat for all his help.

Many thanks to my supervisor, Professor Seter Siziya, who read my numerous revisions, encouraged and helped me, make some sense of the confusion. Also thanks to my co-supervisor Ms Prudencia Mweemba who offered guidance and support.

My sincere gratitude goes to Siavonga and Mazabuka District Management Boards for permitting me to undertake the study in their areas. I also wish to express my gratitude to all the nurse midwives and the trained traditional birth attendants who participated in the study.

And finally, my heartfelt gratitude goes to my son Luyando, family and numerous friends who endured this long process with me, always offering support and love.

CHAPTER 4	
4.0 Presentation of findings	22
4.1 Midwives/Nurses	22
4.2 Observation of routine deliveries (Midwives/Nurses)	29
4.3 Focus Group Discussions (Midwives/Nurses)	30
4.4 Trained traditional birth attendants	32
4.5 Observation of routine deliveries (tTBAs)	36
4.6 Focus Group Discussions (tTBAs)	36
CHAPTER 5	
5.0 Discussion of findings	38
5.1 Introduction	38
5.2 Knowledge	38
5.3 Practice	39
5.4 Adherence	41
5.5 Factors contributing to non-adherence	42
CHAPTER 6	
6.0 Conclusion	45
6.1 Recommendations	45
6.2 Policy makers	45
6.3 Health and Health related managers	46
REFERENCES	47
APPENDICES	50
Appendix i Work plan	50
Appendix ii Budget	51
Appendix iii Questionnaire	52
Appendix iv Focus Group Discussion guide	62
Appendix v Consent form	63
Appendix vi Adherence scoring system for midwives/nurses	66
Appendix vii Adherence scoring system for tTBAs	67
Appendix viii Authority from Research Ethics Committee	68
Appendix ix Letter of completion from Research Ethics Committee	70
Appendix x Authority to conduct the study from Siavonga DHMT	71
Appendix xi Authority to conduct the study from Mazabuka DHMT	72
Appendix xii Authority to conduct the study from Chikankata Health Services, Mazabuka.	73

LIST OF TABLES

No. of Table	Name of Table	Page No.
Table 1	Socio-demographic data	22
Table 2	Knowledge of UPS	23
Table 3	Frequency of medical supplies	23
Table 4	Number of respondents who wash their hands Before and after delivery	24
Table 5	Sterilization of medical equipment	25
Table 6	Availability of protective clothing	26
Table 7	Resuscitation methods used by midwives/nurses	27
Table 8	Availability of medical supplies by adherence	28
Table 9	Have heard about UPS by adherence	28
Table 10	UPS included in training by adherence	28
Table 11	Socio-demographic Data (tTBAs)	32
Table 12	Knowledge of UPS (tTBAs)	33
Table 13	Availability of medical equipment in TBA Kit	34
Table 14	Heard of UPS by adherence	35
Table 15	UPS included in training by adherence	35
Table 16	Presence of TBA Kit	35

LIST OF ABBREVIATIONS

AIDS	Acquired Immune-deficiency Syndrome
CBOH	Central Board of Health
CDK	Clean Delivery Kit
CDC	Centre for Disease Control
CI	Confidence Interval
CSO	Central Statistical Office
FGDs	Focus Group Discussions
HIV	Human Immune-deficiency Virus
ITG	Integrated Technical Guidelines for frontline health workers
IPP	Infection Prevention Principles
MOH	Ministry of Health
NAC	National Aids Council
NMW	Nurse-midwife
TBA Kit	Traditional Birth Attendant Kit
TTBAs	Trained Traditional Birth Attendants
UPS	Universal Precautions
ZDHS	Zambia Demographic Health Survey

CHAPTER 1

1.0 BACKGROUND INFORMATION

Acquired Immunodeficiency Syndrome (AIDS) is caused by the Human Immunodeficiency Virus (HIV). The virus attacks the immune system, which is the body's defense mechanism against invading microorganisms. The Human Immunodeficiency Virus (HIV) and the Acquired Immunodeficiency Syndrome (AIDS) epidemic is a serious health and development problem in many countries around the world. Men, women and children across all continents have been infected with the virus and many have died due to the infection. In 1999 approximately 2.6 million people died of AIDS globally, with at least 2 million of them in Sub-Sahara Africa (De Cock & Weiss, 2000). The number of people infected with the virus increased from 33.4 million in 1998 to a total of 40 million in 2001 world -wide (MOH/CBOH, 1999).

The number of people living with HIV/AIDS in Sub-Sahara Africa has increased from 22.5 million in 1998 to 28.5 million in 2002. About 13.9 million people in Africa were reported to have died from the disease since the beginning of the epidemic in 1984, turning millions of children into orphans. It is estimated that there are 11 million orphans in Africa (NAC, 2002-2005 PLAN).

The first AIDS case in Zambia was diagnosed in 1984. By the year 2000, an estimated 20 percent of the entire adult population aged 15 to 49 years was living with HIV/AIDS. The prevalence of HIV/AIDS in the adult population in Zambia is now 16 percent, while the Antenatal surveillance estimates of HIV infection is 19 percent. There are some provinces in Zambia with HIV prevalence above the national average, for example Southern province, which has an HIV prevalence level of 18 percent (ZDHS, 2001-2002). This shows that even though the National HIV prevalence may show a lower percentage, HIV/AIDS is still on the increase in some parts of the country and therefore needs a lot of attention. More than 50 percent of Zambia's population (currently estimated at 10.3 million) is less than 20 years of age, and this constitutes the most

vulnerable group to HIV/AIDS infection (MOH/CBOH, 1999). In terms of gender, the prevalence rates are much higher in women than in men. This could be because of many associated factors, for example, culture, biological make up, the roles and responsibilities assigned to women and girls (that of caring), early marriages for economic reasons and also the rampant rape cases of women and children reported so often in our Zambian society today. Research done in selected African countries by UNAIDS show that among 20-24 year olds, six young women are HIV positive for every infected young man (UNFPA, 2002). It is estimated that 25 percent of pregnant women are HIV positive (NAC, 2002-2005 PLAN). The high HIV prevalence in women (especially pregnant women) creates a significant risk of HIV transmission during delivery. This is so because of the large quantities of blood that midwives and trained traditional birth attendants (tTBAs) and other people (relatives and friends) who assist with delivery come into contact with.

HIV infection is primarily transmitted through sexual contact and peri-natal transmission, that is, mother to child. HIV infection is also transmitted through intravenous blood transfusion with unscreened blood, through breast milk and through the use of unsterilised needles. In peri-natal transmission, their mothers infect infants with HIV either during pregnancy, at the time of birth or while breastfeeding.

Since medical history and examination cannot reliably identify all patients with HIV or other blood borne pathogens, the Centre for Disease Control and Prevention (CDC) developed “Universal blood and body fluid precautions” or “Universal Precautions” to prevent transmission of HIV in health care settings in 1988. In Zambia, Central Board of Health (CBOH) in the year 2003 published its first edition of Infection Prevention Guidelines for all health workers. It is recognized that transmission of HIV due to exposure to blood in a health care setting may occur by exposure of a health worker to the blood of an infected patient (needle-stick injuries); exposure of patients to the blood of other patients with HIV infection (re-use of unsterile equipment); exposure of patient to the blood of an infected health worker (ITG, 2002). One of the objectives in the Infection Prevention Principles (IPP) is to minimize the risk of transmitting serious

infections such as Hepatitis B and C and HIV not only to clients but also to service providers and staff, including cleaning and housekeeping personnel (CBOH, 2003).

The current elevated rates of prevalence of highly infectious and potentially life-threatening diseases like HIV infection and other diseases demand that special attention be placed on infection prevention practices considering that every person, client, or staff is potentially infectious. These practices include, hand washing, wearing of gloves, use of barriers, that is, personal protective clothing (protective goggles, face masks, and aprons); proper disposal of contaminated instruments and waste; proper sterilization of equipment that have come into contact with patients blood or body fluids; safe practices when dealing with sharp instruments (not recapping of bending needles and safely disposing of sharps in puncture proof containers). The priority therefore is to strengthen these practices and to provide the necessary means to follow them. Infection prevention (in the light HIV infection) is the cornerstone of the quality health services that Central Board of Health and Ministry of Health is committed to improve to its clients.

Midwives and trained traditional birth attendants are a crucial resource in the health care system in Zambia considering the current high maternal mortality rate. They are at a high risk for the preventable and life threatening HIV infection as they perform deliveries. A critical look at the reproductive health practices (of nurses, midwives, and, trained traditional birth attendants) is needed, given Universal Precautions, so that the chances of HIV transmission can be reduced.

1.1 STATEMENT OF THE PROBLEM

Among the 40 million people reported to be living with HIV/AIDS, 37.1 million are adults (18.5 million women) and 3 million are children below the age of 15 (NAC, 2002-2005 PLAN).

Sub-Saharan Africa accounts for about two-thirds of the world's infected persons, and 80 percent of the world's HIV-infected women and children. Approximately 2.6 million AIDS deaths occurred globally, with at least 2 million of them in Sub-Saharan Africa. The biggest tragedy is that HIV/AIDS is on a dramatic increase. HIV is expected to infect many more and to kill many more in Africa and around the world. The sentinel population of pregnant women in some parts of Southern Africa is high, for example, in Botswana, which now exceeds 40 percent (De Cock and Weiss, 2000). This presents a serious situation that needs attention.

According to the Zambia Demographic and Health Survey (ZDHS) 2001-2002, women are more likely to be HIV positive than men. The women show a prevalence rate of 18 percent while the men show a prevalence rate of 13 percent. MOH (2000) indicates that every year, approximately 30,000 infants are estimated to have become infected with the virus during pregnancy, during delivery or while breastfeeding. The risk of HIV transmission during the intra-natal period is high (39%) (Kamanga et al 1989). The high levels of HIV/AIDS infection among women, in particular pregnant women has therefore created a significant risk of HIV infection during deliveries because of the large quantities of blood that the birth attendants (midwives, traditional birth attendants and others) come into contact with. The risk of infection to the birth attendants depends on the prevalence of HIV in the local population, the amount and frequency of exposure to blood and body fluids of HIV infected people and on their practices. The risk is compounded by other factors like shortage of trained staff, basic protective equipment and cleaning materials and by the fact that over half of births occur at home, 38 percent of these by relatives (untrained traditional birth attendants), while 12 percent are attended to by tTBAs (CSO, 2003). Deliveries conducted at home lack the necessary equipment and materials, especially surgical gloves and instruments needed to minimize the risk of

HIV transmission from the mother to the baby and birth attendant. Most of the time, there is the lack of preparedness on the part of the tTBAs because they are usually called for emergency deliveries. It has been reported by the United Kingdom Voluntary Service Overseas that Zambian care workers do not have special training or equipment to implement Universal precautions. If the report is true, then this kind of scenario places the midwives and the Traditional Birth Attendants at a high risk of getting HIV infection during delivery.

The high attrition among health workers for illness, death and for choosing either to leave the profession or to practice in other countries may be partly attributed to the high risk of infection inherent in the care profession and the perception that they are not adequately protected and provided for. The consequences of the HIV/AIDS epidemic is the high mortality rates especially in women and children under five, a weakened workforce, disrupted and impoverished families and an increase in orphans, thereby threatening the existence of humanity and human development in Zambia.

1.2 JUSTIFICATION

As the HIV/AIDS pandemic continues to spread among the populations in Zambia, with women of the child bearing age being the most vulnerable, those who assist women during labour and delivery continue to be at risk to the HIV infection in their practice. This is so because the HIV status of women during delivery is most of the time unknown to the health care giver. The unsafe practices of the midwives and the tTBAs as they assist with deliveries may result in a continued spread of HIV infection to others, like their spouses and family.

Adherence to Universal Precautions in the light of the risk that midwives and tTBAs face in this era of HIV/AIDS epidemic has been subjected to relatively little research. Critically looking at their practices during deliveries would give an insight into what strategies need to be put in place to minimize the risk of getting HIV infection during delivery, thereby limiting the spread of this deadly disease which is on the increase and saving the limited workforce. It is an issue that cannot be ignored, and needs a lot of attention from policy makers.

The study will be done in the Southern Province, which is reported to have HIV prevalence higher than the National one (18%) (CSO, 2003). The proportion of midwives adhering to Universal precautions will be compared with that of the trained traditional birth attendants.

1.3 HYPOTHESIS

The proportion of trained traditional birth attendants following Universal Precautions during home deliveries is the same as that of midwives during health centre deliveries.

1.4 RESEARCH QUESTIONS

1. What is the proportion of midwives adhering to Universal Precautions during deliveries?
2. What is the proportion of trained traditional birth attendants (tTBAs) adhering to Universal Precautions during home deliveries?
3. Is there a difference in the proportion of adherence to Universal Precautions between the midwives and the trained traditional birth attendants (tTBAs)?
4. What are the factors associated with adherence to Universal Precautions among midwives and tTBAs?

1.5 GENERAL OBJECTIVE

To determine if Universal Precautions are adhered to and the reason for non-adherence during Home and Health Center deliveries.

1.6 SPECIFIC OBJECTIVES

1. To establish the proportion of midwives adhering to Universal Precautions during deliveries performed at health institutions.
2. To estimate the proportion of trained traditional birth attendants adhering to Universal Precautions during home deliveries.
3. To determine the factors associated with adherence to Universal Precautions among midwives and tTBAs.
4. To make recommendations to relevant authorities on how adherence to Universal Precautions during delivery could be enhanced.

1.7 OPERATIONAL DEFINITION OF TERMS

For the purpose of this study, the following definitions will apply:

Adherence: Adherence is “the act or condition of sticking to something firmly”. Adherence in this study will be related to the faithfully following of the Universal Precautions as outlined in the Infection Prevention guidelines for health workers (CBOH, 2003) and the Centre for Disease control guidelines (CDC, 1988).

Knowledge: Knowledge is that which “can be shared and communicated through words, symbols, actions, art and sound” (Chin & Kramer, 1991). Knowledge in this study will be related to what the midwives, nurses and trained traditional birth attendants know about Universal Precautions.

Midwife: A person, either male or female who is trained to conduct deliveries, including the care of the newborn and is registered with the General Nursing Council of Zambia.

Nurse: A person, who has received general training to take care of the sick, injured, performs deliveries, and is registered with the General Nursing Council of Zambia.

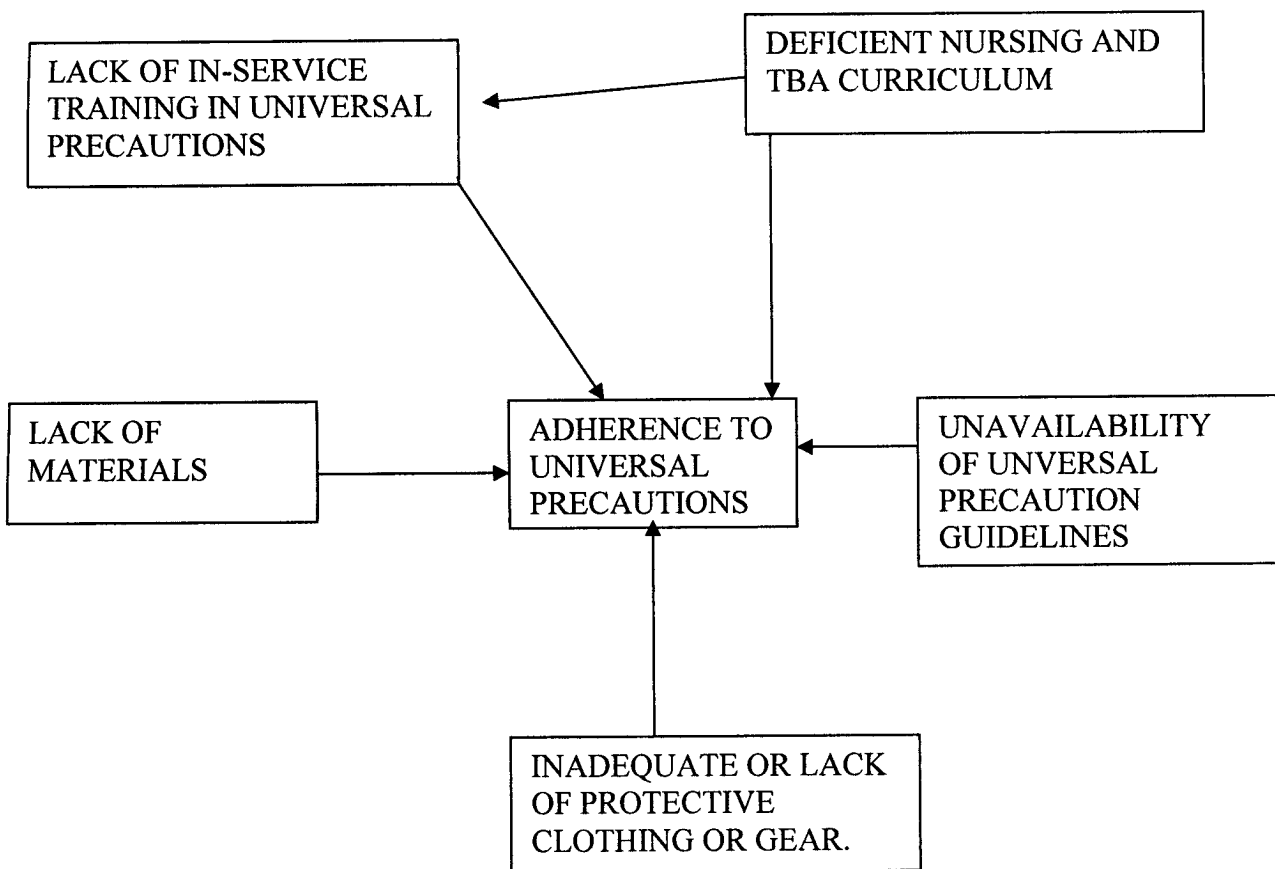
Traditional Birth Attendant (TBA): A woman who helps the mother during pregnancy, labour, delivery and puerperium including the initial care of the newborn and has acquired her skills from relatives, through observation and apprenticeship.

Trained Traditional Birth Attendant (tTBA): A woman who had been performing deliveries traditionally in homes and has received training for a period of six weeks to upgrade her skills.

Universal Precautions: A set of simple guidelines applicable in all health care settings, including the home, to prevent the transmission of blood-borne infections.

1.8 VARIABLES

PROBLEM ANALYSIS DIAGRAM



CHAPTER 2

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

Transmission of HIV/AIDS is critical in the prevention of HIV/AIDS. For the past two decades HIV/AIDS has continued to spread across all continents, killing millions of people, turning many children into orphans and weakening the workforce.

2.2 OVERVIEW

The global view indicates that currently, 60 million people have been infected with the HIV. Each day, 14,000 new HIV infections add to the epidemic. The USAID report of June 2002 shows that in the year 2000 alone, 3 million people including 500,000 children died of AIDS; and another 5.3 million people including 600,000 children were newly infected with the virus. This means that about 440,000 people are newly infected every month and one person every six seconds (UNFPA, 2002). Millions more are expected to be infected with HIV and to die of AIDS as the disease continues to spread unless measures are taken to control and stop the epidemic.

Africa continues to be the hardest hit by HIV/AIDS. Central/Eastern Africa that is, Cameroon, Ethiopia, Kenya, Rwanda, Sudan, Uganda and Zaire (now Congo DR) have 37 percent of all current HIV infection on the continent. Countries like Botswana, Malawi, Mozambique, South Africa, Tanzania, Zambia and Zimbabwe have a similar proportion (37 percent), while the West African countries including Burkina Faso, Cote d' Ivoire, Ghana and Nigeria contribute about 15 percent of the total number of adults and adolescents living with HIV in Africa (Gibney., 2002).

In Sub-Saharan Africa, more than 10 percent of women attending antenatal clinics surveyed in urban areas were found to be HIV positive with rates that may exceed 40 percent in some surveillance sites. High rates of HIV incidence that cannot be explained have been observed in African women during antenatal and postnatal periods (Gisselquist et al, 2002). These observed high rates of HIV in women of reproductive age have resulted in high numbers of HIV infected newborns.

As has been mentioned earlier, 16 percent of the adult population in Zambia aged 15 – 49 years is living with HIV/AIDS. More than 50 percent of the population is less than twenty years of age and constitutes the most vulnerable group to HIV/AIDS (MOH/CBOH, 1999). Women are more vulnerable to infection all their lives, from infancy to old age. About 25 percent of Zambia's pregnant women are infected with HIV and an estimated 39.5 percent of the babies born to HIV mothers are infected with the virus (NAC, 2002-2005 PLAN). In 1997 and 1998 the University of Alabama, department of Epidemiology and International Health carried out a pilot HIV/AIDS testing in some Antenatal clinics in Zambia and found out that 84 percent of pregnant women had positive HIV serology (Baker, 2002).

Commercial sex has been a thriving business world wide. It is a crucial vector for introducing HIV infection in the general population. Siavonga, being a border district in the Southern Province of Zambia where HIV prevalence levels are above the national level (18 percent) is not unexceptional. In the year 2002, Siavonga district report showed that among the 252 HIV tests done, 155 laboratory tests were positive for HIV, giving rise to 62% (Siavonga DHO, 2002).

The high prevalence of HIV infection among women, especially pregnant women does not only increase the risk that the midwives, nurses and trained traditional birth attendants will be exposed to HIV infected blood during delivery, but also causes strain on the health system in terms of in-patient days and the treatment costs involved. Midwives, nurses and trained traditional birth attendants are an important resource in any health care system, especially in Africa. They come into contact with large quantities of blood as

they perform deliveries. They need to consider all women in labour as potentially infected with HIV and other borne infections and strictly adhere to Universal Precautions in order to minimize the risk of exposure to blood.

Accidental transmission of HIV infection to the midwife and trained traditional birth attendant (tTBA) during delivery is a real threat today. The conversion of theoretical knowledge about HIV/AIDS and safe measures into safe practices is critical in the reduction of HIV transmission.

2.3 UNIVERSAL PRECAUTIONS

Universal precautions were developed in 1988 to protect both the health care providers and their patients from HIV and other pathogens that can be transmitted through exposure to blood and certain body fluids. In the developing world however, these precautions are not consistently implemented due to the lack of supplies and proper training.

Universal Precautions are recommendations made by the Centers for Disease Control (CDC) to prevent transmission of Human Immunodeficiency Virus (HIV), the causative agent of AIDS in the health care settings in which the risk to blood exposure is increased (like during delivery) and the infection status of the patient is usually unknown. These recommendations include, taking precautions to prevent injuries by needles, sharp instruments or sharp devices, for example, the single use of new disposable injection equipment for all injections and discarding of contaminated sharps immediately and without recapping in puncture and liquid proof containers that are closed, sealed and destroyed before completely full; documenting the quality of the sterilization for all medical equipment used for percutaneous procedures; washing hands with soap and water before and after procedures; use of protective barriers such as gloves, gowns, aprons, masks, goggles, shoes for direct contact with blood and other body fluids; disinfecting instruments and other contaminated equipment; Properly handle soiled linen (Soiled linen should be handled as little as possible. Gloves and leak-proof bags should

be used if necessary. Cleaning should occur outside patient areas, using detergent and hot water) (Beare&Myers, 1990).

Other additions are that, mouthpieces, resuscitation bags, or other ventilation devices should be available for use in areas in which the need for resuscitation is predictable to minimize the need for emergency mouth-to-mouth resuscitation, and that health care workers who have exudative lesions or weeping dermatitis should refrain from all direct patient care and from handling patient-care equipment until the conditions resolves. Pregnant health care workers should be especially familiar with and strictly adhere to precautions to minimize the risk of peri-natal HIV transmission (Centers for Disease Control, 1987).

2.4 PREVALENCE OF ADHERENCE TO UNIVERSAL PRECAUTIONS

Little research has been done concerning the risk of health care providers outside North America and Western Europe. North America and Western Europe have only about 4 percent of the world HIV infected population, but 90 percent of the documented cases of occupational HIV infection come from these regions (Sagoe-Moses et al, 2001). A study done on the attitudes of the Italian obstetricians regarding the applications of the HIV infection control guidelines during labour and delivery showed that the Universal Precautions were necessary. The use of gloves and collecting needles in suitable containers was routinely done, but the washing of hands and the wearing of protective garments, glasses, shoes and masks were infrequently applied (Ricci,et al, 1998).

In Hong Kong a survey was conducted to investigate the knowledge of nurses and their compliance with universal precautions. The study revealed that the nurses' knowledge of Universal Precautions was inadequate and that the Universal Precautions were not only insufficiently and inappropriately applied, but also selectively practiced. The use of other protective wear such as masks and goggles was uncommon (Chan R et al, 2002).

In Burma, one of the reasons given for the spread of HIV/AIDS by the Burma Watch International is the lack of Universal Precautions practice in health care settings.

In Africa, just like in countries outside Africa, adherence to Universal Precautions is poor. In a study done in Nigeria to determine the knowledge and practice of Universal Precautions among nurses revealed that the nurses had a poor knowledge about Universal Precautions as only a few had heard about them. Apart from the poor knowledge, there was also poor observance of the Universal Precautions (Ofili, et al, 2003). Occupational health hazards among health care workers in obstetrics and gynaecology were also investigated in Nigeria. It was found that doctors as compared to nurses and ward orderlies used safety precautions such as gloves, facemasks and aprons. However they all employed hand washing technique after procedures, but none of them adopted regularly proper disposal of needles and sharps into separate puncture proof containers (Orji, et al, 2002).

Another study was done among nursing and midwifery students in Nigeria concerning their knowledge, perception and practice with regards to occupational risks of HIV/AIDS. The study revealed that the nursing and midwifery students had a poor knowledge of World Health Organization (WHO) recommended Universal Precautions for preventing HIV transmission among students in all the schools (Atulomah & Oladepo, 2002).

Few studies have been done on the prevalence of the practice of Universal Precautions in Zambia. A study done by Libetwa (1997) on infection control among midwives in maternity wings in Lusaka revealed that midwives did not practice infection control measures and that both patients/clients and the midwives themselves were at risk of contracting infectious agents. In her study, she recommended that demonstration workshops and training programs were needed for midwives in order for them to provide quality service through continuing education. Siziya et al (2002) did a study on the risk of occupational exposure to HIV for nurse-midwives and traditional birth attendants. It was observed that general hygiene measures taken in hospitals to reduce the risk of HIV

infection were insufficient and that many inadequacies stemmed from the lack of supplies.

2.5 FACTORS ASSOCIATED WITH NON-ADHERENCE TO UNIVERSAL PRECAUTIONS

Adherence to Universal Precautions among healthcare givers is generally poor. This could be due to a number of factors, for example, inadequate knowledge, failure to put knowledge into practice or simply the inadequate supply of the required equipment to ensure safe practices. A study done in India found that public hospitals lacked the equipment necessary to implement Universal Precautions; the supply of gloves and other protective gear was poor. In another survey done among nurses in a tertiary hospital in India, it was found that converting what was known theoretically into safe practices was shockingly poor. This was due to inadequate supplies and attitude problems (Kumar et al, 2002).

Health care providers in many African countries lack the gloves, masks and other protective barriers to protect them from contracting HIV infection in the health care setting. Without the protective barriers, the practice of the Universal Precautions becomes difficult thereby increasing the risk of contracting HIV through exposure to patient's blood and other body fluids. It is reported in a review of 19 health care providers in tropical regions who had become infected by HIV from a patient for whom the source of infection was known and whose cases have been documented in February 1989 that needle stick injuries caused 15 of the infection (Veenken, 1991). The risk of getting HIV infection from a needle stick injury is 0.4 percent when the patient is HIV positive (CBOH, 2003). According to a World Health Organization, 1992 – 1993 progress report, a study done in Uganda among nurse-midwives examined the use of gloves, hand-washing practices, needle stick injuries, number of deliveries and length of time in midwifery practice showed that a needle stick injury in the was significantly related to HIV infection . In a cross sectional study done by Siziya et al (2002) on the evidence of occupational exposure to HIV infection among nurse midwives ten years into the epidemic in Zambia showed that there was no significant association between a needle

stick injuries and HIV infection. Training alone could prevent this kind of risk. Universal Precautions warn against recapping of needles, and emphasize the importance of proper safe disposal, transportation, and storing of used needles (presumably in puncture – proof containers). Training alone could prevent this kind of risk. Universal precautions warn against recapping of needles, and emphasize the importance of proper safe disposal, transportation, and storing of used needles (presumably in puncture – proof containers).

In his study Veeken (1991) reported that HIV infections have occurred through exposure of the health care providers' non-intact skin (that is, open wounds and certain other skin conditions) or mucous membranes (most important, the eyes) to the patients' blood, which was infected with HIV. Gloves and other protective equipment are important and central to the prevention of infection, more so when being exposed to patients blood. Wearing of double gloves helps prevent transmission by reducing the amount of blood transmitted (De Graaf et al, 1998). Birth attendants in Tanzania are reported to cover their hands with plastic bags to protect themselves from exposure to HIV infection during deliveries (Sagoe-Moses et al, 2001).

Habimana et al (1994) in his study on the occupational blood contact and HIV infection among traditional birth attendants in Rwanda concluded that the risk of occupationally acquired HIV infection among trained traditional birth attendants was small, but the need for Universal Precautions was necessary due to the high frequency of blood-skin contact during delivery. In a study done in Kenya, it was discovered that even where gloves were available, the health care providers might not have used them because they believe them to be unnecessary or a waste of time (Awusabo-Asarea & Marfob, 1997).

The need for goggles cannot be underestimated. In a study done on Dutch health professionals working in Africa, many potential exposures to HIV occurred when blood splashed in the eyes of the health workers (Jagger et al, 1998).

The declining economic situation in Zambia has greatly affected the health sector. There are shortages of resources in terms of money, material and manpower. This places Zambia in a most difficult position in its fight against the HIV/AIDS epidemic. Are the midwives, nurses and the trained traditional birth attendants who are in contact with a lot of blood and body fluids from patients whose HIV/AIDS status is often not known equipped enough to handle this challenge? Even though this study does not concern the surgeons, but it is interesting to note that a study done to look at the risk for surgeons in Zambia found that because of the high HIV prevalence among patients, 23.3 percent surgeons' risk of becoming infected with HIV while performing surgery was 15 times that of their western colleagues. The study estimated that surgeons practicing for five years in Zambia had a 1.5 percent risk of contracting HIV from their work (Consten et al, 1995).

In 2003, Central Board of Health has recently come up with infection prevention guidelines, whose objective is to minimize the risk of transmitting serious infections such as HIV and prevent major infections. A study, therefore to look at the adherence to Universal Precautions in both Mazabuka and Siavonga districts among midwives and trained traditional birth attendants will give needed insight into the present situation and the strategies that can be put in place to curb this dangerous disease.

Adherence to the Universal precautions is a necessity, in particular, the use of protective gear such as gloves, mask, gowns, goggles and shoes, avoiding needle stick injuries and use sterile instruments to curtail the transmission of HIV infection from the mother to the baby and birth attendants (in this case, the midwives, nurses and trained traditional birth attendants). The birth attendants may not have the proper training on how to use the protective gear that may be available, apart from the problem of the inadequate supplies of protective barriers.

It has been found out that even a brief contact with small quantities of blood can actually transmit HIV (Jagger et al, 1998). As it is implied by Consten et al (1995) that a certain percentage of health workers in Africa may become occupationally infected with HIV (one out of three hundred) every year, the impact that this situation has a developing country like Zambia as a whole and the families in terms of spread and cost of treatment is great. The prevalence of HIV infection in Antenatal women in Zambia (19 percent), the incidence of parental exposure (needle stick injuries due to suturing tears and episiotomies after delivery) to blood and the chances of transmission per exposure are high. The chances of HIV transmission when exposed depends on the amount of blood that the birth attendant comes into contact with, the duration of exposure, adherence to Universal Precautions and host factors.

The midwives, nurses and trained traditional birth attendants are a crucial resource in the health care system in the reduction of the high mortality rate in Zambia. Yet these are at a high risk for the preventable and life threatening HIV infection. That is why a critical look at the reproductive health practices of the birth attendants is a step to minimizing the risk of contracting HIV (or occupational exposure to HIV) and adds to the reduction of the HIV/AIDS spread in the country. Safe practices therefore, need to be made a way of life for those assisting deliveries and other health care givers.

Adherence to Universal Precautions among the birth attendants is an important aspect in the prevention of HIV/AIDS in the health care setting. The low motivation and high attrition rate among health workers, the costs and in-patient days due to HIV/AIDS causes immeasurable strain on the health system. It is a serious public health problem and a challenge, as well as an economic crippling threat for Zambia.

CHAPTER 3

3.0 METHODOLOGY

3.1 RESEARCH DESIGN

The study adopted a descriptive and cross-sectional design involving Midwives at Health Institutions and trained Traditional Birth Attendants in the Community.

3.2 RESEARCH SETTING

The study was carried out in Siavonga and Mazabuka districts in the Southern Province of Zambia, which has a higher HIV prevalence level (18 percent) than the National average of 16 percent (CSO, 2003).

3.3 SAMPLE SIZE AND SAMPLING

The subjects for both Siavonga and Mazabuka districts were conveniently sampled. The sample size for Siavonga district was determined to be 79 subjects, that is, 65 midwives and trained traditional birth attendants available in the district including the nurses who are non-midwives performing deliveries in the 14 health centres. The sample size for Mazabuka district was determined to be 80 subjects, that is, 34 midwives and nurses performing deliveries in health centres and 46 trained traditional birth attendants. The determined total sample size for both districts was therefore 159 subjects.

The inclusion criteria used was any practicing midwife, nurse and trained traditional birth attendant who had performed a delivery within the past one month.

The exclusion criteria used was any non-practicing midwife, nurse and trained traditional birth attendant who had not performed a delivery within the past one month.

3.4 DATA COLLECTION TOOLS

Data was collected from August 2004 to mid November 2004 in Siavonga and Mazabuka districts. The data was checked for completeness and accuracy.

Two semi-structured questionnaires were used for the study: the midwives and nurses questionnaire and the tTBAs questionnaire. The contents of these questionnaires were based on the knowledge and practice of Universal Precautions. Data was collected during a face-to-face interview.

Two Focus group discussions (FGDs) were conducted in Mazabuka district. One FGD was held for the midwives and nurses, and another for the tTBAs for in-depth information. No FGDs were conducted in Siavonga district because of the limited staff available in the district. This was to avoid the bias of including the same subject interviewed using the questionnaire, into the Focus Group Discussions.

A checklist was used to observe routine deliveries performed by midwives and nurses. The researcher observed routine deliveries by actively participating during the performance of the deliveries with the midwives and nurses to avoid bias in terms of the staff knowing that they were being observed.

3.5 DATA ANALYSIS AND MANAGEMENT

Epi-info 6 and SPSS was used to analyze data. The uncorrected Chi-square was used to assess the association between qualitative factors. Regression analysis was done to adjust for confounding factors. Odds Ratio and 95 percent confidence limits were used to determine the likelihood of independent variable being related to the outcome variable. The P value of less than 0.05 was used to measure the level of significance.

In order to measure adherence to Universal Precautions, scores were given to the standard Universal Precaution Guidelines (Appendices 3 and 4). Each answered questionnaire was then scored against the standard Universal Precaution Guidelines. A checklist was used to observe routine deliveries done by nurses and midwives, and these observations were

compared to the standard Universal Precaution guidelines for adherence (Appendix 5). Information from the Focus Group Discussion was reviewed, completed and listed according to the key themes for easy analysis. The results augmented the findings from the questionnaires. The study findings are presented in frequency tables and cross tabulation tables.

3.6 ETHICAL CONSIDERATION

Ethical Approval to carry out the research was obtained from the University of Zambia Research Ethics Committee at the School of Medicine in June 2004. Permission to conduct the study was obtained from Siavonga and Mazabuka District Health Management Boards. An informed consent was obtained from the respondents/subjects and confidentiality was assured.

3.7 LIMITATIONS

There were a limited number of subjects who met the inclusion criteria in both Siavonga and Mazabuka districts because of the critical shortage of staff. The midwives, nurses and trained traditional birth attendants had either left the district or had died. The other problem was the lack of transport to get to the hard to reach areas due to the terrain of Siavonga district.

CHAPTER 4

4.0 PRESENTATION OF FINDINGS

The total number of respondents interviewed was 127, that is, 63 midwives and nurses, and 64 trained traditional birth attendants.

4.1 MIDWIVES/NURSES

The majority (68.3%) of the midwives and nurses interviewed were female (93.7%), above 35 years of age and married (66.7%). Most (39.0%) of the midwives and nurses had worked for 1-5 years and 73.7% had performed more than 5 deliveries in the past one month.

TABLE 1: SOCIO-DEMOGRAPHIC DATA

	MIDWIFE/NURSE	
	FREQUENCY	PERCENTAGE
AGE		
25-35	20	31.7
>35	43	68.3
Total	63	100.0
SEX		
Male	4	6.3
Female	59	93.7
Total	63	100.0
MARITAL STATUS		
Single	21	33.3
Married	42	66.7
Total	63	100.0
WORK EXPERIENCE		
1-5 years	23	39.0
6-10 years	22	37.3
>10 years	14	23.7
Total	59	100.0
DELIVERIES		
1-5	15	26.3
>5	42	73.7
Total	57	100.0

About 88.9% of midwives and nurses had heard of Universal Precautions because they were part of their nursing training. The midwives and nurses, who had heard of Universal Precautions, had 100.0% knowledge of Universal Precautions.

TABLE 2: KNOWLEDGE OF UNIVERSAL PRECAUTIONS

	MIDWIFE/NURSE	
	FREQUENCY	PERCENTAGE
HEARD OF UPS		
Yes	56	88.9
No	7	11.1
Total	63	100.0
UPS ARE PART OF TRAINING		
Yes	56	88.9
No	7	11.1
Total	63	100.0
UPS KNOWN		
Yes	55	100.0
No	0	0
Total	55	100.0

RISK OF CONTRACTING HIV DURING DELIVERIES

All (100.0%) of the respondents interviewed were aware of the risk of contracting HIV infection during the performance of deliveries in the health centres.

Table 3 shows that 50% of midwives and nurses received medical supplies weekly. The (30.4%) midwives and nurses from the rural health centres received medical supplies monthly.

TABLE 3: FREQUENCY OF MEDICAL SUPPLIES

	MIDWIFE/NURSE	
	FREQUENCY	PERCENTAGE
Daily	11	19.6
Weekly	28	50
Monthly	17	30.4
Total	56	100.0

Table 4 shows that 85.7% of the midwives and nurses always washed their hands immediately before and after the delivery procedure, while only 14.3% sometimes did not wash their hand before and immediately after the delivery procedure. 84.1% of them used soap and water.

TABLE 4: NUMBER OF RESPONDENTS WHO WASH THEIR HANDS BEFORE AND AFTER DELIVERY

	FREQUENCY	PERCENT
Do you wash your hands?		
Yes	54	85.7
No	9	14.3
Total	63	100.0
What do you use to wash your hands?		
Soap and water	53	84.1
Water only	1	1.6
Disinfectant	9	14.3
Total	63	100.0

AVAILABILITY OF RUNNING WATER

The majority (95.2%) of the midwives and nurses had running water at their health centres to enable them wash their hands before and after delivery procedures.

DISPOSAL OF SHARPS

Most (63.5%) of the midwives and nurses immediately discarded the used needles without re-capping, while 36.5% re-capped used needles before discarding them.

HANDLING OF SOILED LINEN

Majority (95.2%) of the respondents used gloves only to handle their soiled linen, while 3.2% used gloves and then put the soiled linen in leak proof bags, and only 1.6% used gloves, detergent and cold water to handle soiled linen.

Table 5 shows that the majority (93.7%) of the respondents always sterilized medical equipment used during delivery. Only 65.1% used the autoclave, while 57.1% used Jik. 20% of the respondents boiled their instruments, while 9.5% used a sterilizer to render equipment sterile.

TABLE 5: STERILIZATION OF MEDICAL EQUIPMENT

	FREQUENCY	PERCENT
Sterilizes medical equipment		
Always	59	93.7
Sometimes	4	6.3
Total	63	100.0
How do you sterilize medical equipment?		
Use sterilizer		
Yes	6	9.5
No	57	90.5
Total	63	100.0
Boiling		
Yes	13	20.6
No	50	79.4
Total	63	100.0
Use Autoclave		
Yes	41	65.1
No	22	34.9
Total	63	100.0
Use Jik		
Yes	36	57.1
No	27	42.9
Total	63	100.0

The table below shows that 96.8% of the midwives and nurses had clean gloves and 90.3% had aprons to use during deliveries. Only 48.4% had closed shoes, while 30.6% had gowns. Very few (11.3%) had masks and used them; 8.1% had goggles in their labour rooms, but rarely used them.

TABLE 6: AVAILABILITY OF PROTECTIVE CLOTHING

	FREQUENCY	PERCENTAGE
GLOVES		
Yes	60	96.8
No	2	3.2
Total	62	100.0
FACEMASKS		
Yes	7	11.3
No	55	88.7
Total	62	100.0
GOWNS		
Yes	19	30.6
No	43	69.4
Total	62	100.0
APRONS		
Yes	56	90.3
No	6	9.7
Total	62	100.0
GOGGLES		
Yes	5	8.1
No	57	91.9
Total	62	100.0
CLOSED SHOES		
Yes	30	48.4
No	32	51.6
Total	62	100.0

Most (77.4%) of the respondents used resuscitation bags for emergency resuscitation. Mouthpieces were used by 45.2% of the respondents, while 33.3% used suction machines. A small percentage (8.1%) still used mouth-to-mouth resuscitation during emergency resuscitation.

TABLE 7: RESUSCITATION METHODS USED BY MIDWIVES/NURSES RESPONDENTS

	FREQUENCY	PERCENTAGE
MOUTH TO MOUTH		
Yes	5	8.1
No	57	91.9
Total	62	100.0
MOUTHPIECES		
Yes	28	45.2
No	34	54.8
Total	62	100.0
RESUSCITATION BAGS		
Yes	48	77.4
No	14	22.6
Total	62	100.0
SUCTION MACHINE		
Yes	17	33.3
No	34	66.7
Total	51	100.0

ADHERENCE TO UPS FOR MIDWIFE/NURSE

-About 63.5% of the respondents adhered to Universal Precautions while 36.5% did not adhere.

The cross tabulation in table 8 shows that the midwives and nurses who received medical supplies daily 5 (45.5%) and monthly 8 (47.1%) less adhered to Universal Precautions as compared to those who received weekly medical supplies 24 (85.7%). Uncorrected Chi-square=9.65, P-value=0.008.

TABLE 8: AVAILABILITY OF MEDICAL SUPPLIES BY ADHERENCE

MEDICAL SUPPLIES	ADHERENCE		TOTAL
	YES	NO	
Daily	5(45.5%)	6(54.5%)	11(19.6%)
Weekly	24(85.7%)	4(14.3%)	28(50.0%)
Monthly	8(47.1%)	9(52.9%)	17(30.4%)
Total	37(66.1%)	19(3.9%)	56(100.0%)

Table 9 shows that 60 (95.2%) of the midwives and nurses who had heard of Universal Precautions showed more adherence to Universal precautions as compared to those who had not heard of Universal Precautions 3 (4.8%). Uncorrected Chi-square=0.01, P-value=0.906.

TABLE 9: HAVE HEARD ABOUT UPS BY ADHERENCE

HEARD OF UPS	ADHERENCE		TOTAL
	YES	NO	
Yes	38(63.3%)	22(36.7%)	60(95.2%)
No	2(66.7%)	1(33.3%)	3(4.8%)
Total	40(63.5%)	23(36.5%)	63(100.0%)

The majority of midwives and nurses 38 (67.9%) who had Universal Precautions included in their training adhered to Universal Precautions as compared to the 2 (28.6%) who did not have Universal Precautions included in their training. Uncorrected Chi-square=4.14, P-value=0.041.

TABLE 10: UPS INCLUDED IN TRAINING BY ADHERENCE

UPS INCLUDED IN TRAINING	ADHERENCE		TOTAL
	YES	NO	
Yes	38(67.9)	18(32.1%)	56(88.9%)
No	2(28.6%)	5(71.4%)	7(11.1%)
Total	40(63.5%)	23(36.5%)	63(100.0%)

After adjusting for confounding factors for the midwives and nurses, it was found that respondents who received weekly supplies were 11.86 (95% CI 2.10, 67.03) times more likely to adhere to Universal Precautions as compared to respondents who received monthly supplies. No significant difference was observed in adherence between respondents who received daily supplies and monthly supplies (OR = 0.84, 95% CI 0.18, 3.91). It was also found that respondents who were trained in Universal Precautions were 24.89 (95% CI 1.63, 380.59) times more likely to have adhered to Universal Precautions as compared to respondents who were not trained in Universal Precautions.

4.2 OBSERVATION OF ROUTINE DELIVERIES

Observations of routine deliveries were done using a checklist. A total number of 36 midwives and nurses were observed during the period of data collection. The midwives and nurses were aware of the required basic procedures, but because of the inadequate supplies, improvised and proceeded differently. The following was observed:

Hand washing before and after procedures: About 50.0% of the respondents washed their hands before the delivery procedure, while 88.9% washed their hands after the procedure.

Wearing of protective clothing: Most (81.4%) of the respondents wore an apron/gown. They shared the plastic aprons available in the labour room (2-3 aprons) when assisting deliveries. 8.3% wore facemasks and goggles during the delivery procedures. The researcher observed that 25% of the respondents wore protective shoes, while the rest wore their own closed shoes. 83.3% of the midwives and nurses wore clean gloves, while 16.7% wore sterile gloves before assisting a delivery. 2.8% of the respondents' re-used gloves.

Sterilization of equipment used during delivery: about 66.7 of the respondents properly sterilized instruments. Used instruments should be soaked in Jik 1:6 parts of water for 10 minutes, then cleaned and rinsed and taken for sterilization using autoclave machine.

Handling of soiled linen: 41.7% of the midwives and nurses followed Universal Precaution guidelines where the handling of soiled linen was concerned. Soiled line was put in the sluice room for the maid to sluice with cold water and then sent to the laundry where it washed with cold water and detergent. Soiled linen should be soaked in jik for

10 minutes, rinsed and then taken to the laundry where it is washed with cold water and detergent.

Handling of sharps: Majority (82.4%) had improvised sharp boxes of cardboard near where procedures were carried out. The sharps were discarded into these carton boxes. About 22.2% of the midwives and nurses re-capped used needles before discarding them into the sharp boxes.

Disposal of contaminated waste after procedures: Most of the respondents (80.6%) disposed of contaminated waste after delivery according to the Universal Precaution guidelines.

Devices used during emergency resuscitation: the majority (86.1%) used resuscitative devices for emergency resuscitation.

About 63.9% of the midwives and nurses observed during the routine deliveries adhered to Universal Precautions.

4.3 FOCUS GROUP DISCUSSIONS

Focus Group Discussions composed of eight midwives and nurses between the ages of 25 to 45 years. All the respondents were female. The researcher introduced the themes for the discussion, while the research assistant wrote down the responses with the permission of the respondents. The discussions proceeded according to the themes and all the respondents actively participated. The following were the results of the Focus Group Discussions:

Awareness of Universal Precautions: The midwives and nurses were aware of the Universal Precautions because they were part of their training as midwives and nurses. Some midwives and nurses have had a workshop on infection control principles, which they disseminated to others. At the workshop, they were taught to consider every person infectious, wash hands, use of protective clothing, for example, wearing gloves and aprons; use safe work practices, process instruments, properly dispose of contaminated waste and use of an individual hand towel. They said, 'We learnt the infection control principles and we know what should be done, but when it comes to practice in the work

place, we have to convince management and lobby for the medical equipment and supplies we need to adhere to Universal Precautions’.

Adherence to Universal Precautions: The respondents said that, ‘they found it difficult to adhere to Universal Precautions due to inadequate and sometimes lack of medical supplies’. They knew that they were suppose to use protective clothing like masks, goggles, closed gumboots, gowns and sterile gloves during delivery to avoid direct contact with blood during delivery. The only protective clothing available for them was clean gloves, share plastic aprons (2 or 3) in labour ward, and their own nurses’ shoes. According to the midwives and nurses, jik was in short supply sometimes because their management were unable to supply them with enough for proper disinfection of instruments and linen, quote, ‘we do not always have jik, as a result we are forced to rinse the used instruments with plain water and then soak them in jik for 10 minutes. We are supposed to change the jik dilution every day, but we change it after two to three days because of the short supply of jik’. Adherence to Universal Precautions is not possible without the required medical supplies. The respondents also said that it was safer to re-cap used needles because this would protect them from needle stick injury from the improvised cardboard sharp boxes.

Factors contributing to non-adherence: The respondents said that the inadequate supply of medical equipment and the lack of refresher courses concerning Universal Precautions were the main contributing factors to non-adherence. They said, ‘We do want to adhere to the Universal Precautions, but we lack the necessary equipment and medical supplies, we improvise most of the times’.

Enhancing adherence to Universal Precautions: The respondents said that in order to enhance adherence to Universal Precautions, they needed enough and a constant supply of medical supplies and refresher courses. They needed the copy of the infection prevention principles recently published by Central Board of Health (in 2003). They also needed a lot of support from their respective management to provide the needed medical supplies and equipment.

4.4 TRAINED TRADITIONAL BIRTH ATTENDANTS

Table 11 shows that the (82.8%) majority of the trained traditional birth attendants were above the age of 35 years, all female (100.0%) and 70.3% of them were married. Most (92.2%) of the respondents had been working as trained traditional birth attendants for 1-5 years and had performed at least 1-5 deliveries in the past one month.

TABLE 11: SOCIODEMOGRAPHIC DATA

	TRAINED TBA	
	FREQUENCY	PERCENTAGE
AGE		
25-35	11	17.2
>35	53	82.8
Total	64	100.0
SEX		
Male	0	0
Female	64	64
Total	64	100.0
MARITAL STATUS		
Single	19	29.7
Married	45	70.3
Total	64	100.0
WORK EXPERIENCE		
1-5 years	59	92.2
6-10 years	5	7.8
>10 years	0	0
Total	64	100.0
DELIVERIES		
1-5	55	87.3
>5	8	12.7
Total	63	100.0

Table 12 shows that 84.4% of the trained traditional birth attendants had heard of Universal Precautions through their training as tTBAs, but only 76.4% had a standard (knew all the guidelines) knowledge of Universal Precautions.

TABLE 12: KNOWLEDGE OF UNIVERSAL PRECAUTIONS

	TRAINED TBA	
	FREQUENCY	PERCENTAGE
HEARD OF UPS		
Yes	54	84.4
No	10	15.6
Total	64	100.0
UPS ARE PART OF TRAINING		
Yes	54	84.4
No	10	15.6
Total	64	100.0
UPS KNOWN		
Yes	42	76.4
No	13	23.6
Total	55	100.0

FREQUENCY OF MEDICAL SUPPLIES

More than half (52.6%) of the respondents received medical supplies monthly from the nearest health centre, 10.5% received them quarterly and 36.8% did not receive any medical supplies from the health centre.

RISK OF CONTRACTING HIV DURING DELIVERIES

All the trained traditional birth attendants (10.0%) were aware of the risk of contracting HIV infection during the performance of deliveries.

Majority (81.8%) of the trained traditional birth attendants had plastic aprons, gloves (97%), new razor blades (71%) and cord ties (87.1%). Only 54.5% had hand soap, 36.4% had a hand towel, 30.3% had cotton wool, 15.2% had disinfectant and 21.9% had a receiver in their TBA Kit.

TABLE 13: AVAILABILITY OF MEDICAL EQUIPMENT IN TBA KIT

	FREQUENCY	PERCENTAGE
APRON		
Yes	27	81.8
No	6	18.2
Total	33	100.0
GLOVES		
Yes	32	97
No	1	3
Total	33	100.0
HAND SOAP		
Yes	18	54.5
No	15	45.5
Total	33	100.0
TOWEL		
Yes	12	36.4
No	21	63.6
Total	33	100.0
COTTON WOOL		
Yes	10	30.3
No	23	69.7
Total	33	100.0
DISINFECTANT		
Yes	5	15.2
No	28	84.8
Total	33	100.0
INSTRUMENTS		
Yes	7	21.9
No	25	78.1
Total	32	100.0
NEW RAZOR BLADE		
Yes	22	71
No	9	29
Total	31	100.0
CORD TIES		
Yes	27	87.1
No	4	12.9
Total	31	100.0

Table 14 shows that 42 (77.8%) of the trained traditional birth attendants who had heard of Universal Precautions were more likely to adhere to Universal Precautions than those 1 (10.0%) who had not heard of Universal Precautions. Uncorrected Chi-square= 17.58, P-value= 0.000.

TABLE 14: HEARD OF UNIVERSAL PRECAUTIONS BY ADHERENCE

HEARD OF UPS	ADHERENCE		TOTAL
	YES	NO	
Yes	42(77.8%)	12(22.2%)	54(84.4%)
No	1(10.0%)	9(90.0%)	10(15.6%)
Total	43(67.2%)	21(32.8%)	64(100.0%)

Trained traditional birth attendants who had Universal Precautions as part of their training 42 (97.7%) were more likely to adhere to Universal Precautions than those who did not have them as part of their training 1 (2.3%). Uncorrected Chi-square= 17.58, P-value=0.000.

TABLE 15: UPS INCLUDED IN TRAINING BY ADHERENCE

UPS PART OF TRAINING	ADHERENCE		TOTAL
	Yes	No	
Yes	42(97.7%)	12(57.1%)	54(84.4%)
No	1(2.3%)	9(42.9%)	10(15.6%)
Total	43(67.2%)	21(32.8%)	64(100.0%)

Table 16 shows that the trained traditional birth attendants who had a TBA kit 26 (60.5%) were more likely to adhere to Universal Precautions than those who did not have a TBA kit 17 (39.5%). Uncorrected Chi-square=4.16, P-value=0.041.

TABLE 16: PRESENCE OF TBA KIT

TBA KIT	ADHERENCE		TOTAL
	YES	NO	
Yes	26(60.5%)	7(33.3%)	33(51.6%)
No	17(39.5%)	14(66.7%)	31(48.4%)
Total	43(67.2%)	21(32.8%)	64(100.0%)

After adjusting for confounding factors, it was found that the trained traditional birth attendants who had heard of Universal Precautions through their training were 5.61 (95% CI 1.90, 16.55) times more likely to have adhered to Universal Precautions, as compared to those who had not heard of them.

4.5 OBSERVATION OF ROUTINE DELIVERIES

No observations of routine deliveries were made during the period of data collection for the trained traditional birth attendants.

4.6 FOCUS GROUP DISCUSSIONS

Focus Group Discussions composed of ten trained traditional birth attendants between the ages of 25 to 48 years. All the respondents were female. The researcher introduced the themes for the discussion, while the research assistant wrote down the responses with the permission of the respondents. The discussions proceeded according to the themes and all the respondents actively participated. Focus Group discussions revealed the following:

Awareness of Universal Precautions: The tTBAs were aware of Universal Precaution because they were part of their training except that they did not sterilize instruments any more because of the introduction of Clean Delivery Kits (CDKs). They disposed of everything (pit latrine or bury) after use except for the mackintosh and apron, which they cleaned with soap and water and later re-used. They said that as trained traditional birth attendants, they were taught about the cleanliness of the delivery area, hand washing with soap and water before and after assisting deliveries, wearing clean gloves, wearing an apron and closed shoes. Those who were trained more than five years ago were given instruments like receivers and forceps. These instruments were washed with detergent and water and later boiled as a way of sterilizing them. Very few if any used Jik.

Adherence to Universal Precautions: The trained traditional birth attendants said that when the aprons, gloves, soap, razor blade, cotton wool were available, they did adhere to Universal Precautions. They said, "When we run out of gloves, we use plastic bags". They would double the plastic bags just to avoid direct contact with blood during delivery. However, some said that there were rare occasions in the very remote areas

where they would have to use their bare hand, because there were neither gloves nor plastic bags to wear as a barrier to protect them from direct contact with blood.

Factors contributing to non-adherence: The trained traditional birth attendants said that the lack of gloves, aprons, cord ties, razor blades and clean delivery kits were the main reasons for non-adherence to Universal Precautions. The other factor was the lack of refresher courses to keep them informed on issue of infection control principles. They said they needed more knowledge on Universal Precautions because of HIV/AIDS.

Enhancing adherence to Universal Precautions: In their opinion, Universal Precautions can only be enhanced if two pairs of gloves were introduced in the Clean Delivery Kits instead of one pair; increase the supply of gloves and cotton wool in the monthly health centre kits at their local clinics for them to re-stock when need arises and refresher courses. They also said, 'We would appreciate if the Ministry of Health (MOH) could consider supplying us with monthly TBA kits like they do for the community health workers. They also said that the local health centres are not able to support them due to the limited supply of gloves, cotton wool and razor blades they get from the monthly health centre Kits. They sometimes buy these items using their own money.

CHAPTER 5

5.0 DISCUSSION OF FINDINGS

5.1 INTRODUCTION

The principal objective of the study was to establish the proportion of midwives, nurses and trained traditional birth attendants adhering to Universal Precautions with reference to HIV infection during deliveries, and the factors leading to non-adherence, and make recommendations to relevant authorities for an intervention in order to curb the spread of HIV infection. Data was collected using a semi-structured questionnaire during a face-to-face interview. Observation of routine deliveries was done using a standard checklist and Focus Group Discussions were held.

5.2 KNOWLEDGE

Knowledge of Universal Precautions is an important aspect of adherence. Universal Precautions are part of the midwives, nurses and trained traditional birth attendant's training curriculum. The levels of training in Universal Precautions maybe different, but the basic infection control guidelines, which are crucial in the prevention of HIV infection for the health worker in the work place are the same.

The results showed that knowledge of Universal Precautions from having heard of them through their training was generally good among midwives and nurses (88.9 percent) and the trained traditional birth attendants (84.4 percent). In Siavonga district, a workshop on infection control for all hospital staff was held on the 10th March 2004. Infection control principles were discussed and later put on the notice board in the wards, including the maternity wing. In Mazabuka district, some nurses also attended a similar workshop, but unfortunately, the information of the workshop had not yet been disseminated among the other hospital staff at the time of data collection. The handbook on Infection Prevention Principles produced by Central Board of Health in 2003 had not yet reached both districts.

The focus group discussion held for midwives, nurses and trained traditional birth attendants support the fact that they had adequate knowledge on Universal Precautions through their training. Our Zambian scenario is therefore different from the scenario described by Chan et al (2002) in his survey in Hong Kong where the nurses' knowledge of Universal Precautions was inadequate. It is also different from the Nigerian situation where it was found that the nurses had poor knowledge of Universal Precautions as only a few had heard about them (Ofili et al, 2003). If one has knowledge, the likelihood of that person using the knowledge for their advantage is high. This theory agrees with the study results, as the findings showed that those who were knowledgeable about the Universal Precautions through their training adhered to the Universal Precautions. The focus group discussions held with the nurses and midwives revealed that there was a need for refresher courses, even though knowledge of Universal Precautions was not the reason for non-adherence.

5.3 PRACTICE

In his study De Graaf et al (1998) showed that about 33 percent of needle stick injuries occurred during re-capping used needles, while 15 percent needle stick injuries occurred when used needles were not properly disposed of. In the study findings, 36.5 percent of the midwives and nurses re-capped needles. It means that a significant number of the midwives and nurses were at risk of needle stick injuries. The sharp boxes were available and placed in a room where procedures were being carried out. The midwives and nurses felt that it was safer for them to re-cap used needles because the sharp boxes were not puncture proof. The improvised sharp boxes were made of cardboard, which could easily be punctured by used needles. This response was echoed in the focus group discussions. Plastic containers (like empty cooking oil containers) could be improvised as puncture proof sharp boxes. This practice was noted during the observation of routine deliveries. The issue also came up during the focus group discussions.

Proper sterilization of equipment used during delivery involves the use of jik and autoclave machine. The study findings showed that 65.1 percent of respondents used an autoclave machine for sterilizing equipment used during deliveries, while 57 percent used jik. Only hospitals had autoclave machines, while the health facilities used jik to sterilize their used instruments. Jik was not always available for use because it was sometimes unaffordable. The respondents brought this issue up during the FGDs, where they said that they had to re-use the diluted jik to soak instruments twice or three times before discarding it and putting fresh jik. This situation meant that the delivery instruments were not directly put into the diluted jik as they were supposed to do. Instruments are supposed to be decontaminated first in jik for 10 minutes, cleaned to remove dirt, and then rinsed and sent for sterilization. The used instruments were instead rinsed first to remove the blood with plain water and then soaked in jik for 10 minutes and sent for autoclaving if there was one at the facility, or else stored for the next delivery. This picture shows a very serious situation of cross infection. No sterilization was needed for the tTBA. Most of the items used during delivery were either buried or disposed of in the pit latrine.

Handling of soiled linen was also below par due to the lack of leak-proof bags, inadequate jik to sterilize the linen before it was rinsed and taken to the laundry. The maids who did the sluicing were more at risk here than the midwife. These results were similar with the results of the observations of the routine deliveries. The only soiled linen that the tTBA handled, were the apron and mackintosh, which they cleaned with soap and water, dried and later re-used for the next delivery. Rendering the apron and mackintosh clean requires the use of jik, which they did not have. Their handling of soiled linen after delivery was also below par. A chance of them getting infected with HIV from infected mothers' blood in the process was high.

Altogether, 95.2% of the respondents, that is, midwives and nurses had running water at their health institutions to enable them wash their hands before and after a delivery procedure. Unfortunately, only 85.7% always washed their hands immediately before and after the delivery procedure. During routine deliveries, it was observed that, 50.0% of the respondents washed their hands before the delivery. This was attributed to pressure of

work and being understaffed. The midwives and nurses would put on gloves, sometimes double and attend to a delivery, and after the delivery, wash their hands, and when another client came in for delivery, the midwife or nurse would just put on gloves considering that they had already washed their hands after the previous delivery procedure. This explains why 88.9% washed their hands after the delivery procedure.

Protective clothing, namely sterile/clean gloves, plastic apron, long sleeved gown, goggles to protect the eyes, face masks and closed shoes/boots are important aspects of adherence to Universal Precautions. Wearing protective clothing helps avoid direct contact with blood during deliveries. The 98.4% nurses and midwives, who said they wore protective clothing, meant that they wore clean gloves, shared plastic apron and their own closed shoes. Facemasks, gowns and goggles were either not available or in very limited supply. During routine deliveries, it was observed that the labour room had a maximum of 3 plastic aprons, which were shared by all the midwives performing deliveries. 83.3% of the respondents wore clean gloves (not sterile), which were not strong enough and sometimes would tear in the process of delivery. 2.8% still re-used gloves. This kind of picture puts the respondents at risk of coming into direct contact with blood during delivery. The majority (77.4%) of the respondents had resuscitation bags for emergency resuscitation, although 8.1 percent still use mouth-to-mouth resuscitation, which was risky in this era of HIV/AIDS pandemic.

5.4 ADHERENCE

According to the study results, the proportion of midwives and nurses who adhered to Universal Precautions was 63.5%. The results from the observation of routine deliveries also showed that 63.9% of the respondents adhered to Universal Precautions. The study results also revealed that the proportion of trained traditional birth attendants who adhered to Universal Precautions was 67.2%. These results indicate that 1/3 of the midwives and nurses and trained traditional birth attendants were at risk of occupational HIV. These respondents who showed non-adherence included those who had knowledge of Universal Precautions, but without the necessary medical equipment and supplies.

Adherence to Universal Precautions for the midwives and nurses is different from the trained traditional birth attendant because of their different levels of training.

Adhering to Universal Precautions for the trained traditional birth attendant meant wearing glove, an apron, maintaining hygiene at the delivery area and disposal of used gloves and razor blade. One of the reasons for the high percentage of adherence among trained traditional birth attendants was the introduction of the Clean Delivery Kits. These kits are sold to expecting mothers at an affordable price (K2, 500.00 or K3000.00) by the health centre staff or the trained traditional birth attendants themselves. No sterilization is required. However, the noted proportions of non-adherence require attention, because of the rampant shortages of staff in the health institutions and limited number of trained traditional birth attendants.

These findings confirm Libetwas's (1997) study where she found that midwives in maternity wings in Lusaka did not practice infection control, and that both clients, and, midwives were at risk of contracting infections. She recommended that continued education through training and workshops was required. The study done by Siziya et al (2002) on the risk of occupational exposure to HIV for nurse-midwives and traditional birth attendants also revealed that the general hygiene measure taken in hospitals to reduce the risk of HIV infection were insufficient. Doebbling et al (2003) did a study among health care workers in the United States and concluded that new strategies for preventing exposures, training and monitoring adherence was needed because of the suboptimal adherence to Universal Precautions. Focus Group Discussions held with respondents support the fact that adherence is below par, and that refresher courses were needed.

5.5 FACTORS CONTRIBUTING TO NON-ADHERENCE

Many factors contribute to non-adherence to Universal Precautions. The study results showed that the socio-demographic factors were not significant in relation to adherence to Universal Precautions. Lack of in-service training was a factor that came up during the Focus Group Discussions with the midwives, nurses and trained traditional birth attendants. Very little in-service training had been done. The unavailability of Universal

Precaution guidelines was another factor that came up in the Focus Group Discussions. Even though Central board of Health produced a booklet on the Infection control Principles in 2003, this booklet had not yet reached the health centres at the time of data collection. The respondents expressed the need for this booklet. The study revealed that the majority of the respondents acknowledged the fact that Universal Precautions were part of their training. All they needed was re-training from time to time.

The study findings revealed that there was a lack of /inadequate medical supplies and equipment. This need was confirmed during the observations of routine deliveries and during the Focus Group Discussions held with the respondents. Medical supplies like, jik for sterilizing equipment, protective clothing (gloves, masks, goggles, closed shoes, aprons, gowns) were either absent or inadequate. %0% of the midwives and nurses received weekly supplies, which is obviously not enough for the maternity wing. 30% of the respondents received monthly supplies (most of these would be from the health centres) and 19.6% received daily supplies.

Lack of and inadequate medical supplies available for the trained traditional birth attendants were revealed in the study findings. 57.7% of the tTBAs received their supplies monthly, while 34.6% did not receive any supplies at all. This kind of situation made it difficult for the respondents to put their knowledge into practice, hence the lack of adherence to Universal Precautions.

In the absence of gloves, 85.4% tTBAs used plastic bags to cover their hands and avoid direct contact with blood during deliveries. These findings agree with the findings of the needs assessment, which was done in one of the districts in Zambia where the major complaint amongst the tTBAs was the lack of gloves (Siziya et al, 2000). The findings also confirm the reports that the lack of basic protective equipment such as gloves was common in Africa. The scenario here again was in conformity with what was found out in studies done in other parts of Africa; mainly the lack of necessary equipment to use during deliveries as the reason for non-adherence to Universal Precautions (Sagoe-Moses et al, 2001). The situation in Tanzania where birth attendants were reported to cover their

hands with plastic bags to protect themselves from exposure to HIV infection during deliveries reported by Sagoe-Moses et al, (2001) is similar to the situation here in Zambia among tTBAs.

These findings agrees with the findings in India, where a study done by Kumar R et.al (2002) showed the lack of necessary equipment to use and protective clothing as the reason why the nurses did not adhere to Universal Precautions. According to the results of the study elaborated earlier, the Zambian scenario also requires strategies for preventing exposures, more of re-training and monitoring adherence to Universal Precautions. Although most parts of Africa showed that knowledge of Universal Precautions was poor among the health care workers, the study shows that knowledge of Universal Precautions was not really the reason for not adhering to Universal Precautions although the midwives in the FGD echoed the need for refresher courses.

The lack of necessary medical equipment and supplies makes it difficult for the nurses and midwives to adhere to Universal precautions despite the knowledge that they have of Universal Precautions through their training. That was the reason why 1/3 of the respondents showed non-adherence to Universal Precautions. This kind of scenario increases their chance of contracting HIV infection during deliveries especially where the HIV prevalence in the communities is high as it is in the Southern Province of Zambia.

CHAPTER 6

6.0 CONCLUSION

The study revealed that one third of the midwives, nurses and trained traditional birth attendants did not adhere to Universal Precautions and thus were at risk of contracting HIV infection during the performance of deliveries. It was clear from the findings that the inadequacies stemmed from the lack of supplies for the midwives and knowledge for the trained traditional birth attendants. For the midwives, nurses and indeed the trained traditional birth attendants, putting knowledge into practice requires the availability of the necessary equipment to use during deliveries in order to implement the Universal Precautions. Inadequate or lack of medical supplies and knowledge are the two factors that lead to non-adherence to Universal Precautions. There is a need for new strategies to be put in place to increase or make available the required medical supplies and for continued education and monitoring in order to strengthen the knowledge and practice of the midwives, nurses and trained traditional birth attendants, thereby enhancing adherence to Universal Precautions.

6.1 RECOMMENDATIONS

6.2 POLICY MAKERS

- The Ministry of Health should make sure that the booklet on Infection Prevention Guidelines reaches every health Institution in Zambia through the Quality Assurance Unit, which monitors the standards of practice.
- The Ministry of Health should consider coming up with a Kit for tTBAs just as it did with Community Health workers. This will reduce the strain on the local health centre trying to share the few supplies received in the health centre Kit every month as the number of tTBAs increases.

6.3 HEALTH AND HEALTH RELATED MANAGERS

- The District Health Boards should see to it that the Principles of Infection control Guidelines are distributed to all health institutions in their respective districts.
- In-service training and workshops concerning the enhancement of Universal Precautions should be provided to all health staff by the district health boards and their collaborating partners.
- The district health boards should budget for more supplies for maternity wings in their districts especially items like Jik and protective clothing like gloves (sterile and clean), Plastic aprons for all nurse midwives, closed shoes/boots, masks, gowns and goggles. Sharp boxes should be puncture proof or improvised plastic containers should be used instead of carton boxes. The number of delivery packs should be increased and other necessary material.
- The Zambia Nurses Association should continue looking into the plight of the nurse midwives especially in relation to the risk of occupational exposure to HIV infection through supportive infection prevention workshops with their partners.
- The general Nursing council of Zambia should monitor adherence to Universal Precautions.
- The district health boards together with their collaborating partners should consider putting two pairs of gloves for the tTBAs in the Clean Delivery Kits sold to mothers at their local clinics.

REFERENCES

- Atulomah N.O; Oladepo O, Knowledge, perception and practice with regards to occupational risks of HIV/AIDS among nursing and midwifery students in Ibadan, Nigeria, African Journal of medicine and medical sciences 2002; 31 (3): 223-7.
- Aswusabo-Asarea, K.; Marko C., Attitudes and Management of HIV/AIDS among Health Workers in Ghana: the case of Cape Coast municipality. Health transition Review 1997 7 supp: 271-280, 274-275.
- Baker.J.P, Rapid voluntary testing and counseling for HIV, acceptability and feasibility in Zambia Antenatal Clinic. Alabama Edith Wolfson Medical Center, 2002.
- Beare.P.G; Myers J.L, Principles and practices of adult Nursing, 11830, West line Industrial drives St.Louis Missouri, The C.V Mosby Company, 1990.
- Central Board of Health (Zambia), Infection Prevention Guidelines. Central Board of Health, Lusaka. 2003: 1-2.
- Central Board of Health (Zambia), Integrated Technical Guidelines for Frontline Health Workers, Central Board of Health, Lusaka. 2nd edition, 2002.
- Central Statistical Office, Zambia 2000 census of Population and Housing, Zambia analytic Report, Lusaka. Volume 10. 2003.
- Central Statistical Office (Zambia), Central Board of Health (Zambia), and ORC Marco. Zambia Demographic and Health Survey 2001-2002. Calverton, Maryland, USA. Central statistical Office, Central Board of Health and ORC Marco. 2003.
- Centres for Disease control, Recommendations for Prevention of HIV transmission in health-care settings. MMWR 1987; 36 suppl. 2s: 1-4.
- Chan R; Molassiotis A; Chan E; Chan V; Ho B; Lai C.Y; Lam P; Shit F; Yiu I; Knowledge of and compliance with Universal Precautions in an acute care hospital, International journal of nursing studies 2002; 39 (2): 157-63.
- Consten E.C.J; Lanschot J.J.B.V; Henry P.C.H; Tinnemans J.G.M; Van der Meer J.T.M, A prospective study on the risk of exposure to HIV during surgery in Zambia. AIDS 1995; 9:585-588.
- De Cock, K.M; Weiss, H.A., The Global Epidemiology of HIV/AIDS, Tropical Medicine and International Health 2000; 5(7): A3-A9.
- De Graaf, R; Houwelling, H; Zessen, G.V., Occupational risk of HIV infection among Western Health care Professional posted in AIDS endemic areas. AIDS Care 1998; 10(4): 441-452.

Doebbeling, B.N; Vaughn T.E; McCoy K.D; Beekmann S.E; Woolson R.F; Ferguson K.J; Torner J.C., Percutaneous injury, blood exposure, and adherence to standard precautions: are hospital-based health care providers still at risk? Infectious Diseases Society of America 2003; 37(8): 1006-13.

Gibney, L., Preventing HIV in Developing Countries, New York. Klumer Academic/Plenum publishers, 1999.

Gisselquist, D; Rothenberg, R; Potterrat, J; Drucker, E., HIV infections in sub-Saharan Africa not explained by sexual or vertical transmission, AIDS 2002; 13(10): 657-66.

Habimana, P; Bulterys, M; Usabuwera, P; Chao, A; Saah, A.J., A survey of occupational blood contact and HIV infection among traditional birth attendants in Rwanda. AIDS 1994; 8(5): 701-4.

Jagger, J; Bently, M; Tereskez, P., A study of patterns and prevention of blood exposures in OR personnel. American Operating Room Nurses journal, 1998; 67(5): 979-996.

Kamanga, J; Hira, S.K; Bhat, G.J., Perinatal Transmission of HIV-1 in Zambia, Dermato-Venereology department, Lusaka. Br. Med J.1989; 299: 1250-2.

Kumar, R; Mohan, N; Seenu, V; Kumar, A; Nandi, M; Sairna, R.K., Knowledge, attitude and practices towards HIV among Nurses in a tertiary care teaching hospital; two decades after the discovery. Journal of communicable diseases 2002; 34(4): 245-56.

Libetwa, M.C., A study on the Knowledge, attitude, and Practice of midwives on Infection control in Maternity wings in Lusaka Urban clinic, Lusaka, Zambia. 1997.

Longman Group Limited, Longman Dictionary of Contemporary English. The Pitman Press, England, 1978.

Ministry of Health (Zambia), Central Board of Health (Zambia), HIV/AIDS in Lusaka, Ministry of Health, Central Board of Health, Lusaka, 1999.

Ministry of Health, National HIV/AIDS/STI/TB Strategic Framework, 2001-2003, Ministry of Health, Lusaka, 2000.

National HIV/AIDS/STI/TB Council Intervention strategic plan, 2002-2005, Lusaka.

Ofili, A.N; Asuzu, M.C; Okojie, O.H., Knowledge and Practice of Universal Precautions among nurses in central hospital, Benin-city, Edo state, Nigeria. Nigeria postgraduate medical Journal 2003; 10(1): 26-36.

Orji, E.O; Fasubaa, O.B; Onwudiegwu, U; Dare, F.O; Ogunniyi, S.O., Occupational health hazards among health care workers in an obstetrics and gynaecology unit of Nigerian teaching hospital,. Journal of obstetrics and gynaecology 2002; 22(1): 75-8.

Ricci, E; Oezzopane, R; Grasso, P; Benzi, G; Parazzini, F., Application of guidelines for occupational HIV infection control during delivery in Italy, European journal of obstetrics and gynaecology 1998; 79(1): 39-41.

Sagoe-Moses, C; Pearson, R.D; Perry, P; Jagger, J., Risks of Health Care Workers in Developing Countries. New England Journal of Medicine 2001; 345(7): 538-541.

Siavonga District Health Office, Budget and Action Plan, Siavonga 2003.

Siziya, S; Tawanda, M; Kaona, F., Was there evidence of occupational exposure to human immunodeficiency virus (HIV) infection among nurse-midwives ten years into the epidemic in Zambia. African Journal of Health Sciences, 2002; 7:3-4.

UNFPA, Gender and HIV/AIDS in sub-Saharan Africa, New York. 2002.

Veeken, H., Occupational HIV infection and Health Care Workers in the Tropics. Tropical Doctor 1991; 21:28-31.

APPENDICES

APPENDIX I

WORK PLAN (2003-2004)

	2004										2005			
ACTIVITY	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	
Review														
Writing														
by REC														
to studies														
ection														
ysis														
riting														
on of														
on of final examiners														
ns														
ation of														

APPENDIX II

BUDGET

No.	Item	Unit cost	Quantity	Total cost
1	Personal			
	(a) Chief Investigator			
	- Lunch allowance	50,000	40 days	2,000,000.00
	- Transport	30,000	40 days	1,200,000.00
	- Accommodation	50,000	40 days	2,000,000.00
	Subtotal			K 5,200,000.00
2.	Secretarial Services			
	(a) Typing questionnaire	1,500.00	X 10 pages	15,000.00
	(b) Printing questionnaires	500.00	X10 pages	5,000.00
	(c) Photocopying questionnaire	300 x 200	X10 pages	600,000.00
	(d) Research Report Typing	1500.00	X30 pages	45,000.00
	(e) Research report photocopying	200.00	X120 pages	24,000.00
	(f) Report binding	30,000	X3	90,000.00
	Subtotal			K 779,00.00
3.	Stationery			
	(a) Typing paper	25,000.00	X 2 reams	50,000.00
	(b) Toner	500,00.00	X 1	500,000.00
	(c) Pens	250.00	X 4	1,000.00
	(d) Pencils	100.00	X 2	200.00
	(e) Tipex	9,000.00	X 1	9,000.00
	(f) Bag for questionnaires	150,000.00	X 1	150,000.00
	(g) Staples	5,000.00	X 1 box	5,000.00
	(h) Files	4,000.00	X 2	8,000.00
	Subtotal			K 723,200.00
	Total			K 6,702,200.00
	Contingency 10%			K 670,220.00
	Grand total			K 7,372,420.00

QUESTIONNAIRE

**ADHERENCE TO UNIVERSAL PRECAUTIONS WITH
REFERENCE TO HIV INFECTION AMONG MIDWIVES AND
TRAINED TRADITIONAL BIRTH ATTENDANTS DURING HOME
AND HEALTH CENTRE DELIVERIES**

DATE.....

SERIAL NO.....

INTERVIEW SCHEDULE

INSTRUCTIONS FOR THE INTERVIEWER

1. Introduce yourself to the respondent and explain the purpose of the interview.
2. Do not write the name of the respondents on the questionnaire.
3. Circle the most appropriate response to the questions.
4. All information provided by the respondents must be held in strict confidence.
5. The respondents should be free to ask questions during the course of the interview.
6. Thank the respondent at the end of each interview.

SECTION A

MIDWIFE/NURSE

1. Age: _____

2. Sex:

(1) Male

(2) Female

3. What is your marital status?

(1) Single

(2) Married

(3) Divorced

(4) Widowed

4. How long have you been working as a midwife?

5. Are you a midwife by training?

(1) Yes

(2) No

6. How many deliveries have you attended to in the past one month?

7. Have you heard of Universal Precautions?

(1) Yes

(2) No

8. Were Universal Precautions parts of your training curriculum?

(1) Yes

(2) No

9. If yes, what Universal Precaution guidelines do you know?

10. Do you re-use needles?

(1) Yes

(2) No

11. How do you discard sharps?

(1) Re-cap and throw in the sharp box

(2) Discard immediately without re-capping in the sharp box

(3) Throw away in open rubbish pit

12. Where do you place your sharp box?

(1) Near where procedures are carried out

(2) In the nurses' room

13. Do you sterilize medical equipment used during delivery?

(1) Always

(2) Sometimes

(3) Never

14. If yes, how do you do it?

- (1) Use sterilizer
- (2) Boiling
- (3) Steam
- (4) Autoclave
- (5) Jik

15. Do you wash your hands before and after delivery procedure?

- (1) Always
- (2) Sometimes
- (3) Never

16. If yes, to question 14, what do you use?

- (1) Soap and water
- (2) Water only
- (3) Disinfectant

17. Do you use protective clothing during the delivery procedure?

- (1) Yes
- (2) No

18. If yes, which ones?

- (1) Gloves
- (2) Masks
- (3) Gowns
- (4) Aprons
- (5) Goggles
- (6) Closed shoes

19. If not, why?

20. How do you handle soiled linen?

(1) Use gloves only

(2) Use gloves and leak-proof bags

(3) Use detergent and hot water

(4) Use detergent and cold water

(5) Other (specify) _____

21. How do you do emergency resuscitation?

(1) Mouth to mouth

(2) Use of mouthpieces

(3) Resuscitation bags

(4) Other (specify) _____

22. How often do you get medical supplies? (Gloves, masks, goggles, gowns, needles, disinfectants, shoes, hand soap, cotton wool etc) _____

23. Are you aware of the risk of contracting HIV infection during delivery?

(1) Yes

(2) No

Are the following medical supplies and equipment available in the delivery room?

DELIVERY ROOM CHECKLIST

NO.	ITEM	PRESENT (+) ABSENT (-)	COMMENTS
1.	Gloves <ul style="list-style-type: none"> ○ Sterile ○ Clean 		
2.	Apron/Gown		
3.	Masks		
4.	Sterile needles and syringes		
5.	Sharp box		
6.	Sterilizer		
7.	Disinfectant (jik)		
8.	<ul style="list-style-type: none"> ○ Delivery pack (sterile) ○ Forceps ○ Cord scissors ○ Cord clumps ○ Cotton wool/maternity pads 		
9.	Linen		
10	Hand soap		
11.	Hand towels		
12.	Sterile suturing material		

SECTION B

TRAINED TRADITIONAL BIRTH ATTENDANT

1. Age: _____

2. What is your marital status?
 - (1) Single
 - (2) Married
 - (3) Divorced
 - (4) Widowed

3. How long have worked as a trained traditional birth attendant?

4. How many deliveries have you attended to in the past one month?

5. What is HIV/AIDS?

6. Are you aware of the risk of contracting HIV infection during delivery?
 - (1) Yes
 - (2) No

7. If yes, what precautions do you take to avoid the above risk during delivery?

8. Have you heard of Universal Precautions?

(1) Yes

(2) No

9. What Universal Precaution Guidelines do you know?

10. Were Universal Precautions part of your training curriculum as trained traditional birth attendants?

(1) Yes

(2) No

11. Do you have a trained traditional birth attendant Kit?

(1) Yes

(2) No

12. If no, what do you use when assisting a delivery?

13. If yes, do have the following medical supplies in your TBA kit?

TBA KIT CHECKLIST

NO.	ITEM	PRESENT (+) ABSENT (-)	COMMENTS
1.	Apron		
2.	Gloves		
3.	Hand soap		
4.	Towel		
5.	Cotton wool		
6.	Disinfectant		
7.	Instruments: Forceps Receivers		
8.	New razor blade		
9.	Cord ties		
10.	Mackintosh		

14. How often do you get medical supplies for your delivery kit from the nearest health centre?

- (1) Twice every month
 - (2) Once every month
 - (3) Once in three months
 - (4) Other, specify
-
-

15. Do you re-use gloves?

- (1) Yes
- (2) No

16 Did you receive training in the use of gloves, gowns/aprons, and disinfecting instruments?

- (1) Yes
- (2) No

17. If yes, what are the reasons for not adhering to Universal precautions?

18. In the absence of protective gear, how do you assist deliveries?

19. How do you render your equipment clean/sterile after a delivery?

- (1) Wash with water only
- (2) Wash with soap and water
- (3) Boil the instruments
- (4) Soak in disinfectant

APPENDIX IV

FOCUS GROUP DISCUSSION GUIDE

INSTRUCTIONS

1. Introduce yourself and the topic.
2. Explain the purpose of the discussion.
3. Do not ask for names and addresses of respondents.
4. Take notes as the discussion proceeds.

QUESTIONS FOR MIDWIVES, NURSES AND TRAINED TRADITIONAL BIRTH ATTENDANTS

1. As birth attendants who come in contact with large quantities of blood during delivery, are you aware of the Universal Precaution Guidelines? (hand washing, wearing of protective clothing and sterilization of instruments).
2. Were Universal Precautions parts of your training as birth attendants?
3. Do you adhere to Universal Precautions? If not, why?
4. In the absence of protective barriers, what precautions do you take?
5. What in your opinion are the factors contributing to non adherence to Universal Precautions?
6. What do you think should be done to enhance adherence to Universal Precautions during deliveries?

APPENDIX V

ADHERENCE TO UNIVERSAL PRECAUTIONS WITH REFERENCE TO HIV INFECTION AMONG MIDWIVES AND TRAINED TRADITIONAL BIRTH ATTENDANTS DURING HOME AND HEALTH CENTRE DELIVERIES IN SIAVONGA AND MAZABUKA DISTRICTS.

INFORMED CONSENT FORM

INTRODUCTION

You are being requested to take part in the research study mentioned above because you are the people who are qualified to assist women during labour and delivery. This study will help you assess our practices as you assist deliveries. Before you decide whether or not to take part in this study, we would like to explain to you the purpose of this study, any risks to you and what is expected of you. If you agree to take part, you will be asked to sign this consent or make a mark in front of someone. You will then be given a copy to keep. Your participation in this study is entirely voluntary; you are under no obligation to participate. You should be aware that this study has been approved by the Research Ethics Committee of the University of Zambia, which is there to protect you.

PURPOSE OF THE STUDY

The purpose of this study is to find out whether the Universal Precaution with reference to HIV infection are adhered to among midwives and trained traditional birth attendants during home and health centre deliveries.

PROCEDURE

After you sign the consent form and have had a chance to ask questions, you will be asked questions concerning the following of Universal Precautions during delivery with the help of a prepared questionnaire. You will also be asked to participate in a Focus Group Discussion concerning the same. The Focus Group Discussion will help you express yourself more.

RISKS AND DISCOMFORTS

No risk or discomfort is involved apart from the use of your time in answering the questionnaire and participating in the Focus Group Discussions. Answering the questionnaire will take approximately ten minutes and the Focus Group Discussion will take thirty minutes.

BENEFITS

By taking part in this study, you will be able to provide us with the information that will help relevant authorities and policy makers to come up with strategies to try and improve or strengthen Universal Precautions adherence as a means of reducing the risk of HIV infection among midwives and trained traditional birth attendants during home and health centre deliveries.

CONFIDENTIALITY

Your research records will be confidential to the extent permitted by law. You will be identified by a code and personal information will not be released without your written permission, except when required by law. The Ministry of Health, Central Board of Health, Siavonga and Mazabuka District Health Boards, the University of Zambia Research Ethics Committee or School of Medicine may review your records, but again this will be done confidentially.

PLEASE NOTE

- 1. Your participation in this study is entirely voluntary.
- 2. You may decide not to take part or to withdraw from the study any time without losing the privilege of practicing as a midwife or trained traditional birth attendant.

Person to contact for problems or questions:

Leoda Hamomba, University of Zambia, Department of Community Medicine, Lusaka.
P.O. Box 50110, Lusaka. Cell No. 097-704239.

.....
CONSENT TO JOIN THE STUDY

NAME.....HAVING BEEN FULLY INFORMED
OF WHAT THIS STUDY IS ALL ABOUT, THE BENEFITS, DISCOMFORTS, RISKS
AND CONFIDENTIALITY, AGREE TO PARTICIPATE WILLINGLY.

SIGN.....DATE...../...../.....

THUMB PRINT.....

WITNESS

(NAME).....SIGN.....

APPENDIX VI

ADHERENCE SCORING SYSTEM FOR MIDWIVES AND NURSES

NO.	ACTION	STANDARD SCORE
1.	HAND WASHING <ul style="list-style-type: none"> ○ Before the delivery procedure ○ After the delivery procedure ○ Use soap and water 	3
2.	USE OF PROTECTIVE CLOTHING <ul style="list-style-type: none"> ○ Gloves (sterile/clean) ○ Apron/gown ○ Goggles ○ Face mask ○ Closed shoes 	5
3.	HANDLING OF SHARPS <ul style="list-style-type: none"> ○ Does not re-use needles ○ Discard used needles immediately without re-capping ○ Discard sharps in puncture proof box 	3
4.	STERILIZATION OF INSTRUMENTS <ul style="list-style-type: none"> ○ Always sterilize instruments used during delivery ○ Decontaminate in Jik solution for ten minutes after procedure, clean and rinse instruments ○ Sterilization using Autoclave 	3
5	HANDLING SOILED LINEN <ul style="list-style-type: none"> ○ Use gloves ○ Decontaminate using Jik ○ Use detergent and water 	3
6.	EMERGENCY RESUSCITATION <ul style="list-style-type: none"> ○ Use mouth pieces ○ Use resuscitation bags ○ Resuscitaire 	3
	TOTAL SCORE	20

APPENDIX VII**ADHERENCE SCORING SYSTEM FOR TRAINED TRADITIONAL
BIRTH ATTENDANTS**

NO.	ACTION	STANDARD SCORE
1.	HAND WASHING <ul style="list-style-type: none">○ Before the delivery procedure○ After the delivery procedure○ Use soap and water	3
2.	USE PROTECTIVE CLOTHING <ul style="list-style-type: none">○ Gloves (clean)○ Apron	2
3.	STERILIZATION OF INSTRUMENTS <ul style="list-style-type: none">○ Clean with detergent and rinse○ Boil	2
4.	HANDLING OF SOILED LINEN <ul style="list-style-type: none">○ Use gloves○ Use detergent and water	2
5.	DISPOSAL OF WASTE <ul style="list-style-type: none">○ Bury○ Throw in pit latrine	2
6.	RESUSCITATION <ul style="list-style-type: none">○ Use mouth pieces	1
	TOTAL	12



**THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
RESEARCH ETHICS COMMITTEE**

Telephone: 252641
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753

Dean's Office
P.O. Box 50110
Lusaka, Zambia

**Assurance No. FWA00000338
IRB00001131 of IOR G0000774**

1st June 2004

Our Ref. 009-03-04

Ms Leoda Hamomba
UNZA
Department of Community Medicine
P.O. Box 50110
LUSAKA

RE: SUBMITTED PROPOSAL

Dear Ms Hamomba

The following research proposal was presented to the Research Ethics Committee on
In our March meeting where changes were recommended. **Having received your**
corrections we are pleased to approve your proposal. **Congratulations!**

Title of proposal: **Adherence to Universal precautions with reference to HIV
infection among midwives and trained traditional birth
attendants during home and health centre deliveries in
Siavonga and Mazabuka districts.**

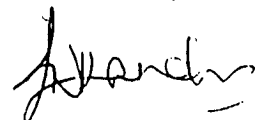
Conditions:

This approval is based strictly on your submitted **proposal**. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.

Informed Consent forms approved 1 in English.

If you have need for further clarification please consult the **Research Ethics Committee**. Please note that it is mandatory that you submit a **detailed progress report** of your study to this committee every six months and a final copy of your **report at the end of the study**.

Yours Sincerely



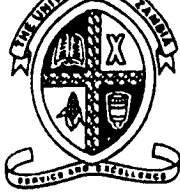
Prof. J.T. Karashani, M.B., Ch.B., Ph.D.

CHAIRMAN - RESEARCH ETHICS COMMITTEE

Date of Approval: 1st June 2004

Date of Expiry: 1st June 2005

Please note that when your approval expires, you will need to request for **renewal**. The request should be accompanied by a progress report.



THE UNIVERSITY OF ZAMBIA
RESEARCH ETHICS COMMITTEE

Telephone: 260-1-256067
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: + 260-1-250753
E-mail: unzarec@zamtel.zm

Ridgeway Campus
P.O. Box 50110
Lusaka, Zambia

Assurance No. FWA00000338
IRB00001131 of IORG0000774

19 September, 2005
Ref.: 009-03-04

Ms Leoda Hamoomba
P.O. Box 16
SIAVONGA

Dear Ms Hamoomba,

**RE: FINAL REPORT: "ADHERENCE TO UNIVERSAL PRECAUTIONS WITH
REFERENCE TO HIV INFECTION DURING HOME AND HEALTH CENTRE
DELIVERIES"**

We acknowledge receipt of a copy of your dissertation submitted to the University of Zambia in partial fulfilment of the requirement for the degree of Master in Public Health.

On behalf of this Committee, and indeed on my own behalf, I wish to congratulate you for completing the research project successfully.

With best wishes.

Yours sincerely,

Prof. J. T. Karashani, MB, ChB, PhD
CHAIRMAN

REPUBLIC OF ZAMBIA



**MINISTRY OF HEALTH
SIAVONGA DISTRICT HEALTH BOARD**

*correspondence to be
addressed to the
District Director of Health*

P.O. BOX
SIAVONGA- ZAMBIA
TEL/FAX: (01) 5110

ur Ref:

5th August 2004

Ms Leoda Hammomba
University of Zambia
School of Medicine
Department of Community Medicine
P.O. BOX 50110
LUSAKA

Dear Madam

RE : STUDY PROJECT

We received your letter in which you are requesting to conduct a research study "adherence to universal pre-cautions with reference to HIV infection prevention during home and health center deliveries.

We wish to inform you that as management, we have no objection to your request. However, you need to inform us when you intend to start the study and any other information you need to tell us.

We wish you success in your project.

Yours in Community Service

L. Himwiila

L. Himwiila (Ms)
**ACTING MANAGER ADMINISTRATION
FOR / DISTRICT DIRECTOR OF HEALTH**



REPUBLIC OF ZAMBIA

MINISTRY OF HEALTH

Office of the District Director of Health
Mazabuka District Health Management Board
P.O. Box 670060
MAZABUKA

Tel: 30951/30624

Fax: 30532

MDHB/RN/6943

20th September 2004

Ms Leoda Hamomba
University of Zambia
School of Medicine, Department of Community Medicine
P O Box 50110
LUSAKA

Dear Ms Hamomba

PERMISSION TO CARRY OUT FIELD STUDIES ON ADHERENCE TO UNIVERSITY PRECAUTIONS WITH REFERENCE TO HIV INFECTION AMONG MIDWIFE & TRAINED BIRTH ATTENDANTS

I wish to acknowledge receipt of your letter dated 3rd September 2004 requesting for permission to do field studies in Mazabuka District regarding the above subject matter from September to 31st October 2004.

Management has no objection to your request and you are therefore granted permission for two months from September to 31st October 2004 to do the above study. By copy of this letter the Medical Superintendent at Mazabuka District Hospital and the Health Centre Incharges mentioned below are requested to receive you and assist you with the required information.

Yours faithfully

Dr Francis Bwalya
DISTRICT DIRECTOR OF HEALTH

CC: Provincial Health Director, L/stone
CC: University of Zambia, School of Medicine
CC: Medical Superintendent – Mazabuka District Hospital
CC: Health Centre Incharges- Chivuna/Kaleya/Mukuyu/Lubombo/Nanga/Nega/Mugoto
Naluma/Kaonga/Nakambala

TO GOD
Church of Zambia

PT807C

The Salvation Army
Zambia Territory
Chikankata Health Services
Private Bag S 2, Mazabuka, Zambia
Tel: 01 222060
Fax: 01 222060
E-Mail: administration@chikankata.com or
Chikankata@zamnet.zm



20 September, 2004.

Ms Leoda Hamomba
UNZA
Dept of Community Medicine
P.O. Box 50110
LUSAKA.

Dear Ms Hamomba

Permission to Carry out a Study

Reference is made to your letter of 15 September, 2004 regarding the above.

I am pleased to inform you that permission is granted for you to interview the midwives and some TBAs in our catchment area.

We would appreciate getting a copy of the study upon completion.

Yours sincerely

Elvis Simamvwa
Executive Director

Cc Manager, Clinical Care : Chikankata Health Services

/rs