

**Factors Affecting Short Course Efficacious ARV Prophylaxis Regimen Use for Prevention
of Mother to Child Transmission of HIV in Nairobi, Kenya**

By:

Damaris Kinyoki – H57/P/7040/2007

**Thesis Submitted to the Department of Community Health in partial fulfilment of the
degree of Masters of Public Health**

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DECLARATION

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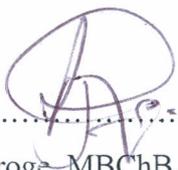
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TABLE OF CONTENTS

DECLARATION	I
TABLE OF CONTENTS	III
DEDICATION	V
ACKNOWLEDGEMENT	VI
ABSTRACT	VII
LIST OF ABBREVIATIONS/ACRONYMS	VIII
LIST OF TABLES.....	IX
LIST OF FIGURES.....	X
DEFINITION OF OPERATIONAL TERMS	XI
CHAPTER ONE.....	1
INTRODUCTION AND BACKGROUND INFORMATION.....	1
1.1 Introduction.....	1
1.2 Background Information.....	4
CHAPTER TWO.....	10
LITERATURE REVIEW	10
2.1 Introduction and Scope of the HIV/AIDS Pandemic.....	10
2.2 Mother-to-Child HIV Transmission.....	12
CHAPTER THREE	23
STATEMENT OF RESEARCH QUESTION.....	23
3.1 Research Problem	23
3.2 Justification.....	24
3.3 Objectives	25
3.5 Research Question	25
CHAPTER FOUR.....	26
METHODOLOGY.....	26
4.1 Study Design.....	26
4.2 Variables	26
4.3 Study Area	27
4.4 Study Population.....	28
4.5 Sampling and Sample Size.....	29
4.6 Data Collection	31
4.7 Data Processing and Analysis.....	33
4.8 Minimization of Errors and Biases	34
4.9 Ethical Considerations	34
4.10 Limitations and Validity of the Study.....	35

CHAPTER FIVE	37
RESULTS AND DISCUSSION	37
5.1 Results.....	37
5.1.1 Antenatal Mother AZT+sdNVP Regimen Uptake.....	39
5.1.2 Institutional factors	41
5.1.3 HIV Positive Pregnant Mothers factors	45
5.1.4 Focus Group Discussions Results.....	48
5.2 Discussion	50
5.2.1 Antenatal Mother AZT+sdNVP Regimen Uptake	50
5.2.2 Institutional Factors	51
5.2.3 HIV Positive Mothers Determinants	54
CHAPTER SIX	58
CONCLUSIONS AND RECOMMENDATIONS	58
6.1 Conclusions.....	58
6.2 Recommendations.....	59
REFERENCES	61
APPENDICES	67
Appendix 1: Population under the administrative divisions in Nairobi.....	67
Appendix 2: Screening Form	69
Appendix 3: Questionnaire for the Health Workers	70
Appendix 4: Questionnaire for the HIV Positive Mother	75
Appendix 5: Structured guideline for FGDs with the HIV+ Mothers	77
Appendix 6: Consent Form for Health Workers.....	81
Appendix 7: Consent Form for HIV Positive Mothers	84

DEDICATION

I dedicate this study to my parents, for establishing an academic base and moral support and more importantly their love that gave me confidence and strength during my studies.

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ABSTRACT

Introduction: The enormous progress in Kenya in mobilizing the Human Immunodeficiency Virus (HIV) infected pregnant women to access the antiretroviral (ARV) prophylaxis provides a real opportunity for preventing the mother to child transmission (PMTCT) of HIV. Previous studies have demonstrated that simpler and more cost-effective regimens such as single dose nevirapine (sdNVP) and/or short course zidovudine used alone or in combination could achieve mother to child transmission (MTCT) reductions of up to 50% or more. Recent evidence strongly supports the use of efficacious dual regimens of ARV prophylaxis especially short course zidovudine (AZT) and single dose NVP, to achieve a more dramatic reduction in perinatal transmission of HIV.

Objectives: The overall purpose of this study was to determine the factors affecting uptake of short course zidovudine (AZT) and sdNVP regimen amongst HIV positive pregnant women in Nairobi Kenya. Secondly, the study was to determine the level of uptake and provide specific recommendations to sustain high levels of uptake to this demanding ARV prophylaxis regimen.

Methodology: A cross sectional study was conducted from January to August 2009 in health facilities in Nairobi, Kenya. Both quantitative and qualitative approaches were used to collect primary and secondary data. Interviews were conducted among health workers and HIV positive mothers in the health facilities. Quantitative and qualitative data was processed, tabulated, and analyzed using SPSS version 13 to generate frequency tables and graphs. Chi square analyses were done to determine measures of association.

Results: In this study the antenatal mother AZT+sdNVP regimen uptake in the health centers was at 14% and in the hospitals was at 17%. There was significant statistical association between the uptake of ARV prophylaxis with the following factors: level of knowledge of the health workers ($P=0.042$), ARV prophylaxis dispensing points ($P=0.01$), HIV positive women who received support ($P=0.05$) and antenatal clinic attendance ($P\text{-value}=0.00$). However there was no statistical difference between the uptake of ARV prophylaxis with marital status ($P\text{-value}=0.789$), number of children ($P\text{-values}=0.068$) and monthly income ($P\text{-values}=0.274$).

Conclusion and Recommendations: Therefore there are still daunting challenges with regard to ARV availability, accessibility and utilization. The results suggest key improvements would be improving inequity in distribution of ARV dispensing sites, training of service providers on the whole aspect of PMTCT and creation of awareness amongst HIV positive pregnant women.

LIST OF ABBREVIATIONS/ACRONYMS

AIDS	- Acquired Immuno-Deficiency Syndrome
3TC	- Lamivudine
ANC	- Antenatal Clinic
ART	- Antiretroviral Therapy
ARV	- Antiretroviral
AZT	- Zidovudine
CCC	- Comprehensive Care Center
CD4	- Cluster of Differentiation Antigen 4
d4T	- Stavudine
ERC	- Ethics and Research Committee
HAART	- Highly Active Antiretroviral Therapy
HCWs	- Health Community Workers
HIV	- Human Immunodeficiency Virus
KAIS	-Kenya AIDS Indicator Survey
KDHS	-Kenya Demographic Housing Survey
MCH	- Maternal and Child Health
MTCT	- Mother-to-Child Transmission
NACC	- National AIDS Control Council
NASCOP	- National HIV/AIDS and STD Control Program of Kenya
sdNVP	- Single Dose Nevirapine
PCR	- Polymerase Chain Reaction
PLWHA	- People Living with HIV/AIDS
PMTCT	- Prevention of Mother-to-Child Transmission
SPSS	- Statistical Package for the Social Sciences
STI	- Sexually Transmitted Infections
UNAIDS	- Joint United Nations Programme on AIDS
UNGASS	- United Nations General Assembly Special Session on HIV/AIDS
UNICEF	- United Nations Children's Fund
VCCT	- Voluntary, Confidential Counseling and Testing
VCT	- Voluntary Counseling and Testing
WHO	- World Health Organization

LIST OF TABLES

Table 1: Options for ARV Prophylaxis to prevent HIV Infection in Infants.....	3
Table 2: Estimated magnitude of MTCT in Kenya, 2007	5
Table 3: HIV Prevalence Women age 15-49, by reported Pregnancy status and recent Motherhood. Kenya 2007	11
Table 4: Rates of Transmission Estimation	15
Table 5: Recommendations for initiating ARV Treatment in Pregnant Women based on Clinical Stage and availability of CD4 Count	16
Table 6: Recommended HAART for Pregnant Women based on CD4 Count and Stage of Pregnancy.....	17
Table 7: Number of Pediatric Sites in each Division in Nairobi	27
Table 8: Socio-Economic Profiles of ARV Recipients.....	38
Table 9: A Summary of the available PMTCT Related Services in each Facility Type	39
Table 10: PMTCT Data in the three types of the Health Facilities	39
Table 11: Cross Tabulation of AZT+sdNVP Uptake with Institutional Factors	40
Table 12: Cross Tabulation of AZT+ sdNVP Uptake with Institutional Factors	41
Table 13: Distribution of Responses to FGDs Questions by Themes	Error! Bookmark not defined.

LIST OF FIGURES

Figure 1:	HIV Outcomes of Infants Born to ARV naïve infected.....	6
Figure 2:	PMTCT Scale up by Regimen, 2007	7
Figure 3:	Conceptual Framework.....	9
Figure 4:	Trends in antenatal clinics of mothers using counseling services and taking antiretroviral drugs.....	14
Figure 5:	Diagrammatic representation of the multi-stage sampling	30
Figure 6:	Diagrammatic representation of the data collection	32
Figure 7:	Level of Training of Health Workers on ARV Prophylaxis.....	42
Figure 8:	Knowledge Level on the available Efficacious Prophylaxis Regimen as recommended by Kenya National PMTCT Guidelines	43
Figure 9:	Knowledge Level on ARV Prophylaxis administration to the Clients.....	43
Figure 10:	Frequency at which the Health Facilities Run Out of PMTCT Supplies.....	44
Figure 11:	ARV Prophylaxis Dispensing Points.....	44
Figure 12:	Specific Awareness on the ARV Prophylaxis Regimen before attending ANC for HIV Counseling and Testing	45
Figure 13:	Specific Awareness on the ARV Prophylaxis Regimen after receiving HIV Counseling and Testing.....	46
Figure 14:	Proportion of HIV Positive Mothers who received any of the ARV Prophylaxis...	46
Figure 15:	Proportion of HIV Pregnant Mothers that received the ARV prophylaxis compared with their marital status.....	47
Figure 16:	Support accorded to HIV Positive Mothers	48

DEFINITION OF OPERATIONAL TERMS

Human Immunodeficiency Virus (HIV) is a retrovirus that can lead to acquired immunodeficiency syndrome (AIDS), a condition in humans in which the immune system begins to fail, leading to life-threatening opportunistic infections.

Acquired Immunodeficiency Syndrome (AIDS): The active pathological condition that follows the earlier, non-symptomatic state of being HIV positive.

Mother-to-child transmission: Transmission of HIV to a child from an HIV-infected woman during pregnancy, delivery or breastfeeding.

PMTCT : refers to prevention of mother-to-child transmission. Is a commonly used term for interventions designed to reduce the risk of mother-to-child transmission (MTCT) of HIV.

Antiretroviral drugs are medications for the treatment of infection by retroviruses, primarily HIV. They include; Zidovudine (AZT), Lamivudine (3TC), Stavudine (d4T), Nevirapine, Highly Active Antiretroviral Therapy (HAART).

ARV Treatment: long-term use of antiretroviral drugs to manage client's HIV/AIDS and prevent MTCT.

ARV prophylaxis: short-term use of antiretroviral drugs to reduce HIV transmission. For instance, sdNVP, sdNVP-AZT, HAART (sdNVP+AZT/3TC).

HAART - Highly Active Antiretroviral Therapy (sdNVP+AZT/3TC).

Uptake of ARV – Proportion of HIV pregnant women who received ARV prophylaxis for the last one year.

Number of the HIV positive women taking ARV prophylaxis in a health facility

=

Estimated Number of HIV positive pregnant women in the population of the catchment area

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.1 Introduction

HIV remains a global health problem of unprecedented dimensions. Unknown 27 years ago, HIV has already caused an estimated 25 million deaths worldwide and has generated profound demographic changes in the most heavily affected countries (UNAIDS 2008).

In some countries in Asia, Latin America and sub-Saharan Africa, the annual number of new HIV infections is falling. The estimated rate of AIDS deaths has also declined, in part as a result of success in expanding access to antiretroviral drugs in resource-limited settings. Yet these favorable trends are not uniformly evident, either within or between regions, underscoring the need for more comprehensive progress in implementing effective policies and programmes (UNAIDS 2008).

An estimated 1.9 million [1.6 million–2.1 million] people were newly infected with HIV in sub-Saharan Africa in 2007, bringing to 22 million [20.5 million–23.6 million] the number of people living with HIV. Two thirds (67%) of the global total of 33 million [30 million–36 million] people with HIV live in this region, and three quarters (75%) of all AIDS deaths in 2007 occurred there (UNAIDS 2008).

The Kenya Demographic and Health Survey (KDHS, 2003) estimates that 1.2 to 1.5 million people in Kenya between the ages of 15 to 49 years are infected by HIV.

HIV/AIDS continues to have an increasing impact on the health and welfare of families worldwide. About 90% new pediatric HIV infections occur through mother to child transmission. Therefore interventions aimed at preventing mother to child transmission of HIV remains critical in averting the number of new pediatric HIV infections.

PMTCT programs can and should begin with strengthening existing sustainable strategies, including pregnancy prevention through contraceptive services, quality antenatal care, strengthened postpartum care, and promotion of safer infant feeding for all mothers and their infants. Where feasible, pre-pregnancy and antenatal voluntary, confidential counseling and testing (VCCT) for HIV should be established. Antiretroviral drugs (ARVs), elective cesarean section, and formula feeding should be considered in settings where these are truly feasible, but should not be the driving interventions around which all funding and programs for PMTCT revolve (Pathfinder International 2003).

The use of ARV prophylaxis has been recognized by Kenya National PMTCT programme as one of the core PMTCT interventions. ARV prophylaxis entails short-term use of antiretroviral drugs to reduce HIV transmission from an infected individual to an exposed individual. Ninety percent of Kenyan women receive antenatal care from a doctor or a nurse/midwife. Therefore, antenatal clinics provide a window of opportunity to target mothers for PMTCT (KDHS 2003). Mobilizing the mothers to seek antenatal services at the earliest opportunity becomes a central theme of the communication strategy. The strategy should focus on increasing awareness, knowledge and motivation for mothers and fathers in seeking to know their status.

Newer studies have shown that combining the AZT protocols and NVP and earlier initiation of AZT at 28 weeks of gestation have all resulted in improved prevention of MTCT of HIV. While recognizing the need for short-course prophylaxis, new recommendations from WHO (2004) emphasize longer, combination prophylaxis regimens, where feasible (Pathfinder International 2003).

For prophylaxis the recommendations are ranked and will depend on time of first contact with the woman. HIV-infected pregnant women who are not eligible for ART or in whom it is not possible to start ART immediately and the mother is being seen between 28 and 38 weeks of pregnancy, should be started on recommended more efficacious short course prophylactic ARV regimens as shown in Table 1. The baby should also be given ARV prophylaxis soon after birth as shown in the same table. The regimens as outlined in Table 1 are for prophylaxis and not for treatment.

Table 1: Options for ARV prophylaxis to prevent HIV infection in infants

Options	Time of Administration			
	Pregnancy	Labour	Postpartum	
			Maternal	Infant
Recommended	AZI(28-38 <u>weeks</u> <u>gestation</u>)	sdNVP + AZT/3TC	AZT/3TC X 7 days	sdNVP PLUS 3TC X1 week + AZT X 6 weeks
Alternative	AZT(28-38 <u>weeks</u> <u>gestation</u>)	sdNVP + AZT (600 mg stat)	-	sdNVP PLUS 3TC X1 week + AZT X 6 weeks
Minimum	-	sdNVP + AZT/3TC	AZT/3TC X 7 days	sdNVP PLUS 3TC X1 week + AZT X 6 weeks
Dosages:				
	Mother	Baby		
NVP	200 mg stat	2mg/kg stat within 72 hours		
AZT	300 mg BID	4mg/kg BID X 4 weeks		
3TC	150 mg BID	4mg/kg BID X 1 week		

Source: *Guidelines for Prevention of Mother to Child Transmission (PMTCT) of HIV/AIDS in Kenya (3rd Edition, 2008)*

PMTCT service uptake depends on several factors including; Socio-cultural and institutional factors. The study aims to determine the factors affecting uptake of short course zidovudine (AZT) and single dose NVP regimen amongst HIV positive pregnant women in Nairobi Kenya.

1.2 Background Information

The most important approach for avoiding mother-to-child transmission of HIV is still the primary prevention of HIV infection in young women through education, counseling, STD treatment, condom use and prevention of unintended pregnancies among those infected with HIV, within the scope of comprehensive multisectoral HIV/AIDS control programmes.

Global estimates reveal that 46% of all infections occur in women of childbearing age, giving testament to the increasing feminization of the epidemic. Globally only 10% of women giving birth annually are counseled and tested for HIV and only 9% of HIV positive women in those countries received ARV preventive treatment for PMTCT (UNAIDS 2008). HIV infection in women negatively impacts not only the quality of life of these women, but has dire consequences for their children.

Current evidence suggests that unlike in adults, HIV infected children follow a more aggressive course of illness, with 30 percent of children dying by age one and 50 percent by age two (Marie-Louise Newell et al 2004). HIV infection continues to ravage hard won child survival gains, contributing to 3% of under-five mortality in 2005 (WHO 2005).

In Africa as a whole, the proportion of under five mortality attributable to HIV increased to 6 % and to above 20% in certain parts of Sub-Saharan Africa (UNICEF 2007). The majority of these deaths could be avoided through proven interventions such as early diagnosis and timely provision of effective care, treatment and support. In numerous countries of eastern and southern Africa, 30% of pregnant women are HIV positive, up to 10% of all infants here are born with HIV or acquire it from breast milk within the first weeks and months of life (UNICEF 2007).

Kenya National AIDS/STI Control Programme (NASCO) estimates that there were 1.2 million babies born in 2006 in Kenya and that as many as 9% of pregnant women in Kenya were living with HIV/AIDS. At least 50,000 to 60,000 infants in Kenya were thought to have been infected with HIV as a result of MTCT that year. With an estimated population of 37.2 million in the year 2007, the number of births in 2007 was 1.73 million. With an HIV prevalence of 6.7%, the number of HIV - exposed babies is 114,101 and at least 45,640 HIV-positive babies are born, assuming a 40 % transmission (Kenya National PMTCT guideline, June 2008).

Table 2: Estimated magnitude of MTCT in Kenya, 2007

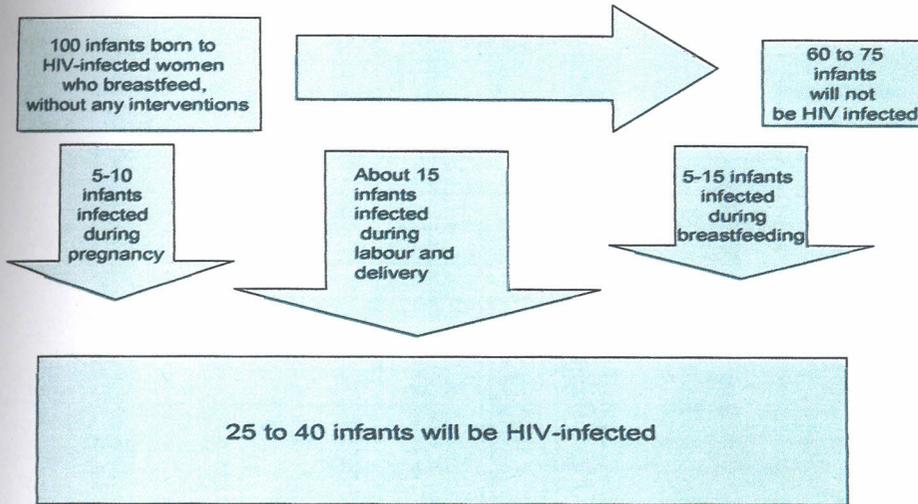
Population (Estimates 2007)	37.2 million
Births per annum	1.73 million
HIV prevalence in Mothers	6.7%
Total number of births to HIV-infected mothers exposed to MTCT assuming no multiple pregnancy	141,101
Number of HIV positive infants per annum in Kenya assuming 40% transmission	45,640

Source: Guidelines for Prevention of Mother to Child Transmission (PMTCT) of HIV/AIDS in Kenya (3rd Edition, 2008)

In Kenya, an estimated 40,000 to 50,000 infants are infected with HIV annually due to mother-to-child transmission. This can occur in utero, during labour and delivery and through breastfeeding. During pregnancy, about 5 to 8 percent of HIV-exposed babies become infected through transmission across the placenta. Labour and delivery poses the greatest risk for transmission with 10 to 20 percent of exposed infants becoming infected at this time.

Breastfeeding also exposes infants to HIV. When mothers breastfeed for 18 to 24 months another 10 to 15 percent of infants become infected. Thus, in non-breastfeeding populations, without antiretroviral treatment, approximately 15 to 30 percent infants will become infected; with prolonged breastfeeding, 25 to 45 percent infants will become infected.

Figure 1: HIV Outcomes of Infants Born to ARV Infected Mothers



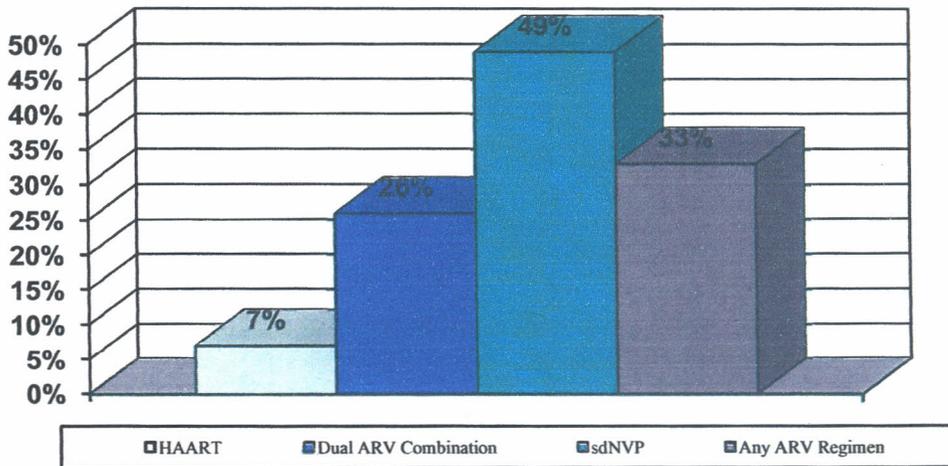
Source: WHO, PMTCT—Generic Training Package Trainer Manual, 2008

ARV prophylaxis is one of the key interventions for the pregnant HIV infected woman. To date the most widely used anti-retroviral (ARV) prophylaxis for the mother and infant is sd NVP as prescribed by the HIV NET 012 trial, Nevirapine 200mg stat for the mother at onset of labor and 2mg/kg for the baby within 72 hours of life/birth. New evidence of more efficacious short course regimens and emergence of NVP resistance has led to the use of combination prophylactic ARV's such as AZT should initiated at 28 weeks of gestation and loading dose at onset of labor with sd NVP together with ARV prophylaxis for the infant and HAART for eligible women. In mothers who present with unknown HIV status to the maternity, pre-delivery and postpartum provider initiated test positive women is offered and ARV prophylaxis offered to infected women and their infants immediately after delivery if diagnosed before delivery and to infants only for those diagnosed after delivery. Rapid test should be used. Babies of HIV positive women also should receive a prophylactic dose of Nevirapine (2mg/kg) within 72 hours of birth plus one month of Zidovudine 4mg/Kg twice daily.

As of 2007, 33% of all pregnant women living with HIV received any antiretroviral regimen for the prevention-of-mother-to-child transmission (109 countries). From the 60 countries where

disaggregated data by type of regimens were reported, 49% used sdNVP, 26% a combination of two ARVs and 7% combination antiretroviral therapy for their own health.

Figure 2: PMTCT Scale up by Regimen, 2007



Source: Dr Rex Mpazanje, WHO, Kenya, ART & PMTCT, Grand Round for PMTCT, University of Nairobi, 27 -28th Nov 2008

Prevention of new infections including PMTCT is one of the key strategies in the Kenya National HIV/AIDS Strategic Plan and several actions have been taken to strengthen PMTCT. In 1994 PMTCT services were initiated with establishment of pilot PMTCT sites in Nairobi, Karatina and Homa Bay. In 1996 the Kenya Obstetrical and Gynaecological Society (KOGS) spearheaded the development of the first guidelines for PMTCT in the country. In 2000, a National Technical Working Group (TWG) on PMTCT was formed. The TWG, co-chaired by NASCOP and the Division of Reproductive Health, coordinates implementation and provides technical support to the National PMTCT Program. As new PMTCT projects begin, the TWG serves as a forum to update stakeholders and discuss challenges and upcoming activities.

The goal of the National PMTCT Program is in line with the goal set out at the United Nations General Assembly Special Session on HIV/AIDS in 2001 to reduce the proportion of infants infected with HIV by 20% by 2005 and 50% by 2010. In Kenya, the National Program plans to extend PMTCT services to at least 20% of all health facilities by the end of 2005 and to at least

80% by 2007. This massive roll out of PMTCT services aims to meet the National target that “80% of all pregnant women access PMTCT services by 2010” so as to reduce the proportion of infants infected with HIV by 50% in line with the UNGASS 2001 declaration (UNGASS 2001).

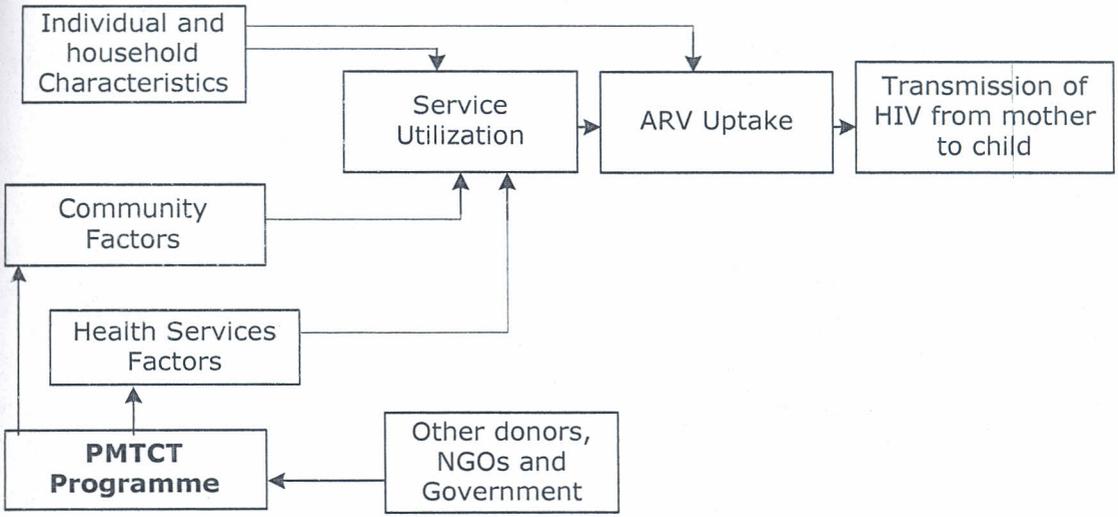
This empathizes on the use of the ARV prophylaxis as a key intervention area in reducing mother to child transmission of HIV. The importance of this is also captured in Kenya National PMTCT Program Goals which are;

- 1 80% ANC women to have access to PMTCT services
- 2 \geq 80% uptake HIV counseling and testing
- 3 \geq 80% uptake of prophylactic ARV
- 4 50% infant HIV infections averted by 2010

In 2000, Government of Kenya through NASCOP then established six pilot PMTCT sites and recommended use of Nevirapine for PMTCT. Since then the number of PMTCT sites have grown steadily from (eleven) 11 sites in 2000 to (two thousand and eighty) 2080 sites in 2007 (2000-11 sites, 2001-23 sites, 2002-34 sites, 2003-154 sites, 2004-463 sites, 2005-1009 sites, 2006-1674 sites and 2080 sites in 2007). The National PMTCT Program was officially launched in 2002 with the introduction of the National Guidelines on the Prevention of Mother to Child Transmission of HIV, with support from partner organizations and in 2003 the National PMTCT Strategic plan (2003-2007) was developed. In the last 4 years the Kenya PMTCT program has been widely rolled out and the number of women counseled and tested in PMTCT programs has increased from 3,432 in 2002 to 637,032 in 2006 (Ayisi 2007).

Figure 3 is a Conceptual framework illustrating causal linkages between the key components of a PMTCT program and the outcomes of interest. For instance, in this example, the program, in addition to other donors, is supplying health services, in order to increase service utilization, with the ultimate outcome of improved health. By identifying the variables that factor into program performance and depicting the ways that they interact, the results that can reasonably be expected from program activities are outlined.

Figure 3: Conceptual Framework



Source: Customized from USAID global health elearning course; *Monitoring and Evaluation Fundamentals*.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction and Scope of the HIV/AIDS Pandemic

HIV stands for human immunodeficiency virus, the virus that causes AIDS. HIV breaks down the body's defence against infection and disease—the body's immune system—by infecting specific white blood cells, leading to a weakened immune system. When the immune system becomes weak or compromised, the body loses its protection against illness. As time passes, the immune system is unable to fight the HIV infection and the person may develop serious and deadly diseases, including other infections and some types of cancer.

There are two types of HIV; HIV-1 and HIV-2. Both types are transmitted the same way, and both are associated with similar opportunistic infections and AIDS. HIV-1 is more common worldwide while HIV-2 is found predominantly in West Africa, Angola, and Mozambique (DeCock *et al* 2000).

The annual number of AIDS deaths has declined in the past two years from 2.2 million [1.9 million–2.6 million] in 2005 to 2.0 million [1.8 million–2.3 million] in 2007, in part as a result of the substantial increase in access to HIV treatment in recent years (UNAIDS 2008). However, in sub Saharan Africa HIV prevalence appears to have stabilized at extraordinarily high levels. Although the number of people on antiretroviral drugs in low- and middle-income countries has risen, most of those who need such therapies are not currently receiving them. Moreover, the epidemic is outpacing the rate at which these drugs are being delivered (UNAIDS 2008). In 2007, the estimated number of new HIV infections was 2.5 times higher than the increase in the number of people on antiretroviral drugs in that year, underscoring the need for substantially greater success in preventing new HIV infections.

Results from KAIS 2007 indicate that 7.4 percent of Kenyan adults age 15-64 are infected with HIV, the virus that causes AIDS. According to this survey, more than 1.4 million Kenyans are living with HIV/AIDS. In 2003, KDHS estimated a prevalence of 6.7 percent among 15-49 year

olds. For the same age group, KAIS estimates that 7.8 percent are infected. A higher proportion of women age 15-64 (8.7 percent) than men (5.6 percent) are infected with HIV according to KAIS 2007. This pattern is similar to what was observed in 2003. This means that 3 out of 5 HIV-infected Kenyans are female.

According to the 2003 Kenya Demographic and Health Survey (KDHS), 7% of Kenyan adults are infected with HIV. Almost 9% of women, compared to 5% of men are HIV-infected. The HIV/AIDS pandemic has had an adverse impact on Kenyan society, both socially and economically. AIDS-related morbidity and mortality among Kenyan adults, and specifically among women, are steadily increasing. AIDS-related mortality rates among children under five years of age are also increasing. An estimated one million AIDS orphans in Kenya require care and support. *All sectors of the economy have suffered with the hardest-hit age group (15 to 49 years) less able, even unable, to contribute to national development.* (Kenya National PMTCT guideline, 2008).

According to KAIS 2007, nearly 1 out of 10 pregnant women in Kenya are infected with HIV (9.6 percent) with minimal differences by urban and rural residence. Rates among women who gave birth in the last 4 years is similar at 9.0 percent. In KDHS 2003, HIV prevalence among pregnant women was 7.3 percent and 8.8 percent among those who were not pregnant or were unsure of their pregnancy status.

Table 3: HIV prevalence women age 15-49, by reported pregnancy status and recent motherhood. Kenya 2007

	Total	Urban	Rural
	% HIV infected	% HIV infected	% HIV infected
Pregnant	9.6	9.8	9.5
	<i>9.2</i>	<i>11.3</i>	<i>8.6</i>
Unsure	7.6	3.0**	8.5
<i>Birth in the last 4 years*</i>	<i>9.0</i>	<i>9.1</i>	<i>8.3</i>
All females (15-49)	9.2	11.1	8.7

*Not exclusive from other categories ** n<25 observations

Source: KAIS 2007

2.2 Mother-to-Child HIV Transmission

In Kenya in 2001, HIV prevalence in urban areas ranged from 11 to 29%, while in rural sentinel surveillance sites, the prevalence ranged from 2 to 31%. Overall, among the urban population the rate averaged 15% while in rural populations the average rate is 12 % (Kenya National Guideline PMTCT 2002).

Mother-to-child HIV transmission (MTCT) is responsible for more than 90% of childhood HIV infections (WHO 2006). Given the number of women of reproductive age living with HIV/AIDS, achieving a decline in the transmission of HIV from mother to child will continue to pose a challenge. The number of infections in children is therefore bound to increase if urgent measures are not put in place. MTCT can take place during pregnancy, labour and delivery and breastfeeding. It is estimated that in the absence of breastfeeding, about 30% of MTCT occurs during pregnancy and 70% during labour and delivery (WHO 2006).

In most sub-Saharan African countries, one-third of paediatric hospital admissions are related to HIV/AIDS. Prevention efforts can slow the spread of HIV. However, pregnant women in countries heavily affected by HIV/AIDS often do not have access to services aimed at preventing mother-to-child transmission (PMTCT) of HIV. Coverage of these and other vital prevention services must be extended as a matter of urgency (WHO 2006).

The prevalence of HIV among pregnant women in Kenya is estimated at 13% (KDHS 2003). Without treatment, when a mother has HIV infection, the risk of transmitting the infection to her child is reported to be 20-42% (Kenya National Guideline PMTCT 2002). Given annual birth rate of 1.2million, without PMCT 50,000 and 60,000 infants become infected with HIV through mother-to-child transmission annually (NACC 2005).

Anti-retroviral drugs work mainly through two mechanisms: i) Reducing the viral load in the mother (a lesser quantity of virus goes to the infant) and ii) Preventing the virus from “fixating” itself in the child (“post-exposure prophylaxis”) (Soucat *et al* 1999).

Recent advances in prevention of MTCT of HIV using short-course antiretroviral drugs have emerged from the recent clinical trials. In 1994, a landmark study conducted by the Pediatric AIDS Clinical Trial Group protocol 076, demonstrated that AZT, given to HIV-infected women who had very little or no prior antiretroviral therapy reduced the risk of MIT by two-thirds, from 25 percent to 8 percent.

The prevalence of HIV infection among pregnant women in Kenya is currently estimated at 13%. This rate of high infection in women aged 15—49 (reproductive age group) coupled with high birth rate translates into an estimated 50,000 to 60,000 children under five years old age infected with HIV per annum. In 2000, about 10% of reported AIDS cases in children were under 5 years of age. 90% of HIV infection in children was due to mother to child transmission (MTCT).

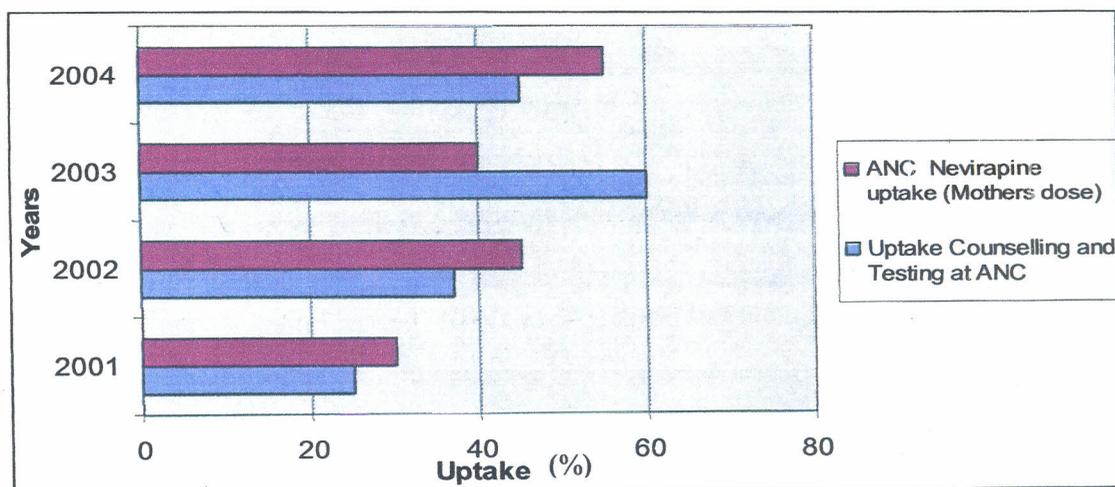
Mother to child Transmission of HIV (MTCT) is a major public health problem. In industrialized countries, MTCT, rates in untreated non-breastfeeding populations have ranged from 14% to 32% whereas rates of 25% to 48% are found in breastfeeding populations in resource poor settings (Wiktor, Ekpini et al. 1997). Africa is home for over 90% of the world HIV-1 infections in babies (UNAIDS 2001).

There are three main periods during which MTCT can take place: 1) intrauterine 2) intrapartum and 3) postnatal due to breastfeeding. A number of studies using early diagnostic techniques of viral culture and polymerase chain reaction (PCR) suggest that over half of MTCT occurs in the intrapartum period (Ahmed, Clemens et al. 1992; Bryson, Luzuriaga et al. 1992; Burgard, Mayaux et al. 1992; Krivine, Firtion et al. 1992; Mofenson 1997). These techniques are rarely available and in most cases children have to wait for 18 months before they can be tested using antibody-based procedures such as the enzyme linked immunosorbent assay (ELISA). The distinction between the different times when a foetus can get infected is important in guiding implementers of PMTCT programmes. According to Bryson et al. non-breast fed neonates who test positive for HIV-1 by culture or by polymerase chain reaction in the first 48 hours are considered to have acquired the infection in utero and those who test HIV-1 negative at birth but positive between 2-6 weeks are considered to have acquired the infection either in the late

intrauterine period, intrapartum or early postpartum period (Bryson, Luzuriaga et al. 1992). However, this definition makes no distinction between late intra-uterine and intrapartum transmission as well as intrapartum and early postpartum transmission in breast-feeding populations. Due to the closeness of this period, distinguishing them becomes very difficult and therefore their distinctions remain ill defined. It is estimated that in the absence of breastfeeding, about 30% of MTCT occurs during pregnancy and 70% during labour and delivery (Simono, Lepage et al. 1994; Bertolli, St. Louis et al. 1996; Mock, Shaffer et al. 1999). The current review of information on the timing against the rates of transmission still confirms that 70% occur in the intrapartum phase. Table 4 gives a breakdown of the rates of transmission

To implement PMTCT services widely, a large number of obstacles must be overcome. Many women who have access to antenatal care do not agree to be tested for HIV. Acceptance of testing at sites varies from 25% to 95%, with an average of approximately 65%. Lack of male involvement and stigma regarding HIV remain significant barriers to accepting these services. Due to various reasons including failure to return to the clinic at the appropriate time and shortage of drugs, only half of HIV infected women receive nevirapine tablet.

Figure 4: Trends in antenatal clinics of mothers using counseling services and taking antiretroviral drugs



Source: AIDS, in Kenya. Trends, Interventions and Impact. Seventh Edition, 2005. Ministry of Health.

Table 4: Rates of Transmission Estimation

Timing	Rate of Transmission (%)
During Pregnancy	5 to 10
During Labor and delivery	10 to 20
During Breastfeeding	5 to 20
Overall without breastfeeding	15 to 30
Overall with breastfeeding < 2 Months	25 to 35
Overall with breastfeeding > 2 Months	30 to 45

Source: de Cock, JAMA 2000 (DITRAME 1999; Miotti, Taha et al. 1999; De Cock, Fowler et al. 2000; Nduati, John et al. 2000)

Source: *Guidelines for Prevention of Mother to Child Transmission (PMTCT) of HIV/AIDS in Kenya (3rd Edition, 2008)*

In an effort to monitor access and quality several guidelines and indicators have been developed.

PEPFAR indicators reference guide 2007 outlines the PMTCT program indicators as follows:

- 1 Number of service outlets providing the minimum package of PMTCT services according to national and international standards
- 2 Number of pregnant women who received HIV counseling and testing for PMTCT and received their test results
- 3 Number of pregnant women provided with a complete course of antiretroviral prophylaxis in a PMTCT setting
- 4 Number of health workers trained in the provision of PMTCT services according to national and international standards

2001 UNGASS Declaration of Commitment on HIV/AIDS has stated the PMCT indicators used to determine program success namely:

1. HIV counseling and testing- Number of pregnant women giving birth, receiving ANC, testing and counseling for HIV
2. ARV prophylaxis for women and infants

Short course efficacious ARV drug regimens can reduce the risk of MTCT to 2-4 percent and can be implemented in resource-limited settings on a population-based public health scale. ARVs are used both for the treatment of HIV disease and for PMTCT in HIV-infected pregnant women

and their neonates. Antiretroviral treatment (ART) for women, who qualify for it, prolongs and improves the quality of their lives. The survival of the child is closely interlinked with the health and survival of the mother. Women eligible for ART should be started on treatment as soon as possible. Pregnancy is not a reason to delay ART. Women who are already on ART before becoming pregnant should continue with their treatment. In certain situations, modifications may be needed to make treatment safer for the mother and the unborn baby (Guidelines for Prevention of Mother to Child Transmission of HIV/AIDS in Kenya, 2008).

The benefits of using ARVs to treat HIV-infected pregnant women and for PMTCT outweigh the risks. However, when ART or other short course ARV regimens are used, baseline evaluation and monitoring is encouraged to ensure the safety of the mothers and their newborns. Linkages of HIV-infected pregnant women and their children to other care and support programs at health facility and community level should be ensured (Guidelines for Prevention of Mother to Child Transmission of HIV/AIDS in Kenya, 2008).

Table 5: Recommendations for initiating ARV treatment in pregnant women based on clinical stage and availability of CD4 Count

WHO Clinical Stage	CD4 testing not available	CD4 testing available
1 Asymptomatic: Persistent generalized lymphadenopathy	Do not Treat	Treat if CD4 \leq 350 cells /mm ³ Treat if CD4 \leq 350 cells /mm ³
2 Unexplained moderate weight loss (<10% of presumed or measured body weight)	Do not Treat	
3 Unexplained severe weight loss (>10% of presumed or measured body weight)	Treat	Treat irrespective of CD4 count. (consider CD4 values for better management)
4 Severe HIV/AIDS	Treat	Treat irrespective of CD4 cell count

Source: Anti retroviral drugs for treating pregnant women and preventing HIV infection in infants. Guidelines on care, treatment and support for women living with HIV/AIDS and their children in resource-constrained settings, 2005.

Table 6: Recommended HAART for Pregnant Women based on CD4 Count and Stage of Pregnancy

CD4 Count	HAART/Trimester		
st 1 Trimester	nd 2 Trimester	rd 3 Trimester	
<250	AZT+3TC+NVP	AZT+3TC+NVP	AZT+3TC+NVP
250-350	AZT+3TC+LPV/r OR AEC+3TC+LPV/r	AZT+3TC+LPV/r OR ABC+3TC+LPV/r	AZT+3TC+LPV/r OR ABC+3TC+LPV/r
> 350	AZT+3TC+LPV/r OR AEC+3TC+LPV/r	AZT+3TC+LPV/r OR ABC+3TC+LPV/r	AZT+3TC+LPV/r OR ABC+3TC+LPV/r
Maternal dosages:			
•AZT 300 mg BID. •Z3TC 150 mg BID. •NVP 200 mg OD for two weeks, thereafter 200 mg BID. •ABC 300mg BID •LPV/r(400/100) 2 tablets BID •EFV 600mg QID			
Notes: Important considerations that modify choice of ARVs during pregnancy include CD4 count, maternal anaemia and stage of pregnancy			

A report card on prevention of mother-to child transmission of HIV and paediatric HIV care and treatment in low- and middle-income countries Scaling up Progress from 2004 to 2005) February 2007 indicates that the attainment of the UNGASS 2010 target of reducing infections by 50% by 2010 necessitates that 80% of all pregnant women accessing ANC receive PMTCT services. Based on the assumption that countries are “on track” to meet the target by 2010 if at least 40% of all women living with HIV receive ARV prophylaxis by 2005, few countries were on track. Globally only seven low and middle income countries, with available data, provided ARV prophylaxis to at least 40% of the estimated total number of women living with HIV giving birth in 2005. According to the report Kenya is not one of the Low Income Countries with at least 40% of estimated HIV positive pregnant women receiving ARVs for PMTCT, 2005 and we are on the way missing the UNGASS targets if progress is not stepped up. Kenya has made some progress but insufficient to improve the Coverage of ART Prophylaxis for PMTCT (%), 2005.

Despite the limited access to PMTCT programmes, promising progress was made in 2005 with regards to PMTCT. Of the total estimated number of pregnant women living with HIV, the proportion that received ARV prophylaxis for PMTCT increased from 7% in 2004 to 11% in 2005, more than a 50% increase. The delivery of ARV prophylaxis to infants born to HIV positive women (exposed infants) within existing programmes has been equally challenging. In 2005, 8% (173,180/2,086,793) of all infants estimated to be exposed to HIV received ARV prophylaxis as part of the PMTCT package, up from 5% in 2004. The report further showed that the Percent of HIV positive pregnant women receiving ARV prophylaxis, 2004-2005 in east and southern Africa increased from 9% in 2004 to 14% in 2005 which is still below that UNGASS target of over 80% ARV prophylaxis uptake. Roughly half a million women tested positive for HIV at PMTCT sites in 2005 yet fewer than 50% of these women actually received ARV prophylaxis. Even when women living with HIV are identified and initiated into the health care system, many are being lost along the way. About a quarter of the infants born to women who received ARV are slipping through the cracks of health systems and not receiving the necessary ARV prophylaxis needed at birth. According to the report, about 30% ANC facilities in the East and Southern Africa provided PMTCT services in 2005. The East and Southern Africa region was the sole region to make significant progress of ARV prophylaxis for PMTCT service coverage in 2005. Over 50% more women had access to PMTCT services in 2005 than the year before (9% in 2004 to 14% in 2005). Even though the current unmet need in East and Southern Africa is more than 85% for PMTCT services, many countries have made significant leaps in service uptake from 2004 to 2005. The number of HIV exposed children who were given ARV prophylaxis at birth in East and Southern Africa significantly increased in 2005 from 6% to 11%.

Study done by Nduati *et al*, (2004), showed that none of the health facilities were able to provide the essential antenatal care package largely because of short supply of essential consumables and the clients' inability to pay for the services. The MCH and maternity universally did not have any private space to be used for counseling. The staff at all 4 District hospitals initiated PMTCT after receiving the necessary training, however uptake of testing was only 20% in the sites where there was poor staffing compared to 50% in the better-staffed units because of frequent stock-outs of supplies and staff. The study showed that training of health workers on PMTCT and provision of HIV test kits and NVP is not adequate preparation for up-scaling PMTCT.

A Study by Kindyomunda *et al* (2003) depicts some of the challenges facing effective PMTCT scale up to include inadequate physical infrastructure, lack of human capacity, inadequate and inconsistent delivery of drugs and supplies, limited community mobilization & follow-up, and high stigma levels

According to the Regional Ministerial Review Conference on Implementation of the Dakar/Ngor Declaration and the Programme of Action of the International Conference on population and Development, (2004), African Governments continue to face inadequate human resources coupled with high staff turnover and financial resources and poor or inadequate institutional capacities affect the implementation of national programmes.

Alexander *et al* (2007), suggests stock-outs of HIV test kits and/ or Nevirapine (tablets or syrup) within the health units as causing missed opportunities. This is made worse by little involvement of the male partners and other family members (e.g. mothers in-law or the aunts), who are the key decision makers when it comes to delivery plan. Shortages of human resources for health coupled with the constant reshuffling of staff within the health unit, transfer out to other health units or migration leaves providers that have no proper orientation/knowledge on the subject. This therefore creates a gap in the ability of the unit to provide the service. In Uganda only 47% of Ugandans live within 5Km of any health facility and only 25% of deliveries take place in a health facility. These two parameters greatly affect the uptake of PMTCT especially the prophylactic Nevirapine. The uptake for counseling and testing is much higher since this is provided outside the health unit setting e.g. during outreaches or Home to Home counseling and testing. Disintegration of service provision causing many missed opportunities for example HIV counseling and testing can only occur in the outpatient/ ambulatory services yet there are mothers who come to the health facility just for delivery and the Nevirapine tablets and syrup are only found in labor wards. More still ART in many health units is provided in specific areas which are in most cases far from the Antenatal clinic.

There are other client related challenges that include low level of awareness and knowledge, leading to low utilization of services. These challenges are similar to those reported in the national report, most of which are related to Weaknesses of the health system.

Fowler *et al*, (2007), concludes that Prevention of mother-to-child transmission (PMTCT) of human immunodeficiency virus (HIV) in the United States and Europe has been a tremendous success, such that transmission rates of less than 2% have been achieved. Some key successes have also been demonstrated in resource-poor countries. However, the translation of successful interventions into public health policy has been slow because of a variety of factors such as *inadequate funding and cultural, social, and institutional barriers*.

Tembo (2006), noted that in the Ministry of Health some of the challenges facing PMTCT scale up include health workers not positive to the programme, increased workload, limited resources – human and financial, motivation of PMTCT staff, messages by health workers given to mothers about infant feeding options are inconsistent, withdrawal of the supply of Infant Formulae at the PMTCT sites, supervision from district and national levels inadequate at the PMTCT sites, lack of physical infrastructure and Stigma.

According to Tembo (2006), despite the impressive efficacy of the short-course PMTCT regimens in research clinical trial settings, the translation into public health policy in resource-limited international settings has been disappointingly slow due to a variety of factors including weak and crumbling health care infrastructure in some settings, lack of integration of PMTCT programs into maternal child health services, limited donor funding support, PMTCT drug and HIV test kit stock outs and the fact that many women in resource limited settings deliver at home or outside medical facilities in which PMTCT services are available.

A Study by Fishkin *et al* (2006) suggests that although simple, inexpensive drug regimens for PMTCT are available, there are still barriers to widely implementing and national scaling up of these regimens because of inadequate funding, socio-cultural, and institutional barriers. Currently it is estimated that less than 10% of HIV-infected women in sub-Saharan Africa receive any antiretroviral during pregnancy or delivery

Many studies have been done on the best practices in delivering and scaling up PMTCT services. Tembo (2006), Ministry of Health mentions some of the best practices in PMTCT include most

sites had staff recruited, all sites integrated PMTCT within ANC and other health care service delivery, most mothers come for pre-test counseling, training of HCWs in PMTCT, motivation of mothers (e.g. provision of ARVs, food supplements), reduced waiting time, treatment of opportunistic infections, involvement of male partners, confidentiality, active follow up / monitoring, availability of coordination committees, regular support supervision from districts, private sectors when involved can provide better services, PMTCT work plan integrated into district work plan and most HIV positive mother delivering at health facility.

Farquhar *et al* (2004) showed that partner participation in VCT and couple counseling increased uptake of interventions to prevent HIV-1 transmission. These data support antenatal couple counseling as a strategy to reduce perinatal HIV-1 infection risk in developing countries. Furthermore, Homsy *et al* (2006) found that intrapartum health card technology may be an acceptable and feasible way to increase individual and couple participation in PMTCT interventions.

Perez *et al* (2006) noted that 79% would accept HIV testing if opt-out testing was introduced and this would significantly increase the uptake of PMTCT services.

Partner involvement is critical in increasing PMTCT service uptake. Homsy *et al* (2007) found out that the need for partner consent is a main reason for opting out of routine HIV testing for prevention of mother-to-child transmission in a rural Ugandan hospital.

Malonza *et al* (2003) noted that rapid HIV-1 testing significantly increased the proportion of women receiving HIV-1 results, which is important for sexual and perinatal HIV-1 prevention.

A study by Tembo 2006, Ministry of Health showed that some of the best practices in PMTCT include staff recruitment, integrating PMTCT within ANC and other health care service delivery, mothers coming for pre-test counseling, training of HCWs in PMTCT, motivation of mothers through provision of ARVs, food supplements, replacement feeds to infants, reduced waiting time, treatment of opportunistic infections and involvement of male partners improved service delivery. Provision of PMTCT services free, maintaining confidentiality and availability of

coordination committees as well as regular support supervision from districts. Furthermore integrating PMTCT work plan into district work plan and encouraging HIV positive mothers to deliver at Health Facility would increase PMTCT service uptake. Adequate staffing of delivery wards is crucial and critical for enhanced PMTCT. It was noted that enhanced PMTCT in labour and delivery settings is feasible and labour ward based strategies target women at multiple points in the PMTCT cascade. Supply of essential items like test kits, refrigerators, cabinets, register books, forms to make sure that service providers are well equipped.

Best Practices in delivery of PMTCT services (PEPFAR, 2008), notes that mother to mother support provides enabling environment to the woman to share experiences and concerns so as to increase utilization of the PMTCT services.

Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings (Branson *et al* 2006) emphasizes that HIV screening should be included in the routine panel of prenatal screening tests for all pregnant women unless the patient declines (opt-out screening). This further reduces perinatal transmission of HIV by fostering earlier detection of HIV infection. Perinatal transmission rates can be reduced to <2% with universal screening of pregnant women in combination with prophylactic administration of antiretroviral drugs.

According to Kenya Demographic Health Survey and Behavioral Surveillance Survey (2003), 70% of the Kenyan population knows about mother to- child transmission of HIV. About 2/3 in both surveys knew that HIV can be transmitted through breastfeeding. However, knowledge of specific actions that mothers could take to prevent mother to child transmission was low, and less than 1/3 of respondents in all age groups suggested that medications could reduce transmission of HIV from mother to infant. Therefore dealing with incomplete knowledge of ways to reduce mother to child transmission remains an important challenge for national PMTCT program.

CHAPTER THREE

STATEMENT OF RESEARCH QUESTION

3.1 Research Problem

The high rate of HIV infection in women aged 15—49 (reproductive age group) in Kenya coupled with high birth rate translates into an estimated 50,000 to 60,000 children under five years old age infected with HIV per annum.

Kenya National AIDS/STI Control Programme (NASCO^P) estimates that there were 1.2 million babies born in 2006 in Kenya and that as many as 9% of pregnant women in Kenya were living with HIV/AIDS. With an estimated population of 37.2 million in the year 2007, the number of births in 2007 was 1.73 million and an HIV prevalence of 6.7%, therefore the number of HIV-exposed babies is 114,101 and at least 45,640 HIV-positive babies were born, assuming a 40% transmission rate (Guidelines for Prevention of Mother to Child Transmission of HIV/AIDS in Kenya, 2008).

Short course efficacious ARV drug regimens can reduce the risk of MTCT to less than 10 percent and can be implemented in resource-limited settings on a population-based public health scale. Such intervention is initiated at around 28 weeks of gestation, or soon after, and stopped after birth if CD4 count is still above 350 cells/mm³. On average mother-to-child transmission rates are 15% for sdNVP, 6.5% for more efficacious dual regimens and 2.4% for 3-drug ARV combination. (Guidelines for Prevention of Mother to Child Transmission of HIV/AIDS in Kenya, 2008).

NASCO^P programme data has shown that Nevirapine uptake by HIV infected pregnant women for MTCT as the most common type of ARV Prophylaxis regimen which is estimated at 62% uptake in Kenya. In Nairobi the Nevirapine uptake by the HIV infected pregnant women is 78%. This type of regimen reduces HIV transmissions from mother to child by 50%. AZT+sdNVP regimen which can reduce the MTCT to 6.5% has been very low and the AZT+sdNVP

programmatic uptake has been stated to be at 30% using 1000 sites out of 3000 PMTCT sites (Ayisi, 2007).

If this efficacious dual regimen uptake improved to almost the same level as single dose Nevirapine, mother to child transmission of HIV would be greatly averted. However, timing and the frequency of antiretroviral prophylaxis uptake by the HIV positive pregnant mothers in Kenya is variable and may be with a range of socio-economic, cultural, demographic and institutional factors. Therefore the research question investigated was: what are the factors affecting AZT+sdNVP uptake amongst HIV positive women in Nairobi.

3.2 Justification

Mother to child transmission (MTCT) of HIV is of major area of concern and action in Kenya, where at least 50,000-60,000 infants become HIV infected each year due to MTCT of HIV. This is despite Kenyan's Ministry of Health, through NASCOP, taking several actions to expand and strengthen the quality of PMTCT interventions in the country. ARV prophylaxis remains one of the core interventions in averting new pediatric HIV infections. The national PMTCT program target is to have over 80% ARV prophylaxis uptake and to use more efficacious regimen that have about 80% efficacy compared to single dose nevirapine with efficacy of 50%. Recent evidence strongly supports the use of combination regimens, especially AZT+sdNVP, to achieve a more dramatic reduction in perinatal transmission of HIV.

Early diagnosis of HIV is instrumental to planning the prophylactic ARV regimen to be given to the HIV infected pregnant women. This type of regimen requires the pregnant women to start at 28 weeks of gestation.

Therefore the study determined the factors affecting uptake of AZT+sdNVP Prophylaxis amongst HIV positive pregnant women and established the association of the uptake of this efficacious prophylaxis regimen and the selected factors affecting uptake of AZT+sdNVP prophylaxis amongst HIV positive pregnant women.

3.3 Objectives

General Objective

To determine the factors affecting uptake of efficacious regimens of ARV prophylaxis for prevention of mother to child HIV transmission (PMTCT)

Specific Objectives

1. To determine the level of uptake of efficacious AZT+sdNVP regimen amongst HIV positive pregnant women in the sampled health facilities
2. To describe the factors affecting uptake of AZT+sdNVP prophylaxis amongst HIV positive pregnant women
3. To recommend strategies for scale up of AZT+sdNVP prophylaxis regimen for HIV positive pregnant women.

3.5 Research Question

What are the factors affecting the uptake of AZT+sdNVP prophylaxis amongst HIV positive pregnant women in Nairobi?

CHAPTER FOUR

METHODOLOGY

4.1 Study Design

This was a cross-sectional study that sought to gain understanding on barriers to uptake of the AZT+sdNVP regimen and to determine whether the barriers to uptake may be specific to the selected factors of the study.

4.2 Variables

Dependent Variable

1. **Antenatal mother AZT+sdNVP regimen uptake:** Proportion of known HIV infected pregnant women in antenatal clinic who received AZT+sdNVP prophylaxis.

Numerator: Total number of HIV-infected pregnant women in antenatal clinic receiving mother AZT+sdNVP regimen prophylaxis.

Denominator: Total number of pregnant women who are HIV-infected in the antenatal clinic.

Independent variables

1. Level of training of health workers on ARV prophylaxis
 - Proportion of Trained staff providing the services
 - Level of knowledge of the trained staff in AZT+NVP regimen service delivery
2. PMTCT supplies in the health facilities
 - Availability of ARV tablets (sdNVP/AZT)
 - Availability of syringes complete with needles
 - Availability of HIV rapid test kits
 - Availability of lancets for finger pricking
3. ARV prophylaxis dispensing points
4. Socio-economic characteristics of ARV recipients
5. Level of awareness of HIV positive mothers on ARV prophylaxis
6. Psycho-social support to HIV positive mothers to take ARVs prophylaxis

4.3 Study Area

Nairobi province is one of eight provinces in Kenya. It shares common boundaries with Nairobi city, the capital of Kenya, but functions as a state unit. The province differs in several ways from other Kenyan provinces. The province is the smallest in area and is entirely urban. It has only one local authority, Nairobi City. Nairobi Province was not divided into district until 2007, when three districts were created; Nairobi East, Nairobi South and Nairobi West. The province is further divided into "divisions" which are further divided into "locations".

Nairobi province has eight constituencies, which follow same boundaries with administrative divisions (which is not the case on most districts in Kenya). Constituency name may differ from division name, such that Starehe constituency is equal to Central division, Langata Constituency to Kibera division, Kamukunji constituency to Pumwani Division in terms of boundaries.

Administrative divisions of Nairobi

Nairobi is divided into eight divisions and fifty locations, mostly named after residential estates. Kibera Division, for example, includes Kibera (Kenya's largest slum) as well as affluent estates of Karen and Langata. The location and corresponding populations are presented in appendix 1. Out of the 85 health facilities that are in Nairobi, 56 health facilities have paediatric sites. Table 6 shows the number of paediatric sites (health facilities that provide services for children) in each division in Nairobi.

Table 7: Number of pediatric sites in each division in Nairobi

Nairobi Province		
No.	Division	No. of paediatric sites
1.	Central	4
2.	Dagoretti	8
3.	Embakasi	9
4.	Kasarani	7
5.	Langatta	11
6.	Makadara	8
7.	Pumwani	2

8.	Westlands	7
	Total	56

Source: *NASCOP Database September, 2008*

4.4 Study Population

The study population included health care workers as well as HIV positive mothers attending postnatal clinic in the health facilities in Nairobi (private, public and faith based organizations).

According to Kenya AIDS Indicator Survey Report 2007, the prevalence of HIV in Nairobi province is 9.0% which is the second highest in Kenya after Nyanza province with a HIV prevalence of 15.3%. There is a wide variation between the prevalence in men and women in Nairobi where the prevalence of men is 8% and women is 12.3%. This female-to-male ratio of 1.5 to 1 is higher than that found in other population-based studies in Africa.

Ayisi (2007) notes that pregnant mothers counseled and tested in the year 2006 in Nairobi province were 86187 and the number that tested positive among those tested was 9782 making a PMTCT HIV+ prevalence of 11%. The proportion that received NVP was 78%. The proportion of the women that received AZT+sdNVP regimen was at 30% (National PMTCT grand round, 2008).

Pumwani was also ranked as the best division in Nairobi province in scaling up the PMTCT program in 2006. Nevirapine uptake was highest in Westlands division and lowest in Central division. Below are the inclusion and exclusion criteria. The screening form that was used to recruit HIV positive mothers is in appendix 2.

Inclusion criteria

- 1 Mothers in the reproductive age group (15-49 years)
- 2 Mothers residing in Nairobi for more than 5 years
- 3 Key informants who had worked in Nairobi for at least one year
- 4 Participants who gave informed consent to participate in the study

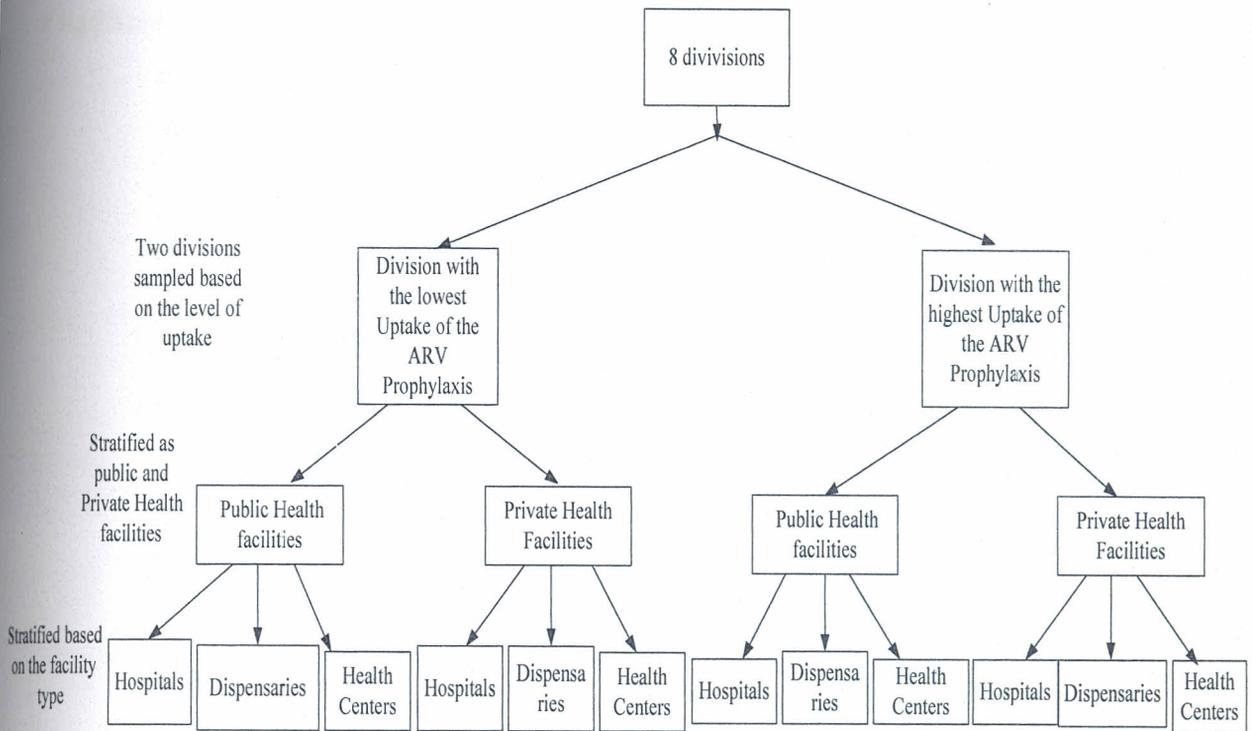
Exclusion Criteria

- 1 Mothers in the age group of less than 15 years and more than 49 years.
- 2 Mothers not living in Nairobi or who had lived in Nairobi for less than 5 years.
- 3 Key informants who had worked for less than one year at the sampled study sites in Nairobi.
- 4 Participants who did not give informed consent to participate in the study.

4.5 Sampling and Sample Size

Multi-stage sampling procedure was used as follows: Out of the 8 divisions in Nairobi, a convenient sampling was used to sample two divisions with the highest and lowest uptake of the ARV prophylaxis according to the recent data from NASCOP, 2008. Health facilities were then sampled from these two divisions. Seventeen health facilities were selected proportionately depending on the number of health facilities available in the selected divisions. The health facilities were first stratified as public health facilities and private health facilities. Further stratification was done as hospitals, health centers and dispensaries. The sampling within each stratum was done using simple random sampling method. All the facilities in the sampling frame were given a 3 digit identifier number which was unique to each health facility. The facilities were not stratified by whether they offer PMTCT services therefore it was expected that the facilities offering and not offering PMTCT services was to be almost equally represented in the random sample. Figure 5 is a diagrammatic representation of the multi-stage sampling procedure that was used.

Figure 5: Diagrammatic representation of the multi-stage sampling



Sampling and sample size for the HIV positive mothers and health workers

The number of HIV positive mothers to be sampled in every health facility was based on the postnatal clinic attendance. Using weighted average the number of HIV positive mothers to be interviewed in the sampled health facilities was determined. All HIV positive mothers who met eligibility criteria were enrolled consecutively till the required numbers of HIV positive women were enrolled.

The identification of HIV positive mothers was done at the postnatal clinics and/or immunization clinics. Mothers attending postnatal clinics and/or immunization clinics were screened to determine if they accessed PMTCT counseling and testing services using ANC cards. The HIV positive mothers were interviewed to determine their awareness level on the use of ARV prophylaxis in Nairobi province.

The size of sample was determined according to the estimated levels of key indicators that were to be assessed. As majority of key indicators were proportions, the size of the sample was

determined using the following formula for prevalence study (Olive Jean Dunn, 1977) at a level of significance of 95% and a precision level of 5%.

$$n \geq \frac{z^2 (pq)}{d^2}$$

Where z is the standard normal deviate corresponding to 95% confidence level (=1.96)

Where d= margin of error, 0.1

Where p = the proportion of women accessing ARV prophylaxis in the province =0.5

Where q = the proportion of women not accessing ARV prophylaxis in Nairobi, 1-P, 1-0.5=0.5

$$n > \frac{1.96^2 (0.5 \times 0.5)}{0.1^2}$$

> 96 HIV positive mothers.

The estimated postnatal clinic attendance by the HIV positive mothers was high and therefore the actual number that was interviewed was 115 HIV positive mothers. Health workers at the antenatal and postnatal clinics were also interviewed.

4.6 Data Collection

The researcher collected data with the assistance of two enumerators. The exercise was started with developing structured questionnaires with suggested questions for each research theme which was customized from the FHI Baseline Tools for Preventing Mother to child Transmission (PMTCT) of HIV (August 2003). See Appendix 3 and 4.

The enumerators were then trained for ten days on the required knowledge and skills for data collection. Enumerators were specifically trained on interview techniques, identifying eligible clients, obtaining informed consent, and administering the questionnaires.

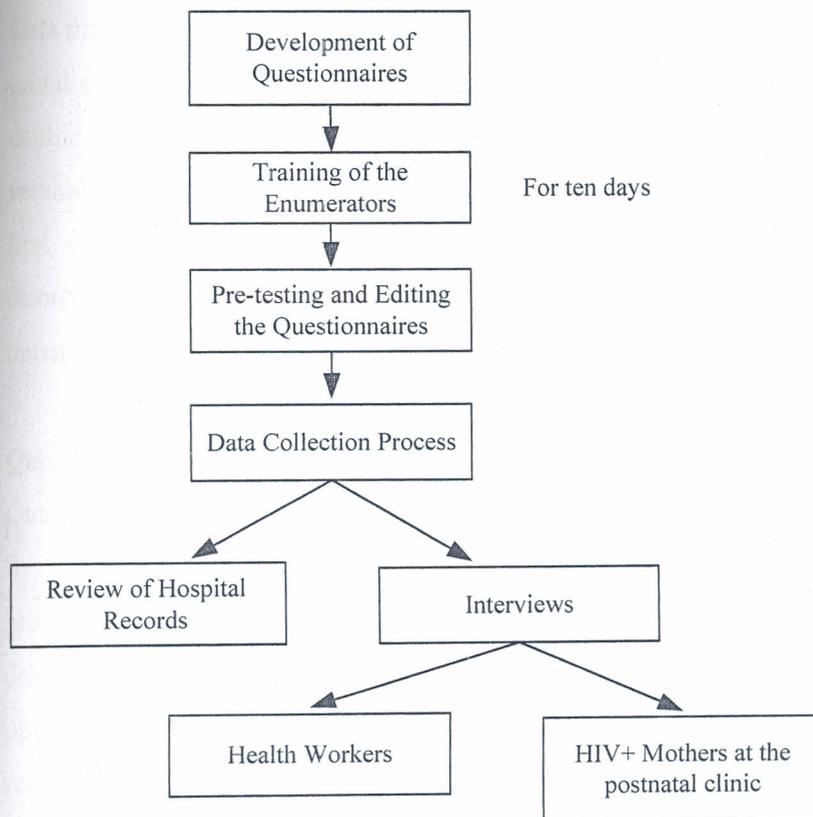
The actual data collection commenced after the questionnaires were pretested and edited to avoid any ambiguity. Data sources included hospital records review at the antenatal clinics to determine the level of uptake of AZT+sdNVP prophylaxis for the last one year in the health

facilities. Interviews for the health workers at the antenatal and postnatal clinics were conducted to determine the status of the selected factors for the study and how they affect the uptake of this prophylaxis regimen.

The fieldwork also included focus group discussions with the HIV positive mother at the postnatal clinics to determine the level of awareness and factors that would have hindered them from taking the ARVs prophylaxis. A well structure guideline that was used for the focus group discussion is found in appendix 5.

An average of 4 health workers were interviewed daily with informed consent until all sampled health workers in the selected health facilities were covered and the interviewer got sufficient information to facilitate analysis of the data obtained.

Figure 6: Diagrammatic representation of the data collection



Focus Group Discussion

Focus group discussions were held with 3 different support groups in Nairobi health facilities and in total the focus groups were 10. The participants were selected at random with the help of

health staff from study health facilities. Each focus group discussion had between 8 and 12 individuals and took from one hour to one and a half hours. A semi-structured interview guide with open ended questions was used to initiate discussion. Screening form was used to recruit focus group participants aged between 15 and 45 years.

The following issues were discussed by the participants: 1. Understanding of transmission of HIV from mothers to babies, 2. Ways in which HIV is transmitted from mother to her child, 3. Ways of preventing MTCT HIV, 4. Knowledge on the ARV Prophylaxis regimens for MTCT, 5. Factors affecting the ARV Prophylaxis regimens uptake 6. Type of help the HIV positive mothers receive from the Community and the health facilities.

4.7 Data Processing and Analysis

Data processing included a number of important steps to prepare the raw data for analysis. The initial steps in data processing included: editing questionnaires prior to data entry, and complete double-data entry of all questionnaire responses to minimize error. Data was entered using SPSS version 13. Once all the data had been transferred to electronic format, data cleaning began. The first step was to ensure 100 percent verification using paper questionnaires to resolve any discrepancies. Next, a series of consistency and range checks were used to identify any unreasonable responses and to verify that responses adhered to skip patterns.

Quantitative data analysis:

Quantitative data was processed, tabulated, and analyzed using SPSS version 13 to generate frequency tables and graphs. The results were presented as descriptive analysis. Data presentation was done using graphic and tabular forms. Chi-square statistics was also used to determine statistically significant association between antenatal mother AZT+sdNVP regimen uptake and different secondary outcome variables. To eliminate confounding that may arise as a result of the type of the health facility, the data was further stratified by the type of the health facility (Hospital, Health center and Dispensary) and determined whether there was an association of antenatal mother AZT+sdNVP regimen uptake and different secondary outcome variables using Chi square test.

Qualitative data analysis:

Qualitative analysis was also used to identify key ideas, differences and similarities, based on what was commonly mentioned in interviews, and testimonies, and supported by direct quotations. Qualitative data with open-ended questions was transcribed, synthesized, coded into relevant thematic categories. Others were description of the state of affairs matters concerning knowledge, attitudes, practices, opinions and culture.

4.8 Minimization of Errors and Biases

The potential errors and biases were minimized by:

- a. Pre-testing of the questionnaires and any ambiguity corrected before the actual collection of data.
- b. Training enumerators so as to make sure that they understood the questions well
- c. Random selection of participants.
- d. The filled questionnaires were edited on a daily basis for completeness and to make sure that the entry is accurate.

4.9 Ethical Considerations

1. Before the commencement of the research study, clearance to carry out the study was sought and obtained from the Kenyatta National Hospital Ethics and Research Committee (KNH/ERC).
2. Exact translation of the consent information was verbally explained to seek consent from the respondents. After the consent was obtained, the respondents signed a consent form. See appendix 6 & 7.
3. Permission was sought and obtained before start of the study from the facility managers and provincial department heads to carry out research at the selected sites and to further access the records of the health facilities and interview the health workers and HIV positive mothers.
4. Attention was paid to anonymity and confidentiality by ensuring that the interviews were anonymous with no names or other identifiers used except for codes to help in analysis of results.

5. The HIV exposed infants were tracked and followed up appropriately as per the national protocol
6. Participation of the clients was on a voluntary basis.

4.10 Limitations and Validity of the Study

Given that the study was based on questionnaires to measure factors affecting uptake of efficacious regimens of ARV prophylaxis for prevention of mother to child HIV transmission, there were several limitations that were bound to arise inherent in selection biasness and non-responsiveness, some of which are highlighted below:

1. The study participants were sampled from two divisions with the highest and lowest uptake of the ARV according to the NASCOP data in 2008. This could have introduced bias because the study did not focus on the other divisions.
2. The study was not able to interview patients who were not in the health facilities and therefore the study focus on the HIV positive women who were at the antenatal clinics and postnatal clinics.
3. Negative perception towards the research. For instance, some HIV positive mothers demanded to be compensated for the information provided since most of the international organizations have been compensating mothers every time they conduct a study.

To further strengthen the study in terms of validity, several steps were undertaken as outlined below: These dealt mainly with recall problems and creating a rapport with the respondents among others.

- a) Due to recall problems and reluctance of respondents to be honest about the information required by the interviewer, the questionnaire may not have been able to properly measure ARV uptake and hence the use of hospital records review to determine the proportion of HIV positive pregnant mothers that took efficacious ARV prophylaxis regimen.
- b) Given the likelihood of patients' reluctance to be truthful about the level of awareness and the type of ARV prophylaxis regimen that they took experienced interviewers (some of whom were

PLWHA and health workers) conducted the interviews. They were able to put respondents at ease, establish a rapport in order to encourage respondents to be truthful about information asked.

c) Additionally the interviewers were proficient in English and Kiswahili as well as a third language in case the respondent preferred it. Employing same language-speakers to interview respondents was meant to elicit the likelihood of more honest responses.

d) Structured questionnaires were used to improve the consistency of the questions during the interviews.

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Results

Introduction

The study population included health care workers as well as HIV positive mothers attending postnatal clinic in the health facilities in Nairobi (private, public and faith based organizations). Multi-stage sampling procedure was used to sample the health facilities for the study. Seventeen health facilities were sampled proportionately depending on the number of health facilities available. The participation from the HIV positive mothers and health workers was above the target. In the sampled health facilities 62 health workers working in the antenatal clinics were interviewed to determine their level of training and knowledge on the efficacious ARV prophylaxis regimen. 115 HIV positive mothers were interviewed to determine ARV prophylaxis awareness.

This section presents a synthesis of the study findings in relation to the study objectives and variables.

Socio-demographic and economic Profiles of ARV Recipients

The findings of the study revealed that majority 64.3% (n=74) of the HIV positive mothers interviewed in the study were married. In terms of the number of children, there was even distribution across the four strata used in the study. Most of the ARV beneficiaries were generally poor as reflected by their monthly income with the highest percentage, 68% (n=78) earned less than 1,000.

Table 8 summaries socio-economic profiles of HIV positive mothers in study health facilities. Among the social economic indicators investigated were marital status, number of children and monthly earning (n=115).

Table 8: Socio-Economic Profiles of ARV Recipients

Socio-Economic Factor	Characteristics	Frequency	Percent (%)
Marital Status	Married	74	64.3
	Unmarried	27	23.5
	Divorced	6	5.2
	Widowed	8	7.0
	Total	115	100.0
Number of children	One child	34	29.6
	Two Children	32	27.8
	Three	30	26.1
	More than 3	19	16.5
	Total	115	100.0
Monthly earning (in Kenya Shillings)	Nil	30	26.1
	Less than 100	16	13.9
	101 - 500	17	14.8
	501 – 1000	15	13.0
	1001- 5000	21	18.3
	5001-10000	14	12.2
	Over 10000	2	1.7
	Total	115	100.0

On the side of health facilities properties, the study findings as indicated in the table 8 showed that hospitals were well equipped with PMTCT related services while health centers lacked essential PMTCT related services. Table 9 shows availability of PMTCT related services stratified according to facility type.

Table 9: A Summary of the available PMTCT Related Services in each Facility Type

PMTCT Related Service		Facility Type			Total
		Hospital (n=4)	Health center (n=11)	Dispensaries (n=2)	
HIV Testing	Yes	4	11	1	17
	No	0	0	1	
CD4 count machine /	Yes	3	3	0	17
Viral load	No	1	8	2	
ARV prophylaxis (NVP) for mother	Yes	4	11	0	17
	No	0	0	2	
ARV prophylaxis AZT and sdNVP for mother	Yes	4	6	0	17
	No	0	5	2	
HAART	Yes	4	5	0	17
	No	0	6	2	

5.1.1 Antenatal Mother AZT+sdNVP Regimen Uptake

Antenatal mother AZT+sdNVP regimen uptake: Proportion of known HIV infected pregnant women in antenatal clinic who received AZT+sdNVP prophylaxis.

Numerator: Total number of HIV-infected pregnant women in antenatal clinic receiving mother AZT+sdNVP regimen prophylaxis.

Denominator: Total number of pregnant women who are HIV-infected in the antenatal clinic.

Table 10 shows the number of HIV + pregnant women that were on ARV prophylaxis and ARV uptake specifically AZT+sdNVP.

Table 10: PMTCT Data in the three types of the Health Facilities

Health Facility	Number of HIV +	Number on ARVs	Number on AZT+sdNVP	ARV Uptake (%)	AZT+sdNVP Uptake (%)
Dispensary	20	4	0	20%	0%
Health Center	651	400	93	61%	14%
Hospital	905	565	154	62%	17%

Table 11 is a cross tabulation of AZT+sdNVP uptake (categorized as <0.4 and 0.4+) with institutional factors.

Table 11: Cross Tabulation of AZT+sdNVP Uptake with Institutional Factors

		AZT+sdNVP Uptake		Total	
		<0.4	0.4+	N	
Health workers Training	Generic Training in HIV counseling and testing (VCT Type) ($\chi^2=0.017;p=0.735$)	Yes	10(62%)	2(13%)	16
		No	3(19%)	1(6%)	
	PMTCT Training including more efficacious regimens ($\chi^2 = 0.837;P=1.000$)	Yes	5(31%)	1(6%)	16
		No	8(50%)	2(13%)	
PMTCT related supplies	- ARV Tablet ($\chi^2 = 0.542;P=1.000$)	Yes	10(63%)	3(19%)	16
		No	3(19%)	0(0%)	
Stock out	ARV syrup ($\chi^2 = 0.342;P=1.000$)	Yes	11(69%)	3(19%)	16
		No	2(13%)	0(0%)	
	Syringes complete with needles ($\chi^2=0.901;P=1.000$)	Yes	12(75%)	3(19%)	16
		No	1(6%)	0(0%)	
	HIV rapid test kit ($\chi^2 = 0.29;P=0.679$)	Yes	13(81%)	3(19%)	16
		No	0(0%)	0(0%)	
	Lancer for Rapid Testing ($\chi^2 = 0.25;P=0.713$)	Yes	13(81%)	2(13%)	16
		No	0(0%)	1(6%)	
ARV Dispensing point	MCH	Yes	2(13%)	4(25%)	16
		No	9(%)	1(6%)	
	CCC	Yes	8(50%)	2(13%)	16
		No	2(13%)	4(25%)	
	Other	Yes	13(81%)	2(13%)	16
		No	0(0%)	1(6%)	

5.1.2 Institutional factors

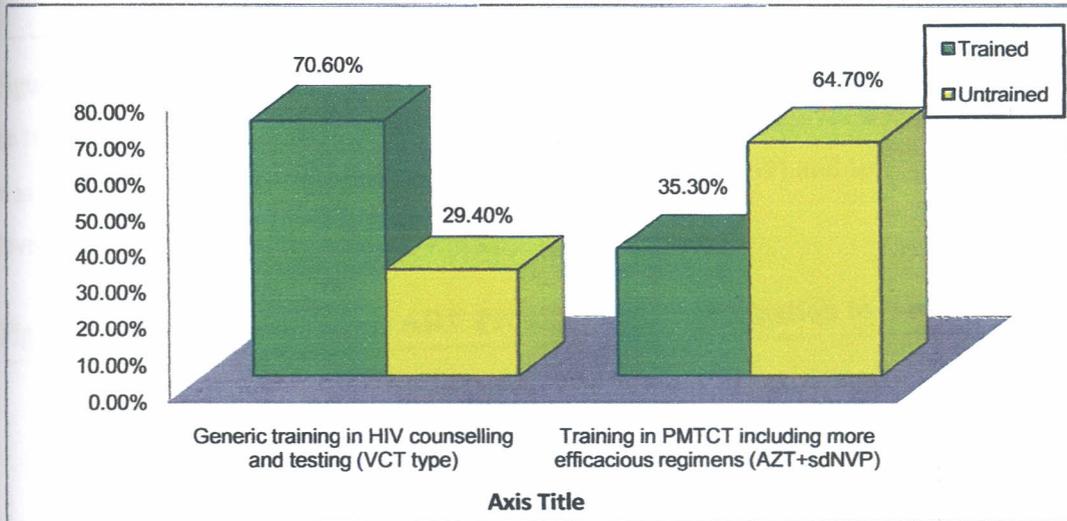
There were significant differences on the level of knowledge that is, between the two health workers who gave a “true” or “false” response and the uptake of ARV prophylaxis ($\chi^2 = 1.642$; $P=0.042$). However there was no statistical difference between the number of trained workers and the uptake of ARV prophylaxis ($P=0.076$). Table 12 shows a summary of institutional factors in different health facility type.

Table 12: Cross Tabulation of AZT+ sdNVP Uptake with Institutional Factors

		Facility Type		Total (N=15)	
		Hospital	Health center		
Health workers Training	Generic Training in HIV counseling and testing (VCT Type) ($\chi^2 = 1.273; P=0.259$)	Yes	4 (27%)	7 (47%)	15
		No	0(0%)	4 (27%)	
PMTCT related supplies	PMTCT Training including more efficacious regimens ($\chi^2 = 0.938; P=1.000$)	Yes	2(13%)	4 (27%)	15
		No	2(13%)	7 (47%)	
Stock out	ARV Tablet ($\chi^2 = 0.62; P=1.000$)	Yes	4 (27%)	9 (60%)	15
		No	0(0%)	2 (13%)	
ARV Dispensing point	ARV syrup ($\chi^2 = 0.39; P=0.692$)	Yes	4(27%)	8 (53%)	15
		No	0(0%)	3 (20%)	
ARV Dispensing point	Syringes complete with needles ($\chi^2 = 0.13; P=0.846$)	Yes	4(27%)	10 (67%)	15
		No	0(0%)	1 (7%)	
ARV Dispensing point	HIV rapid test kit ($\chi^2 = 1.29; P=0.387$)	Yes	4(27%)	11 (69%)	15
		No	0(0%)	0 (0%)	
ARV Dispensing point	Lancet for Rapid Testing ($\chi^2 = 0.934; P=0.188$)	Yes	3(20%)	11 (69%)	15
		No	1(7%)	0 (0%)	
ARV Dispensing point	MCH	Yes	1(7%)	2 (13%)	15
		No	3(20%)	9 (60%)	
ARV Dispensing point	CCC	Yes	2(13%)	4 (27%)	15
		No	2(13%)	6 (40%)	
ARV Dispensing point	Other	Yes	1(7%)	5 (33%)	15
		No	3(20%)	1 (7%)	

Figure 7 shows the level of training on ARV prophylaxis. In study health facilities 70.6% (n=44) of the health workers had undertaken a generic training in HIV counseling and testing (VCT type) and 35.3% (n=22) had undertaken training in PMTCT including more efficacious regimens (AZT+sdNVP).

Figure 7: Level of Training of Health Workers on ARV Prophylaxis



A majority of the respondents (Fig 8) answered correctly when asked questions on the ARV prophylaxis regimens. Figure 8 shows the level of knowledge of the health workers on the ARV prophylaxis recommended by national PMTCT guideline. 37% (n=23) of the interviewed health workers were aware of the three (sdNVP, AZT+sdNVP, HAART) recommended ARV prophylaxis by the national PMTCT guidelines. 47% (n=29) of the health workers interviewed only knew 2 ARV prophylactic regimens (sdNVP, AZT+sdNVP) while 11% (n=7) of the health workers knew only NVP. A small proportion 3% (n=2) of the health workers recognized septrin as one of the ARV Prophylaxis regimen and 2% knew all of the above mentioned drugs as ARV prophylaxis regimen.

Figure 8: Knowledge Level on the available Efficacious Prophylaxis Regimen as recommended by Kenya National PMTCT Guidelines

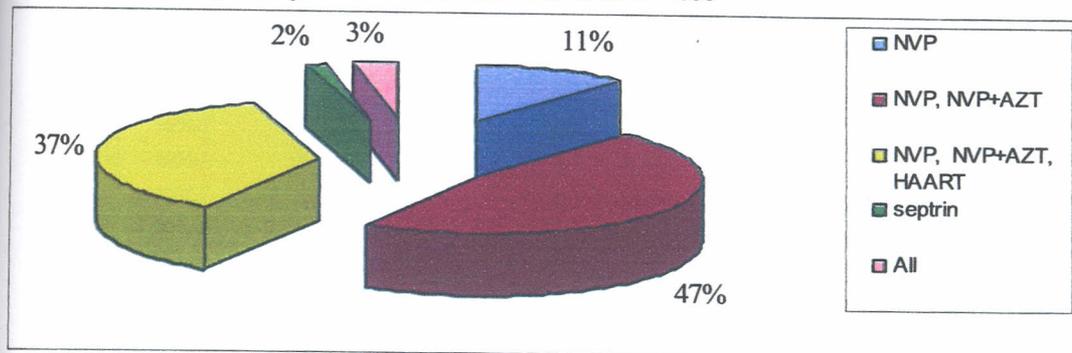
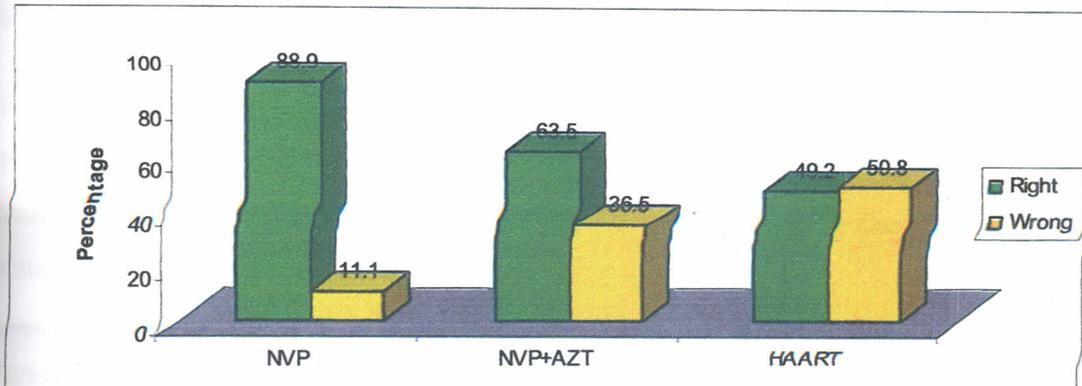


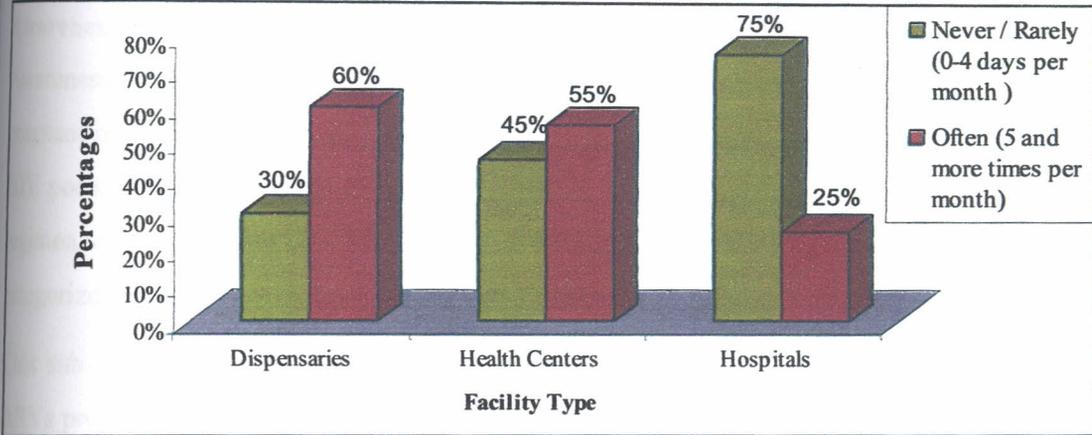
Figure 9 shows knowledge level on how the 3 recommended ARV prophylaxis regimens should be taken by the HIV positive pregnant mothers. The knowledge level was high for sdNVP which was at 88% (n=101) followed by AZT+sdNVP at 63.5% (n=39) and lowest for HAART with the level of knowledge at 49.2% (n=31).

Figure 9: Knowledge Level on ARV Prophylaxis administration to the Clients



Health workers mentioned to have experienced some erratic drug supplies in the dispensaries and health centers. *“The drugs are not always supplied on time and recipients have to wait whilst the drugs should be taken daily...for example, this month we only received enough for 80 people, which is below the amount required”*. Figure 10 shows the stocking frequency of PMTCT supplies. The percentages shown in the figure represents the rate at which the health facilities run out of their stocks.

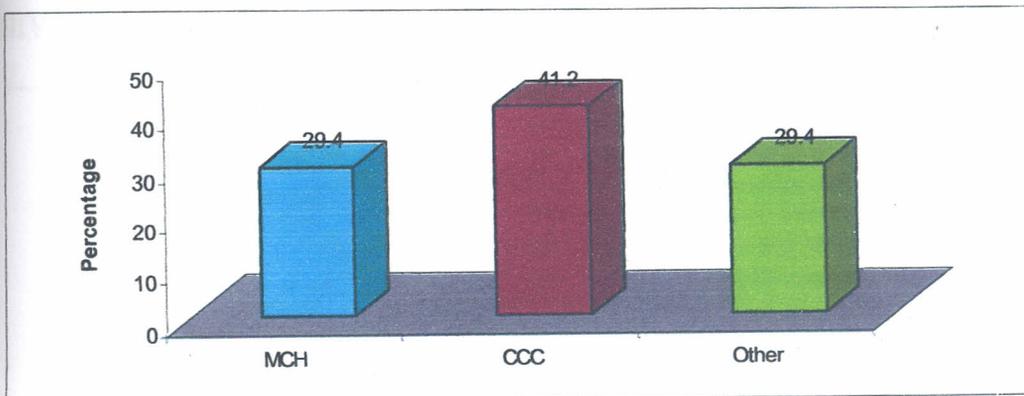
Figure 10: Frequency at which the Health Facilities Run Out of PMTCT Supplies



The ARV prophylaxis dispensing points were significantly associated with the ARV prophylaxis regimens uptake ($P < 0.01$). These were noted to be statistically significant especially between the MCH as ARV prophylaxis dispensing point and the ARV prophylaxis regimens uptake. There was notably a high uptake of ARVs prophylaxis regimen at the MCH/ANC as compared to the other dispensing point.

Figure 11 shows the proportion of health facilities dispensing ARVs at MCH, CCC and other points. 29.4% ($n=5$) of the health facilities dispensed the ARVs at MCH, 41.2% ($n=7$) of the health facilities dispense at the CCC and 29.4% ($n=5$) of health facilities dispensed at other points other than MCH and CCC.

Figure 11: ARV Prophylaxis Dispensing Points



5.1.3 HIV Positive Pregnant Mothers factors

Awareness of ARV prophylaxis amongst HIV positive mothers

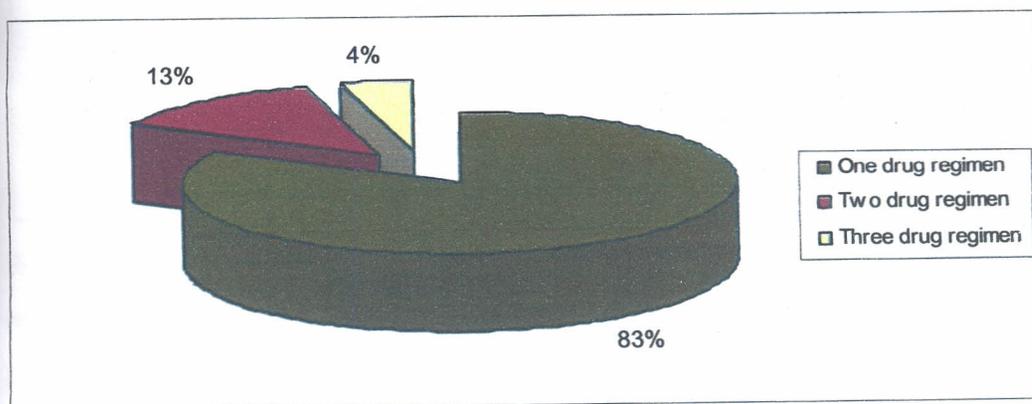
Awareness of ARV prophylaxis was used as a proxy for the cognitive demands the HIV positive pregnant mothers had regarding ARV prophylaxis. The objective was to determine whether the HIV positive pregnant mothers had information to help them decide on the ARV prophylaxis regimen to use and what was expected of them when on ARV prophylaxis. Their responses were categorized as either correct or incorrect and further investigated.

This sub-section, therefore, presents a synthesis of the study findings on the awareness about ARVs prophylaxis including such intricacies as understanding of ARV prophylaxis, the sources and factors affecting their uptake.

There was no statistically significant association between the number of children a HIV positive pregnant women had and monthly income with the uptake of ARV prophylaxis (P-values were 0.068 and 0.274 respectively). However there was a stronger association between antenatal clinic attendance and uptake of the ARV prophylaxis (P-value=0.00).

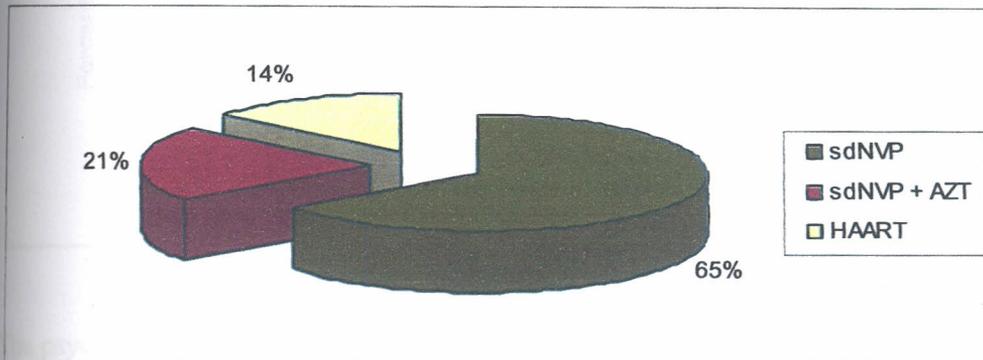
Awareness of HIV positive mothers on ARV prophylaxis regimens before they attended antenatal clinic was low. 77% (n=89) of the HIV positive mothers were not aware of any ARV prophylaxis regimen and 23% (n=26) were aware of one of ARV prophylaxis. Figure 12 shows that out of the 23% (n=26) of the HIV positive mothers that were aware of ARV prophylaxis regimen, 83% (n=22) knew of one drug regimen, 13% (n=3) were aware of two drug regimen and 4% (n=1) of three drug regimen.

Figure 12: Specific Awareness on the ARV Prophylaxis Regimen before attending ANC for HIV Counseling and Testing



The awareness level was high after the HIV positive mothers attended antenatal clinic which was at 91% (n=105). Figure 13 shows that out of the 91% (n=105) of HIV positive mothers who were aware of any of three ARV prophylaxis regimen for mothers after HIV counseling and testing at the antenatal clinic, 65% (n=68) were aware of the sdNVP regimen, 21% (n=22) AZT+sdNVP and 14% (n=15) HAART.

Figure 13: Specific Awareness on the ARV Prophylaxis Regimen after receiving HIV Counseling and Testing



Eighty seven percent (87%) (n=100) of HIV positive pregnant mothers received one of ARV prophylaxis regimens and 13% (n=15) did not get any during pregnancy. Figure 14 shows that out of the 87% (n=100) that received ARV prophylaxis regimen during pregnancy, 60% (n=60) received sdNVP, 25% (n=25) received AZT+sdNVP and 15% (n=15) received HAART.

Figure 14: Proportion of HIV Positive Mothers who received any of the ARV Prophylaxis

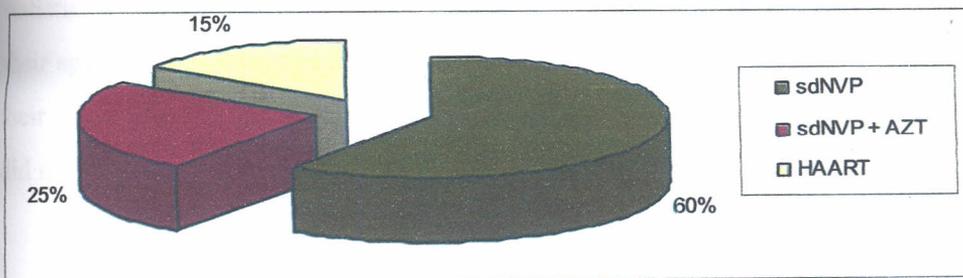
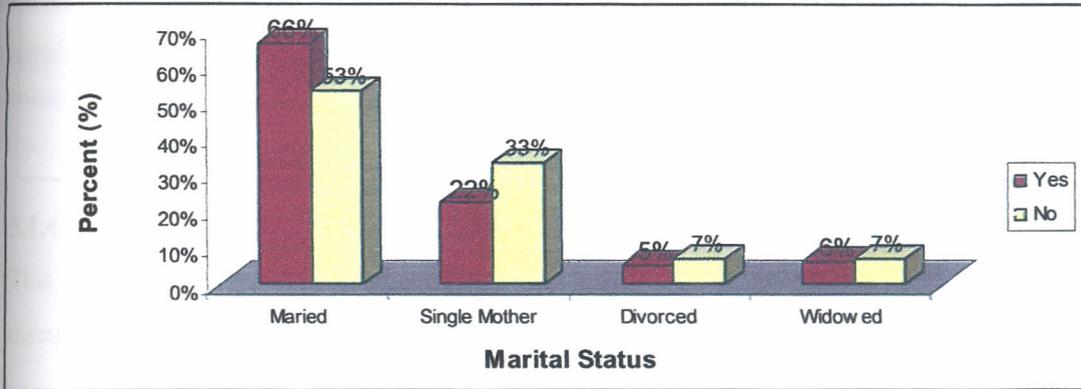


Figure 15 shows proportion of HIV pregnant mothers that received the ARV prophylaxis in relation to marital status. There is high ARV prophylaxis uptake amongst married HIV positive pregnant women as compared to single mothers, divorced and widowed. The result shows that

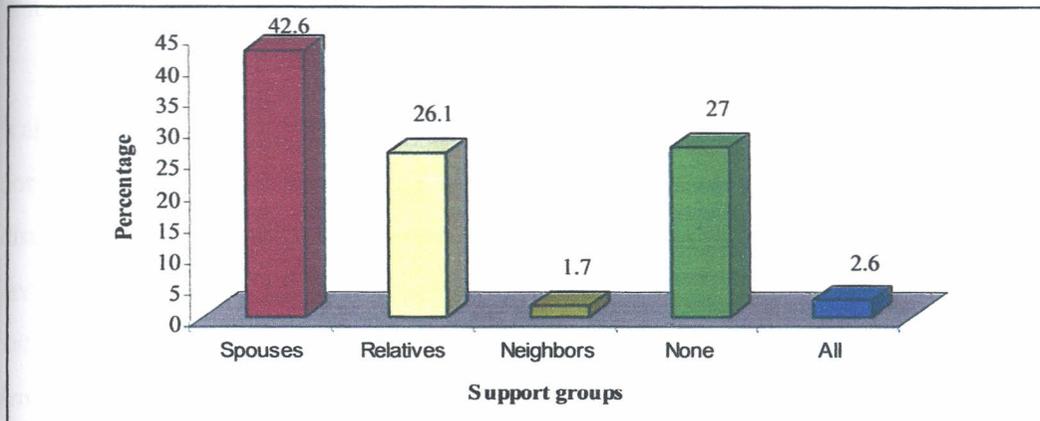
there is no statistically significant association between the marital status and the uptake of ARV prophylaxis (P-value=0.789).

Figure 15: Proportion of HIV Pregnant Mothers that received the ARV prophylaxis compared with their marital status



The psycho-social support was categorized into four groups; from spouses, relatives, neighbors and those who did not receive any support. Figure 16 shows that most of HIV positive mothers received support from their spouses and relatives and received very little support from neighbors and community around them. 42.6% (n=49) received support from spouse, 26.1% (n=30) from relatives, 1.7% (n=2) from neighbors, 27% (n=31) did not receive any support and 2.6% (n=3) from all the groups of people. When further analysis was done to find if there was an association between the support received and the uptake of the ARV prophylaxis regimen, there was statistically significant differences between the HIV positive women who received support from their spouses and who did not ($\chi^2 = 10.74; P < 0.05$). The respondents who received support from their spouses were 3.1 times more likely to take ARV prophylaxis drugs than respondents who did not receive any support.

Figure 16: Support accorded to HIV Positive Mothers



5.1.4 Focus Group Discussions Results

This Section presents synthesized findings on the responses from participants in focus group discussions.

All FGD participants perceived themselves to be knowledgeable on transmission of HIV from mother to child. Although it appeared that HIV positive mothers had the knowledge on the transmission of HIV from mother to child, there was confusion on the type and timing of the ARV prophylaxis regimens according to the national guidelines. Some of the mothers mentioned septrin as one of ARV prophylaxis regimen. Table 13 shows the responses by group.

The discussions revealed a greater tendency for women to disclose their HIV status to their spouses than to relatives and neighbors. Women also reported to have more confidence to share their status with health workers and support groups in the health facilities. This helped them accept their status and take the ARV prophylaxis. *“The support group has been of great benefit to me, I realized I was HIV positive when I was pregnant, I was so distressed and disappeared for 2 months, but when I came back to the health facility, I joined the HIV positive mothers support group and it has help me discover my life”.*

The FGD also indicated stigma and discrimination were the main barriers to receiving care and support from the spouse, family and community. Some do receive care and support from these sources, but others have experienced discrimination especially from their spouses leading to divorce. *“.....when I told my husband that I was HIV positive, he became abusive and*

eventually left me for another woman"; this statement reverberated across every discussion group.

It also emerged from the FGD that mother to child transmission is a common problem since HIV positive mothers were not willing to share their HIV status due to fear of stigmatization and discrimination. *"Nobody knows my status where I live" "I have never shared with anybody because it is impossible to get support at the community level" ".....if I share my HIV status with others, they will start talking behind my back and tell everyone in the neighborhood" "I have only told my husband and he has been supportive because he was also tested positive", ".....I have not disclosed my HIV status to husband because he might leave me, so I take my pills when he is not in the house"*

The same issues were raised in each focus group. While there was no particular trend in the prioritization of these issues, there was strong cultural concordance across FGDs about factors influencing HIV positive pregnant mothers decision-making in taking the ARV prophylaxis. In the ranking exercise top inhibitors to ARV prophylaxis uptake revealed factors relating to skepticism/denial, marital insecurity and parental fears: "She hasn't disclosed status to husband and afraid he'll catch her with pills"; "She is not convinced the test results are accurate"; "Worried she will die and child survive, and then who will look after her children". Top reasons all women ranked for not taking ARV prophylaxis related to marital break-up/domestic abuse or destructive thinking/stress from knowing one's status: "...she can get high blood pressure or stress from thinking too much"; "...the husband's family can blame you for bringing the disease"; and "she thinks...she could be divorced or sent home". "...I could have been beaten".

5.2 Discussion

5.2.1 Antenatal Mother AZT+sdNVP Regimen Uptake

Worldwide, more than two million HIV-infected women give birth annually, but only 9% of them receive PMTCT intervention (Thu Anh Nguyen *et al*, 2008). It is expected that having in place a simple PMTCT program that provides ARV prophylaxis for HIV infected mothers and children could increase the utilization of these services. However, study findings showed that even in an urban area with sufficient resources, the PMTCT services were underused. The situation is similar in other developing countries (Thu Anh Nguyen *et al*, 2008).

The HIV test is the entry point to getting HIV-infected women into a PMTCT program. The HIV test is routinely offered at health facilities in Nairobi. In this study the antenatal mother AZT+sdNVP regimen uptake at the health centers was at 14% and at the hospitals was at 17%. This is the first study in Kenya that has been done to determine the antenatal mother AZT+sdNVP regimen uptake by interviewing the HIV positive mothers and also using their hospital records. The findings can act as baseline upon which further research can be undertaken and has identified some recommendations which can be explored further in a larger scope than the one used in this study. The facilities in this study were not stratified by whether they offer PMTCT services therefore facilities offering and not offering PMTCT services were represented in the random sample.

The national PMTCT program target is to have over 80% ARV prophylaxis uptake and to use more efficacious regimen that have about 80% efficacy compared to single dose nevirapine with efficacy of 50%. According to Ayisi 2008, overall PMTCT counselling and testing coverage is at 38% and PMTCT ARV coverage is at 23% in Kenya. Therefore the current status of antenatal mother AZT+sdNVP regimen uptake is way below the national PMTCT program target. While there is a widespread response to antiretroviral drugs (ARVs) and prevention of mother-to-child transmission (PMTCT) treatment across Kenya, there is still room for improvement in the uptake of efficacious ARV prophylaxis regimen.

5.2.2 Institutional Factors

Level of Training on ARV Prophylaxis

At the health facility, the commonly cited barrier for using and accessing efficacious ARV prophylaxis regimen was inadequacy of trained personnel on efficacious ARV prophylaxis regimen at the PMTCT service delivery points.

In study health facilities 70.6% (n=44) of the health workers had undertaken a generic training in HIV counseling and testing (VCT type) and 35.3% (n=22) had undertaken training in PMTCT including more efficacious regimens (AZT+sdNVP). There is a need to train health workers on the whole aspect PMTCT service delivery which encompasses the three ARV prophylaxis regimens.

Increased uptake of ARVs prophylaxis is not only a function of the availability of drugs and health facilities, but also availability of qualified health personnel. Although there was no statistically significant association between the number of health workers trained in PMTCT and the uptake of the AZT+sdNVP ($P=0.076$), most of the health facilities visited acknowledged having challenges with providing the ARV prophylaxis regimen due to health workers not trained to provide ARV prophylaxis and especially on efficacious ARV prophylaxis regimen.

The study findings confirms a research that was done by Kindyomunda *et al* (2003) which depicts that some of the challenges facing effective PMTCT scale up and uptake of ARV prophylaxis to include inadequate health workers training on the PMTCT services including the ARV prophylaxis regimen. PEPFAR indicators reference guide 2007 also outlines number of health workers trained in the provision of PMTCT services according to national and international standards as one of the important PMTCT program indicators that would greatly affect the uptake of ARV prophylaxis regimen.

Level of Knowledge

The level of knowledge of the health workers on the ARV prophylaxis as recommended by national PMTCT guideline varied from one health facility to another. 37% (n=23) of the interviewed health workers were aware of the three ARV prophylaxis regimens (NVP, AZT+sdNVP, HAART) recommended in the Kenya national PMTCT guidelines. 47% (n=29) of the health workers interviewed only knew two ARV prophylaxis regimens (NVP, AZT+sdNVP) while 11% (n=7) of the health workers knew only NVP. These show that there is a high level of knowledge on the sdNVP as compared to the efficacious ARV prophylaxis regimen. There were significant differences on the level of knowledge that is, between the two individuals who gave a “true” or “false” response and the uptake of ARV prophylaxis ($\chi^2 = 1.642$; $P=0.042$).

The variation was also observed in different types of health facilities. Health workers in the hospitals and health centers had a higher level of knowledge on the ARV prophylaxis as compared to health workers in the dispensaries. This may be due to the availability of the PMTCT services in those health facilities and therefore a better understanding of the services.

A study by Peter *et al* (2006) suggests that although simple, inexpensive drug regimens for PMTCT are available, there are still barriers to widely implementing and national scaling up of these regimens because of low level of knowledge among service providers on the subject.

PMTCT Supplies in the Health Facilities

PMTCT supplies in the health facilities denotes availability of ARV prophylaxis drugs which can be defined as the situation of users' ability to get the drugs (ARVs) anytime they need them. Availability of ARVs, though improving, is still inadequate in all the three types of the health facilities (hospital, health centers and dispensaries). The issue of equity in distribution of ARV provisioning sites across different types of health facilities featured prominently, that is, there was more concentration of ARV prophylaxis drugs in the hospitals and health centers and little in dispensaries.

On a positive note though, government with support from donors and other stakeholders are taking initiatives to ensure that free ARVs are always available in the few sites which have been accredited. Virtually all respondents (87% n=100) revealed that they got ARV prophylaxis whenever they visited the antenatal clinic or ARV dispensing units.

However, cases of erratic drug supplies were more common in dispensaries and some of the health centers as compared to hospitals. Disruptions in the supply of antiretroviral (ARV) drugs and other essential PMTCT related items in the health facilities are putting HIV positive pregnant women's lives at risk. Alexander *et al* (2007), suggests stock-outs of HIV test kits and/or Nevirapine (tablets or syrup) within the health units as causing missed opportunities.

ARV Prophylaxis Dispensing Points

ARV prophylaxis drugs dispensing points reflect on the accessibility of ARV prophylaxis drugs which can be defined as users being able to reach with relative ease the ARV dispensing site and, obtain ARV prophylaxis and services.

Study findings revealed varying degrees of popularity of the different dispensing points of ARV prophylaxis drugs. 29.4% of the health facilities dispense the ARV prophylaxis at MCH, 41.2% of the samples health facilities dispense at the CCC and 29.4% of health facilities dispensed at other points other than MCH and CCC. There was also significantly statistical association of ARV prophylaxis dispensing points with the ARV prophylaxis regimens uptake ($P < 0.01$). Van der Merwe *et al*, 2006, confirms that strengthening linkages and integrating key aspects of ARV prophylaxis within antenatal care reduces delays between HIV diagnosis and prophylaxis initiation for pregnant women. Health workers from ARV treatment services should be integrated within antenatal clinics to streamline the transition from antenatal care to ARV prophylaxis services and ensure consistent counseling and messages.

Overall accessibility to ARV prophylaxis services has tremendously improved over the years, but the numbers are still far below achieving UNAIDS desired universal access. Apparently, there was limited access compared to the need in all the communities studied and it is reportedly more skewed against the dispensary and health centers based ARV users. For such localization

of ARV dispensing services to be relevant, it ought to go hand in hand with promotion of VCT and activities aimed at eliminating stigma and discrimination (ACORD *et al* 2007).

According to Mary *et al* (2007), despite the impressive efficacy of the short-course PMTCT regimens in research clinical trial settings, the translation into public health policy in resource-limited international settings has been disappointingly slow due to a variety of factors including lack of integration of PMTCT programs into maternal child health services.

5.2.3 HIV Positive Mothers Determinants

Socio-Demographic, Economic and Behavioral Profiles of ARV Recipients

Profiles of ARVs recipients are very important to appreciate in any policy debate regarding accessibility and utilization of ARVs. The socio-economic characteristics are particularly important due to their potential to influence the extent to which beneficiaries access ARVs, use them and adhere to ARV use. Most of the ARV beneficiaries were generally low income earners as reflected by their main monthly income where 26% (n=26) of the interviewed HIV positive mothers had no monthly income. The above findings therefore underscore the challenging livelihood conditions that ARV prophylaxis users have to cope with. It is possible to deduce that it would be unlikely for such people to start ARV prophylaxis if they were to pay for them.

The study findings also showed that the number of children and monthly income of HIV positive pregnant women were not significantly associated with uptake of ARV prophylaxis with P-values of 0.068 and 0.274 respectively. This could be because the ARV drugs are available at no cost at health facilities in Kenya.

However there was a statistical association between the antenatal clinic attendance and the uptake of the ARV prophylaxis with a P-value of 0.00. This finding therefore suggests that the HIV positive women should be encouraged to attend antenatal clinics when they are pregnant.

Although a proportion of women attended antenatal care delivered at the health facilities, a substantial number of women confessed to have delivered at home during focus group discussion. This was a combination of HIV positive mothers who attended and never attended antenatal care. This is one of the factors that influenced the level of uptake of AZT+sdNVP prophylaxis regimen in the health facilities. This would also affect the actual taking of the regimen by HIV positive pregnant mothers and also would interfere with the records in the health facilities since it would be difficult to determine if HIV positive pregnant mothers took the ARV drugs.

The study contradicts a study that was done by Alexander *et al* (2007), which suggests that there is a positive association between the uptake of ARV prophylaxis and the Socio-demographic and economic status of the ARV recipients.

Awareness of HIV Positive Mothers on ARV Prophylaxis

Awareness an individual has on a particular aspect determines how she relates to that aspect. In this case, knowledge of what constitutes ARV prophylaxis, their utility, and factors influencing the uptake were issues deemed pertinent to using ARV prophylaxis regimens. Overall, HIV positive mothers' knowledge about use of ARV prophylaxis before visiting the health facility was limited. More than three quarters 77% (n=89) did not know of any ARV prophylaxis before attending antenatal clinic.

The knowledge gap was also evident in the ARV prophylaxis especially the efficacious ARV prophylaxis regimen even after attending the antenatal clinic. Out of the 91% (n=105) of the HIV positive mothers who were aware of any of the three ARV prophylaxis regimen for mothers after attending antenatal clinic and receiving the counseling, 65% (n=68) were aware of the sdNVP regimen, 21% (n=22) AZT+sdNVP and 14% (n=15) HAART.

Low awareness of the efficacious regimens due to lack of appropriate and adequate information on ARVs was cited widely in the study findings as a key barrier to use of ARV prophylaxis services.

It is also important to note that factual information about ARVs prophylaxis and their utility constitute part of the content of counseling. ARV knowledge gaps were not only confined to HIV positive mothers, but health workers as well. Segregation of data on ARV prophylaxis knowledge by types of health facilities of the respondents generally revealed little difference between the three types of health facilities (ACORD *et al* 2007). Thu Anh Nguyen *et al* 2008, confirms that there is a positive correlation between awareness of ARV Prophylaxis regimen amongst HIV positive mothers with the actual uptake of the regimens.

While all groups had heard of ARV prophylaxis during focus group discussion, they were not aware of, or showed confusion about, the length of time taking ARV prophylaxis regimen, passing it on. Clearly, knowing ARV prophylaxis regimens exist is not enough to address behavior and misunderstandings.

Psycho-social Support to HIV Positive Mothers to take ARVs Prophylaxis

AIDS-related stigma and discrimination refers to prejudice, negative attitudes, abuse and maltreatment directed at people living with HIV and AIDS. They can result in being shunned by family, peers and the wider community; poor treatment in healthcare and education settings; an erosion of rights; psychological damage; and can negatively affect the success of testing and treatment.

The study findings showed that 42.6% (n=49) of the HIV positive mothers (N=115) received support from their spouses and 26.1% (n=30) relatives and very little 1.7% (n=2) support from neighbors around them. This was due to disclosure of their HIV status to only the immediate family members compared to the rest of the society.

The ability to disclose within your family, linked to a supportive family and community environment is one of the key intervention to encourage HIV positive pregnant mothers to take ARV prophylaxis (CAFOD *et al* 2008). An important determinant seemed to be disclosure- patients who share status with family members seem to do much better.

The best impact is when a client shares her own story with others. Strong support groups of People living with HIV and AIDS (PLWHA), not only as self help groups, but also as ARV prophylaxis uptake counselors and treatment buddies. Related to this was the importance of building the self esteem of HIV positive pregnant mothers' programmes. The work of support groups is extremely key in the process. Exchange, socialization and solidarity are still the best way to learn how to live with HIV and HIV positive pregnant mothers who should be taking ARV prophylaxis and especially the efficacious regimen (ACORD *et al* 2007).

Partner involvement is critical in increasing PMTCT service uptake. Homsy *et al* (2007) found out that the need for partner consent is a main reason for opting out of routine HIV testing for prevention of mother-to-child transmission in a rural Ugandan hospital. Alexander *et al* (2007), suggests that the uptake of ARV prophylaxis is made worse by little involvement of the male partners and other family members (e.g. mothers in-law or the aunts), who are the key decision makers when it comes to delivery plan.

Support groups were also cited in focus group discussions as one of the component that have helped deal with stigmatization and also building the self esteem of HIV positive pregnant mothers. Best practices in delivery of PMTCT services, 2008 HIV/AIDS Implementers 'meeting, (2008), notes that mother to mother support provides enabling environment to the woman to share experiences and concerns so as to increase utilization of the PMTCT services.

Fowler *et al*, (2007), concludes that prevention of mother-to-child transmission (PMTCT) of human immunodeficiency virus (HIV) in the United States and Europe has been a tremendous success, such that transmission rates of less than 2% have been achieved. Some key successes have also been demonstrated in resource-poor countries. However, the translation of successful interventions into public health policy has been slow because of a variety of factors such as inadequate cultural and social barriers which includes stigmatization.

Women were more unwilling to access ARV prophylaxis at centers nearer their homes in both localities if fully operationalised due to concern for stigmatization.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Overall, provisioning of ARV prophylaxis services is a recent initiative in the country. There are still daunting challenges with regard to ARV availability, accessibility and utilization. Universal accessibility of ARVs especially of free ARVs will take a while to be realized in the country.

In a setting where PMTCT services are available, service providers did not have enough knowledge on the whole aspect of PMTCT including the ARV prophylaxis regimens. The knowledge gap was noted on the efficacious ARV prophylaxis regimen. There was also inadequate training on the whole aspect PMTCT as per the National PMTCT guidelines. Evidence from the study suggests that proper knowledge on the ARV prophylaxis regimen was of immense benefit to health workers at the ARV dispensing point. The study results also suggest key improvements would be training of health workers on the PMTCT as per the national guidelines and making PMTCT guidelines.

The study concluded that integrating ARV prophylaxis regimen in the ANC will improve uptake. Inequity in distribution of ARV dispensing sites is more skewed against the dispensaries, ARV dispensing sites are located in referral hospitals and health centers that are mainly sponsored by non-governmental organizations. This is an equity problem that characterizes the ARV programmes and requires attention. There has been erratic ARV drugs supplies in some health facilities. Commodities and supply issues specifically related to stock outs and procurement of appropriate commodities of PMTCT related supplies especially ARVs are putting HIV positive pregnant women's lives at risk.

HIV positive mothers need information on ARV services including information on HIV testing. This then means that ARV knowledge campaigns need to be all embracing covering the health workers especially those in the working at the health centers.

6.2 Recommendations

This study came up with the following recommendations some of which may form foundation for further research.

- **Health workers trained in the provision of PMTCT services according to national and international standards:** - The study findings revealed low levels of ARV awareness among HIV positive mothers. Primary data also pointed to lack of adequate ARV knowledge among the health care providers to disseminate factual and appropriate ARV information. Therefore, there is an urgent need for more training focused of health care personnel in both public and private health facilities on the provision of PMTCT services. The government and the international community should support PMTCT training programmes for health care workers so as to be able to deliver ARV prophylaxis regimen.
- **Dispensing point for ARV prophylaxis:** Adequate measures should be taken by the ministry of medical services and public health towards encouraging integration of ARV prophylaxis in the ANC clinics. Therefore PMTCT services should be integrated into MCH clinics in all health facilities providing MCH services.
- **PMTCT Supplies in the Health Facilities:** Ministry of medical services and public health, donors, and implementing partners should undertake urgent and concrete measures to ensure steady supply and availability of PMTCT supplies especially ARV drugs in the health facilities.
- **Campaigns targeting stigma and discrimination:** - Although stigma and discrimination were reportedly on the decrease, there was evidence that these still existed in some sections of the communities and undermined ARV prophylaxis uptake. It is therefore recommended that Ministries of Medical Services and Public Health and Sanitation, NGOs and private sector with support of other stakeholders such as the civil society should sustain the campaign against stigma and discrimination, which undermines social support for sero-exposure and taking ARVs. This strategy seeks to arouse social support for HIV positive pregnant women to use ARV prophylaxis.

- **Addressing the equity problems:** The study findings showed that ARV sites were almost a preserve of hospitals and not health centers, which created imbalances in access to information and service provision between the hospitals, health centers and yet majority of the people attend health centers. It is therefore recommended that alongside stimulating demand for ARVs, ministry of medical services and public health should decentralize dispensing of ARVs to lower health units to ease accessibility, and promote use. This implies rolling out the ARV program in dispensaries and government sponsored health centers or those at the margins of society. ARV prophylaxis drugs and related services need to be availed freely to all those who need them.

- **Raising awareness amongst HIV positive pregnant women:** Methods which reinforce highly interpersonal, customized, individualized means of delivery of information need to be promoted by the health staff. Regarding the disparities in access to information about ARVs, it is suggested that awareness raising and sensitization on ARVs ought to be promoted by the Ministries of Medical Services and Public Health and Sanitation, NGOs and private sector to include all sections of the society; the youth, men and women groups, users of ARVs and nonusers, PLHAs and those that are HIV negative, i.e., reaching everyone.

- **Improve ANC Attendance:** Based on the study findings, there is a need to educate HIV positive pregnant mothers on the importance of attending ANC. Health workers should develop a follow up mechanism of the HIV positive mothers to encourage them to attend ANC as per visit plan.

- **Couple counseling** on the ARV prophylaxis regimen and especially efficacious regimen should be encouraged in the health facilities to scale up the uptake of the ARV prophylaxis by the HIV positive mothers for prevention of mother to child transmission of HIV.

REFERENCES

- Agency for Co-operation and Research in Development, (ACORD), (2007), ARV Community Knowledge, Awareness, Accessibility & The Policy Environment. A Compendium Report of Tanzania, Mozambique & Burkina Faso.
- Alexander G, Sunitha BJ, Chitra LK, Rao PS., 2007, Counseling needs of persons exposed to human immunodeficiency virus. *Indian J Med Res.* 2007 Aug; 126(2):158-60.
- Ayisi R. 2008, 28 February. An Update on the National PMTCT Programme Presented to Technical Working Group, National HIV/AIDS and STD Control Program of Kenya.
- Ayisi R. 2007, 14 August. Overview of PMTCT Nationally and Regionally. Kenya National PMTCT Consultative Forum. Nairobi, Kenya.
- Bertolli, J; St Louis, ME; Simonds, RJ; Nieburg, P; Kamenga, M; Brown, C; Tarande, M; Quinn, T; Ou, CY. 1996, Estimating the timing of mother-to-child transmission of human immunodeficiency virus in a breast-feeding population in Kinshasa, Zaire. *J Infect Dis.*; 174(4):722-726.
- Branson B., Handsfield H., Lampe M., Janssen R., Taylor A., Lyss S., Clark J., 2006, Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings, Centers for Disease Control and prevention (CDC).
- Bryson, Y. J., Luzuriaga, K., Sullivan, J. L. & Wara, D. W. 1992, Proposed definitions for in utero versus intrapartum transmission of HIV-1. *N. Engl. J. Med.* 327:1246-1247.
- Burgard M., Mayaux M., Blanche S., Guihard-Moscato M., et al. 1992, The use of viral culture and p24 antigen testing to diagnose human immunodeficiency virus infection in neonates. *N Eng J Med*; 327:1192-7.
- CAFOD, 2008. Adherence to ARVS- challenges and successes. A consultation with CAFOD partners and members of the Catholic HIV and AIDS Network (CHAN).
- Central Bureau of Statistics, Nairobi, Kenya, 2003, Ministry of Health Nairobi, Kenya, Kenya Medical Research Institute Nairobi, Kenya, Centers for Disease Control and

Prevention Nairobi, Kenya; MEASURE DHS+ ORC Macro Calverton, Maryland, USA; Kenya Demographic and Health Survey.

DeCock K., Fowler M., Mercier E., de Vincenzi I., Saba J., Hoff E., Alnwick D., Rogers M, Shaffer N. 2000. Prevention of mother-to-child HIV transmission in resource-poor countries: Translating research into policy and practice. *JAMA* 283(9): 1175–1182.

Farquhar C, Kiarie J., Richardson B., Kabura M., John F., Nduati R., Mbori-Ngacha D., and John-Stewart G., 2004, Antenatal Couple Counseling Increases Uptake of Interventions to Prevent HIV-1 Transmission. *JAIDS* 37:1620-1626.

Fishkin P., Armstrong D., Routh D., Harris L., Thompson W., Miloslavich K., Levy J., Johnson A., Morrow C., Bandstra E., Mason C. and Scott G., 2006, Relationship Between HIV Infection and WPPSI-R Performance in Preschool-Age Children. *PEDIATRICS* Vol. 117 No. 3 March 2006, pp. 851-862.

Fowler M., Lampe M., Jamieson D., Kourtis A., Rogers M., 2007, Reducing the risk of mother-to-child human immunodeficiency virus transmission: past successes, current progress and challenges, and future directions. *American Journal of Obstetrics & Gynecology.* 197(3 Suppl):S3-9, 2007 Sep.

Homsy J., King R., Malamba S., Opio C., Kalamya J., mermin J., Okallanyi A., Obonyo J., (2007) The need for partner consent is a main reason for opting out of routine HIV testing for prevention of mother-to-child transmission in a rural Ugandan hospital *JAIDS* 44:366-369.

Kenya National PMTCT Generic Training Package, 2005, June., Participant Manual.

Kindyomunda Rosemary Mwesigwa. August 7 2003: Report of the Regional PMTCT meeting, Uganda AIDS Commission.

Krivine A., Firtion G., Cao L., Francoual C., Henrion R; Lebon P., 1992, HIV replication during the first weeks of life. *Lancet;* 339(8803):1187–1189.

Marie-Louise Newell et al., 2004, Mortality of infected and uninfected infants born to HIV infected mothers in Africa: a pooled analysis. 364(9441):1236-43.

Ministry of Health, National AIDS and STI Control Programme 2008, Kenya AIDS Indicator Survey 2007 (KAIS), Preliminary Report.

Ministry of Health, National AIDS and STI Control Programme, 2008, Guidelines for Prevention of Mother to Child Transmission (PMTCT) of HIV/AIDS in Kenya (3rd Edition).

Ministry of Health. National AIDS and STI Control Programme, 2005 AIDS in Kenya: trends, interventions and impact. 7th edition. Kenya.

Ministry of Planning, 1999, The 1999 Population & Housing Census, Kenya.

Mpazanje R., 2008, ART & PMTCT, WHO, Kenya, Grand Round for PMTCT, University of Nairobi, 27 -28th Nov 2008.

Mock P., Shaffer N., Bhadrakom C., et al. 1999; Maternal viral load and timing of mother- to-child HIV-1 transmission. AIDS. 13:407-14.

Mofenson, L. M. & Wolinsky, S. M. 1995, Current insights regarding vertical transmission. In: Pediatric AIDS, Edition 4 (Pizzo, P. A. & Wilfert, C. M., eds.), pp. 179-203. William and Wilkins, Baltimore, MD.

National HIV/AIDS and STD Control Program of Kenya (NASCOP), 2008, Kenya AIDS Indicator Survey 2007, Preliminary Report.

National HIV/AIDS and STD Control Program of Kenya (NASCOP), 2008, NASCOP Database, September,

National AIDS Control Council (NACC), 2007, World AIDS Day – Theme: Stop AIDS, keep the Promise – Leadership. Nation News Paper Article December 1, 2007.

National AIDS Control Council (NACC), 2005, Kenya HIV/AIDS Data Booklet.

National HIV/AIDS and STD Control Program of Kenya (NAS COP), 2005, Module 1 – Trainer Manual. Kenya National PMTCT Training Curriculum.

Nduati R., John G., Mbori-Ngacha D., Richardson B., Overbaugh J., Mwatha A., Ndinya-Achola J., Bwayo J., Onyango F., Hughes J., Kreiss J., 2004, Effect of breastfeeding and formula feeding on transmission of HIV-1: a randomized clinical trial. *JAMA*; 283:1167-74.

Dunn O., Virginia A. Clark, 2009, Basic Statistics: A Primer for the Biomedical Sciences, 4th Edition Published by John Wiley & Sons, Inc., Hoboken, New Jersey, Canada, 2009.

Pathfinder International, 2003, Integrating Prevention of Mother-to-Child HIV Transmission into Existing Maternal, Child, and Reproductive Health Programs Ellen Israel, CNM, MPH and Mary Kroeger, CNM, MPH, Number 3.

Perez F., Zvandaziva C., Englesmann B., Dabis F., 2006, Acceptability of routine HIV testing (opt-out) in antenatal services in two rural districts of Zimbabwe. *J Acquir Immune Defic Syndr* 41:514-520.

Republic of Kenya, Ministry of Health (MOH), 2002, National guidelines for the prevention of mother-to-child HIV/AIDS prevention (PMCT) 2nd Edition, MOH, National AIDS and STD Control program (NAS COP) PMCT guidelines.

Soucat A., and Knippenberg R., 1999, November: Technical Update No. 1 Prevention of Mother to Child Transmission of HIV PMTCT.

Tembo B. 2006, "Wrap up of Implementation Experience and report from support supervision".

Nguyen T., Oosterhoff P., Ngoc Y., Wright P., and Hardon A., 2008, Barriers to access prevention of mother-to-child transmission for HIV positive women in a well-resourced setting in Vietnam. Faculty of Public Health, Hanoi Medical University, Hanoi, Vietnam, Medical Committee Netherlands Vietnam, Hanoi, Vietnam and Amsterdam School of Social Science Research, University of Amsterdam, Amsterdam, Netherlands.

UNAIDS, 2008, Report on the Global AIDS Epidemics.

UNICEF, 2007, Informing Policy and Action to Accelerate National Responses on PMTCT and Paediatric HIV Care and Treatment through Dialogue.

United Nations General Assembly Special Session on HIV/AIDS, 2001, 25 - 27 June
Declaration of commitment on HIV/AIDS. New York, NY, USA.

U.S. President's Emergency Plan for AIDS Relief (PEPFAR), 2008, Best Practices in delivery of PMTCT services, HIV/AIDS Implementers meeting, Kampala Uganda

U.S. President's Emergency Plan for AIDS Relief, 2007, PEPFAR Indicator Reference Guide 2007.

Van der Merwe K., Chersich M., Technau K., Umurungi Y., Conradie F., Coovadia A. Acquir Immune Defic Syndr. 2006, Integration of antiretroviral treatment within antenatal care in Gauteng Province, South Africa. 2006 Dec 15;43(5):577-81.

Wiktor S., Ekipini E., Karon J., et al 1999:short course oral zidovudine for prevention of mother to child transmission of HIV-1 in Abidjan,cote d'Ivoire:a randomized trial.*Lancet* 1999;353:781-785.

World Health Organization (WHO), 2008, PMTCT—Generic Training Package Trainer Manual,

World Health Organization (WHO), 2006, Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: towards universal access, Recommendations for a public health approach, 2006 version

World Health Organization (WHO), 2005, Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants. Guidelines on care, treatment and support for women living with HIV/AIDS and their children in resource-constrained settings. WHO: Geneva. Retrieved 16 February 2009, from <http://www.who.int/hiv/pub/mtct/en/arvdrugswomenguidelinesfinal.pdf>.

World Health Organization (WHO), 2005, Consultation on Prevention of HIV in the African Region.

World Health Organization (WHO), 2004, Scaling up antiretroviral therapy in resource-limited settings: Treatment guidelines for a public health approach. WHO: Geneva. Retrieved 30 January 2008, from <http://www.who.int/hiv/pub/mtct/en/arvdrugsguidelines.pdf>.

APPENDICES

Appendix 1: Population under the administrative divisions in Nairobi

Division	Locations	Male	Female
Central	Huruma	48,150	41,926
	Kariokor	17,574	16,616
	Mathare	39,737	29,266
	Ngara	13,713	11,954
	Starehe	10,290	5,716
Dagoretti	Kawangware	47,555	39,269
	Kenyatta/Golf Club	14,603	15,650
	Mutuini	7,458	7,063
	Riruta	34,322	31,636
	Uthiru/Ruthmitu	11,271	11,745
	Waithaka	9,863	10,074
Embakasi	Dandora	57,353	52,811
	Embakasi	12,672	10,215
	Kariobangi South	8,384	9,144
	Kayole	49,834	48,688
	Mukuru Kwa Njenga	36,165	25,791
	Njiru	10,201	7,844
	Ruai	6,633	5,895
	Umoja	45,856	47,398
Kasarani	Githurai	23,867	23,998
	Kahawa	16,676	15,239
	Kariobangi North	38,945	32,392
	Kasarani	19,522	17,914
	Korogocho	24,257	19,545
	Roysambu	15,663	11,808
	Ruaraka	44,390	34,709
Kibera	Karen	5,651	4,113

	Kibera	48,492	35,195
	Laini Saba	30,360	21,659
	Langata	9,585	6,533
	Mugumoini	17,867	17,195
	Nairobi West	21,035	21,497
	Sera Ngombe	26,093	21,464
Makadara	Makadara	25,796	26,386
	Makongeni	11,741	9,006
	Maringo	15,799	13,177
	Mukuru Nyayo	18,936	17,296
	Viwandani	36,501	22,796
Pumwani	Bahati	19,823	19,540
	Eastleigh North	38,384	31,847
	Eastleigh South	28,665	24,314
	Kamukunji	10,711	7,763
	Pumwani	12,226	8,938
Westlands	Highridge	25,031	21,611
	Kangemi	31,746	27,542
	Kilimani	23,069	20,730
	Kitisuru	15,525	11,934
	Lavington	9,767	9,199
	Parklands	6,071	5,385

Source: 1999 Kenya Census of Population and Housing

Appendix 2: Screening Form

Efficacious ARV Prophylaxis Regimen Use for Prevention of Mother to Child Transmission of HIV in Nairobi, Kenya

Mother at the postnatal clinic

Name of the health facility _____

Date of Interview _____

ID # of the person completing the form _____

Tick the correct response

Interviewer: Ask the following questions to ALL potential study participants.

Screening questions:	Yes	No
1. Are you HIV positive?	___	___
2. Are you in the reproductive age group (15-49 years)	___	___
3. Have you lived in Nairobi for the last 5 years?	___	___
4. Were you eligible for the AZT+NVP Prophylaxis when you were pregnant?	___	___
5. Do you give informed consent to participate in the study?	___	___

To the best of my knowledge, the above information is accurate and complete

Signature _____ Date _____

Appendix 3: Questionnaire for the Health Workers

General Information

001 Code of facility.....

006 Type of facility (01= referral hospital; 02=Health Center; 03=Dispensary)

.....

007 Type of sector (01=Government; 02=Mission; 03=Private; 04=Other NGO)

.....

SECTION 1: ARV Prophylaxis-related services (Uptake)

This questionnaire should be conducted to the ANC Health workers

No.	Questions	Responses – Codes		
		Yes	No	IF NO, are women referred for these services?
ANC1	Which of the following ARV Prophylaxis-related services are offered at your site?			
ANC1A	HIV Testing	1	2	YES.....1 NO.....2
ANC1B	CD4/Viral load count	1	2	YES.....1 NO.....2
ANC1C	ARV prophylaxis (NVP) for mother	1	2	YES.....1 NO.....2
ANC1D	ARV prophylaxis (NVP) for child	1	2	YES.....1 NO.....2
ANC1E	ARV prophylaxis AZT and sdNVP for mother	1	2	YES.....1 NO.....2
ANC1F	ARV prophylaxis AZT and sdNVP for child	1	2	YES.....1 NO.....2
ANC1G	HAART	1	2	YES.....1 NO.....2
ANC2	Are the following data recorded? INTERVIEWER: YOU CAN ALSO DO THIS BY LOOKING AT THE REGISTER.	YES	NO	
ANC2A	The number of pregnant women tested for HIV for the last six months	1 #.....	2	
ANC2B	The number of pregnant women who tested positive for HIV for the last six months	1 #.....	2	

No.	Questions	Responses – Codes	
ANC2C	The number of HIV + pregnant women receiving ARV therapy for the last six months.	1 #.....	2
ANC2D	The number of HIV + pregnant women who received AZT+NVP Prophylactic regimen for the last six months	1 #.....	2
ANC3	How do you ensure positive pregnant women are followed, monitored and not lost through ANC, L&D and postnatal clinic?		

Section 2: Human resources and training

Providers include those working in all of the areas of MCH.

ANC4	Has this site specifically sought out training for staff in the following areas:	YES	NO	
ANC4A	Generic training in HIV counseling and testing (VCT type)	1	2	
ANC4B	Training in PMTCT including more efficacious regimens (AZT+NVP)	1	2	
ANC5	Total number of providers providing ANC/MCH services by provider type trained in PMTCT including more efficacious regimens (AZT+NVP)		Trained	Not trained
		clinical officer		
		Midwives		
		Nurses		
		Doctors		
		Laboratory staff		
		Counselors		
Other				
ANC6	How has the training affected the uptake of the AZT+NVP prophylaxis regimen amongst HIV positive pregnant women			

Level of Knowledge of the health workers

ANC7	<p>Health Care Workers knowledge on AZT+NVP Prophylaxis regimen <i>Several copies should be produced for each health worker interviewed.</i></p>	
ANC7A	<p>How many type of efficacious regimens Prophylaxis regimen are available according to the Kenya National Guidelines.</p>	<p>1..... 2..... 3..... Other</p>
ANC7B	<p>How should they be given to the clients?</p>	<p>sdNVP----- AZT and sdNVP----- ----- HAART-----</p>
ANC7C	<p>What's the difference between the opt in and opt out initiated treatment and which one do you use?</p>	<p>----- ----- ----- -----</p>

Section 3: PMTCT Supplies

ANC8	Are the following PMTCT-related supplies available at this site?	Yes	No	Not applicable, not offered at site
ANC8A	ARV tablets (AZT/NVP)	1	2	3
ANC8B	ARV syrup (AZT/NVP)	1	2	3
ANC8C	Syringes complete with needles	1	2	3
ANC8D	HIV rapid test kits	1	2	3
ANC8E	Test kit 1	1	2	3
ANC8F	Test kit 2	1	2	3
ANC8G	Test kit 3 (tie breaker)	1	2	3
ANC8H	Lancets for rapid testing	1	2	3
ANC9	How often do you run out of the following PMTCT supplies each month?	Never/rarely (i.e., 1 day a month)	3-4 times per month	Often (5 and more times per month)
ANC9A	ARV tablets and syrup (AZT/NVP)	1	2	3
ANC9B	Syringes complete with needles	1	2	3
ANC9C	HIV rapid test kits	1	2	3
ANC9D	Lancets for finger pricking	1	2	3
ARV Dispensing Point				
ANC10	Where is the ARV dispensing point	MCH..... CCC..... Other.....		

Appendix 4: Questionnaire for the HIV Positive Mother

This questionnaire should be conducted to the HIV Positive Mothers at the postnatal clinic

Section 1: Socio-Demographic information

ANC11	What is your marital status?	1. Married 2. Single mother 3. Divorced..... 4. Widowed..... 5. Other.....
ANC12	Number of children?	1. One child..... 2. Two Children..... 3. Three..... 4. More than 3.....
ANC13	Please estimate how much you earn in a month (in Kenya Shillings)?	1. Nil 2. Less than 100 3. 100 - 500 4. 501 - 1000 5. 1100- 5000 6. 5001-10000 7. Over 10000

Section 2: Awareness level of HIV positive pregnant women and Social Cultural factors

ANC14	When you came to the ANC did you already know of any of the ARV prophylaxis regimen?	Yes ----- No-----
ANC15	If yes which one?	One drug regimen..... Two drug regimen..... Three drug regimen.....
ANC16	Do you now know any ARV Prophylaxis regimen for PMTCT after going through the ANC?	Yes----- No-----

ANC17	If yes, how many prophylaxis regimens do you know for HIV+ pregnant mothers to prevent mother to child transmission of HIV?	sdNVP----- sdNVP + AZT----- sdNVP + AZT/3TC (HAART)-----
ANC18	If the services were not offered would you have asked for the services?	Yes..... No.....
ANC19	When should you have taken the ARV drugs?	sdNVP----- sdNVP + AZT----- sdNVP + AZT/3TC (HAART)-----
ANC20	Did you receive any on this prophylaxis regimen?	Yes----- Which one----- No-----
ANC21	Do you get support from the following people from your community to take the ARV drugs?	Spouse Yes No..... Relative Yes..... No..... Neighbors Yes..... No.....
ANC22	How has that influenced you taking the drug?	

Project Title: Efficacious ARV Prophylaxis Regimen Use for Prevention of Mother to Child Transmission of HIV in Nairobi, Kenya
Target Audience: HIV+ Mothers
Student: Damaris Kinyoki, University of Nairobi

Project Dates: Jan. - October 2009
Method: Focus group discussion
Topic: Factors Affecting the Uptake of Efficacious ARV Regimen (AZT+NVP) among HIV+ Mothers

Appendix 4: Structured guideline for FGDs with the HIV+ Mothers

Instrument Title: Discussion Guide for Factors affecting the Uptake of efficacious AZT+NVP Prophylaxis Regimen for HIV Pregnant mothers in Nairobi, Kenya.

TOTAL PARTICIPANT TIME REQUIRED: 1.00 HOURS
Total Focus Group Time: One hour

OVERALL QUESTION TO ANSWER IN FOCUS GROUP DISCUSSIONS:

The purpose of the study is to conduct a Crosssectional study:

1. To determine the level of uptake of efficacious AZT+NVP regimen amongst HIV positive pregnant women in the sampled health facilities
2. To describe the factors affecting uptake of AZT+NVP Prophylaxis amongst HIV positive pregnant women
3. To recommend strategies for scale up of AZT+NVP prophylaxis regimen for HIV positive pregnant women.

INTRODUCTION, EXPLANATION, GROUP PROCESS (5 minutes)

A. Moderator introduces her/himself and explains research purpose.

Hello, my name is Damaris Kinyoki and I am a student at the University of Nairobi. My assistants are _____. We are working on a research study for fulfilment of Masters of Public Health. You have all been asked to join us here today because of your experience, insights and perspectives you can share in this area on the uptake of the AZT+NVP Prophylaxis during pregnancy. We plan to use your input to improve recommend strategies for scale up of AZT+NVP prophylaxis. We will be discussing your ideas about factors that have affected your uptake of this efficacious prophylaxis regimen. Before we begin, let me tell you about this focus group and answer any initial questions you may have.

C. B. Explain focus group process. (5 minutes)

A focus group is a research method for collecting data similar to surveys, except that rather than asking questions on a one-on-one basis, questions are posed to the whole group and everyone is asked to respond and talk to each other. We are interested in your own opinions, in other words, what you think and feel about each topic.

D. Read and have participants sign consent forms. (5 minutes)

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D. Have participants complete information form. (5 minutes)

E. Explain focus group process. (5 minutes)

As explained in the consent form, this focus group is confidential. Everything you say in this discussion will be kept private and no names will be used in my report. It is important to us that you give us your honest opinions.

Our discussion will last about one hour and we may take a five-minute break about halfway through. To cover everything and end on time, I will move the discussion, but everyone will have an opportunity to speak. Please speak clearly, one at a time, and share your opinions. There are no right or wrong answers. We are interested in your opinions and you do not have to agree with one another - we are interested in hearing different opinions.

F. Respondent introductions: (5 minutes)

Let's have everyone introduce herself. Please tell us your name.

GROUP DISCUSSION QUESTIONS:

Please discuss the following issues as a group, with each member participating in the discussion. You may not reach a consensus on each issue, but all ideas are valuable.

Focused group discussion with the HIV+ mothers at the postnatal clinic on the factors that influence the uptake of AZT+NVP Prophylaxis regimen
(25 Minutes)

1. What is your understanding know on transmission of HIV from mothers to babies

2. In what ways is HIV transmitted from a mother to her child

3. Explain how MTCT of HIV is a common problem in the community

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4. How can Is MTCT be prevented

5. What is your understanding of ARV Prophylaxis regimens you know

6. How these regimens should be taken

7. What are the factors that influence the ARVs prophylaxis uptake?

8. What and Who has family influenced you in taking the ARVs prophylaxis

Project Title: Efficacious ARV Prophylaxis Regimen
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of HIV in Nairobi, Kenya
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Method: Focus group discussion
Topic: Factors Affecting the Uptake
of Efficacious ARV Regimen
(AZT+NVP) among HIV+ Mothers

9. How has the community influenced you in taking the ARV prophylaxis regimen?

10. How has the Health workers in the health facilities influenced you in taking the ARV prophylaxis regimen?

11. Is there anything else that you would like to add or ask in relation to our topic today?

ACKNOWLEDGEMENTS AND CONCLUSIONS

That's all the questions I have. Thank you for participating in this discussion. Your comments will be invaluable in the development of this research report.

Appendix 6: Consent Form for Health Workers

Title: Efficacious ARV Prophylaxis Regimen Use for Prevention of Mother to Child Transmission of HIV in Nairobi

Student and Research Assistants

Name	Institution	Telephone numbers
Damaris Kinyoki	University of Nairobi	0722-875991
Erickson N. Muriithi	Kenya Medical Training College	0722798572
Frashia K. Mungai	Kenya Medical Training College	0720713465

Introduction

This Consent form contains information about the research named above. In order to be sure that you are informed about being in this research, we are asking you to read (or have read for you) this consent form. You will also be asked to sign it (or make your mark in front of a witness). We will give you a copy of this form. This consent form might contain some words that are unfamiliar with you. Please ask us to explain anything you may not understand.

Reason for Research

You are being asked to take part in this research to help in identifying the factor that influences the uptake of the efficacious ARV prophylaxis regimen amongst HIV positive pregnant women.

General Information about the Study

This research is being undertaken in several health facilities in Nairobi. About 98 HIV positive women and health workers in MCH clinics in health facilities will participate in the study. The results should help in identifying the factors that influence the uptake of the Efficacious ARV Prophylaxis Regimen and especially AZT+NVP.

Your Part in the Research

If you agree to be in this research study today, we will:

- Ask you question to see if you are eligible to be in the study
- Get your permission to participate in the study by signing this form
- Ask you questions about you and health facility to determine the institutional factors that affect the uptake of the efficacious ARV prophylaxis regimen amongst HIV positive pregnant women.

Possible risk

There is no risk involved in this research.

Possible benefits

This study will not help you directly. This study should help researchers and policy makers in identification of factors that influence the uptake of the Efficacious ARV Prophylaxis Regimen and especially AZT+NVP upon which further action can be taken.

If you decide not to be in the research

You are free to decide if you want to be in the research.

Confidentiality

We will protect information about you and your taking part in this research to the best of our ability. Your name will not be on the interview form. You will not be named in any reports.

Compensation

You will not be paid for your participation in this research, since you do not have to take part in this research.

Leaving the research

If you choose to be in the study you can still decide not to complete the interview. If you leave the study please tell the interviewer why you are leaving.

If you have a problem or have other questions

If you have a problem that you think might be related to taking part in this research or any questions about the research, please call Damaris Kinyoki: 0722875991

Your rights as a participant

This research has been reviewed and approved by Kenyatta National Hospital Ethics and Research Committee (KNH/ERC). This committee reviews research studies in order to help protect participants.

VOLUNTEER AGREEMENT

The above document, describing the benefits, risks and procedures for the research titled Efficacious ARV Prophylaxis Regimen Use for Prevention of Mother to Child Transmission of HIV in Nairobi, has been read by me and explained to me. I have given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Signature of Volunteer

Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Signature of person who obtained consent

Date

Appendix 7: Consent Form for HIV Positive Mothers

Title: Efficacious ARV Prophylaxis Regimen Use for Prevention of Mother to Child Transmission of HIV in Nairobi

Student and Research Assistants

Name	Institution	Telephone numbers
Damaris Kinyoki	University of Nairobi	0722-875991
Erickson N. Muriithi	Kenya Medical Training College	0722798572
Frashia K. Mungai	Kenya Medical Training College	0720713465

Introduction

This Consent form contains information about the research named above. In order to be sure that you are informed about being in this research, we are asking you to read (or have read for you) this consent form. You will also be asked to sign it (or make your mark in front of a witness). We will give you a copy of this form. This consent form might contain some words that are unfamiliar with you. Please ask us to explain anything you may not understand.

Reason for Research

You are being asked to take part in this research to help in identifying the factor that influences the uptake of the efficacious ARV prophylaxis regimen amongst HIV positive pregnant women.

General Information about the Study

This research is being undertaken in several health facilities in Nairobi. About 98 HIV positive women will participate in the study. The results should help in identifying the factors that influence the uptake of the Efficacious ARV Prophylaxis Regimen and especially AZT+NVP.

Your Part in the Research

If you agree to be in this research study today, we will:

- Ask you question to see if you are eligible to be in the study

- Get your permission to participate in the study by signing this form
- Ask you questions about your life and about the factors that influenced your uptake of the AZT+NVP efficacious ARV prophylaxis regimen

Possible risk

There is no risk involved in this research.

Possible benefits

This study will not help you directly. This study should help researchers and policy makers in identification of factors that influence the uptake of the Efficacious ARV Prophylaxis Regimen and especially AZT+NVP upon which further action can be taken.

If you decide not to be in the research

You are free to decide if you want to be in the research. Your decision will not affect the health care you would normally receive.

Confidentiality

We will protect information about you and your taking part in this research to the best of our ability. Your name will not be on the interview form. You will not be named in any reports.

Compensation

You will not be paid for your participation in this research, since you do not have to take part in this research.

Leaving the research

If you choose to be in the study you can still decide not to complete the interview. If you leave the study please tell the interviewer why you are leaving.

If you have a problem or have other questions

If you have a problem that you think might be related to taking part in this research or any questions about the research, please call Damaris Kinyoki: 0722875991

