# DIRECTORATE OF LEARNING SYSTEMS

## DISTANCE EDUCATION PROGRAMME

**INTEGRATED HIV/AIDS PREVENTION, TREATMENT AND CARE**

## Unit 7
## Prevention of Mother To Child Transmission of HIV

**Allan and Nesta Ferguson Trust**

# Unit 7: Prevention of Mother to Child Transmission of HIV

A distance learning course of the Directorate of Learning Systems (AMREF)



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## CONTENTS

## ABBREVIATIONS

| | |
|---|---|
| **AIDS** | Acquired immune deficiency syndrome |
| **ANC** | Antenatal care |
| **ARC** | AIDS-related complex |
| **ART** | Antiretroviral therapy |
| **ARV** | Antiretroviral |
| **AZT** | Zidovudine |
| **BMI** | Body mass index |
| **BMT** | Breastmilk Transmission |
| **C&T** | Counseling and testing |
| **CBC** | Complete blood count |
| **COC** | Combined Oral Contraceptive |
| **CNS** | Central nervous system |
| **CSF** | Cerebrospinal fluid |
| **d4T** | Stavudine |
| **ddC** | Zalcitabine |
| **ddI** | Didanosine |
| **EC** | Emergency Contraceptive |
| **FBC** | Full blood count |
| **FP** | Family Planning |
| **G, gr or gm** | Gram |
| **HAART** | Highly active antiretroviral therapy |
| **HCW** | Health Care Worker |
| **HIV** | Human immunodeficiency virus |
| **IUCD** | Intrauterine Contraceptive Device |
| **kg** | Kilogram |
| **MCH** | Maternal Child Health |
| **mg** | Milligram |
| **mg/L** | Milligrams/liter |
| **mm3** | Cubic millimeter |
| **mmol/mL** | Millimole per milliliter |
| **MTCT** | Mother-to-child transmission |
| **NRTI** | Nucleoside reverse transcriptase inhibitor |
| **NVP** | Nevirapine |
| **NsRTI** | Nucleoside reverse transcriptase inhibitor |
| **ORS** | Oral rehydration solution |
| **OI** | Opportunistic infection |
| **OVC** | Orphans and vulnerable children |
| **PEP** | Post-exposure prophylaxis |
| **PI** | Protease inhibitor |
| **PID** | Pelvic infl ammatory disease |
| **PLHA** | People living with HIV/AIDS |
| **PMTCT** | Prevention of mother-to-child transmission |
| **mg** | Milligram |
| **mg/L** | Milligrams/liter |

| | |
|---|---|
| **mm3** | Cubic millimeter |
| **mmol/mL** | Millimole per milliliter |
| **MTCT** | Mother-to-child transmission |
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| **PI** | Protease inhibitor |
| **PID** | Pelvic inflammatory disease |
| **PLHA** | People living with HIV/AIDS |
| **PMTCT** | Prevention of mother-to-child transmission |
| **SSA** | Sub-Saharan Africa |

# Unit Introduction

Congratulations for coming this far! You are now on the seventh unit of this course. You deserve a pat on the back. In the last unit you learnt about HIV in children including its management. In this unit we are going to discuss the Mother to Child Transmission (MTCT) of HIV, its role in the HIV pandemic and the various strategies that can be used to prevent it.

Just like in the other units, this unit is divided into four sections. The first section will give an overview and mechanisms of MTCT of HIV. In section two, we shall focus our attention on anti-retroviral agents in PMCT of HIV while in section three we shall discuss how to care for the HIV-infected mother during pregnancy and delivery. Lastly, in section four, we shall look at how to set up PMCT services in primary care setting.

We hope you will find this unit interesting and informative.

## Learning Objectives

At the end of this unit, you should be able to:

- Discuss the magnitude of MTCT of HIV, globally, in Sub-Saharan Africa and Kenya;
- Describe the modes of MTCT of HIV;
- Describe the strategies for PMTCT of HIV;
- Discuss the delivery of PMTCT and reproductive health services for HIV infected mothers.

# Section 1: Overview And Mechanism Of MTCT Of HIV

## Introduction

Welcome to section 1 of unit 7. In this section, we are going to have an overview and mechanism of Mother-to-child transmission (MTCT) of HIV. We shall look at the magnitude of MTCT of HIV globally, in Sub-Saharan Africa and in Kenya. We shall also discuss the interaction between HIV and pregnancy, modes of MTCT of HIV, risk factors for MTCT of HIV, and the role of breast-feeding in MTCT of HIV.

Let's start by looking at the objectives of this section.

## Objectives

By the end of this section, you should be able to:

- Describe the magnitude of MTCT of HIV globally, in Sub-Saharan Africa and Kenya;
- Discuss the interaction between HIV and pregnancy;
- Describe the modes of MTCT of HIV;
- Discuss risk factors in relation to MTCT of HIV;
- Discuss the role of breast-feeding in MTCT of HIV.

## Overview of the HIV/AIDS Epidemic: Globally and in Sub-Saharan Africa

The global pandemic of HIV/AIDS has had a devastating impact on families in Sub-Saharan Africa. An estimated 38 million people worldwide are living with HIV/AIDS, of whom two-thirds are in Sub-Saharan Africa (UNAIDS, December 2004).

The majority of the people living with HIV/AIDS are aged 15 to 49 years. Nearly 50% are women of reproductive age. The number of HIV infections in children less than 15 years of age as at the end of 2004 was 2.1 million. Approximately 90% of these children live in Sub-Saharan Africa. Table 7.1 gives a global picture of the HIV pandemic.

*Table 7.1 Regional HIV/AIDS statistics and features, through end 2004. Source: UNAIDS, 2004*

| Region | Adults and Children Living with HIV/AIDS | Adults and Children Newly Infected with | Adult Prevalence* % | Adult and Child Deaths due to AIDS |
|---|---|---|---|---|
| Sub-Saharan Africa | 23.1 – 27.9 million | 2.6 – 3.7 million | 6.9-8.3 | 2.0-2.5 million |
| North Africa And Middle East | 200,000-1.4 million | 21,000-310,000 | 0.1-0.6 | 9,900-62,000 |
| South and South-East Asia | 4.1 – 9.6 million | 610,000-2.2.1 million Includes East Africa | 0.4-0.9 | 290,000-700,000 |
| East Asia | 450,000-1.5 million | n/a | 0.1-0.2 | 22,000-75,000 |
| Oceania | 21,00-46,000 | n/a | 0.1-0.3 | <1300 |
| Latin America | 1.2-2.1 million | 140,000-340,000 | 0.5-0.8 | 65,000-110,000 |
| Caribbean | 270,000-760,000 | 26,000-140,000 | 1.4-4.1 | 23,000-59,000 |
| Eastern Europe and Central Asia | 860,000-1.9 million | 160,000-900,000 | 0.4-0.9 | 32,000-71,000 |
| Western Europe | 460,000-730,000 | 34,000-140,000 | 0.2-0.4 | <8,000 |
| North America | 520,000-1.6 million | Includes W.Europe and North America | 0.3-1.0 | 8,300-25,000 |
| **TOTAL** | **37.8 million (34.6-42.3 million)** | **4.8million (4.2-6.3 million)** | **1.1 (1.0-1.2)** | **2.9 million (2.6-3.3 million)** |

*Percentage of adults ages 15 to 49 years living with HIV/AIDS in 2004, using 2004 population data.
The ranges in this table are based on the best available information. These ranges are more precise than in previous years and work has been completed to further improve the precision of the estimates (UNAIDS 2004).

**Mother-to-Child Transmission (MTCT)**

Mother-to-child transmission (MTCT) of HIV is also known as vertical transmission. This refers to infants who acquire HIV infection from their mothers. Transmission of HIV from mother to child can take place during pregnancy, during labour and delivery, or after birth through breast-

feeding. Without intervention, about one-third of children born to an HIV positive mother will acquire HIV.

HIV infection has become a common complication of pregnancy in many countries, with more than 600,000 children world wide being infected annually through maternal to child transmission. Without treatment, around 15-30% of babies born to HIV positive women will become infected with HIV during pregnancy and delivery. Mother-to-child HIV transmission (MTCT) is responsible for more than 90% of childhood HIV infections. Of all the children born with HIV globally, 9 in every 10 live in sub-Saharan Africa. In at least 16 countries in this region the HIV seroprevalence in pregnant women exceeds 10% and in at least 6, it is over 20%. The risk of transmitting infection from mother to child without treatment is reported to be 20-42%. Given the number of women of reproductive age living with HIV/AIDS, achieving a decline in the transmission of HIV from mother to child continues to pose a challenge. If you and I do not take urgent measures to arrest this threat, the number of infections in children is bound to increase. It is estimated that in the absence of breastfeeding, about 30% of MTCT occurs during pregnancy and 70% during labour and delivery.

The HIV epidemic in children is reversing the gains in child health and survival. It has also made caring for HIV-infected children costly for families and health systems. 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 need to be extended as a matter of urgency.

Reducing the incidence of HIV infections, particularly in children, requires comprehensive intervention measures that include preventing new infections by targeting the general population, especially women of reproductive age; offering supportive family planning services to prevent unintended pregnancies among HIV positive women; providing interventions during pregnancy, labour and delivery and in the postnatal period as it relates to infant feeding practices.

## Epidemiology of HIV among pregnant women in Kenya.

The National AIDS Control Programme has a sentinel surveillance programme of HIV throughout Kenya. Blood samples from antenatal women are regularly tested to estimate the prevalence of HIV infection among them. Antenatal mothers represent sexually active low risk individuals among the population. It is expected that these values would be very similar to values obtained from a population based study.

The HIV/AIDS epidemic in Kenya has been tracked through annual sentinel surveillance in antenatal clinics since 1990. The system started with 13 sites and now has over 35. Behaviours have been measured through national Demographic and Health Surveys in 1993, 1998, and 2003. The surveillance data indicate that prevalence has declined substantially starting in 1998 in five of the original 13 sites and starting in 2000 in another four sites. No decline is evident in the other five original sites although the 2004 estimate is the lowest recorded. Nationally, adult prevalence has declined from 10% in the late 1990s to under 7% today.

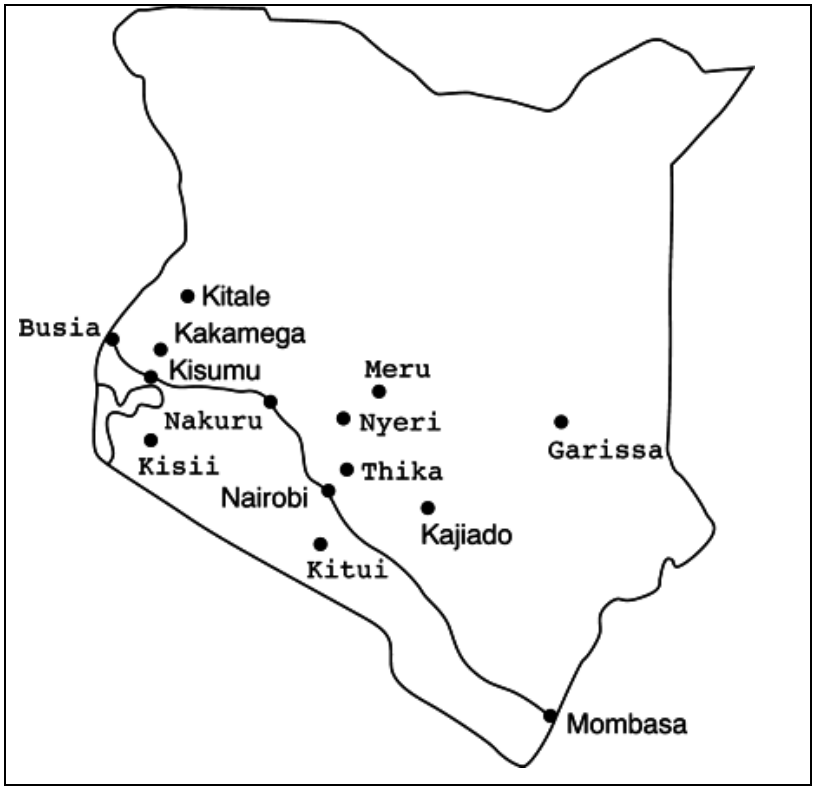


*Figure 7.1: Location of the 13 surveillance sites collecting data since 1990*

Surveys indicate that both age at first sex and use of condoms are rising and that the percentage of adults with multiple partners is falling. It is clear that HIV prevalence is now declining in Kenya in a pattern similar to that seen in Uganda but seven or eight years later. Although the coverage of preventive interventions has expanded rapidly since 2000 this expansion was too late to account for the beginnings of the decline in prevalence.

In Kenya, HIV prevalence in adults in 2003 was estimated by a national survey to be about 7% nationally. Previous estimates of adult prevalence, based on surveillance among pregnant women, put 2003 prevalence at almost 10%, but these were later revised downwards using new information from the national survey on differentials between female and male prevalence and rural and urban prevalence. Almost 9% of women, compared to 5% of men are HIV-infected.

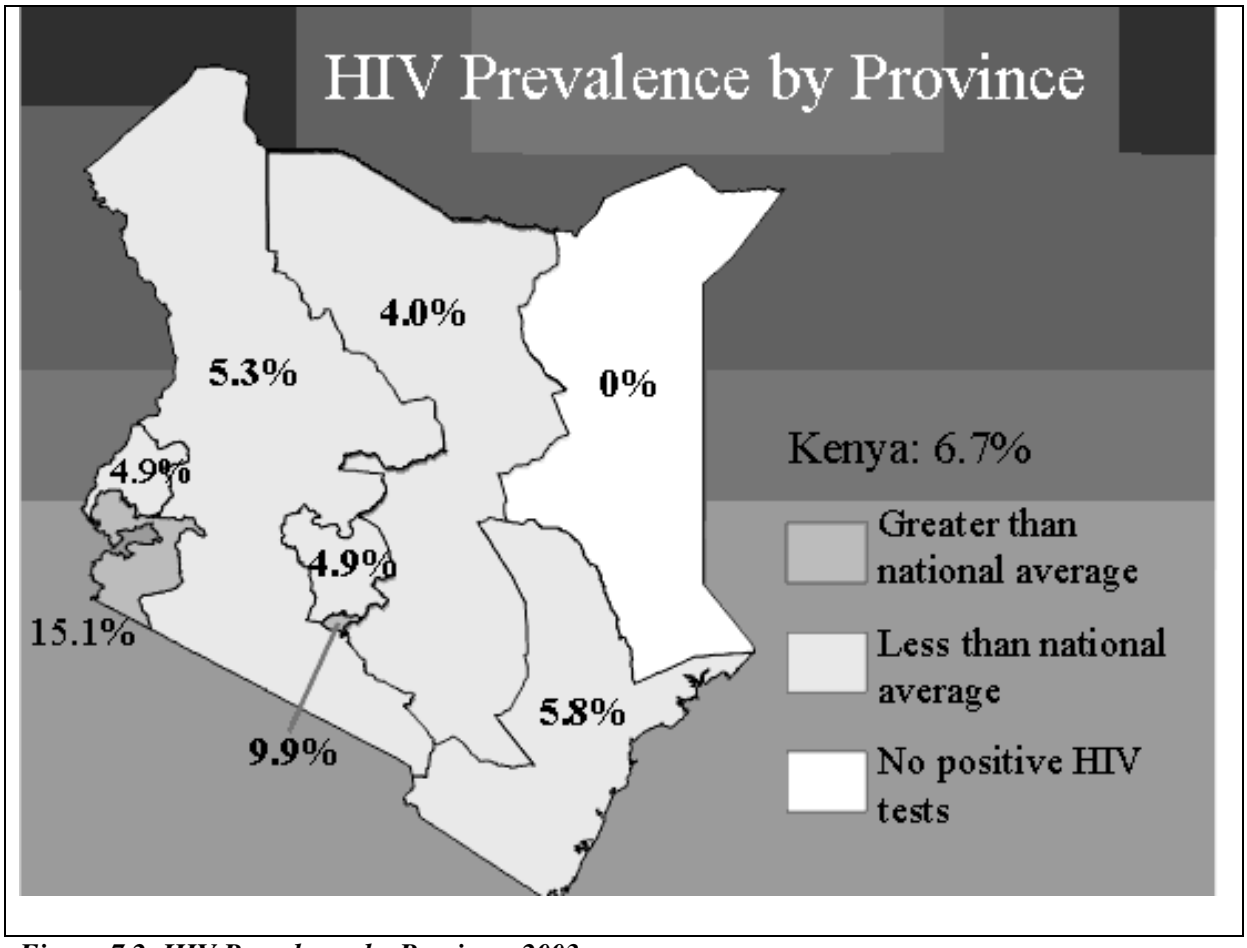


***Figure 7.2. HIV Prevalence by Province, 2003***

## Rates of mother to child transmission of HIV

The term "rate" refers to proportion that is expressed as a percentage.
When we discuss rates of mother to child transmission, we are saying "if you had 100 HIV-infected women, how may of them would infect their babies?" This is what we refer to as a percentage rate. This is a very useful way of examining similarities and differences across population samples.
The estimated rate of mother to child transmission of HIV-1 is 13-32% in developed countries and 25-48% in developing countries. This data has been obtained from studies that follow-up pregnant HIV-infected women and their offspring. Table 7.2 summarizes the data from different regions of the world.

***Table 7.2 Rates of mother to child transmission of HIV in selected countries and regions***

| **Region/Country** | **Rate** |
|---|---|
| India | 48% |
| Africa | 22-43% |
| Caribbean | 24% |
| USA | 17-30% |
| Europe | 14-27% |

As you can see, there are major differences from one region of the world to the other. Infants of HIV-infected women in developed countries are primarily formula fed, while infants in developing countries are primarily breast-fed. We also know that the nutritional status of women in developing countries is generally poor. These women also tend to have a higher prevalence of sexually transmitted diseases and their access to health care is limited compared to those in developed countries. These differences may explain the higher mother to child transmission rates of HIV in developing countries including Kenya.

You may already know that it is difficult to separate late pregnancy, delivery related and early breast milk transmission of HIV. There appears to be very little risk of mother to child

transmission of HIV in early pregnancy. Studies among formula fed infants, that is, children who are not exposed to breast milk HIV, have shown that 50-65% of the infected children do not have detectable virus at birth. All of the HIV-infected children have detectable virus by the age of 3 months. This observation is consistent with the theory that the majority of children who acquire HIV infection do so in late pregnancy (through the transplacental spread of the virus) and through ingestion of infected genital secretions during delivery. After exposure to the HIV-1 virus there is a period of 6 weeks to 3 months when the infection is undetectable using currently available diagnostic tests. This is commonly referred to as the "window period." In breast-feeding populations, it is estimated that 30-50% of the transmission is through breast milk.

**Impact of HIV/AIDS**

Before you proceed, do the following activity.


**ACTIVITY**

What is the impact of HIV and AIDS in Kenya?

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Now read through the text below and see if your ideas are included.

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. This includes losses in sectors such as education, health, security and agriculture.

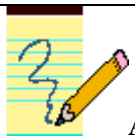
AIDS also has the following negative impact on individuals, families and communities:

- Individual losses — related to deprivation of parental love, loneliness, social rejection and stigma.
- Family losses — increased burden of orphaned children, deprivation of income earners and related poverty.
- Community losses — burden of providing necessities of living for orphaned children; depletion of skilled working force; increased school dropout rates; increased hospital admissions, and increased need for healthcare services and social burdens to the community.

Development of an effective, comprehensive and well-focused national HIV program for PMTCT should include strengthening and increasing access to antenatal care, provision of counselling and testing services, modification of obstetric care and the provision of care and support services (for those who are HIV-positive), including nutrition and antiretroviral drugs for the mother and infant. In addition, to have the desired results, the PMTCT program has to achieve adequate coverage, compliance and sufficient follow up.

## Gender and Socio-Cultural Risk Factors in HIV

Before you proceed, do the following activity.

**ACTIVITY**

List four factors that put adolescents and young people at risk of HIV and pregnancy.

_____

_____

_____

_____

Now compare your factors with the ones discussed below.
There are four factors that put adolescents and young people at risk of HIV and pregnancy. These include:

- Lack of adequate information on sexuality and their own development;
- Lack of skills including ability to delay sexual debut, reducing multiple partners, correct and consistent condom use, avoidance of substance use and safer substance use for those who are already addicted;
- Limited access to health services, risk reduction resources such as condoms; harm reduction for intravenous drug users, testing and treatment of sexually transmitted infections (STIs);
- Increased vulnerability from factors that are largely beyond the control of the young person and yet affect how he or she behaves.

In addition to the structural and social factors that put them at risk, there are others factors that enhance risk such as:

- gender disparities in access to information,
- age differential with the partner,
- race/ethnicity,
- norms and values of the community in which they are growing up,
- economic disparities, and
- residential location.

In addition, young females have specific physiological risk factors, such as cervical ectopy in adolescent females, asymptomatic nature of STIs and bigger surface area of exposure following sex.

## Gender Vulnerability

Both men and women are vulnerable to HIV infection. Women are infected at relatively younger ages than men due to social, cultural, economic, attitudinal and biological factors.

These factors are important in addressing MTCT of HIV. They can only be fully and effectively addressed if both sexes appreciate their complementary roles.

**What are the Risk Factors for HIV/AIDS in Women?**

- Inability of women and young girls to negotiate for safer sex;
- Vulnerability to pressure from male counterparts;
- Trauma and bleeding caused by sexual intercourse at an early age increases exposure to HIV infection;
- Early marriages, encouraged by some cultures, expose young women to older men who may be HIV-infected;
- Forced sex through rape, traditional rituals and practices such as wife inheritance or wife cleansing increase risk of infection;
- Economic pressures which force women to exchange sex for the necessities of survival (food, shelter and safety).

**What are the Risk Factors for HIV/AIDS in Men?**

- Failure to seek proper care for HIV and other STIs due to lack of knowledge, lack of comfort in healthcare settings, and /or stigma;
- Culturally accepted practices of having multiple sexual partners both in and out of wedlock, such as polygamy;
- Men who have sex with men;
- Ego-driven behaviours to display their manhood, including drug and alcohol abuse that may lead to irresponsible high-risk sexual practices;
- Peer pressure from other young men to conform to unsafe sexual practices without regard for consequences.

## Impact of Gender on PMTCT

**What do you think is the impact of gender on PMTCT?**

Most gender issues are embedded in culture, tradition, attitudes, religion and social policy. Practices that promote MTCT of HIV infection can be modified once communities understand the relationship between these practices and the transmission of HIV. In order to introduce new behaviour models to communities, you l require the support of key stakeholders.

HIV/AIDS does not discriminate. Both men and women are infected and affected.
Men and women may lose their jobs, friends and social status. Loss of income makes it difficult to meet demands in life as well as those brought on by HIV/AIDS. The burden of being sick and caring for others deprives women of their quality of life and valuable time for meeting the needs of other family members. Often a girl-child is removed from school to care for her sick relative. HIV/AIDS affects all members of the family, irrespective of sex.

Coping with long-term care of family members takes a very heavy toll on women as they double up their roles as caregivers, breadwinners and family heads. Psychological, social and economic adjustments associated with AIDS-related deaths of family members add to the burden. Pregnancy and childbirth create new health demands on the HIV-infected woman and often contribute to progression of HIV. Women may be subject to stigma, abandonment and discrimination once identified as HIV-positive and be unfairly blamed for the spread of HIV. PMTCT during pregnancy, labour or delivery through breastfeeding requires consistent support and the use of specific interventions to minimize transmission risk.

**Maternal to Child Transmission of HIV – Background**

- Children account for 5 – 10% of all HIV infections worldwide;
- MTCT accounts for 90% of HIV infections in children;
- Overall rates of transmissions are 30 – 40% without intervention;
- In Kenya, 4 – 40% of pregnant women are HIV positive (regional variations).

**Approximate Risk of Mother to Child Transmission of HIV**

- 5-10% during pregnancy;
- 15-20% during delivery;
- 10 – 15% during breastfeeding

Having looked at the epidemiology of HIV in pregnancy and the various risk factors, let us now turn to the interaction between HIV and pregnancy.

## Interaction between HIV and Pregnancy

HIV presentation is the same in both sexes, but the disease has greater implications on a woman's reproductive health, in terms of her ability to cope with pregnancy and the possibility of transmission of the virus to her unborn and newborn child.

During the asymptomatic phase of HIV, most women are unaware of their infection until the disease is diagnosed in their infants. This may cause conflict within the family, especially if the relatives think she brought in the infection.

### Effects of HIV on Pregnancy

Some studies in Africa suggest that HIV may have the following adverse effect on fertility in both symptomatic and asymptomatic women:

- Pregnancy rates are lower and pregnancy loss more common in those who are HIV infected;
- Other studies suggest that fertility is affected only in late HIV disease;
- When comparing changes in CD4 count/percentage over time, there is no difference between HIV-positive pregnant and non-pregnant women;
- HIV does not seem to be a significant cause of congenital abnormalities or spontaneous abortion;
- Pregnancy does not accelerate disease progression in early HIV infection;
- Late HIV disease may affect the outcome of pregnancy, that is, poor fetal growth, preterm delivery, low birth weight and prenatal and neonatal death;

- Common HIV-related problems are no different in pregnant and non-pregnant women, and both groups should receive the same management (except for drugs that are contraindicated or used with caution, like streptomycin and efavirenz).

**Does pregnancy have an effect on the progression of HIV/AIDS?**

Pregnancy does not have an effect on the progression of HIV/AIDS. However, patients with AIDS or advanced HIV are more likely to suffer from pregnancy-related complications.

**How does a mother transmit HIV to her child?**

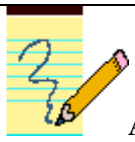
There are several ways in which a mother can transmit HIV to her child:

- HIV virus can pass from mother to her child during pregnancy, labour and delivery or during the post-natal period through breast milk;
- HIV transmission during labour and delivery occurs when baby comes in contact with or ingests/inhales maternal blood and/or vaginal secretions containing HIV virus;
- HIV transmission may also occur with maternal-foetal transfusion during contractions in labour.

Next we are going to look at the factors which lead to MTCT of HIV

## Factors that facilitate mother to child transmission of HIV

Before you proceed do the following activity.

**ACTIVITY**

List down the factors that facilitate the transmission of HIV from mother to child

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Now confirm your answers as you read the following discussion.

There are a number of factors that facilitate transmission of HIV-1 infection. These can be classified into:

- Virus related characteristics
- Maternal characteristics
- Delivery related characteristics
- Breast-feeding.

We are now going to examine each of these risk factors in turn.

**Virus related characteristics**

Women with high concentrations of virus in their bodies are more likely to transmit the infection to their babies. In addition, certain phenotypes of the HIV-1 virus are more infectious than others. The syncytium-forming virus makes immune competent cells to aggregate together into a syncytium. Women with this phenotype of virus transmit HIV-1 more readily to their infants compared to those with a non-syncytium forming virus.

**Maternal characteristics**

There are several maternal characteristics that increase the risk of an infant becoming HIV-infected. Some of these are:

- Stage of the disease;
- Nutritional status of the mother;
- Maternal infections;
- Maternal social characteristics.

**Stage of Disease**

The stages of HIV disease are classified under new infection or early disease, the latent period and the end stage disease also known as AIDS (stages I-IV). Throughout an HIV-1 infection there is rapid viral replication with more than a billion viruses made per day. HIV-infected individuals have a high concentration of the virus soon after infection before the body develops HIV-1 specific immune responses that include cytotoxic T-cell lymphocytes and antibodies. They also have high virus concentration when their immunity succumbs to AIDS. We know that women with a lot of viruses in their bodies are more likely to transmit HIV to their babies. It is therefore not surprising that women with new HIV infection, clinical features of AIDS, and women with laboratory indicators of immunosuppresion such as low CD4/CD8 ratio have an increased rate of mother to child transmission of HIV.

During the latent period of HIV infections, diseases such as tuberculosis, malaria, STDs as well as other acute bacterial infections may increase the individual's viral infections. These diseases have been investigated for their role in increasing the rate of mother to child transmission. You should therefore make sure you treat all infections in HIV-infected women in order to increase their chances of delivering a healthy baby.

**Nutritional status of the mother**

HIV-infected women with vitamin A deficiency have an increased likelihood of transmitting HIV infection to their babies. Vitamin A is very important in maintaining the integrity of skin and mucous membranes and in the immune response of the body. It is possible that among women with very low vitamin A levels, the skin and mucous membranes break down more easily thus exposing the infant to HIV. Difficulties of other micronutrients may increase MTCT of HIV-1 as well as compromising the woman's health status. There is also some evidence that anaemia increases the transmission of HIV from mother to child.

**Maternal infections**

Infections of the placenta (amnionitis) and cord (funisitis) are associated with increased mother to child transmission of HIV-1. Infections of the placenta reduce the effectiveness of the placental barrier against foetal infections. Placental infections are associated with premature delivery and in turn premature delivery has been shown to increase the risk of vertical transmission of HIV-1.

Sexually transmitted infections probably increase the risk of mother to child transmission of HIV through:

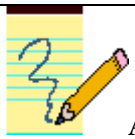
- Increased concentration of HIV in genital secretions;
- Placental infection;
- Inducing premature delivery.

You should screen and treat STDs in pregnancy in order to reduce the mother to child transmission of HIV.

**Maternal social characteristics**

Women with multiple sexual partners or women with an infected partner are at risk of mother to child transmission of HIV. The reason for this is not clear. It may be that they have more frequent STDs or that they are exposed to a wide variety of HIV-1 strains thus increasing their opportunity of acquiring an HIV strain that is more readily transmitted from mother to child.

**Delivery related factors**

**ACTIVITY**

What delivery related factors increase the chances of HIV transmission from mother to child? List them down in the space provided.

_____

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_____

_____

We hope your answers included the following factors:

- Gestational age
- Mode of delivery
- Instruments used during delivery
- Exposure to maternal blood and genital secretions during delivery.

Once again, let's look at each in turn.

**Gestational Age**

Prematurity increases an infant's risk of HIV-1 infection.

**Mode of Delivery**

The risk of mother to child transmission of HIV among infants born by Caesarean section is only half (50%) compared to those infants born by vaginal delivery. This observation is explained by the fact that infants born by Caesarean are not exposed to maternal genital secretions. Among HIV-infected pregnant women, HIV-1 DNA has been recovered from cervical secretions in 30% of the women and 10% from vaginal secretions. However, Caesarean section as a method of reducing mother to child transmission is not always feasible in our own health services. This is because of maternal problems associated with Caesarean delivery such as post-operation sepsis, the unavailability of reliable antenatal HIV testing, and the fact that a large proportion of women in developing countries still deliver away from the health services make the widespread application of this intervention restricted.

Prolonged labour and the premature rupture of membranes have been shown to be associated with increased mother to child transmission of HIV-1. These circumstances expose the infant oral and gut mucosa to prolonged contact with maternal genital secretions that may be contaminated with HIV-1. The infant swallows the genital secretions and thereby is exposed to HIV-1 infection through the gut.

In older children and adults, the gastro-intestinal tract (GIT) is protected from infection by:

- The acidity of the stomach secretions
- Secretory (IgA) antibody that coats the mucosal surface
- Lymphoid tissues along the length of the GIT tract.

In the newborn, all the above mentioned lines of defence are immature and their functions are not fully established thus making the newborn particularly vulnerable to infection following oral exposure to the virus.

**Instruments used during delivery**

Instruments used during delivery may increase the risk of HIV infection. For instance, vacuum delivery, over-vigorous suction or forceps delivery of the newborn may cause breakage in the skin or mucosa of the infant, and as a result create entry points for the virus if there is contact with infected maternal secretions or blood.

**Exposure to maternal blood**

Events that lead to exposure to maternal blood such as episiotomy and lacerations have also been shown to increase the rate of mother to child transmission of HIV. Procedures that result in a breakage of the infant's skin or mucosa for example through over-vigorous suction of a newborn infant or use of wrong equipment have the potential of increasing the risk of HIV infection. Similarly, sharing of suction tubes from one infant to the other also potentially exposes the infant to HIV-1 infection. Actually there is no difference between this practice and using non-sterile needles.

Having looked at delivery related factors that increase chances of MTCT of HIV during delivery, let us now discuss another important mode of transmission after delivery. This is breastmilk transmission.

## Breast Milk transmission of HIV-1

The postnatal transmission of HIV-1 through breast milk is a well documented phenomenon but it is extremely rare in HIV-2 infection. HIV DNA has been detected in breast milk cells and in smaller amounts in breast milk supernatant. Women who have HIV in breast milk transmit it to their infant more frequently than women who do not have detectable HIV in their breast milk. Immunosuppressed women and women with severe vitamin A deficiency tend to have HIV in their breast milk. In contrast, babies of women who have HIV-1 specific Immunoglobulin M (IgM) antibodes in breast milk are less likely to be infected. You can see that many factors play a role in breast milk transmission of HIV. However, it is still not fully understood why some babies acquire HIV through breast-feeding and others do not.

Breast milk transmission (BMT) of HIV was first reported in women who acquired HIV infection in the postnatal period following blood transfusion or through heterosexual exposure. It is worth noting that the blood transfusions were not always in the newborn period. In our earlier

discussion, we found out that newly infected individuals have a high viral concentration and are therefore more likely to be infectious.

In already infected women, the persistence of maternal HIV antibodies makes it difficult to differentiate between late pregnancy, delivery-related and early breast milk transmission. Nevertheless, breast milk transmission of HIV-1 has been suggested by the higher mother to child transmission rate observed in primarily breast-fed children compared to non-breastfed children of HIV-infected women. Studies of infants of HIV-1 infected women have shown that breastfeeding is associated with an increased risk of infant HIV infection.

Table 7.3 summarizes the findings of various studies on the role of breast-feeding in mother to child transmission.

***Table 7.3: The rates of mother to child transmissions of HIV in breastfed versus formula fed infants***

| Location of the study | MTCT in breastfed infants | MTCT in formula - infants | Risk difference |
|---|---|---|---|
| Australia | 50% | 17% | 33% |
| France | 44% | 17% | 27% |
| USA | 28% | 33% | -5% |
| ZAIRE | 20% | 0% | 20% |
| Europe | 31% | 14% | 17% |
| Switzerland | 15% | 16% | -1% |
| Italy | 41% | 23% | 18% |
| Belgium | 49% | 30% | 19% |
| South Africa | 46% | 18% | 28% |
| Brazil | 49% | 18% | 31% |

Breast milk transmission has also been documented in:

- Children wet-nursed by HIV-1 infected women;
- Children put back on the breast after a period of weaning;
- Following exposure to pooled breast milk.

**Late breast milk transmission of HIV -1**

Breast milk transmission of HIV takes place even after the newborn period. The term late breast milk transmission has been coined to describe children who acquire HIV –1 infections after the age of 6 months. It has been difficult to get an accurate estimate of this transmission, but it is

estimated that approximately 5% of perinatal infected children do so through breast – feeding beyond 6 months of life.

In the next unit on nutrition, you will learn more about current recommendations for safe breast-feeding in Kenya, its benefits and disadvantages and also what advice you should give to a HIV infected mother on infant feeding.

- Risk of transmission to the infant is greatest when viral load in high – most often with recent infection or advanced HIV/AIDS.
- Other viral, maternal, obstetrical, foetal and infant factors, alone or in combination, influence MTCT of HIV infection.
- Early identification and treatment of STIs can minimize associated chorioamnionitis (inflammation of the placental membrane).
- PMTCT interventions are designed to address these risk factors.

***Table 7.5: Maternal factors that may increase the risk of HIV transmission***

| **Pregnancy** | **Labour and Delivery** | **Breastfeeding** |
|---|---|---|
| • High maternal viral load (New or advanced HIV/AIDS);<br>• Viral or bacterial infection<br>• Sexually transmitted Infections<br>• Maternal malnutrition (indirect cause) | • High maternal viral load (New or advanced HIV/AIDS)<br>• Ruptured membranes more than 4 hours before delivery<br>• Invasive delivery procedures that incrase contact with mother's blood or body fluids (e.g. vacuum delivery, episiotomy, artificial rupture of membranes); invasive foetal fissures,;<br>• Vacuum extraction<br>• External cephalic version (ECV);<br>• Chorioamnionitis (from untreated STI or other infection;<br>• Premature delivery;<br>• Low birth weight | • High maternal viral load (New or advanced HIV/AIDS)<br>• Duration of breastfeeding;<br>• Mixed feeding (e.g. foods or fluids in addition to breastmilk;<br>• Breast abscesses, nipple mastitis;<br>• Pooer maternal nutritional status;<br>• Oral disease in the baby (e.g. thrush or sores) |

## Summary

We have come to the end of this section. We hope you enjoyed reading it. Let us summarize what we have leant so far. We have seen that the global pandemic of HIV/AIDS has had a devastating impact on families in sub-Saharan Africa, Kenya included. In Kenya, HIV prevalence among women is estimated at 9%, nearly twice that of men. MTCT is responsible for more than 90% of childhood HIV infections. We have also observed that MTCT can take place during pregnancy, labour and delivery, and breast-feeding. Other areas that we focused on were, the interaction between HIV and pregnancy, modes of MTCT of HIV, risk factors for MTCT of HIV, and the role of breast-feeding in MTCT of HIV.

In the next section we are going to discuss the role that ARV play in PMTCT. However we advise that take a well deserved rest before you proceed to the next section.

# Section 2: Antiretroviral Agents In PMCT Of HIV

## Introduction

Welcome to this second section of unit 7. In this section we are going to discuss antiretroviral agents in PMCT of HIV. In the previous section, we looked at the magnitude of MTCT of HIV globally, interaction between HIV and pregnancy, modes MTCT of HIV, risk factors for MTCT of HIV and the role of breast-feeding in MTCT of HIV.

Anti-retroviral agents have revolutionized the management of HIV/AIDS. They are not a cure but do prolong life when used correctly and consistently. In PMCT of HIV, they can dramatically reduce the risk of transmission of HIV from mother to child.

In this section, we will first give a brief overview of anti-retroviral therapy. We will then look at the various regimes of antiretroviral agents used in PMCT. Next, we will focus on the PETRA study and the current trends in PMCT. Finally, we will briefly discuss the use of ARVs for PMCT of HIV in resource limited settings based on the WHO/UNICEF recommendations.

Let us start by looking at our objectives for this section.

## Objectives

By the end of this section you should be able to:

- Discuss evidence that ARVs can reduce MTCT of HIV;
- Describe the ARV regimen for PMTCT;
- Discuss the PETRA study and the current trends on the use of ARVs in PMCT of HIV;
- Discuss delivery of ARVs in PMCT of HIV in resource-limited settings based on the WHO/UNICEF recommendations.

## Types of Antiretroviral Therapy

You will recall that in Unit 5, we discussed Antiretroviral therapy, their classification and mode of action. You are going to apply that knowledge in this unit so lets start by finding out how much you still remember.


**ACTIVITY**

1. What are the four main classes of antiretroviral drugs?

_____

_____

_____

_____

2. Explain the mode of action of drugs in each class

_____

_____

_____

_____

3. Give examples of 2 drugs in each class that is recommended in your country's guidelines

_____

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_____

_____

_____

Now confirm your answers as you read the following discussion.

In way of summary we can say the following about ARVs:

- Antiretrovirals can be classified into three major classes, reverse transcriptase inhibitors (RTIs), protease inhibitors (PIs), and entry or fusion inhibitors.
- The first group can be further subdivided into nucleoside reverse transcriptase inhibitors (NRTI) and non-nucleoside reverse transcriptase inhibitors (NNRTI). Other classes are nucleotide reverse transcriptase inhibitors, fusion inhibitors and integrase inhibitors (these are under development).
- Reverse transcriptase inhibitors prevent the enzyme reverse transcriptase from making a template for proviral DNA.
- Protease inhibitors, on the other hand, inactivate various enzymes required for assembly and release of the virus.
- Entry Inhibitors – This is a new class of antiretroviral drugs. They are at times referred to as fusion inhibitors

The following are the most commonly available drugs, their short forms and example of trade names:

1. Nucleoside reverse transcriptase inhibitors (NRTIs):
    - Didanosine (DDI), Videx®
    - Lamivudine (3TC), Epivir®
    - Stavudine (D4T), Zerit®
    - Zalcitabine (DDC), Hivid®
    - Zidovudine (ZDV or AZT), Retrovir®

2. Non-nucleoside reverse transcriptase inhibitors (NNRTIs):
    - Delarvidine, Rescriptor®
    - Nevirapine, Viramune®
    - Efeverence, Stocrine®

3. Protease inhibitors (PIs):
    - Indinavir, Crixivan®
    - Nelfinavir, Viracept®

- Ritonavir, Norvir®
- Saquinavir, Invirase®
- Lopinavir

## Antiretrovirals Administered To The Mother In PMTCT

When considering which antiretrovirals you should administer to a mother for PMCT, you should always try to administer Antiretrovirals that can help the mother too.

**Important Definitions:**

- **ARV therapy:** Long-term use of antiretroviral drugs to manage maternal HIV/AIDS and prevent MTCT.
- **ARV prophylaxis:** Short-term use of antiretroviral drugs to reduce HIV transmission from mother to infant

**Antiretrovirals in prophylaxis: Current recommendations.**

In Kenya, **nevirapine (NVP)** is often used for prophylaxis in PMCT. If a mother intends to deliver at home, you should provide her with nevirapine during an antenatal care visit as follows:

***Prophylaxis with nevirapine (NVP)***

- A single 200mg tablet for the mother to take at the onset of labour.
- A single dose of oral suspension (standard dosage = 2mg/kg) to be given to the infant immediately after birth or within 72 hours of delivery.

Nevirapine has the following advantages:

- Absorbed rapidly and completely after oral administration and crosses the placenta quickly.
- Long half-life that benefits the infant.
- May be taken with or without food.

**Zidovudine (AZT)** in combination with **Nevirapine (NVP)** is another prophylaxis regimen used as follows:

***Prophylaxis with Zidovudine (AZT) and Nevirapine (NVP)***

**Antenatal**
*Mother:* AZT 300mg twice daily starting at 28 weeks or as soon thereafter as possible. AZT may be started as late as 36 weeks.

**Intrapartum**
*Mother*: AZT 300mg at onset of labour and every 3 hours until delivery and single-dose NVP 200mg at onset of labour.

OR
AZT 600mg onset of labour and single-dose NVP 200mg at onset of labour.

**Postpartum**
*Infant*:: NVP 2mg/kg oral suspension immediately after birth or within 72 hours of delivery and AZT 4mg/kg twice a day for 7 days.

OR
NVP 2mg/kg oral suspension immediately after birth or within 72 hours of delivery.

While recognizing the need for short-course prophylaxis, new recommendations from WHO (2004) emphasize longer, combination prophylaxis regimens, where feasible.

***Table 7.4: Summary of antiretroviral treatment regimes in pregnancy***

| | **Antenatal** | **Intrapartum** | **Postpartum** |
|---|---|---|---|
| **1. Nevirapine** | | 1 dose of 200mg orally at onset of labour | 1 oral dose of 2mg/kg within 72 hours of birth to infant. |
| **2. Zidovidine (ZDV, AZT)** | | | |
| **Short course** | 300mg orally twice a day till onset of labour | 300mg orally 3 hourly from onset of labour to delivery. | |
| **Long course** | 100mg orally 5 times per day or 200mg orally 3 times per day or 300mg orally twice a day from 14-34 weeks of pregnancy | 2mg/kg intravenously for first hour then 1mg/kg/hr delivery. | 2mg/kg AZT syrup six hourly for six weeks to baby. |
| **Postpartum (where no antenatal or intrapartum treatment received)** | | | 2mg/kg AZT syrup six hourly for six weeks to baby. |
| **3. Zidovudine and Lamivudine (combivir)** | | | |

| | | | |
|---|---|---|---|
| **PETRA 'A'** | ZDV 300mg twice daily + 3TC 150mg twice daily start at 36 weeks. | ZDV 300mg 3 hourly 3TC 150mg 12 hourly. | One week: Mother: ZDV 300mg twice daily, 3TC 150mg twice daily. Infant: ZDV 4mg/kg/12 hourly. 3 TC 2mg/kg/12 hourly orally. |
| **PETRA 'B'** | | ZDV 600mg at onset of labour, then 300mg 3 hourly 3TC 150mg 12 hourly | One week orally: Mother: ZDV 300mg twice-daily 3TC 150mg daily. Infant: ZDV 4mg/kg/12 hourly 3TC 2mg/kg/12 hourly. |

***TABLE 7.5: Antiretroviral prophylaxis regimens to prevent MTCT****

| **COURSE** | **ANTENATAL** | **INTRAPARTUM** | **POSTPARTUM** | **POSTPARTUM** |
|---|---|---|---|---|
| **Zidovudine (AZT) and Nevirapine (NVP)** | **Mother:** AZT 300mg twice a day starting at 28 weeks or as soon as possible thereafter. AZT may be started as late as 36 weeks. | **Mother:** AZT 300mg at onset of labour and every 3 hours until delivery and single dose NVP 200mg at onset of labour. OR AZT 600mg at onset of labour AND single-dose NVP 200mg at onset of labour. | None | **Infant:** NVP 2mg/kg oral suspension immediately after birth*** and AZT 4mg/kg twice a day for 7 days. OR NVP 2mg/kg oral suspension immediately after birth***. |
| **AZT** | **Mother:** AZT 300mg twice a day starting at 28 weeks or as soon as possible thereafter | **Mother:** AZT 600mg at onset of labour OR AZT 300mg at onset of labour and every 3 hours until delivery. | None | **Infant:** AZT 4mg/kg twice a day for 7 days OR AZT 2mg/kg 4 times a day for 7 days. |
| **AZT and NVP for infant** | None | None | None | **Infant:** NVP 2mg/kg oral |

| | | | | |
|---|---|---|---|---|
| (when mother has received no ARV prophylaxis). | | | | suspension immediately after birth and AZT 4mg/kg twice a day for 7 days.<br>When AZT oral suspension not available, NVP 2mg/kg as soon as possible after birth** |
| **NVP** | None | **Mother:**<br>Single-dose NVP 200mg at onset of labour. | None | **Infant:**<br>NVP 4mg/kg oral suspension immediately after birth**. |
| **AZT and Lamivudine (3TC)** | **Mother:**<br>AZT 300mg and 3TC 150mg twice a day starting at 28 weeks or as soon as possible thereafter. | **Mother:**<br>AZT 300mg every 3 hours until birth and 3TC 150mg every 12 hours until delivery. | **Mother:**<br>AZT 300mg and 3TC 150mg twice a day for 7 days. | **Infant:**<br>AZT 4mg/kg and 3TC 2mg/kg twice a day for 7 days. |
| **AZT and 3TC** | None | **Mother:**<br>AZT 600mg and 3TC 150mg at onset of labour followed by AZT 300mg every 3 hours and 3TC 150mg every 12 hours until delivery. | **Mother:**<br>AZT 300mg and 3TC 150mg twice a day for 7 days. | **Infant:**<br>AZT 4mg/kg and 3TC 2mg/kg twice a day for 7 days. |
| **AZT + 3TC + saquinavir (SQV/r)***<br>(This regimen can be considered for MTCT prophylaxis in women not needing ARV therapy). | **Mother:**<br>AZT 300mg, 3TC 150mg and SQ/r 1000mg/100mg twice a day starting at 36 weeks or as soon as possible thereafter. | **Mother:**<br>Continue antenatal dosing schedule. | None | **Infant:**<br>NVP 2mg/kg oral suspension immediately after birth**<br>OR<br>AZT 4mg/kg twice a day for 7 days<br>OR<br>NVP 2mg/kg oral suspension immediately after birth** and AZT 4mg/kg twice a day for 7 days. |

| COURSE | ANTENATAL | INTRAPARTUM | POSTPARTUM | POSTPARTUM |
|---|---|---|---|---|
| **AZT or stavudine (d4T) + 3TC + NVP **** (when used for therapy in pregnant women, this regimen also provides MTCT prophylaxis). | **Mother:** AZT 300mg and 3TC 150mg and NVP 200mg twice a day starting at 36 weeks or as soon as possible thereafter OR d4T 40mg, 3TC 150mg and NVP 200mg twice a day starting at 36 weeks or as soon as possible thereafter. | **Mother:** Continue antenatal dosing schedule. | None | **Infant:** NVP 2mg/kg oral suspension immediately after birth*** OR AZT 4mg/kg twice a day for 7 days **OR** NVP 2mg/kg suspension immediately after birth ** and AZT 4mg/kg twice a day for 7 days. |

*In women who do not require ARV, alternative triple-combination regimens for MTCT prophylaxis may be considered. If the woman is in the third trimester of pregnancy, these regimens may include AZT + 3TC + nelfinavir (NFV) or AZT + 3TC + efavirenz (EFV).

** In women who require ART, this is the recommended first-line regimen. However, in the third trimester of pregnancy, a regimen consisting of AZT (or d4T) + 3TC + EFV may be considered.

*** Infants prescribed single dose NVP can receive the dose immediately after birth or within 72 hours of delivery.

### Points to Remember

- Antiretroviral therapy is different from antiretroviral prophylaxis. The goal of antiretroviral therapy is care of the mother's HIV infection – this also reduces MTCT. Antiretroviral prophylaxis is the short-term use of antiretrovirals solely to reduce MTCT of HIV infection to the baby.
- ARV prophylaxis with nevirapine should be provided to the mother at the onset of labour and to the infant as soon as possible after birth or within 72 hours of delivery.
- To ensure and maintain confidentiality, women may self-administer antiretroviral prophylaxis in labour and delivery.
- A second prophylaxis regimen available in some clinical settings in Kenya combines the use of AZT and NVP.
- Use of triple ARV therapy in pregnancy and delivery reduces risk to about <2%. This is an ideal, but it I usually not available or affordable.

## Evidence That ARVs Can Reduce MTCT of HIV

The above recommendations from WHO which have been adopted by Kenya (MOH), have emanated from previous studies done in various parts of the World. Several studies have been undertaken on clinical regimes to reduce perinatal transmission of human immunodeficiency virus. These studies have provided evidence that ARVs can reduce MTCT of HIV. These include the PACT 076 study in America, the Thailand study, the PETRA study and the Ugandan HIVNET study. They employed either short course or long course regimens. Some of the findings are shown below:

***Table 7.6: Clinical regimes to reduce perinatal transmission of human immunodeficiency virus Type 1***

| Study | Drug | Antepartum | Intrapartum | Postpartum | Infant | % reduction of MCTC |
|---|---|---|---|---|---|---|
| **PACT 076 Non-breastfeeding** | AZT | 100mg orally five times daily starting at 14-34 weeks gestation. | Intravenous 2.0mg/kg loading then 1mg/kg/hr. | No | 2mg/kg orally every 6 hours for 6 weeks | 68% (infection status at age 18 months). |
| **Thailand Non-breastfeeding** | AZT | 300mg orally twice daily starting at 34 weeks gestation until labour onset. | 300mg orally every 3 hours until delivery. | No | No | 50% (infection status at 3 moths) |
| **Code D'Ivore Burkina Faso Breastfeeding** | AZT | 300mg AZT + 150mg 3TC orally every 3 hours. | 300mg orally every 3 hours until delivery. | No | No | 38% (infection status at 6 months). |
| **Code D'Ivore Burkina Faso Breastfeeding** | AZT | 300mg AZT + 150 mg 3TC starting at 36 weeks. | 600mg orally at the onset of labour. | No | No | 37% (infection status at 3 months). |
| **Africa-Petra Arm A 67% breastfeeding** | Zidovudine (AZT) 300mg + Lamivudine (3TC) 150mg (COMBIVIR) | 300mg AZT + 150mg 3TC starting at 36 weeks. | 300mg AZT + 150mg 3TC orally every 3 hours until delivery. | AZT 4mg/kg 3TC 2mg/kg orally twice daily for 1 week. | AZT 4mg/kg 3TC 2mg/kg orally twice daily for 1 week. | 50% (infection status at 6 weeks). |
| **Africa-Petra Arm A 67% breastfeeding** | AZT 300mg + 3TC 150mg (Combivir) | No | 300mg AZT every 3hrs + 150mg 3TC every 12hrs until delivery. | AZT 4mg/kg 3TC 2mg/kg orally twice daily for 1 week. | AZT 4mg/kg 3TC 2mg/kg orally twice daily for 1 week. | 37% (infection status at 16 weeks). |
| **HIVNET** | Nevira | No | 200mg single | NO | 2mg/kg stat | 46% |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Breastfeeding** | pine | | dose at the onset of labour. | | | (infection status at 16 weeks). |

***Table 7.7: Use of antiretroviral drugs in pregnant women and women of child-bearing potential in Kenya.***

| | |
|---|---|
| **HIV-infected women with indications** for initiating ARV treatment[1] who may become pregnant | First-line regimen: **d4T + 3TC + NVP** Efavirenz (EFV) should be avoided in women of Childbearing age, unless effective contraception can be assured. Exclude pregnancy before starting treatment with EFV. |
| **2. HIV-infected pregnant women without indications for ARV treatment[1]** | **First-choice regimen:** AZT and NVP<br><br>**Women**<br>AZT 300mg twice a day starting 28 weeks or as soon as possible thereafter (upto36 weeks). Continue AZT 300mg at onset of labour and every three hours until delivery. In addition, women should receive single-dose NVP 200mg at the onset of labour or upon arrival to the facility**.**<br><br>**Alternative intrapartum dosing regimen**: single-dose AZT 600mg plus single-dose NVP 200mg at the onset of labour or upon arrival to the facility.<br><br>**Infants**<br>NVP 2mg/kg oral suspension immediately after birth or within 72 hours and AZT 4mg/kg twice daily for 7 days.<br>OR<br>NVP 2mg/kg oral suspension immediately after birth or Within 72 hours.<br><br>**Infants**<br>NVP 2mg/kg oral suspension immediately after birth or within 72 hours and AZT 4mg/kg twice daily for 7 days.<br>OR<br>NVP 2mg/kg oral suspension immediately after birth or Within 72 hours.<br><br>**Alternative regimen: AZT only**<br>**Women**<br>Starting at 28 weeks or as soon as possible thereafter (up to 36 weeks). AZT 300mg twice a day. AZT 600mg at the onset of labour.<br><br>**Infants**<br>AZT 4mg/kg twice daily for 7 days.<br>OR<br>AZT 2mg/kg 4 times a day (every 6 hours) for 7 days. |

*Information Adapted from Republic of Kenya Ministry of Health. April 2004. Kenyan National Clinical Manual for ARV providers.*[WHO 2004.] *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-constraint settings. Pp 39 – 41.*

1. WHO recommendations for initiating ARV treatment IN HIV-infected adolescents and adults. If CD4 testing is available it is recommended to offer ARV treatment to patients with: WHO Stage IV disease irrespective of CD4 cell count, WHO Stage III disease with consideration of using CD4 cell counts less that 350 10° cells/L. If CD4 testing is unavailable, it is recommended to offer ARV treatment to patients with WHO Stage III and IV disease irrespective of total and lymphocyte count or WHO Stage II disease with a total lymphocyte count less than 1200 10° cells/L.

2. Continuing the infant on AZT for four to six weeks can be considered if the woman received antepartum ARV drugs for less than four weeks.

## Summary

You have come to the end of this section on antiretroviral agents in PMCT of HIV. In this section we have seen how antiretroviral agents have revolutionalized the management of HIV/AIDS, and particularly the prevention of mother to child transmission. There is sufficient convincing evidence that ARVs prevent mother to child transmission of HIV. We have seen the various studies done including the PETRA study, the PACT-076 study the Thailand study and the Ugandan HIVNET study. When considering antiretrovirals administered to mothers to prevent PMTCT, it is important to try and administer antiretrovirals that can help the mother too. In pregnancy, the mothers should be given the benefit of antiretrovirals for her own sake just like any other person. This should be done and the general consideration should apply just like in any other disease treatment.

**Points to Remember**

- Antiretroviral therapy is different from antiretroviral prophylaxis. The goal of antiretroviral therapy is care of the mother's HIV infection – this also reduces MTCT.
- Antiretroviral prophylaxis is the short-term use of antiretrovirals solely to reduce MTCT of HIV infection to the baby.
- ARV prophylaxis with nevirapine should be provided to the mother at the onset of labour and to the infant as soon as possible after birth or within 72 hours of delivery.
- To ensure and maintain confidentiality, women may self-administer antiretroviral prophylaxis in labour and delivery.
- A second prophylaxis regimen available in some clinical settings in Kenya combines the use of AZT and NVP.
- Use of triple ARV therapy in pregnancy and delivery reduces risk to about <2%. This is an ideal, but it I usually not available or affordable.

In the next section we shall discuss care of the HIV-infected mother during pregnancy.

# Section 3: Care of the HIV-Infected Mother During Pregnancy

## Introduction

Welcome to section three of unit seven. In the previous section, we looked at anti-retroviral agents in PMCT of HIV. We saw that there is a difference between antiretroviral therapy and antiretroviral prophylaxis. The former is the long-term use of ARVs to reduce opportunistic infections while the latter is the short term use of ARV to reduce MTCT of HIV infection to the baby.

In this section, we shall look at care of HIV-infected mother during pregnancy and delivery. We shall discuss the essential package for PMCT of HIV during pregnancy, including counselling, testing and psychological support, treatment/prevention of febrile illness during pregnancy, maternal nutrition and infant feeding options. Other aspects would include, conduct of labour, delivery and newborn care. We shall also discuss the post-natal care of mother including contraceptive choices at her disposal.

But first, let's look at the objectives of this section.

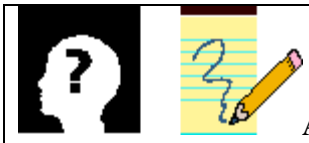
## Objectives

By the end of this you should be able to: -

- Identify components of an essential package of antenatal care services.
- Describe strategies for reducing the risks of MTCT during labour and delivery.
- Discuss the management of women of unknown HIV status in labour and delivery.
- Describe immediate post-partum care of women with HIV infection.

## Essential Package of Integrated Care Services

Let's start this section with your ideas.



**ACTIVITY**

What are the services of the essential package of integrated antenatal care services?

_____
_____
_____
_____

Now read through the text below and see if your ideas are included.

Comprehensive antenatal care includes provision of a wide range of services aimed at ensuring better health of the mother and infant during and after pregnancy. Providing these services in resource-constrained settings can be challenging. That is why you need to enlist community support to advocate for necessary equipment, supplies and physical space can be helpful for implementation of the following services.

Table 7.8 below oulines the services of the essential package of integrated antenatal care.

***Table 7.8: Essential Package of Integrated Antenatal Care Services***

| |
|---|
| **Client history:** Obtain routine data including medical, obstetric and psychosocial history. Determine drug history, known allergies and use of alternative medicines such as herbal products. |
| **Physical examination and vital signs:** Include visual and hands-on examination and assess for current signs or symptoms of illness including HIV/AIDS, tuberculosis (TB), malaria and sexually transmitted infections (STIs). |
| **Abdominal and genital examination:** Include speculum and bimanual examinations, where acceptable and feasible. |
| **Lab diagnostics:** In accordance with Kenya protocol, perform or refer for routine tests including for syphilis, anaemia and HIV. |
| **Tetanus toxoid immunizations:** Administer according to Kenya protocol. |

| |
|---|
| **Nutritional assessment and counseling:** Include iron, multivitamin and folate supplementation, monitor for anaemia, adequate caloric and nutrient intake and recommend realistic diet adjustments based on local resources. |
| **STI screening:** Include risk assessment for STIs. Diagnose and treat early according to Kenya protocols. Counsel and educate about signs and symptoms of STIs and increased risk of HIV transmission. Educate to avoid transmission or re-infection. |
| **Infection:** Provide prophylaxis for opportunistic infections (e.g. herpes, candidiasis, PCP) based on Kenya protocols. Screen and treat any parasitic, bacterial or fungal infection. |
| **Tuberculosis (TB):** Co-infection with tuberculosis is the leading cause of mortality due to HIV. All women presenting for ANC services with a cough of more than 2 weeks duration should be screened for TB regardless of HIV status. Follow Kenya protocols for screening, prophylaxis and treatment. |
| **Antimalarials:** Malaria is a major cause of high maternal and infant morbidity and mortality. Follow Kenya protocols for prophylaxis and treatment. |
| **ARV prophylaxis during pregnancy:** Provide in accordance with Kenya PMTCT protocol. |
| **ARV treatment during pregnancy:** Provide linkage to treatment when indicated according to Kenya protocols. |
| **Counseling on infant feeding:** All women require infant-feeding counseling and support. Exclusive breastfeeding should be promoted as the norm for all women regardless of HIV status. Women infected with HIV need in the selection of safer infant-feeding options (see WHO guidelines). |
| **Counseling on HIV/AIDS danger signs:** Provide women with information and instructions on seeking health care for symptoms of HIV disease progression, such as frequent and recurrent illnesses, chronic persistent diarrhoea, candidiasis, fever, wasting or signs of any opportunistic infection. Refer women to AIDS treatment programmes when indicated and available. |
| **Partners and family:** HIV-related stress and lack of support have been linked to progression of HIV infection. Strengthen postpartum follow-up for women, infants and families for primary prevention of infections and for HIV-infected and affected families to care services and linkages to other care programmes (e.g. community-based support clubs, home-based care). |
| **Effective contraception plan:** Counsel about consistent use of condoms during pregnancy, as well as throughout postpartum and breastfeeding periods to avoid new infection, re-infection and further transmission. Include long-term family planning with partner involvement when possible. Discuss dual protection methods. |

**Points to Remember:**

- Infections in pregnancy such as malaria or STIs may increase the risk of MTCT.
- All women who present for ANC services with a cough of more than 2 weeks should be screened for TB, regardless of HIV status.

## Nutritional impairment in Pregnancy

Nutritional counselling in ANC is recommended to help meet the nutritional needs and increased metabolic demands of the mother. The following factors play an important role in the nutritional status of a pregnant mother:

- Women who maintain adequate nutrition and good health during pregnancy can improve weight-at-birth for their infants and overall survival rates;
- Many factors can contribute to nutritional impairment in pregnancy. Pregnancy is a period of increased nutritional requirements and hence the need for micronutrient supplementation;
- HIV-infected women are at increased risk for nutritional impairment due to HIV-related symptoms that may affect appetite, cause malabsoption of nutrients and increase in the basal metabolic rate;
- Micro and macronutrient deficiency results in an increased number of pre-term and low birth weight babies;
- HIV-positive women need to increase their intake to meet normal pregnancy requirements.

## Barriers to the uptake of ANC services?

Think about barriers to the uptake of ANC services and then do the following activity.


**ACTIVITY**

List down the barriers that hinder the provision of comprehensive antenatal care services in your community.

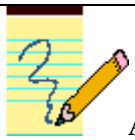
_____
_____
_____
_____
_____

Now read through the text below and see if your ideas are included.

Each community faces challenges in the provision of integrated services. Identification of these challenges is the first step to finding their solutions. Addressing challenges requires a team support.

Some of the system-level challenges to providing comprehensive services in Kenya ANC clinics include:

- Inadequate staffing;
- Deficient infrastructure to support implementation of services;
- Irregular/insufficient supplies;
- Inadequate record storage facilities.

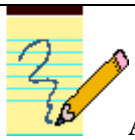
**ACTIVITY**

Atieno, an 18-year-old single woman, tested HIV-positive at her first antenatal visit. According to her LMP, she is approximately 28 weeks pregnant with her first child. She received post-test counselling and was encouraged to bring her partner in for testing.

According to Table 7.11 above, what ANC services should Atieno receive during the course of her care?

_____
_____
_____
_____
_____

Review table 7.11 and see if your answers are correct.

**ACTIVITY**

During her first visit to the antenatal clinic, Nyaboke found out that she was HIV-positive. When she returned for her second visit, and was unable to pay the 20 shillings, she was "treated badly" and she left. She is now 30 weeks pregnant and although this is her third visit, she has only seen the nurse once. She is now planning to have her baby at home. She asks for the medicine for her and her baby so that the baby will not get HIV infection. She also tells you that her partner must not find out that she is HIV-positive.

1. What do you tell Nyaboke?

_____
_____
_____

2. How was her care affected as a result of her second visit?

_____
_____
_____

3. .What other potential obstacles is Nyaboke facing at home?

_____
_____
_____

Did you manage to answer all the questions? Compare your answers with the information provided below.

***Question 1***

- Nyaboke may be feeling stigmatized and discriminated. She needs counseling so that she can identify and deal with issues that arose during the second visit.
- She needs counseling on the importance of having safe delivery, as this will minimize the risk of HIV transmission to her baby during labour and delivery.

***Question 2***

- She missed the essential care components that would contribute to reducing the risk of HIV transmission to her infant.

***Question 3***

- Stigma and discrimination related to disclosure;
- Potential of increased risk of transmitting HIV virus to her partner (if uninfected).

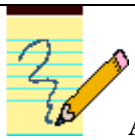
You now know the comprehensive antenatal care services that should be provided to a HIV-infected mother. Next let us look at how to care for them during labour and delivery.

## Care During Labour And Delivery

Let us now look at care of an HIV- infected mother during labour and delivery. The following points are important to note.

- MTCT of HIV can be reduced in labour and delivery through safer obstetrical practices. Infection prevention through use of Universal Precautions is especially important in labour and delivery. Principles of infection prevention should be reviewed with all women, including those who plan to deliver their babies at home.
- Emphasize the importance of recording all vaginal examinations on the partogram because of the increased risk of infection. It is also essential to record the administration of nevirapine on the partogram.
- Elective caesarean section has been known to reduce MTCT of HIV. But it is not always a feasible option.

## Interventions to Reduce MTCT in Labour and Delivery

**ACTIVITY**

How can you reduce MTCT of HIV during labour and delivery?

_____
_____
_____
_____
_____

Compare your responses with those found in the following text.

Most HIV infections due to MTCT occur during labour and delivery. It has been documented that MTCT of HIV can be reduced by the use of specific interventions during this time. The following are some of the interventions, which can help reduce the risk of MTCT in labour and delivery.

- Administer ARV treatment and prophylaxis during labour in accordance to Kenya protocols.
- Use Universal Precautions.
- Minimize vaginal examinations.
- Avoid prolonged labour.
- Avoid routine rupture of membranes.
- Avoid unnecessary trauma during delivery.
- Avoid routine episiotomy.
- Minimize the risk of postpartum haemorrhage.
- Use safe transfusion practices.

Let's look at each of these points in detail.

***Administer ARV treatment and prophylaxis during labour in accordance with Kenya protocols:***

Continue ARV treatment or implement ARV prophylaxis during labour to reduce maternal viral load and provide protection to the infant.

***Use Universal Precautions (good infection prevention practices) for all patient care:***

Include use of protective gear, safe use and disposal of sharps, sterilization of equipment and safe disposal of contaminated materials.

***Minimise vaginal examinations:***

- Perform vaginal examinations only when absolutely necessary using appropriate sterile technique;
- Record all vaginal examinations performed

***Avoid prolonged labour:***

- Use a partogram to monitor the progress of labour and indicate drugs used during labour including ARV prophylaxis;
- Avoid artificial rupture of membranes, unless necessary.

***Avoid unnecessary trauma during delivery:***

- Avoid invasive procedures;
- Avoid routine episiotomy;
- Prevent genital/perineal lacerations;
- Minimise the use of vacuum extractors.

***Minimize the risk of postpartum haemorrhage***

- Actively manage the third stage of labour;
- Give ergometrine according to protocol following delivery;
- Use controlled cord traction;
- Perform uterine massage;
- Carefully remove all products of conception.

***Use safe transfusion practices:***

- Minimise blood transfusions;
- Use only blood screened for HIV, Hepatitis B and C, and when available, syphilis and malaria.

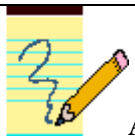
**How can we reduce the risk of occupational exposure in obstetric setting?**

The potential for HCW exposure to HIV-contaminated blood and body fluids is greatest during labour and delivery. Infection control practices should be identified and observed during a home delivery. In Unit 9 you will learn more about how to prevent and protect yourself from occupational exposure. However, we have a few tips below.

**Tips for reducing the risk of occupational exposure in the obstetrics setting:**

- Cover broken skin or open wounds with watertight dressings;
- Wear suitable gloves when exposure to blood or body fluids is likely;
- Wear an impermeable plastic apron during the delivery;
- Pass all sharp instruments on to a receiver, rather than hand-to-hand;
- Use gloves during manual removal of a placenta;
- Modify surgical practice to use needle holders to avoid using fingers for needle placement;
- Workers with dermatitis should not work in obstetrics;
- When episiotomy is necessary, use an appropriate-size needle (21 gauge, 4cm, curved) and needle holder during the repair;
- Wear gloves for all operations;
- When possible, wear an eye shield during caesarean section and when suturing episiotomy;
- If blood splashes on your skin, immediately wash the area with soap and water. If splashed in the eye, wash the eye with water only;
- Dispose of solid waste (e.g. blood-soaked dressings and placentas) safely and appropriately.

Before you proceed , do the following activity.

**ACTIVITY**

Outline ways of preventing infection in the home delivery setting?

_____
_____
_____
_____
_____

Compare your responses with the following:

- Hand washing.
- Sterilising of any equipment used by boiling it for 20 min;
- Use of gloves and other protective equipment if available;
- Prompt clean up of spills involving blood or other body fluids;
- Safe disposal of contaminated materials and products of conception.

## Management of Women with Unknown HIV status

As you well know, it is not always that an expectant mother will come in labour with known HIV status. In some cases, a woman presents to the health service at the time of labour without knowing her HIV status. In Kenya, the Ministry of Health has given guidelines on what you should do in such a case. These are as follows:

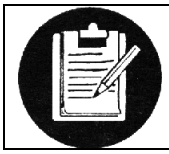
***Early labour***

Provide information on HIV, carry out HIV test unless the client declines, and when appropriate, offer prophylaxis using nevirapine (NVP) according to guidelines.

***Late labour (active phase)***

Defer testing until after delivery and before discharge. At that time, provide information on HIV and test the client if they are agreeable. When appropriate, offer prophylaxis for the infant using Nevirapine (NVP) according to the guidelines we discussed earlier. When available, add

AZT for the infant for 7 days. You should then provide the mother with post-test counselling and refer her and the infant for follow-up services.



**What information should you share with the mother during pre and post test counselling**

**Information Provision Checklist for Use in Labour and Delivery**

The following facts should be shared with the patient during pre/post test counselling:

- HIV is the virus that causes AIDS;
- HIV can be transmitted from a mother to her infant during pregnancy, labour and delivery and through breastfeeding;
- Rapid HIV testing can help determine a client's HIV status and the need for further interventions and care;
- A positive rapid HIV test result must be confirmed with a second test;
- But if the client has recently been exposed to the virus, she may actually be infected even though the results are negative because it is too early to detect the antibodies;
- Medicines are available to reduce the risk of passing HIV infection from a mother to her baby;
- All women will be provided with appropriate labour and delivery care services regardless of the decision about HIV testing and the test results;
- It is strongly recommended that you know your HIV status in order to protect your baby if necessary.

Lets now pause here and take note of a few important points from what we have covered so far.

:

**i) Non-ARV Interventions to Reduce Risk of MTCT**

- **During pregnancy:** Optimize antenatal care
  - Optimize nutrition, treat STIs etc.
- **During delivery:** Optimize birthing practices.
  - Avoid prolonged rupture of membranes and episiotomy,
  - Consider elective c-section.
- **During breastfeeding**
  - Consider use of replacement feeding
  - Consider costs, safety and acceptability.
- If breastfeeding WHO recommendations advice as follows::
  - EXCLUSIVE breastfeeding for 6 months
  - The abrupt weaning at 6 months
  - Optimize breast/nipple care (avoid infections and cracks).

**ii) The antenatal package**

- Micronutrient supplementation
- Screening for sexually transmitted infections
- Screening for anaemia
- Malaria chemo-prophylaxis
- In the malaria endemic areas
- Infant feeding counseling
- Family planning counseling.

We hope you have enjoyed the discussion above on management of labour and delivery of an HIV-infected mother. Now let's focus our attention on the post-natal care of such a mother and her infant.

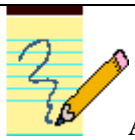
## Post-Natal Care of HIV Infected Mother and Their Infant

## Infant Feeding Options

In many African countries, prolonged breastfeeding is heavily promoted for all children because it is a cheap, natural means of providing adequate nutrition and protection against many childhood diseases, with birth spacing as a secondary benefit. In comparison, the cost of infant formula, along with the clean water and fuel needed to prepare it, is often beyond the means of poor families in developing countries. Furthermore, when incorrectly used, feeding with infant formula may lead to severe malnutrition and fatal infectious diseases. Even if it is safely used, it may lead to stigma and rejection for women who find they are infected with HIV and, after

counseling, decide not to breastfeed. The choice of feeding method can thus be a difficult dilemma for an HIV-positive mother as well as health caregivers who will have difficulty understanding that breastfeeding may not be always the best option.

Before you read on do the following activity.

**ACTIVITY**

An HIV positive mother has just given birth. What are the feeding options she has for her new born baby? What are the advantages and disadvantages of each of these options?

| Feeding option | Advantage | Disadvantage |
|---|---|---|
| | | |

Now confirm your answers as you read the following discussion.

Basically a mother has two feeding options for her new born baby. These are Breastfeeding vs. Replacement feeding. Let us briefly discuss the pros and cons of both options.

***Advantages of Breastfeeding***

- It has a protective immune function;;
- Provides optimal nutrition;
- Allows birth spacing;
- Has emotional and psychological benefits.

***Replacement feeding***

- Protection against HIV transmission;

- Increased risk of diarrhoea diseases;
- Increased risk of ARI;
- Increased risk of malnutrition.

**So how do we balance the risks in both feeding options?**

In environments where replacements feeding is **acceptable, feasible, affordable, sustainable** and **safe (AFASS),** avoidance of all breastfeeding by HIV-positive women is recommended from birth.

When HIV-positive mothers choose to breastfeed in Kenya, exclusive breastfeeding for the first six months of life is recommended. Mothers who work outside the home may wish to stop breastfeeding their infants when they return to their work, typically three months following delivery. Such mothers will require your support to do so safely.

The recommended feeding options which will be discussed in Unit 8, differ based on HIV status. The HIV-positive mother will ideally have received information on safer infant feeding prior to delivery, as well as general information on breast care.

Having selected a safer infant feeding option, the mother will require guidance and support for implementation for her choice. In Kenya, exclusive breastfeeding for the first six months of life is recommended for HIV-positive mothers. Many HIV-positive mothers select exclusive breastfeeding as their option and require assistance to breastfeed effectively and exclusively. Any time a woman decides to change her feeding method, or abruptly discontinues breastfeeding she will require additional counselling and support.

**What is exclusive breastfeeding?**

**Exclusive Breastfeeding:** The mother gives her infant only breast milk - not even water except for drops or syrups consisting of vitamins, mineral supplements or medicines (when indicated).

### Postpartum Education

Regardless of HIV status, you should give the mother the following information:

- Proper hygiene;
- Care for the infant's umbilicus;
- Recognizing signs and symptoms of infection;
- Accessing help in the event of haemorrhage;
- Optimal nutritional requirements including rehydration;
- Dual protection for family planning and infection prevention;
- Schedule of postpartum follow-up for the mother, infant and family.

For HIV-positive mothers, additional information is needed about prevention and treatment of infections, antiretroviral therapy and psychological support. It is important to involve the partner and family. You should also facilitate linkages to other HIV/AIDS care and support programmes to ensure continuity of services.

- **Infection prevention practices are important throughout care and treatment.**
- **Immediate care of the newborn follows established procedures.**
- **When a child is delivered at home, the child and mother should ideally be seen for assessment and to support safer infant-feeding practices within 72 hours of delivery.**

## Immediate Care of the Newborn

The immediate care of the newborn exposed to HIV follows standard practice. Regardless of the mother's HIV status, all infants should be kept warm after birth and handled with gloves until maternal blood secretions have been washed off.

Other practices to ensure infant safety include the following:

- Clamp the cord immediately after birth, and avoid milking the cord. Cover the cord with gloved hand or gauze before cutting to avoid splash of cord blood;
- Wipe infant's mouth and nostrils with gauze as soon as the head is delivered;
- Reduce maternal blood and secretions by wiping the infant dry with a towel;
- Wipe the infant's mouth and nostrils with a wet soft gauze or towel. Use suction only when meconium-stained liquid is present. Use either mechanical suction at less than 100mm Hg pressure or bulb suction, rather than mouth-operation suction;
- Determine the mother's feeding choice. If she is using breast milk substitute, place the infant on her body for skin-to-skin contact and provide help with the first feeding. If she is breastfeeding, place the infant on the mother's breast.
- Administer BCG and tetracycline eye ointment according to Kenya protocols (vitamin K is given to premature infants only).

## Monitoring infant growth and development

Before you proceed, do the following activity.


**ACTIVITY**

What are the common methods of assessing growth of an infant or child?

_____

_____

_____

_____

_____

_____

Now compare answers  with the responses below and see how you fared.

HIV-exposed infants require close monitoring for growth and development beginning at six weeks and monthly during the first two years of life and beyond if a positive HIV status is determined.  Factors influencing the growth of a child include:

- Nutritional intake;
- Health status;
- Environment and care received.

Indicators used to assess adequate growth of the infant or child include:

- Weight for age;
- Weight for height;
- Height for age;
- Head and mid-upper arm circumference.

**HIV Testing**

HIV testing is an important component of care for HIV-exposed infants.  In Unit 6, we discussed the signs and symptoms and HIV testing of HIV exposed infants.  You can refer to that unit to refresh your memory.

- **HIV-exposed infants are at risk of health problems that require early intervention. Educating mothers to recognize signs and symptoms of potential problems and reminding them of the importance of early intervention can save lives.**
- **Postpartum care requires education on many topics.**
- **Linkages to community services can help provide continuity of care.**
- **Keeping HIV-negative women through primary prevention is key to eliminating the risk of MTCT of HIV.**

## Reproductive Health Services for HIV-Positive Women

### Postpartum care services for HIV-positive women

HIV positive mothers should have access to the following postpartum services

- Physical assessment;
- Infant-feeding support;
- Sexual and reproductive care, including family planning;
- HIV treatment, care and support;
- Prevention and treatment of opportunistic infections;
- Prevention and treatment of malaria;
- Prophylaxis, screening and treatment of tuberculosis;
- Immunisations;
- Nutritional counselling and support;
- Social and psychosocial support;
- Home-based care as needed.

### Family Planning in the Context of HIV in Kenya

Family planning (FP) is an important public health strategy for primary prevention of HIV and a core intervention for PMTCT. Effective contraceptive methods should be explored within the context of an individual's health and ability to safely implement the method of choice. Condoms are effective contraceptive devices, but they depend on the women's ability to negotiate with their partner.

Family Planning (FP) is part of a comprehensive public health strategy to prevent MTCT. Ideally, this can begin prior to a first pregnancy. A range of family planning services, when integrated into existing MCH and community health care services, can minimise the stigma associated with HIV/AIDS and provide the following benefits:

- Individual and couples counselling;
- Continued risk assessment;
- Early diagnosis and treatment of STIs including HIV/AIDS;
- Information and skills needed to practice safer sex;
- Access to contraceptives.

FP methods should be discussed before and soon after delivery. The mother should have access to the chosen method within 6 weeks after delivery to avoid unintended pregnancy or risk of new infection.

**Contraceptive Options**

Contraceptive options must be individualised with special consideration for the HIV-positive mother. Barrier methods afford dual protection against STIs, including HIV and pregnancy.

**Hormonal Methods**

- Combined oral contraceptives (oestrogen and progesterone) taken daily.

**Injectable Contraceptives**

- Depo Provera (administered once every three months)
- Noristerat (administered once every two months)

**Contraceptive Implants** (subdermal, contain progestin only)

- Norplant 5 – 7 years duration
- Jadelle 5 years duration
- Implanon 3 years duration

**Intrauterine Contraceptive Device (IUCD)**

- Various types – not recommended for women at risk of STIs or with AIDS who are not receiving or doing well with treatment.

**Voluntary surgical contraception** (permanent)

- Tubal ligation – female
- Vasectomy – male

**Barrier methods**

- Male condoms
- Female condoms

Must be used consistently and correctly.

**Lactational Amenorrhoea Method (LAM)**

Woman's menstrual periods have not resumed, AND

- Baby is exclusively breastfed, AND;
- Baby is less than six months old.

If any of the above criteria are not met, another FP method must be utilised.

Each of the above contraceptive options should be explored within the context of an individual's health, other medications in use and personal ability to effectively implement the option of choice. You will learn more about these contraceptive methods in section 4 of this unit.

**Breastfeeding Mothers**

Certain considerations apply to HIV-positive mothers who breastfeed:

- Combined oral contraceptives have been known to decrease breastmilk;
- Progestin-only contraceptives should be started 6 weeks postpartum for the breastfeeding mother. As a steroid, they are secreted in breastmilk and cannot be metabolized by the infant's liver prior to that time.

Before you proceed, do the following activity.


**ACTIVITY**

What strategies would you adopt to support women in postpartum follow up?

_____

_____

_____

_____

I believe your answer included some of the following strategies:

- Education during the antenatal period about the importance of follow-up and where to go for the postpartum visit;

- Schedule the postpartum appointment after delivery or before discharge from the maternity hospital;
- Provide outreach to post-test support groups;
- Link them to Infant-feeding support groups;
- Inform them about community agencies for social support;
- Link Mother's Health Card to Child Health Card.

## SUMMARY

You have now come to the end of this section on care of HIV-infected mother during pregnancy, labour and delivery and also during the post-delivery period. We have seen that comprehensive antenatal care includes provision of a range of services aimed at ensuring better health of the mother and infant during and after pregnancy. MTCT of HIV can be reduced in labour and delivery through safer obstetrical practices. Infection prevention through use of Universal Precautions is especially important in labour and delivery. Elective caesarean section has been known to reduce MTCT of HIV. But it is not always a feasible option.

When HIV-positive mothers choose to breastfeed in Kenya, exclusive breastfeeding for the first six months of life is recommended. We have also seen that WHO recommends that in environments where replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV-positive women is recommended from birth. HIV-exposed infants are at risk of health problems that require early intervention. Educating mothers to recognize signs and symptoms of potential problems and reminding them of the importance of early intervention can save lives. Family Planning (FP) is part of a comprehensive public health strategy to prevent MTCT. Contraceptive options must be individualized with special consideration for the HIV-positive mother. Barrier methods afford dual protection against STIs, including HIV and pregnancy.

It's now time to test how much you still remember by doing the following exercises.
These Case Studies are designed to help you consider issues related to testing and prophylaxis in the labour and delivery setting. Answer the questions in each case study on a separate paper. Once you answer all the questions, compare your answers with those given at the end of the case studies.

**Case study # 1**

*Wambui has arrived at the hospital to have her baby. She tells you that she has a card from Mathare Clinic but in her rush to get to the hospital, she left her card at home. You would like to ask Wambui if she has been tested for HIV, but the room is crowded and you do not want to discuss this in front of others. Wambui is in early labour and contractions are now regular.*

1. How can you find out whether wambui has been tested for HIV?

2. If you determine that Wambui was tested and is positive, what will be your next step?

**Case study # 2**

*Mueni just gave birth to a beautiful baby girl at home with a TBA. This was her fourth child and the baby was delivered within an hour from the start of her first contractions.*
*Mueni never had the opportunity to take the nevirapine tablet that had been given to her at the clinic.*

1. When Mueni asks if she should take the tablet now, what do you tell her?

2. What about the nevirapine suspension for the baby – when should she give this to her new daughter?

3. Mueni asks you – Will my little girl still be protected from HIV? What will you tell her?

**Case study # 3**

*Cherono arrives in labour and delivery. She has received no antenatal care and was never tested for HIV. At this time, she is in advanced labour with contractions about 2 minutes apart. On examination you find she is 7 centimetres dilated. She asks you about HIV testing, and she says that she is worried that she could be infected and pass it on to her baby.*

1. Will you provide HIV testing right now?

2. What can you tell her about protecting her baby after delivery?

**Answers:**

The following represents a listing of possible answers to the questions posed.

**Case Study # 1**
The important issue here is to establish the client's HIV serostatus. If her status is unknown, cannot be verified or her test result is not recent, follow the recommendations for women of unknown HIV status outlined above. Once the client's status is determined, if she is HIV-

positive, follow the recommendations for offering prophylaxis according to protocol. She will also require counselling and follow-up in the postpartum stage.

**Case Study # 2**
Explain to Mueni that taking the tablet now will provide no benefit to her infant. NVP suspension can and should be given to her new daughter within 72 hours of her birth. Explain that NVP can benefit her baby. If available, AZT for 7 days could also be given in addition to NVP. Both mother and daughter will require follow-up.

**Case Study # 3**
Cherono is essentially asking to be tested. This is not the same as in the "opt-out" strategy and presupposes that she already knows something about HIV. Provide testing for her as requested now. Explain to her that NVP prophylaxis can be provided for her baby following delivery, if she is positive. (Alternatively, single-dose NVP and 7 days of AZT can be given if available). Post-test counseling and follow-up will be needed after she gives birth. If multigravida, then consider client in advanced labour and if primigravida, consider HIV testing and give mother NVP if positive.

# Section Four: Integrating PMCT of HIV In MCH/FP Services

## Introduction

Congratulations! You have come to the last section of this Unit. In section 3 we looked at care of the HIV infected mother during pregnancy, delivery and the post-natal period. Here we are going to focus on ways of integrating PMCT of HIV into MCH/FP services.

## Objectives

By the end of this section you should be able to:

- discuss the elements of a comprehensive approach to PMTCT;
- describe prenatal counselling and testing, with ANC as an entry point to prevention and care.

We hope you will find this section interesting and informative.

## Elements of the Comprehensive Approach to PMTCT

Integration of a comprehensive approach to PMCT in MCH/FP settings ensures continuity of care, beginning with primary prevention and following care, treatment and support of the HIV-infected woman and her family after birth. There are four elements in a comprehensive approach to PMCT:

- **Element 1:** Primary prevention of HIV infection.
- **Element 2:** Prevention of unintended pregnancies among women infected with HIV.
- **Element 3:** Prevention of HIV transmission from women infected with HIV to their infants
- **Element 4:** Provision of treatment, care and support to women infected with HIV, their infants and their families.

The first and second elements will form the cornerstones of our discussion in this section. The third and fourth elements were discussed in Section two of this unit and in Unit 4 of this course.

- **Primary prevention is the most effective way to control the spread of HIV.**
- **Most people are not HIV-infected.**
- **Both male and female condoms, used correctly and consistently, are part of safer sexual practices.**
- **Abstinence or faithfulness to one uninfected partner is part of primary prevention.**
- **Prevention, early identification and treatment of STIs can reduce HIV transmission.**

## Primary Prevention of HIV Infection

Since there is no cure for AIDS, primary prevention of HIV is the most effective means of controlling the spread of HIV and minimizing the impact on individuals, families and communities. Primary prevention is the key to reversal of the epidemic.

It is important to emphasize that the best way to prevent MTCT of HIV is to ensure parents avoid getting infected in the first place. This is done by:

- Promoting voluntary counseling and testing before marriage and pregnancy.
- Promoting condom use during pregnancy to prevent infection with HIV and with other sexually transmitted diseases.
- Ensuring that HIV positive women have access to family planning and counselling services

You therefore need to step up your efforts to ensure that those who are negative remain negative. Attention should also be directed to ensure that HCWs and other caregivers who are not infected, do not become infected while providing care and support to those who are living with the virus.

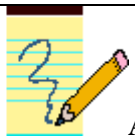
Programmes that enable young women to know their serostatus, such as PMCT and VCT are part of a primary prevention strategy. However, public health strategies to prevent HIV infection go beyond primary prevention. They include secondary prevention. These are:

- Strategies that target people who are already infected focusing on how to prevent them from spreading HIV;
- Strategies focusing on prevention of perinatal HIV transmission.

In the secondary prevention of perinatal transmission in Kenya, caesarean section is only recommended when safe, feasible and accessible.

## Public Health Strategies To Prevent HIV Infection

There are a number of public health strategies that you can adopt to prevent HIV infection during sexual contact, blood to blood transfusion, perinatal transmission, and drug abuse. Can you think of any? Put your thoughts to paper in the following activity.

**ACTIVITY**

List the main health strategies you would adopt to prevent HIV infection through sexual contact?

_____

_____

_____

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_____

Now read through the text below and see if your strategies are included.

**Sexual contact:**

- Promote abstinence or being faithful to one uninfected partner;
- Provide instruction on the consistent and correct use of barrier methods:
  - Male or female condoms for vaginal intercourse;
  - Male condoms for anal intercourse;
- Prevent, identify and provide early treatment for sexually transmitted infections (STIs).
- Condoms provide protection from HIV transmission as well as other sexually transmitted infections (STIs) and pregnancy when used correctly and consistently.

**Blood-to-blood transmission**

- Screen all blood and blood products for HIV;
- Follow universal precautions which include:
    - Use of protective equipment;
    - Safe use and disposal of sharps;
    - Sterilisation of equipment;
    - Safe disposal of contaminated waste products.
- Educate about the importance of cleaning needles/syringes, scalpels and many other sharp objects used to cut or piece the skin or inject medication. This is an important concept for equipment that is soiled with human blood whether it is within healthcare settings or other community settings.

**Perinatal transmission from mothers who are HIV-positive:**

- Follow safer delivery practices.
- Provide ARV prophylaxis during pregnancy, labour and delivery.
- Provide appropriate ARV prophylaxis to the infant.
- Provide infant-feeding counselling.
- Provide linkages to treatment, care and social support for mothers and families with HIV infection.
- Provide ARV treatment when indicated and available.

**Drug use**

- Educate about the risks of infection through drug use with contaminated needles with HIV infection;
- Provide referral for treatment of drug dependence.

Drug use, including alcohol use, in any form may increase the risk of HIV infection by limiting judgment and facilitating engagement in risky behaviour. Even occasional use of alcohol, marijuana and other “recreational” drugs may increase risk of HIV infection.

## Individual Strategies to Prevent HIV Infection

**Safer sexual practices**

Safer sex refers to any sexual activity that reduces the risk of passing STDs and HIV from one person to another. Safer sex does not allow exchange of body fluids.

Protective measures include:

*Abstinence:*

- Refraining from having sexual intercourse;
- Delaying of first sexual intercourse by young people.

*Mutual faithfulness between two uninfected partners:*

- Neither partner has HIV;
- Neither partner is at risk of HIV from other sources of infection;
- Partners are faithful to one another at all times.

*Bargaining for safer sex:*

- With a focus on safety;
- Without implying lack of trust;
- Without blaming or being punitive.

*Using male or female condoms:*

- Consistently and correctly.

Some of the barrier protection products are available for both prevention of unintended pregnancies and STIs including HIV.

- Everyone who is sexually active is at risk of STIs and HIV/AIDS;
- The 41% estimated rate of contraceptive use by Kenyan women is low. Service providers must emphasize the use of contraceptives to prevent unintended pregnancies and as an important primary prevention strategy;
- Both male and female condoms can provide reliable dual protection against all STIs, HIV/AIDS and unintended pregnancies.

## Trends in contraceptive use

According to the 2003 Kenya Demographic and Health Survey findings, contraceptive use in Kenya for married women is estimated at only 41%. Contraceptive use to prevent unintended

pregnancies is an important primary prevention strategy. Almost all adults surveyed were aware of at least one method of family planning. The most commonly known methods are:

- Male condoms
- Birth control pills
- Injectables.

Education is key in promoting the proper use of contraceptives and in particular the concept of dual protection.

**Barrier methods and dual protection**

Both male and female condoms, used correctly and consistently, can provide protection against STIs, reduce the risk of HIV transmission and also prevent unintended pregnancies.

Dual protection is the use of one or more methods of contraception that prevent STIs, including HIV and unintended pregnancy. For examples, if a person only uses birth control pills, this would be a single methods. If on the other hand they use both birth control pills and barrier protection (condoms), this would be dual protection.

The use of dual protection by HIV-infected couples can also protect them from re-infection with variant strains of HIV and effectively help to space their children, avoiding the physical, emotional and economic stress related to unintended pregnancies.

Male condoms are familiar to many and readily available. You should give your clients the following tips for the correct use of male condoms:

- Carefully open the package so that the condom inside is not mistakenly torn;
- Avoid long-term storage in wallet or in hot/sunny places;
- Use a water-based lubricant only when available to avoid breakage;
- Put the condom on after erection and before any sexual touch;
- Squeeze the tip of the unrolled condom in order to leave an airless pocket to collect semen;
- After intercourse, withdraw the penis while still erect and hold the condom in place at the base of the penis to avoid it slipping off;
- Never reuse a condom.

Female condoms are new in the market and slowly gaining in popularity. They have the following characteristics:

- Safe and pre-lubricated (covered with oil);
- Made of strong, soft plastic (polyethylene);
- Reliable and provide sensitive sexual pleasure for the couple;
- Have a flexible ring at each end to prevent shifting;
- One size fits all: the inner ring is inserted in the vagina and the outer ring covers the outside of her genitals (female private parts can be seen);
- Can be inserted up to eight hours before sex or just before sex;
- Intended for single use only, but can possibly be reused after careful washing;
- Act as an effective barrier against all STIs, including HIV/AIDS and pregnancy;
- Empower women to actively apply primary prevention strategies.

Before we finish reviewing the first element, there are a few questions that you should think about.

- When couples agree to use condoms, do they use them every time?
- Can couples discuss sexual issues with each other and be heard?
- What are the main barriers to correct and consistent condom use?
- How can discussion of ways to promote condom use in the communities be encouraged?

You may have a good answer to each one of them or like many of us you may need time to think them over. Whatever the case, you should keep the following points in mind:

- Condoms used consistently and correctly are important in the prevention of STIs, HIV and unintended pregnancies;
- Cultural and social practices may influence the use of condoms;
- You can help to initiate behaviour change in the community where you serve.

We have just reviewed the first element on primary prevention strategies and part of the secondary elements on prevention of unintended pregnancy among women infected with HIV. We will now explore how MTCT can be prevented by integration of PMTCT strategies into an antenatal care package.

## Integrating PMTCT in Antenatal Care Package

As we mentioned earlier in Section 3, comprehensive antenatal care includes the provision of a range of services aimed at ensuring better health of the mother and infant during and after pregnancy. We also acknowledged that providing these services in resource-constrained settings can be challenging. We recommended that you enlist community support for the necessary equipment, supplies and physical space so that you can implement the necessary services. Please refer to Table 7.11 in section 3 of this unit for a list of the essential package of integrated Antenatal Services.

**Counselling And Testing**

All pregnant women should be counselled for HIV testing. HIV testing with pre and post counselling of women seeking ANC should be done on a **Voluntary basis.** Counselling and testing for pregnant women follows the same approaches that we discussed in Unit 3 on counselling and psychological support in HIV.

Women who know their status may decide not to breastfeed or to take other precautions to reduce the risk of HIV transmission to their baby. Discuss options of termination of early pregnancy and use of antiretroviral prophylaxis by HIV positive women for the prevention of mother-to-child transmission.

**HIV Voluntary Counseling and Testing (VCT)**

- Pretest counseling
- Voluntary HIV testing
- Post-test counseling

You are well aware that after testing, the test could either be positive or negative. What should you do in either case?

***HIV Negative Mothers:***

- Inform client of the negative serology;
- Educate client about the window period (period between infection and positive HIV antibody test);
- Educate on the need of a repeat test after 3 months and the importance of staying negative.

***HIV Positive Mother:***

- Usually this is a devastated mother; she'll need a lot of support.

- Further counselling;
- Repeat the test to confirm;
- Discuss who else she would like to be informed;
- Give emotional support as required;
- Negotiate with the partner e.g. safer sex, testing the partner after counselling;
- Educate on personal hygiene, infection prevention and nutrition;
- Sensitize on progression of disease and possible opportunistic infections and the need for prompt treatment;
- Educate client on MTCT and the value of antiretroviral treatment, its cost and availability;
- Educate client on the possible effects of HIV/AIDS on pregnancy and the possible effects of pregnancy on HIV/AIDS.

***If the client opts to have termination refer to the specialist***

- Find out about their future family intentions and counsel accordingly or refer to specialist at which level artificial insemination may be considered.
- The client should be informed of the existence of support systems including peer groups and people living with AIDS (PLWA). They should also be guided on ways of seeking support and the associated benefits.
- Update the client on emerging interventions on HIV/AIDS e.g. AZT, Nevirapine and good diet (Micronutrients).
- Smoking, alcohol and drug use should be discouraged.
- Healthy lifestyles and stress management should be encouraged.

***Maternal follow-up***

- Monitor the mother for any infections;
- Educate on prompt health seeking behaviour;
- Encourage her to continue with good personal hygiene and nutrition;
- Advice her against unprotected early penetrative sex after delivery as this may lead to endometritis;
- Emphasize on family support.

***Family Planning needs***

- All modern methods of contraception can be used by HIV seropositive mothers;

- Non-breastfeeding mothers should be put on a reliable contraceptive method by 2-4 weeks post-partum;
- Use of condom should be encouraged where other methods are contraindicated;
- Conditions that cause malabsorption may reduce efficacy of hormonal contraceptives;
- Diarrhoea is a common condition in HIV infected women. During these episodes, the woman may be poorly protected. Condoms should then be used;
- HIV infected couples should be encouraged to use condoms to protect them against re-infection with additional HIV strains from their partners;
- Spermicides used in conjunction with barrier methods will provide additional contraceptive protection;
- Information on emergency contraception and its availability should be provided;
- Surgical contraception should be encouraged/offered to HIV +ve mothers and their partners.

**Testing Infants for HIV**

- Children born to HIV positive mothers will have maternal antibodies in their blood at birth until about the age of 18 months. However, this does not mean the child is infected;
- After 18 months all children will have lost the maternal antibodies;
- Only those children infected with the virus will produce their own antibodies to HIV;
- Antibody tests cannot therefore detect HIV infected children until about the age of 18 months.

## Linkages of Mother and Infant to Community Services

Kenya is currently using the Mother's Health Card to document important patient information. This includes a medical history, information on ANC, delivery and postpartum examination including a record of follow-up visits

The postpartum follow-up rate is very low and efforts to increase uptake of postpartum care and services may require education during the antenatal period and support from HIV support groups or specialized centers that provide postpartum care of HIV-positive women. The flow chart in Figure 7.1 shows the PMTCT services at a postnatal of child health clinic.

Next let us look at PMCT-Plus.

## PMTCT-PLUS

Start by doing the following activity.


**ACTIVITY**

What is PMTCT plus?

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_____

_____

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Now confirm your answers as you read the following discussion.

PMTCT-Plus is the 4th element in a comprehensive PMTCT programme, which helps establish linkages for continuity of treatment, care, and support of women with HIV-infection, their children and their families.

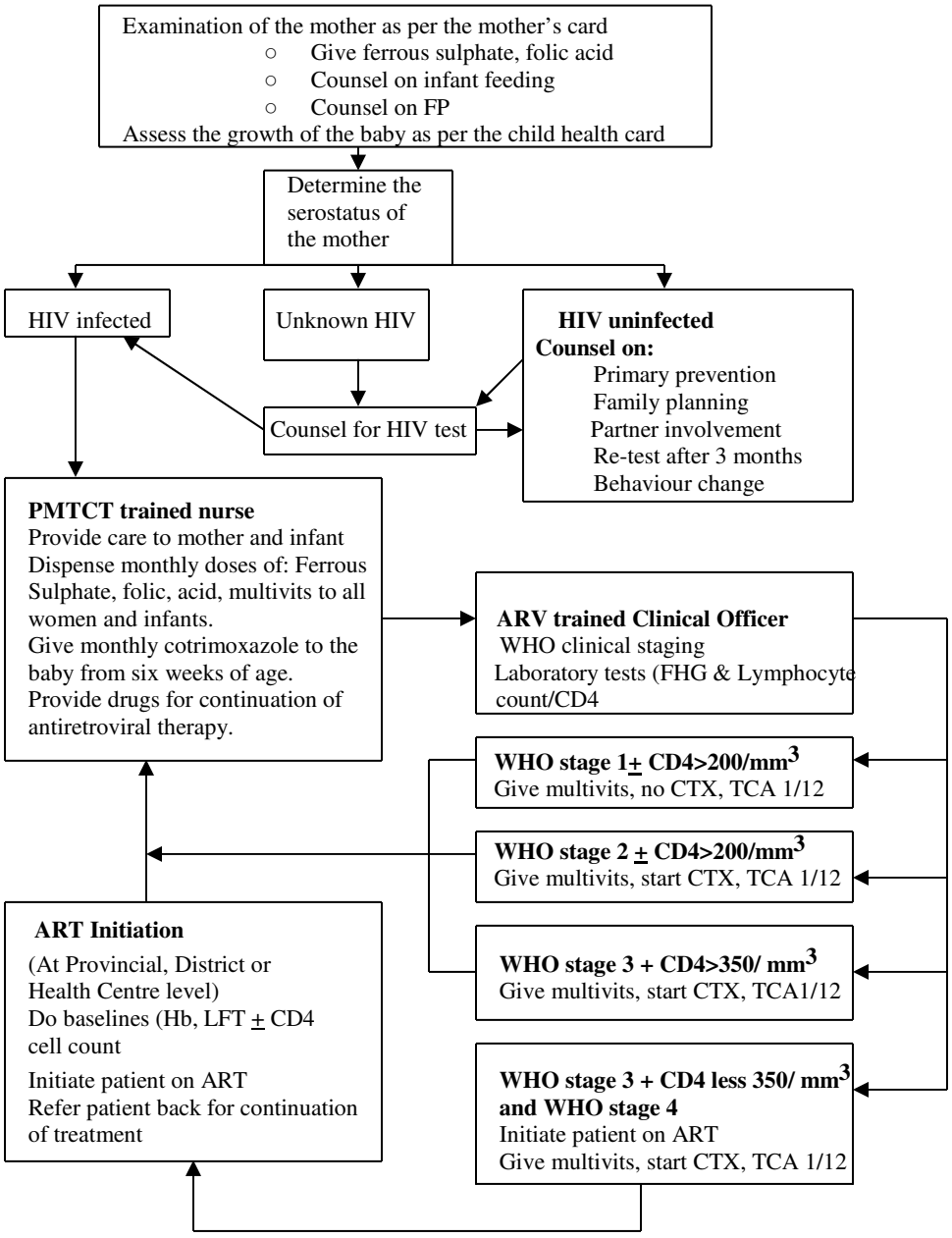


***Figure 7.3 PMTCT Services At Postnatal/Child Clinic***

PMTCT-Plus is the implementation of strategies to provide treatment, care and support of women infected with HIV, their infants and their families. These strategies include:

- Adequate nutritional intake for mother and child to reduce risk of growth failure.
- Follow-up care for HIV-exposed infants including monthly follow-up visits beginning at six weeks through 2 years for early identification and treatment of any health problems;
- Immunisation and HIV-testing as part of monitoring childhood growth and development;
- Use of of HIV antibody testing and viral assays for the infant or child.
- Initiation of cotrimoxazole prophylaxis for symptomatic HIV-positive adults and HIV-exposed infants or child until proven negative.

As immune function declines, opportunistic infections may develop. Co-infection with TB and malaria may increase HIV-related morbidity and mortality. In unit 5, we looked at guidelines for commencing ART and the recommended ARV regimens. In addition to meeting clinical criteria for ART, patient readiness and adherences issues must be addressed. Pregnant women who are eligible for ART require specific management and monitoring. Improving uptake of postnatal services requires establishment of a system for referrals. Community mobilization supports linkages between MCH and community services and ensures continuity of care. Palliative care is family-centered and optimizes quality of life while honouring a person's choices. Linkages for postnatal follow-up of home deliveries require creative strategies.

## PMTCT Programme Integration/Implementation

A successful PMTCT programme requires the support and cooperation of the entire health team in the facility. Team members include:

- Nurses
- Social workers
- Nutritionists
- Laboratory personnel
- Records (HMIS) personnel
- Administrative staff

Delivery of PMTCT-related services can take place in a variety of settings:

- Health centers

- ANC and Maternity settings
- MCH and FP centers
- Nutritional programmes
- Hospital facilities
- Clinics providing treatment care and support to HIV-infected women and their families.
- Home-based care programmes
- Research settings

Logistical issues such as private rooms for post-test counselling, adequate space for group information sessions, supplies and equipment, running water and electricity may pose challenges. Urban settings will differ from rural settings and transportation issues may have an impact on the uptake of services. You should develop a PMTCT Implementation Work Plan to facilitate the provision of effective and quality services in a PMTCT facility.

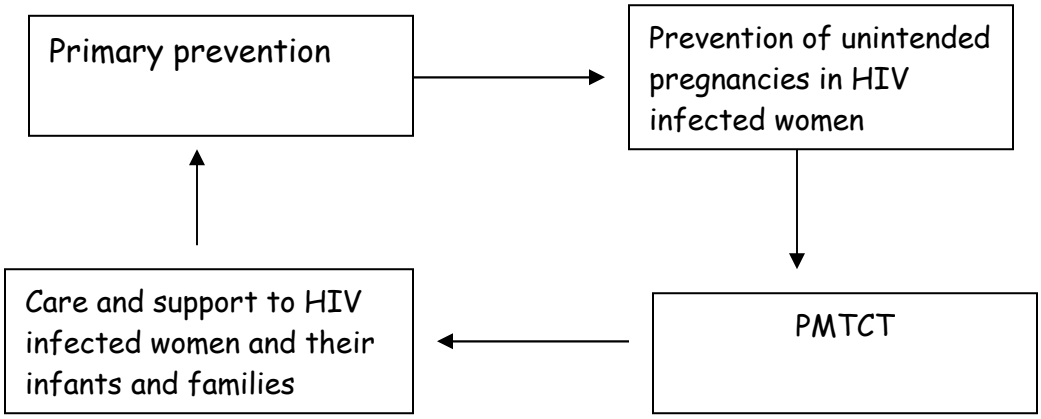


***Figure 7.4: Strategic framework for Prevention of HIV infection in infants and young children***

The three primary prevention interventions which we discussed earlier are the gold standard for PMTCT. These are:

- Triple ARV Therapy during pregnancy
- Elective C-Section
- Formula Feeding

These three interventions together reduce MTCT from 40% to <1%. However, they are beyond the reach of many women in Kenya.

## Comprehensive Care Concept

Let's start with your thoughts on this topic.

**ACTIVITY**

Write your definition of comprehensive care in the space provided

_____

_____

The comprehensive care concept refers to the holistic approach towards the management of a person infected with HIV. It brings in a multi-disciplinary team of clinicians, nurses, counsellors, pharmacists and nutritionists in the management of each patient. This team addresses the whole person in terms of body, mind and spirit. Figure 7.3 shows the interrelatedness of its various components of comprehensive care.

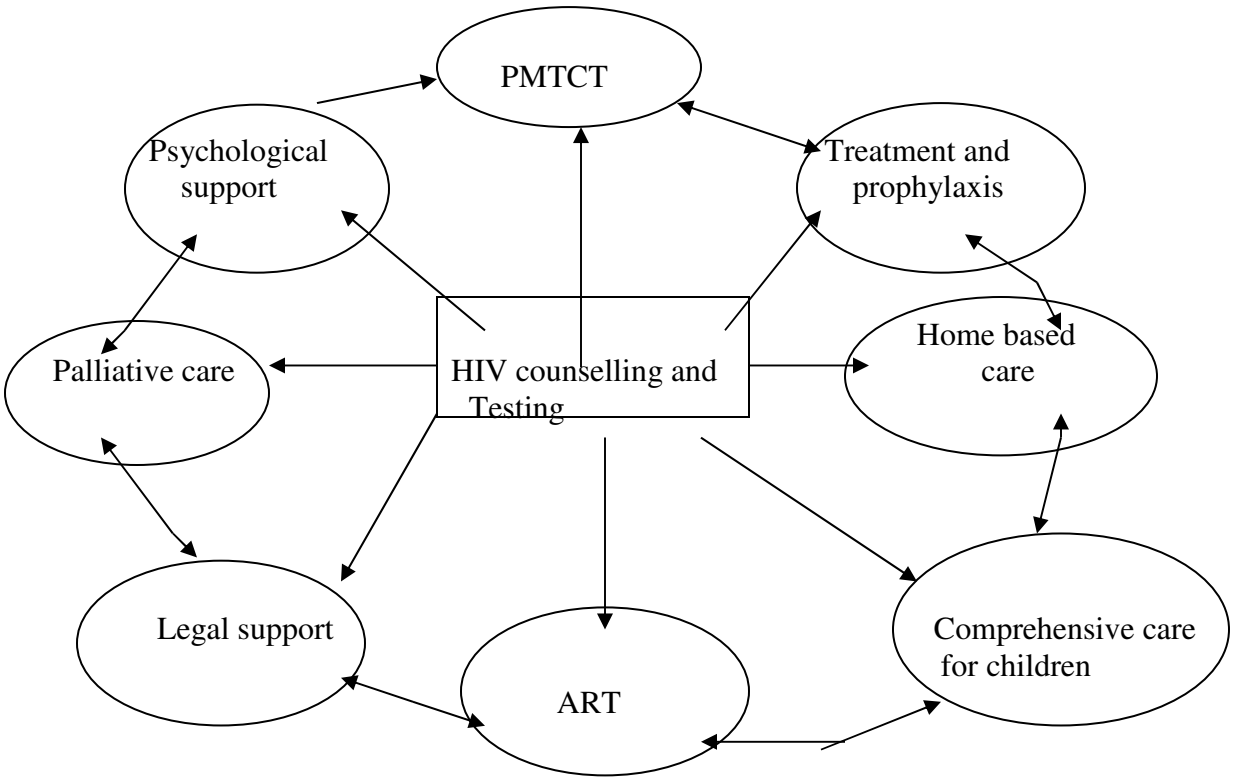


*Figure 7.5 Elements of Comprehensive Care*

## Preventing Mother to Child transmission of HIV


**ACTIVITY**

What strategies would you adopt to prevent MTCT of HIV

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I hope the factors we have discussed so far have inspired you to develop interventions to reduce mother to child transmission of HIV. Generally, improving the quality of antenatal and delivery services will reduce transmission of HIV. We have already discussed primary prevention in the first element. But let's remind ourselves again.

Primary prevention is the most important strategy is to prevent HIV infection in young women. It can be achieved by encouraging girls to delay the age of first coitus, reducing the number of sexual partners, encouraging condom use during pregnancy and lactation to prevent new infection during this period, and vigorous treatment of STIs.

The secondary line of prevention targets HIV-infected women in order to reduce the risk of transmission to the foetus and newborn. This can be achieved by reducing fertility in HIV-infected women through counselling and provision of effective contraception and intervening in the pregnancy of an HIV-infected woman.

There are several possible options available:

- Reducing the Maternal Viral Load:
- Treatment of STDs: **y**ou should use every opportunity you have to establish a pregnant woman's risk of STD infection and treat presumptively if you suspect exposure.
- Improving the nutritional status of the woman by encouraging them to eat a balanced diet and giving them vitamin supplements. Vitamin supplements have been shown to increase

infant birth weight and reduce occurrence of prematurity, while vitamin A supplements reduce maternal neonatal mortality. Remember! High dose vitamin A capsules are not safe during pregnancy and may cause harmful effects on the foetus.

- Cleansing the birth canal: **c**leansing the birth canal using Chlorhexidine (savlon) during labour may reduce the amount of HIV in the genital tract as well as other pathogenic micro organisms such as Group B streptococci.
- Minimizing the contact of the infant with maternal blood and secretions:
- Minimizing postnatal transmission of HIV through breast milk

Now we are going to discuss some issues relating to fertility regulation with special emphasis on the HIV-infected woman and her partner.

## Fertility Regulation For The HIV-Infected Couple

One of the negative outcomes of HIV infection in women has been the increasing number of HIV-infected children orphaned by AIDS. An important strategy to address this problem is to limit fertility in HIV-infected women.

As you have noted, voluntary HIV counselling and testing is increasingly becoming one of the services offered in the maternal child health clinic (MCH). More HIV-infected women will have an opportunity to control their fertility if PMCT is well integrated with MCH services. We hope that this discussion will provoke you to re-examine and adjust the way you manage HIV-infected women and their partners.

### Rationale for fertility regulation in general

Each year, women die from pregnancies that are either too early in life (<18 years), too late (>35 years) or too many in a lifetime (parity >5). Others die as a result of abortions due to unwanted pregnancies.

Abortion related morbidity such as infection and subsequent ectopic pregnancies, chronic pain, infertility; haemorrhage and damage to the uterus are important causes of ill health in women. These problems can be prevented if women and men are given the means by which to prevent unwanted pregnancies.

Family planning allows women to become pregnant when they want and to space their children optimally and limit family size as desired. Spacing births has important benefits for children. Spacing births to at least 2 years reduces child mortality by 20-30%, see Table 7.9 below. In Kenya, infants born within 18 months of the births of a previous child are more than twice as likely to die compared to those born after an interval of at least 4 years.

***Table 7.9: Infant and under-five mortality by different birth intervals***

| Birth Interval | Neonatal mortality Per 1000 live births | Infant mortality rate | Under 18 mortality |
|---|---|---|---|
| <2 years | 32.2 | 81.4 | 116.4 |
| 2-3 years | 21.1 | 51.9 | 84.8 |
| 4 years | 21.1 | 44.5 | 64.4 |

Source: Kenya Demographic Health Survey 2003

Contraception services should be available to all women. In Kenya there are community-based distributors in many communities and as a result contraceptive use has increased considerably. You should therefore be familiar with the different methods of contraception and use every opportunity to promote family planning and child spacing.

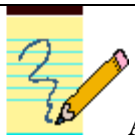
Family planning services are also an important link in the control of sexually transmitted diseases. Family planning services offer an opportunity for the health worker to discuss sexual health with the clients. A family planning visit is an opportunity to:

- Provide information on healthy sexuality.
- Evaluate the risk factors for STIs, AIDS, cervical cancer and breast cancer.
- Treat those who are sick with STIs and other illnesses.
- Promote condom use.
- Gradually help clients to develop skills on how to counsel their peers and their own children on healthy sexuality.

Family planning services are provided on a regular basis and therefore offer a unique opportunity for reinforcing appropriate health messages concerning contraception and prevention of STIs.

## Quality of Family Planning Services

The quality of family planning services has a very important impact on the success of the programme.

**ACTIVITY**

List down the factors that may impede successful delivery of family planning services

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_____

Now read through the following text and see if your ideas are included. As you study the next section, think of how you can improve your own practice in order to facilitate family planning acceptance.

Some of the factors that impede successful delivery of family planning services could be caused by you. Am sure you are asking yourself how this happens?

- By limiting the choice of family planning methods available to your clients. You can do this by imposing unnecessary rules limiting certain contraceptives, limiting the oral contraceptives you give to your clients, having a bias against certain methods, and imposing unnecessary sanctions against certain methods.
- By not giving your client sufficient information either because you are biased or you are not up- up-to-date and therefore cannot sufficiently inform the clients. You may sometimes withhold information about side effects in order to encourage clients. Other reasons that may hinder you from giving good information include lack up-to-date delivery guidelines.
- By having a poor relationship with your clients making it difficult for them to seek health services from you. This could happen if

- Your clients lack confidence in you because you are not knowledgeable or competent to provide a full range of services;
- You ask your clients to come back too often when they do not really need to;
- You are not counselling your clients adequately on what to expect from a particular family planning method;
- You are not respecting you client's confidentiality;
- You are not a good role model yourself in child spacing;
- Your services may not be readily accessible;
- You are requiring excessive and repeated tests and examinations.
- Your age or parity requirements are unnecessarily strict.
- You unnecessarily restrict the start time of family planning methods.

I hope these factors do not apply to you as a health worker. A study conducted in 1999 by Menya, Nduati and Kamboka among 222 health workers in Nyeri and 151 from Homa-bay Districts found the following:

- Ninety two percent of the health workers in Homa-bay and 86% of those in Nyeri thought condoms were a safe contraceptive method for HIV infected women.
- At least half (50%) of the health workers thought that pills, intra-uterine contraceptive devices (IUCD) Depo-Provera and Norplant were not safe for HIV-1 infected women.
- An addition 10% of health workers in Homa-bay and 15% in Nyeri did not know whether these methods were safe or not

So as you can see the factors we mentioned earlier can be real impediments.

Next, we shall focus on the contraceptive needs of HIV-infected women. By so doing we hope to address many of the problems that make us ineffective providers of family planning services. It is our hope that HIV-infected women in particular will not experience a missed opportunity for contraception when they seek your health services.

### Why regulate fertility in HIV-infected women?

Fertility regulation is one of the most important methods of reducing the number of children that are exposed to HIV. By promoting family planning among HIV infected women, we limit the number of children that become infected with HIV and also the number of children faced with

the possibility of becoming orphans. This is an important public health goal. At the level of an individual woman, there are additional important considerations.

Pregnancy and lactation make very high metabolic demands on the woman. HIV infection results in increased metabolic demands and reduced nutritional intakes secondary to the disease. Therefore, HIV-infected pregnant or lactating women face a double jeopardy of increased metabolic requirements. In well-nourished populations, the adverse outcomes may be minimal. Although there are no published studies to date, examining this problem in malnourished populations pregnancy and lactation may accelerate HIV disease progression.

The main goal in providing contraception to the HIV-infected women is to prevent sexually transmitted diseases and to prevent unwanted pregnancies. A proportion of HIV-infected women will opt not to breastfeed in an effort to protect their babies from further exposure to the HIV virus. This category of women will have special contraceptive needs.

An additional important consideration is the provision of contraception to ill women. Normally, ill women are excluded from the provision of family planning on the false assumption that it will aggravate the underlying illness. HIV-infected women present a specific challenge in this way because they are often ill, and yet there are many advantages of assisting them to limit their fertility.

**Never coerce a woman to use a particular method of fertility control. Provide her with information and counseling so that she can make informed consent.**

We will now discuss various methods of contraception and their impact on HIV transmission and illness. But before we proceed, try to answer the question below.

## Methods of Contraception and Their Impact on HIV Transmission

Let's start with your thoughts on this.


**ACTIVITY**

List three broad categories of contraception methods.

_____

_____

_____

I hope your answer included the following broad categories of contraception

- Primary female or male methods.
- Natural or non-natural methods.
- Permanent and non-permanent methods.

You will see that the various methods that we are going to discuss below fall under one of these categories:

### Contraception Methods For the HIV-infected Woman

Several female contraception methods are available for the breastfeeding HIV-infected woman. They include:

- Lactational amenorrhoea method
- Hormonal contraception
- Intrauterine device
- Surgical sterilization.

**The non-breast-feeding woman can use all the above methods except the lactational amenorrhoea method.**

Natural family planning methods other than abstinence have an unacceptably high failure rate for an HIV-infected woman who does not want another pregnancy. However, these methods

have an advantage, in that you do not need to adjust any therapy a woman may be taking due to underlying illness. However, you should encourage women to use the male condom along with the above methods. The condom is the only method that has been shown to protect against both bacterial and viral STDs.

Apart from barrier methods and natural family planning, one needs to be reasonably sure that a woman is not pregnant at the time a contraceptive method is introduced. You can be reasonably sure that a woman is not pregnant if she meets any of the following criteria:

- No intercourse since last menses.
- Regular and consistent use of a reliable contraceptive.
- Is within the first 7 days of her menses.
- Is within 4 weeks of delivery in non-lactating women.
- Is fully breast-feeding, amenorrhoeic and less than 6 months post-partum.
- Is within the first 7 days post-abortion.

You should take a history to evaluate for the symptoms of pregnancy. The presence of the following symptoms should be ruled out:

- Absent or altered menses;
- Nausea with or without vomiting;
- Fatigue (persistent);
- Breast tenderness and enlargement;
- Maternal perception of foetal movement (this occurs within 16-20 weeks pregnancy).

A physical examination is useful in ruling out a pregnancy of more than six weeks. By 18 weeks or more, the foetal heart may be heard using a stethoscope.

Laboratory investigation can also be done. Sensitive pregnancy tests for human chorionic gonadotrophin may be positive as early as 10 days. However, they tend to be expensive.

**Lactational Amenorrhea Method (LAM)**

This is the most commonly utilized method of contraception in developing countries. The method is used usually by default rather than by choice. LAM is indicated in fully or nearly fully breast-feeding women in the first 6 months post-delivery if the woman is amenorrheic.

Full breast-feeding means that the baby is exclusively breast-fed day and night while nearly fully means supplemental feeds are only a small component of infant diet. The effectiveness of LAM beyond 6 months post-delivery has not been established.

If a woman is using LAM but wants to switch to another method, you can be reasonably sure that she is not pregnant if she is:

- Still amenorrheic
- Fully or nearly fully breast-feeding (breast-feeds more than 10 times/day, or gives more than 80% of her infant's meals as breast milk).
- Has no clinical signs of pregnancy.

LAM is suitable for breastfeeding HIV-infected women. However, it should be combined with use of a condom to protect the woman from sexually transmitted infections. Infections increase the amount of serum HIV in an infected individual and potentially make that person more infectious. Periods of infection in a lately infected woman are associated with increased infectiousness to her breast-feeding infant.

**LAM is completely unsuitable for a non-breastfeeding woman.**

**Hormonal Contraception**

Hormonal Contraception is one of the most effective methods of contraception. The two broad groups of hormones used on contraceptives are estrogens and progesterones. Progesterones are used on their own or in combination with estrogens.

Estrogens exert their effect by:

- Inhibiting ovulation.
- Possibly inhibiting implantation
- Accelerating ovum transport
- Promoting luteolysis.
-

Progesterones exert their effect by:

- Making cervical mucous hostile to sperm.
- Decelerating ovum transport
- Inhibiting implantation
- Possibly inhibiting ovulation.

Hormonal contraceptive use increases the genital shedding of HIV in infected women. Thus, this method potentially makes such a woman more infectious to her partner. There are suggestions that hormonal contraceptives increase a woman's vulnerability to bacterial and viral STIs including HIV. This fact should be of particular importance when counselling HIV discordant couples, i.e. when one partner is HIV-infected and the other is not. In Kenya, where the prevalence of HIV is so high, it is important that condoms are provided in addition to hormonal contraception.

**Combined Oral Contraception (COC)**

The combined oral contraception (COC) method, as the name implies, is made from a combination of estrogen and progesterone. Older pills had high doses of these hormones, but today hormonal contraceptives contain only 35mcg of estrogen and low potency progestin. The combined pill has a combined dose of estrogen and progestin for 21 days in each 28-day cycle. When used properly, they have a very low failure rate. There is a wide variety of COC's available. You should familiarize yourself with the different COCs available on the market in your area.

***When do we initiate COC?***

COC can be initiated any time a woman wants contraception except when:

- She is pregnant
- Following a delivery

COC should be initiated during the first 7 days of the menstrual cycle or any time you are reasonably sure that the woman is not pregnant. If COC is initiated after the 7$^{th}$ day of the menstrual cycle, there may be alteration of the regular bleeding pattern. A back-up method such as a condom or abstinence is required for 7 days after initiation. This is the time period required for the pills to become effective against conception.

***COC use in breast-feeding women***

These recommendations are for women who are primarily breast-feeding their infants, not just giving token breast-feeding. COC should not be given in the first 6-8 weeks post-partum because even low dose COC (30-35mcg) decreases breast milk production. It is even better to wait until 6 months post-partum before initiating COC in breast-feeding mothers. After 6-8 weeks post-partum, breastfeeding mothers who require hormonal contraception should use progestin-only pills or injectables or Norplant. In a fully breast-feeding woman, there is very little risk of ovulation during the first 6-8 weeks post-partum.

A woman can use a lactational amenorrhoea method in the first 6 months post-natal as long as she is fully breast-feeding. At the end of this period, she can begin on a COC. A woman who wants to use the COC and does not want to use LAM can start on COC after 8 – 12 weeks post-delivery. This period of time allows for adequate establishment of breast-feeding.

***COC use in non-breast-feeding women***

There have been concerns about side effects such as blood coagulation associated with use of COC. During pregnancy, the blood becomes hypercoagulable, but this effect wears off by the third week post-partum. You can safely start on COC on the second to third week post-partum.

***Common questions about COC***

Your clients will have many questions about COC. Addressing your clients' concerns will increase their confidence and acceptance of the method. Here are some of the concerns that women often have about COC.

- *The client has missed taking her pills*

Advise her to use a back-up method. If she has missed 2 pills, she must use a back-up method until she has taken 7 active pills, i.e. one active pill per day for 7 days.

- *How many packets of COC should you give each visit?*

One can dispense COC for up to 3 months. However, the most important determinant will be your programme organization and your client's financial resources. In whatever approach that is used by the family planning programme, it is important to see the client 3 months after initiating COC for counselling and to assess the well being of the client. The re-issue of pills

should be flexible so that clients can receive their supply easily when they need it. For example, a client who is coming from very far should be given a larger supply of COC.

- *Does a woman need a rest period when she is using COC?*

A rest period is not necessary. COC should be used as along as a woman is at risk of pregnancy.

- *Is there an age limit for COC?*

COC can be used at any age when a woman is at risk of pregnancy. Women who are 40 and above, can use COC as long as other risk factors such as smoking, elevated blood pressure and diabetes are considered.

- *Does COC affect future fertility?*

It is important to note that COC does not compromise future fertility.
Post-pill amenorrhoea is not common and occurs more frequently in women who has irregular menses prior to COC use. Women with irregular menses are more likely to develop secondary amenorrhoea even without the use of COC.

- *Is COC safe during surgery?*

It is recommended that COC should be stopped 2 weeks before any major surgery that will lead to immobilization of the legs. Estrogens may increase the risk of post-operative thrombosis slightly. COC can be restarted after the woman is mobile. Remember that a woman is at risk of becoming pregnant during this period if she is sexually active.

**Remember! Condoms are ideal backup methods in that they not only give additional protection against pregnancy but they are good protection against sexually transmitted diseases**

**Progestin-only Contraception**

The types of progestin-only contraception include Depo-Provera (DMPA) Implanon, Jadelle and Norplant. Progestins can be used for contraception anytime a woman wants contraception, including following a delivery and following an abortion. Progestins are the preferred hormonal contraception in young adolescents who are sexually active.

You can start a progestin-only contraceptive at any point if you are reasonably sure that the woman is not pregnant. If a client is bleeding when the method is initiated, a back-up method is not indicated. If the client is not bleeding, a back-up method is required for at least 7 days. The first seven days of menstrual period are one period when one can be reasonably sure that the client is not pregnant.

***Indications of progestin-only contraceptives in breast-feeding mothers***

Progestin-only contraceptives can be given from 6 weeks after delivery. Progestin is not given in the immediate post-partum period in a breastfeeding woman because small amounts of these drugs are secreted in breast milk. Progesterones belong to the class of compounds called steroids. The immature neonatal liver is not able to metabolize these steroids.

***Indications for progestin-only contraceptives in women using lactational amenorrhoea***

Progestin injection or Norplant may be initiated when:

- The woman wants to change her method.
- The menses return
- The woman is no longer fully or nearly fully breast-feeding.
- The woman is 6 months post-partum.

***Indications for progestin-only contraceptives in non-breast-feeding women***

Progestin injection can be initiated in the post-partum period as long as you are reasonably sure that the client is not pregnant.

Progestin-only contraceptives have the added benefit of decreasing menstrual bleeding. Thus, they are protective against anaemia. Over half of the pregnant women in developing countries are anaemic during pregnancy. A family planning method that minimizes blood loss hastens recovery in the postnatal period. They also protect against endometriosis, pelvic inflammatory disease, ectopic pregnancy and inhibit intravascular sickling in women with sickle cell disease. Users of injectable progestin may have a slight increase in weight and altered lipid profiles.

**Among women above 35 years of age, irregular bleeding after prolonged amenorrhoea should be carefully evaluated for endometrial cancer and ovarian cancer.**

***Indications for progestin-only contraceptives in adolescents***

A significant proportion of Kenyan adolescents are sexually active. In fact, 20% of first babies in Kenya like elsewhere in Sub-Saharan Africa are born to adolescent mothers. The most appropriate contraception method for sexually active adolescents below 15 years of age is injectable progestin.

***Problems experienced in using injectable progestin***

- *Amenorrhoea* : This is a common occurrence with progestin-only contraception. You should reassure your client that it is no medical reason for stopping use. The amenorrhea is a result of the endometrial atrophy. Progestin only contraception protects against endometrial cancer.

- *Missed Appointment:* If a client comes after the grace period, give a progestin-only injection if you are reasonably sure that she is not pregnant. In addition, you will need to give a back-up method of contraception abstinence or condom use for 7 days.

- *Bleeding:* Bleeding associated with the use of progestins is uncommon. If it occurs, it usually does so in the first 3-6 months of using the method. The bleeding can be categorized into:
  - Prolonged spotting/moderate bleeding (similar to period).
  - Heavy bleeding.

  In the case of prolonged spotting/moderate bleeding, the first step is to reassure your client. Bleeding may be due to inadequate hormonal levels. Short-term (7–21 days) administration of COC or estrogen has been found to be useful. Your client may also benefit from Brufen or a similar non-steroidal anti-inflammatory drug. Avoid aspirin, as it has a pronounced anti-adhesive effect on platelets. If the previous contraceptive injection was more that 4 weeks ago, giving another injection may be ineffective in stopping the bleeding. Women need dietary advice and haematinics to mitigate against anaemia. Cases of heavy bleeding are very unusual and the patient should be referred for further evaluation.

- *Insufficient protection against pregnancy by hormonal contraception: There* are several instances when hormonal contraceptives fail to adequately protect against pregnancy. HIV infected women frequently experience the conditions below.

- *Increased metabolism of hormonal contraception:* Hormonal contraceptives are metabolized in the liver by hepatic micro-enzymes. There are many drugs that increase the concentration of hepatic micro-enzymes and thereby increasing the metabolism of the estrogens and progesterones including levoanogesterol.

  Examples of these drugs are:
  - Antibiotics, such as, rifampicin, griseofulvin and erythromycin.
  - Anticonvulsants, such as barbiturates, primidone, carbamazepine and ethosuximide.

Hepatic micro-enzymes induction by rifampin lasts 4 weeks in short term use and 8 weeks in long-term use. These observations are particularly relevant to HIV-infected women, because rifampicin is one of the drugs used in the induction phase of treating tuberculosis in HIV-infected individuals. In order to maintain adequate contraception in cases of long illnesses such as tuberculosis or deep mycosis, there is need to adjust the hormonal contraceptive use to maintain sufficient protection against pregnancy. One can either switch to depo-provera or another effective non-hormonal method or increase the dose of COC to 50mcg ethinyl estradiol (EE). This means the client should use 2 tabs of 30- 35mcg Ethinyl estradiol COC per day to ensure efficient contraception and produce regular menses.

**Oral Hormonal Contraceptive use during Diarrhoea or Vomiting Illnesses**

Acute diarrhoea and vomiting, which are common problems in patients with AIDS, may interfere with absorption of pills, especially if diarrhoea or vomiting occurs within 1 hour of swallowing the tablet. This means that during such an episode the individual is not sufficiently protected against pregnancy. There is no evidence that AIDS makes an individual less likely to be sexually active. We often-meet pregnant women with full-blown AIDS. You should be ready to make modifications to contraceptive use as you treat the diarrhoea.

If diarrhoea or vomiting continues for 24 hours, it is equivalent to missing 2 pills. A back-up method will be required until the client has recovered from the episode and has taken one active pill per day for 7 days.

Another common illness in our practice is malaria. Antimalarials do not interfere with the metabolism of COC, therefore, adjustments of the hormonal contraceptives are not required.

## Intrauterine Contraceptives Devices (IUCD)

An intrauterine contraceptive device (IUCD) may be inserted at any time if one is reasonably sure that the client is not pregnant. The IUCD is immediately effective and you do not need a back-up method. IUCDs have been found to be a safe and effective method of contraception for HIV-infected women who meet the required criteria. Therefore, IUCD is an effective alternative contraceptive method for HIV seropositive and seronegative women.

### Indications for IUCD use

IUCDs can be used:

- Immediately post-delivery (up to 48 hours after delivery) or after a caesarean section. Insertion in the immediate post-delivery period should be done by a specially trained provider;
- During menstruation;
- With breast-feeding women who have been using LAM before resumption of menstrual flow;
- Within 7 days following a spontaneous abortion if you are reasonably sure there is no infection.

IUCDs can be used by women of any age as long as they are at risk of pregnancy. The Copper T IUCD can be inserted safely 4-6 weeks post-partum, while other IUCDs can be used safely 6 weeks post-partum.

**Are you aware of any situations where IUCD use is contra-indicated?**

I am sure you are aware that there are specific contra-indications for use of IUCDs that are relevant also to the HIV-infected women. An IUCD should not be inserted if there is:

- Any indication of reproductive tract infection. You need to wait for 3 moths after the infection has cleared before inserting an IUCD.
- If there are unhealed lesions caused by trauma to the genital tract such as uterine perforations, serious vaginal or cervical trauma, chemical burns. The woman needs to wait until the lesions heal before inserting an IUCD.

- Haemorrhage or severe anaemia. You should defer inserting an IUCD until the anaemia has been corrected. However, progestin-releasing IUCDs may be used in anaemia because the progestin reduces menstrual flow.

There is no absolute contra-indication for IUCD use in young nulliparous women. However, caution should be used, as such women are at increased risk of STDs, PID and infertility. Users of IUCDs should be reviewed a month after insertion. Clients who develop pelvic inflammation disease (PID) as a complication of IUCD do so within 1 month after insertion.

***Problems experienced in the use of IUCDs***

*Heavier Menses and intermenstrual bleeding:*

Clients should be counselled to expect heavier menses with IUCD use and that intermenstrual bleeding can occur in the first few months. If a woman has mild to moderate bleeding and pain in the first month after insertion, but there is no infection and the woman wants to keep the IUCD, give a course of non-steroidal anti-inflammatory drugs other than aspirin. Women should also receive nutritional advice and iron tablets to improve haemoglobin levels. If the bleeding is heavy, the pain severe and the woman wants to discontinue the method, remove the IUCD.

*Suspected Pelvic Infection*

If pelvic infection is suspected, remove the IUCD and treat the patient with antibiotics. You should wait at least 3 months after PID before inserting an IUCD, and you must be reasonably sure that the client is at low risk for subsequent STDs.

*Insertion of an IUCD*

IUCDs are inserted safely by trained nurses and doctors. The provider must observe standard measures of hygiene to avoid introducing infection into the upper reproductive tract. The key points are to:

- Evaluate a woman's past history of STDs or early pregnancies and carry out laboratory investigations if you are in doubt.
- Observe aseptic techniques during insertion of the IUCD;
- Wash hands thoroughly.
- Carefully prepare the cervix.
- Use a sterile IUCD and equipment.

- Follow correct procedures.
- Observe correct decontamination of instruments.
- Safely dispose of all contaminated disposables.

**Counselling Your Client**

You need to counsel your client on:

- Efficacy and correct utilization of the method;
- Change in menses;
- Avoidance of high-risk behaviour
- Condom use if she is at high risk for STDs;

Clients should be advised strongly to come back for review if they have any of the following:

- Late period (which may be indicative of pregnancy);
- Prolonged or excessive bleeding or spotting;
- Abdominal pain or pain on intercourse;
- Genital infection;
- Pelvic pain with fever;
- Missing string, or the string becomes shorter or longer.

**Removal of an IUCD**

***When should IUCDs be removed?***

An IUCD is removed when an old one expires, a client requests removal, expulsion of the IUCD.

***Do you need to observe a rest period after removal of an IUCD?***

A client can have an IUCD inserted immediately after removal of the previous one if she wants to continue with this method of contraception. However, the provider should ensure that the client is not pregnant, has no contra-indications (such as infection) and that the removal of the previous IUCD was on the basis of partial expulsion or because the IUCD was expired.

***Common Complaints Concerning IUCDs***

Male partners may complain that they feel the string during intercourse. You should counsel the client and suggest cutting the string short. However, you need to explain that when the time

comes a forceps will have to be used to remove the IUCD. You should offer to remove the IUCD at once if this is not acceptable.

**Abortion**

This is the least desirable method of contraception. The procedure is not legal in Kenya except when there are medical conditions that threaten the life of the mother. In many developing countries, one of the commonest causes of maternal deaths is post-abortion complications.

HIV-infected women may seek an abortion on the basis of this diagnosis. This is a situation that presents an ethical dilemma to a health professional. On one hand, an HIV-infected woman has the certainty of a shortened life expectancy, but on the other hand, only a small proportion of babies acquire HIV infection during pregnancy.

A second concern is post-abortal sepsis, which has devastating results in immunosuppressed individuals. Currently, we do not have any information on whether the stress of a surgical procedure accelerates HIV progression.

**A demand for an abortion is an indication of failure in provision of contraceptive services.**

A health worker who is providing services to women should make sure that he or she is competent in treating the sequelae of abortion. The following skills are required:

- Ability to carry out a physical exam and diagnosis;
- Ability to prescribe appropriate antibiotic therapy;
- Capacity for manual vacuum aspiration of the uterus to remove products of conception in case of an incomplete abortion;
- Competency in contraceptive counselling.

**After abortion in the first or second trimester of pregnancy, COC can be initiated within 7 days.**

Ovulation returns within two weeks of a first trimester abortion and 4 weeks after a second trimester abortion. Using COC immediately after an abortion does not affect the individual's return to fertility.

An incomplete abortion may result in disseminated intravascular coagulation. If this conditions occurs you should avoid the use of estrogen. However, progestin is safe and should be initiated with 7 days post-abortion if you are reasonably sure the woman is not pregnant.

### Female Sterilization

Female sterilization is carried out using the method of tubal ligation. This can be done by ligation, coagulation or mechanical occlusion using clips, bands and rings. This is a permanent method and reversal is generally unsuccessful. There are many variations, but the most popular are the laparoscopic method and the mini-laparotomy.

When you offer sterilization as a family planning method, you need to discuss it exhaustively with your clients. Let them know the benefits, major and minor risks, possible impact on their marriage, alternative methods of contraception and the details of the procedure. The client needs to be clear that this is a permanent method. You should then document all the information given by the client and obtain a signed informed consent. It is always better when the spouse is involved in the decision-making process. However, there is no legal requirement for spousal consent.

**Sterilization is contra-indicated in an ambivalent patient even when they are HIV-infected.**

The surgical procedure may cause damage to the ovaries or the blood supply. Infection, haematoma, bladder injury or uterine ruptures have been reported in less that 1% of cases of mini-laparotomy or laparoscopy. Your client should be informed of these possible complications even though they are rare events.

**Emergency Contraception (EC)**

Emergency contraception, also called post-coital contraception, is a method that a woman can use following an episode of unprotected sex. EC is not an abortion and works before implantation (i.e. before pregnancy). This method is useful as a back-up rather than a substitute for regular contraceptive use. EC prevents ovulation, fertilization and implantation of the fertilized ovum in the uterus.

**What contraceptives can be used for Emergency Contraception?**

**IUCDs:** A copper IUCD inserted within 5 days of unprotected intercourse provides effective post-coital protection against pregnancy. If you are unsure about the woman's exposure to STDs, the insertion should be inserted under cover of an antibiotic. Copper IUCDs inhibit enzymes vital for fertilization and implantation. IUCDs produce endometrial changes that are incompatible with implantation. The IUCD is not an abortifacient. The failure rate is less than 1%.

**COC:** 2 doses of 100mcg ethinyl estroidiol and 0.5mg levonogestrel are effective in emergency contraception. The first dose should be within 72 hours of intercourse. The second should be exactly 12 hours later. These pills may come already pre-packaged. A convenient preparation would be 2 pills of the brand Ovral or 4 pills of the brand Nordette per dose. The mechanism of action to delay or prevent ovulation if taken early in the cycle, make the endometrium unsuitable for implantation and make it difficult for the egg to travel from the ovary to the uterus. The failure rate is less than 5%.

**Progestin-only Emergency Contraception:** Give 0.75mg of levonogestrel. The first dose should be within 8 hours of coitus and should be repeated 12 hours later. There is still reasonable success even when the first dose is given 48 hours after coitus. This regimen is associated with side effects that are similar to the combined oral contraceptive regimen for EC but occur less frequently.

**Who should use oral contraception for emergency contraception?**

The answer to this question is that all women are eligible for emergency contraception. This includes women who would ordinarily be unsuitable for hormonal contraception.

There are a few side effects that can be experienced after use of the drug. These include:

- Nausea in 50% of clients.
- Vomiting in 20% of clients
- Headaches, dizziness and breast tenderness in a small proportion of clients.
- Early or late menses.

**If there are no menses within 21 days of using EC, the woman should be evaluated for pregnancy.**

**Promoting and Popularizing emergency contraception**

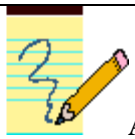
EC should be popularized among family planning providers and within the community. EC has a tremendous potential for reducing abortion deaths. It is a method that should be particularly useful to:

- Adolescents who are prone to unprotected sex;
- Women who have been sexually abused;
- Any woman who has had unprotected sex and does not want to become pregnant.

**As a health provider, you need to make it clear to your clients that EC does not protect against sexually transmitted diseases including HIV/AIDS. For this, individuals need to use barrier contraception.**

## Male Contraception

There are several predominantly male methods of fertility control. How many do you know. Start by doing the following activity.

**ACTIVITY**

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I believe your answer included the following types of male contraception:

- Male condom
- Vasectomy
- Withdrawal methods
- Periodic abstinence

### Male Condom

This is a commonly used method. It has the advantage of:

- Preventing conception.
- Protecting against sexually transmitted diseases.
- Involving the male in family planning.

**The condom is the only male contraception that protect the partners from sexually transmitted diseases**

**Vasectomy:** Vasectomy is a minor surgical procedure that is 99% effective. This method prevents the passage of sperm by blocking the vas deferens. It is one of the safest methods of

contraception. Minor complications include haematoma, granuloma, epididimits and wound infection.

**Withdrawal methods of Contraception:** Also known as coitus interruptus, this is thought to be the oldest method of contraception. It requires the man to withdraw his penis from the woman's vagina before ejaculation. To be effective, ejaculation must occur well away from the woman's vagina and external genitalia. Coitus interruptus has a failure rate of 18%.

**Periodic abstinence:** This is one of the oldest and most frequently used methods of family planning. These are several approaches, which include:

- The calendar method.
- The temperature method
- The cervical mucous method
- The sympto-thermal method, which combines both cervical mucous and temperature measurements.

Effective use requires correct knowledge of the woman's fertile period in order to avoid intercourse during that period. The method also requires cooperation between the partners. However, the failure rate, even with proper use, is in excess of 20%. This method is completely unsuited for ill women who often have disrupted menstrual cycles secondary to their illness. It is important to emphasize to an HIV-infected couple that withdrawal methods of contraception are the most unreliable. Their only advantages are that they have no monetary implications and involve no use of drugs.

This method is completely unsuited for ill women who often have disrupted menstrual cycles secondary to their illness. It is important to emphasize to an HIV-infected couple that withdrawal methods of contraception are the most unreliable. Their only advantages are that they have no monetary implications and involve no use of drugs.

Before concluding this sub-topic on contraception for HIV- infected women, we would like to remind you that our role as health workers is to provide accurate information to our clients. Clients should be allowed to make an informed choice about fertility regulation. We should therefore play our role in providing the method a client chooses. No one should be forced to a method they do not desire.

## SUMMARY

You have now come to the end of this section on integrating PMCT of HIV into MCH/FP services. We looked at health education of HIV transmission and safer sex practices, provision of condoms, counselling and testing, primary prevention of HIV, provision of treatment, care and support of women infected with HIV, their infants and families, and also reviewed contraception in the context of the HIV-infected woman. The key points of this section were that:

- It is important to integrate PMCT into MCH/FP Services in order to increase the uptake and effectiveness of PMCT;
- Fertility control in HIV-infected women is one of the ways of preventing HIV infection in children, as well as a way of promoting the health of the HIV-infected woman;
- Modern methods of fertility regulation can be used safely and effectively by HIV-infected at any point during their illness.

You have also come to the end of this Unit on PMTCT. We hope you have enjoyed reading each section and that you have learnt a lot. You can now take a well deserved break before you do the attached assignment.