



Module 2 Overview of PMTCT of HIV Infection

- SECTION 1** Mother-to-Child Transmission of HIV Infection
- SECTION 2** Comprehensive Approach to Reducing HIV Infection in Infants and Young Children
- SECTION 3** Role of Maternal and Child Health Services in the Prevention of HIV Infection in Infants and Young Children
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INTRODUCTION

After completing the module, the participant will be able to:

- Discuss mother-to-child transmission (MTCT) of HIV infection.
- Describe the four elements of a comprehensive approach to prevention of HIV infection in infants and young children.
- Describe the role of maternal and child health (MCH) services in the prevention of HIV infection in infants and young children.

Introduction

In the midst of an unrelenting global HIV/AIDS epidemic, and the increasing proportion of infection among women, the world's attention is now focusing on the prevention of HIV infection among the most vulnerable individuals: the newborns, infants and young children. About 700,000 children became HIV infected in 2004 alone with over 90 percent occurring through MTCT. The WHO and its UN partners have advocated four strategic approaches to the prevention of HIV infection in infants. These approaches constitute the four elements of PMTCT which include:

1. Primary prevention of HIV infection in women of reproductive age group and their partners
2. Prevention of unintended pregnancies among HIV-positive women
3. Prevention of HIV transmission from HIV-infected mothers to their unborn babies and infants
4. Care and support for HIV-infected women, their children and family members

Definitions

MTCT (Mother-to-child transmission) is the term used for vertical transmission of HIV from an HIV-infected mother to her newborn child.

PMTCT (prevention of mother-to-child transmission) is a commonly used term for programmes and interventions designed to reduce the risk of mother-to-child transmission (MTCT) of HIV.

Access to comprehensive Maternal and Child Health services is central to efforts to reduce HIV infection in infants and young children.

The following sections provide more details on the specific elements of the comprehensive approach.

SECTION 1: Mother-to-Child Transmission of HIV Infection

Use of the term “MTCT” attaches no blame or stigma to the woman who gives birth to a child infected with HIV. It does not suggest deliberate transmission by the mother, who is often unaware of her own infection status and unfamiliar with the transmission risk to infants. Use of the term should not obscure the fact that HIV is often introduced into a family through the woman's sexual partner.

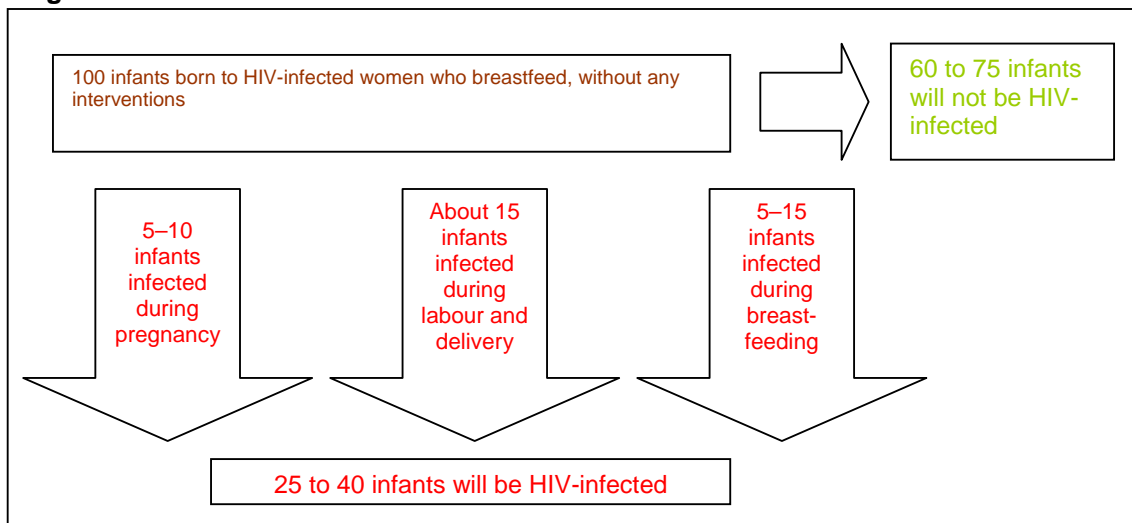
MTCT can occur during:

- Pregnancy
- Labour and delivery
- Breastfeeding

Risk of transmission without interventions

Most transmission occurs during labour, delivery and during breastfeeding. Figure 2.1 shows that without intervention (ARV prophylaxis or treatment) up to 40% of infants born to mothers infected with HIV can become HIV-infected.

Figure 2.1 HIV Outcomes of Infants Born to Women infected with HIV



Risk factors for transmission

A great deal is known about specific factors that may put a woman at higher risk of transmitting HIV to her baby:

- Viral, maternal, obstetrical, foetal, and infant-related factors all influence the risk of MTCT.
- The most important risk factor for MTCT is the amount of HIV virus in the mother's blood, known as the viral load. The risk of transmission to the baby is greatest when the viral load is high—which is often the case with recent HIV infection or advanced HIV/AIDS.

Some of the risk factors for transmission are the same and some are different during pregnancy, labour and delivery, and breastfeeding. These similarities and differences are summarised in Table 2.1.

Table 2.1 Factors that May Increase the Risk of HIV Transmission		
Pregnancy	Labour and Delivery	Breastfeeding
<ul style="list-style-type: none"> ▪ High maternal viral load (new or advanced HIV/AIDS) ▪ Viral, bacterial, or parasitic placental infection (e.g., malaria) ▪ Sexually transmitted infections (STIs) ▪ Maternal malnutrition (indirect cause) ▪ Antepartum haemorrhage 	<ul style="list-style-type: none"> ▪ High maternal viral load (new or advanced HIV/AIDS) ▪ Rupture of membranes more than 4 hours before labour begins ▪ Invasive delivery procedures that increase contact with mother's infected blood or body fluids (e.g., episiotomy, foetal scalp monitoring, instrumental delivery) ▪ First infant in multiple birth ▪ Chorioamnionitis (from untreated STI or other infection) 	<ul style="list-style-type: none"> ▪ High maternal viral load (new or advanced HIV/AIDS) ▪ Duration of breastfeeding ▪ Early mixed feeding (e.g., food or fluids in addition to breast milk) ▪ Breast abscesses, nipple fissures, mastitis ▪ Poor maternal nutritional status ▪ Oral disease in the baby (e.g., thrush or sores)

Appendix 2-A provides guidance for MTCT services for women infected with HIV-2.

HIV and pregnancy

Pregnancy itself does not seem to have an effect on progression of HIV/AIDS. Women with HIV/AIDS, however, are more likely to experience pregnancy – related complications such as anaemia in pregnancy and premature delivery.

SECTION 2: Comprehensive Approach to Prevention of HIV Infection in Infants and Young Children

Although PMTCT programmes often focus on ARV prophylaxis, a comprehensive approach to the prevention of HIV infection in infants and young children consists of four elements:

Element 1: Primary prevention of HIV infection in women of reproductive age group and their partners.

The best way to prevent HIV infection of children through mother-to-child transmission, including transmission through breast milk, is to prevent HIV infection of parents-to-be. About 70% of the global HIV burden is borne by sub-Saharan Africa where the main mode of HIV transmission is heterosexual contact.

The following factors are known to increase the risk of HIV infection in women:

- Having multiple sexual partners
- Immaturity of the genital tract
- Vaginal ectopy
- Sexually transmitted infections (STIs)
- Poor nutritional status

Other factors contributing to women's vulnerability to HIV include:

- Poverty
- Lack of information
- Abuse
- Violence
- Sexual relationships with men who have multiple sexual partners

Primary prevention strategies include the following components:

1. Safer and responsible sexual behaviour and practices

These include:

- Delaying the onset of sexual activity until marriage
- Practising abstinence
- Reducing the number of sexual partners
- Using condoms

This approach has come to be known as the “**ABC**” approach:

A = Abstinence – Refrain from having sexual intercourse

B = Be faithful – Be faithful to one partner

C = Condom use – Use condoms correctly and consistently

Recent reports of increasing new HIV infections transmitted from husbands to wives indicate a continued need to educate people about safer sex practices and other behaviour changes. For example, being faithful to one partner not infected with HIV is a risk reduction behaviour that has been proven to be significant in slowing the spread of HIV infection.

Behaviour change communication (BCC) efforts aim to change the behaviours that place individuals at risk for becoming HIV–infected or spreading HIV infection. BCC recognises that behaviour change is not simply a matter of increased knowledge; many factors, including family, church, and community influence change. BCC attempts to create a household, community, and health facility environment in which individuals can modify their behaviour to decrease risk.

Especially among young women, the successful implementation of “ABC” outlined above may require support from organised programs. Healthcare workers can help women address these challenges through education and community linkages.

Condoms can help prevent HIV transmission when used correctly and consistently, especially in high–risk settings. Programmes that promote condom use for HIV prevention should also focus on condom use for PMTCT.

2. Provision of early diagnosis and treatment of STIs

The early diagnosis and treatment of STIs can reduce the incidence of HIV in the general population by about 40%. STI treatment services present an opportunity to provide information on HIV infection, MTCT, and referral for testing and counselling.

3. Making HIV testing and counselling widely available

HIV testing and counselling services need to be made available to all women of childbearing age because PMTCT interventions depend on a woman knowing her HIV status.

4. Provision of suitable counselling for women who are HIV–negative

Counselling provides an opportunity for a woman who is HIV–negative to better understand how to protect herself and her infant from HIV infection. It can also serve as powerful motivation to adopt safer sex practices, encourage partner testing, and discuss family planning.

Exercise 2.1 Interactive group game: STI handshake	
Purpose	To explore the concept of HIV and STI transmission—both with and without the use of protection—when individuals are sexually active with multiple partners.
Duration	30 minutes
Activity	<p>Take a piece of paper from the basket and do not look at it.</p> <ul style="list-style-type: none"> ▪ Approach three other people in the group and shake hands with them. It is important to remember with whom you shook hands. ▪ After shaking hands with 3 people, return to your seat and open up the sheet of paper. ▪ The facilitator will give you specific directions about standing up or sitting down based on what is written on your piece of paper and the people with whom you shook hands. ▪ Repeat this process again as requested by the facilitator.

Element 2: Prevention of unintended pregnancies among HIV-positive women

It is every woman's fundamental right to decide for herself, without coercion, whether or not to have children. The responsibility of the government and health services is to

provide HIV-positive women and their partners with comprehensive information and education about the risks associated with childbearing as part of routine public information about HIV/AIDS, to ensure they have real choices of action, and to respect and support the decisions they reach. This means:

- Providing good quality, user-friendly and easily accessible family planning services so that HIV-positive women can avoid pregnancy if they choose.
- Promoting condom either alone or combined with a more effective method of contraception (dual method use) for dual protection from STIs/HIV and unplanned pregnancy as an effective strategy to prevent HIV infection in all sexually active women.
- Integrating dual protection messages into family planning counselling services.
- Offering contraception to replace the birth-spacing effect of breastfeeding in women who choose replacement feeding because of their HIV infection.

In many countries in sub-Saharan Africa, bearing healthy children provides social status and access to family resources; this access is denied to women whose HIV-infected children fail to thrive, and die. To that extent, interventions to reduce HIV transmission from mother to child can help a woman consolidate her social position, despite her HIV infection.

Element 3: Prevention of HIV transmission from women infected with HIV to their infants

Specific interventions to reduce HIV transmission from an infected woman to her child include:

- HIV testing and counselling
- Antiretroviral prophylaxis and treatment
- Safer delivery practices
- Safer infant-feeding practices

When an ARV drug is given to mother and infant to prevent MTCT, it is referred to as *ARV prophylaxis*.

How do these interventions work?

- Identify women infected with HIV
- Reduce maternal viral load
- Reduce infant exposure to the virus during labour and delivery
- Reduce infant exposure to the virus through safer feeding options

Ways to reduce risk of MTCT

- HIV testing and counselling
- Prophylactic antiretroviral therapy
- Elective caesarean section, where safe and feasible
- Safer delivery practices
- Infant-feeding counselling for safer infant-feeding practices

In industrialised countries where women infected with HIV receive triple drug ARV treatment and do not breastfeed – and where elective caesarean sections are safe, feasible, and commonly performed – the rate of MTCT has been reduced to about 2%. ARV prophylaxis can reduce MTCT by 40–70%. The impact is greater (closer to 70%) when women do not breastfeed, because current ARV prophylactic regimens only prevent HIV transmission during the early breastfeeding period.

Partner involvement in PMTCT

PMTCT efforts should be as comprehensive as possible and acknowledge that both mothers and fathers have an impact on transmission of HIV to the infant:

- Both partners need to be aware of the importance of safer sex throughout pregnancy and breastfeeding.
- Both partners should be tested and counselled for HIV.
- Both partners should be made aware of and provided with PMTCT interventions.

Testing and counselling of pregnant women

In Nigeria, the high fertility rate, the premium placed on children as objects of parental hope for future survival, and the acceptance of antenatal care, enhance the cultural endorsement of testing and counseling for PMTCT of HIV in antenatal settings. The aim of testing and counselling is to help the woman take necessary action to ensure that she does not become infected with HIV. However, if she is already infected the aim is to help her protect her own health, the health of the unborn child, that of her sexual partner and that of her family.

ARV prophylaxis to mother–child pair

ARV prophylaxis given to a pregnant woman who is HIV–infected does not confer long–term benefits to the woman herself. Pregnant women with advanced HIV infection require combination ARV treatment to reduce the risk of AIDS–related illnesses. As treatment becomes more available, there should be integration between prophylaxis and treatment services.

Several potent regimens, either as monotherapy or combination therapy, are currently in use as ARV prophylaxis. These regimens are discussed in detail in module 4.

Modification of obstetric practices

(i) Modification of routine obstetric practices for all women:

Recognition of HIV infection in pregnant women is the key to the prevention of childhood HIV infection. Issues of access to and affordability of antenatal care are crucial and must be addressed if interventions are to make any significant impact. All doctors, midwives and community healthcare workers who attend to pregnant women, should be trained in HIV and PMTCT testing and counselling to effectively include HIV antibody testing among the routine booking investigations. Rapid test kits should always be available for free HIV testing. In resource-constrained settings, the introduction of any fee, no matter how small, will prevent many willing clients from determining their HIV status. Syndromic management of STIs in the antenatal setting should be strengthened. Iron and folic acid supplementation, tetanus and malaria prophylaxis should be given to all pregnant women irrespective of their HIV status.

(ii) Specific modification of obstetric care for HIV-positive women:

All HIV-positive women should be given optimal health care to ensure their safe delivery. An HIV-positive woman identified in pregnancy should have a full physical examination with focus on HIV-related symptoms and illnesses and signs of opportunistic infections especially tuberculosis (TB).

In addition, apart from the routine laboratory investigations conducted on all pregnant women, other investigations for HIV-positive women should include CD4 cell count or total lymphocyte count. Details of management considerations for HIV-positive women are addressed in module 4.

Invasive procedures such as chorionic villus sampling, amniocentesis and cordocentesis should be avoided. External cephalic version should be avoided as it may also increase the risk of HIV transmission to the foetus.

Modification of infant-feeding practices and support

Breastfeeding is an important route of HIV transmission from mother to child. HIV-positive mothers should be counselled about this risk and where possible should try to avoid or limit breastfeeding. For HIV-negative mothers or mothers with unknown HIV status, exclusive breastfeeding remains the best infant-feeding choice.

However, in the context of PMTCT of HIV, the challenge is to strengthen and support mothers and partners to make breast milk substitutes acceptable, feasible, affordable, sustainable and safe (AFASS). Much as it is important to respect and support HIV-positive mothers in their decisions regarding infant feeding, they should be well informed about the various feeding options available to prevent their infants from being infected through breastfeeding.

Element 4: Provision of treatment, care, and support to women infected with HIV, their infants and their families

Programmes for the prevention of HIV in infants and young children will identify large numbers of women infected with HIV who will need special attention. Medical care and social support are important for women living with HIV/AIDS to address concerns about both their own health and the health and future of their children and families.

If a woman is assured that she will receive adequate treatment and care for herself, her children, and her partner, she is more likely to accept HIV testing and counselling and, if HIV-positive, interventions to reduce MTCT.

It is important to develop and reinforce linkages with programmes for treatment, care, and support services to promote long-term care of women who are HIV-infected and their families.

HIV-related treatment, care, and support services for women

Services for women include the following:

- Prevention and treatment of opportunistic infections
- ARV treatment
- Treatment of symptoms
- Palliative care
- Nutritional support

- Reproductive health care, including family planning, cervical screening and counselling
- Psychosocial and community support

Care and support of the infant and child who are HIV–exposed

Children whose mothers are infected with HIV are at higher risk than other children for illness and malnutrition for many reasons:

- They may be infected with HIV and become ill, even when adequate health care and nutrition are provided.
- Those who receive replacement feeding lack the protective benefits of breastfeeding against diarrhoeal diseases, respiratory infections, and other complications.
- If the mother is ill, she may have difficulty caring for the children adequately.
- Families may be economically vulnerable due to AIDS–related illnesses and deaths among adult relatives.

Nutritional support for the infant or child who is HIV–exposed

- Support the mother’s infant–feeding choice.
- Provide education on hydration and early reporting of diarrhoea.
- Monitor for growth and development.
- Monitor for signs of infection that can alter feeding patterns.

SECTION 3: Role of Maternal and Child Health Services in the Prevention of HIV Infection in Infants and Young Children

Maternal and child health services

HIV infection is one of the most important health problems for pregnant mothers and newborns in many developing countries. PMTCT programmes need to be integrated as an essential part of MCH care.

MCH care encompasses a broad range of educational and clinical services that help mothers, their children, and their families lead healthy lives. *Although all four elements of a comprehensive PMTCT programme are important, antenatal care is the most common entry point for women into those programmes.* MCH programmes facilitate PMTCT by providing:

- Essential antenatal care
- Safer delivery services
- Postnatal care
- Family planning services
- Cervical screening services
- ARV prophylaxis and treatment
- Counselling and support for the woman's chosen infant-feeding method

All mothers and infants will benefit from integrating PMTCT into existing MCH care services. Many elements of PMTCT programmes parallel and complement initiatives that are in development or are already offered by providers of quality antenatal care (e.g., Safe Motherhood and Baby Friendly Hospital Initiatives).

Integration of PMTCT into postnatal MCH services

Effective integration of PMTCT into postnatal MCH services is likely to strengthen maternal care, infant care, and family care.

- MCH postpartum care services help protect the mother's health by providing medical and psychosocial supportive care.
- MCH postnatal care services offer assessment of infant growth and development, nutritional support, immunisations, and early HIV testing. If the infant is HIV-infected, additional support services may include ARV treatment.
- MCH services provide social support, HIV testing and counselling for family members, referrals to community-based support programmes, and assistance in contending with stigma.

A comprehensive PMTCT programme provides the continuum of care for mother and child.

The continuum begins with educating adolescent women about primary prevention of infection and continues through treatment, care, and support to women who are HIV-positive and their families.

PMTCT programmes ensure that women receive education and services to reduce risk of MTCT throughout pregnancy, labour and delivery, and infant feeding. They also provide support for both mother and child, especially during the crucial years of childhood growth and development. This comprehensive approach ultimately provides

linkages to existing community services to address the complex needs and issues involved in HIV prevention, treatment, and management.

Comprehensive MCH services

- Recognise that the best approach to preventing HIV infection in infants and children begins with prevention of primary infection in parents-to-be.
- Provide information to prevent unintended pregnancies in women who are HIV-positive and high-risk women with unknown status.
- Provide education about early recognition and treatment of STIs.
- Provide education about reducing the risk of MTCT.
- Link and refer patients to health care and community services that include the following:
 - HIV testing and counselling
 - Nutritional care
 - ARV treatment
 - Psychosocial and/or spiritual support (such as support groups for women with HIV)
 - Treatment of symptoms
 - Palliative care
 - Economic assistance
- Educate patients about how to recognise symptoms of opportunistic infections and measures they can take to prevent such infections.
- Educate patients about how to recognise early signs and symptoms of HIV infection in the infant or child.

Module 2: Key Points

- A comprehensive approach is needed to prevent HIV infection in infants and young children.
- The four elements of the comprehensive approach to PMTCT are:
 - Primary prevention of HIV infection
 - Prevention of unintended pregnancies in women infected with HIV
 - Prevention of HIV transmission from women infected with HIV to their infants
 - Provision of treatment, care and support to women infected with HIV, their infants and their families
- Without intervention the risk of MTCT is 25–40%.
- Combination interventions can reduce the MTCT rate to as low as 2% in the absence of breastfeeding.
- MCH services are the entry point to PMTCT services.
- Linkages to community services can enhance treatment, care, and support.

APPENDIX 2–A

MTCT services for women who are HIV–2 infected

The woman infected with HIV–2 should have access to the entire range of antenatal, labour and delivery, and postnatal services as well as linkages to other services designed for women infected with HIV–1. Offering the mother infected with HIV–2 short–course ARV prophylaxis to prevent MTCT should follow national and local policy, if such a policy statement exists.

The following information, adapted from the CDC (October 1998) provides pertinent background on HIV–2 for consideration:

- HIV–2 infections are predominantly found in West Africa.
- HIV–2 infections:
 - Have the same modes of transmission as HIV–1
 - Also progress to AIDS
 - Are associated with similar opportunistic infections
 - Appear to be less transmissible from mother to child than HIV–1
 - Develop more slowly and appear less virulent than HIV–1
- Testing for both HIV–1 and HIV–2 should be considered in the following situations:
 - In settings where HIV–2 is present
 - When illnesses (such as opportunistic infections) appear in someone whose HIV–1 test is negative
 - When an HIV–1 Western blot indicates certain indeterminate test band patterns

The best approach to clinical treatment of HIV–2 is unclear. The following factors, however, should be considered:

- Non–nucleoside reverse transcriptase inhibitors (NNRTIs), such as nevirapine, are not as effective against HIV–2. Therefore, zidovudine therapy should be considered for expectant mothers who are infected with HIV–2 and their newborn infants to reduce MTCT risk, especially for women who become infected during pregnancy.
- Treatment response is more difficult to monitor than in women infected with HIV–1. CD4 counts and physical signs of immune deterioration are currently being used for monitoring.
- The woman’s wishes: the healthcare provider should have a frank discussion with the woman infected with HIV–2 to explain the prevailing policy and practice and to support her in making a decision with which she is comfortable.
- Continued surveillance to monitor the spread of HIV–2 is necessary.

Infant Feeding

The woman infected with HIV–2 should be advised to follow national and local infant–feeding recommendations for women infected with HIV–1.

Additional exercise available for use to stimulate discussion among the group.

Exercise : Local terminology: interactive discussion	
Purpose	To determine local language used in HIV/AIDS prevention, care, and treatment programmes.
Duration	10 minutes
Introduction	HIV disease has fostered the development of a number of words in every language to describe the disease, how it is transmitted, how it is prevented, and those thought to be infected and at risk. Although these terms are at times stigmatising, it is important that as healthcare workers we are familiar with the language used by our patients. Additionally it is important that providers are consistent with their use of words for new concepts.