

Module 3

Submodule 1: Role of PPTCT in HIV prevention, care and support

Session objectives

At the end of the session, trainees will be able to:

- Describe information on the epidemiological data related to PPTCT
- Discuss current strategies for PPTCT
- Describe the importance of VCT in the PPTCT programme
- Understand the importance of VCT for both individuals (pregnant women or mothers) and couples

EPIDEMIOLOGY OF MOTHER-TO-CHILD HIV TRANSMISSION

At the end of 2005, it was estimated that globally 2.3 million children under the age of 15 years were living with HIV/AIDS; 700 000 children were newly infected in 2005 and many of whom would die before they reach their teens (Table 3.1).

The vast majority of children with HIV are infected from their mothers *in utero* (mainly late pregnancy), at the time of labour and delivery, or after birth through breastfeeding. PTCT of HIV (or perinatal/vertical transmission) accounts for 3.6% of the total HIV infection load in India. In the absence of preventive measures, the risk of a baby acquiring the virus from an infected mother ranges from 15% to 20% in industrialized countries, and from 25% to 45% in developing countries. This difference is largely due to feeding practices—breastfeeding is more common and usually practised for a longer period in developing countries than in the industrialized world.

Table 3.1 Magnitude of PMTCT challenge in Asia

Country	No. of children infected
India	700 000
China	70 000
Myanmar	23 000
Thailand	18 000
Cambodia	9 000
Malaysia	1 700
Laos	800
Vietnam	600

Source: UNAIDS 2002 Country Reports

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Although PTCT of HIV also occurs at the time of delivery or late in pregnancy, between one third and one half of infections occur during breastfeeding. Several factors, not all of which have been fully elucidated, influence the likelihood of the baby getting infected, including viral, maternal, obstetrical, fetal and neonatal factors. High maternal viral load, such as at the time of seroconversion or in advanced disease, is considered to be a major factor in transmission.

It is estimated that there are about 5.134 million HIV-infected persons in India (NACO, 2004). States such as Tamil Nadu, Maharashtra, Andhra Pradesh, Karnataka, Manipur and Nagaland are 'high-prevalence states' (antenatal care [ANC] positivity rate >1%, high-risk group prevalence >5%); a higher seropositivity rate is generally seen among pregnant women.

The high-prevalence states of Andhra Pradesh, Maharashtra (including Mumbai with a total population of 18 million), Karnataka, Tamil Nadu, Manipur and Nagaland have a total population of 325 million with a pool of 27 105 infected babies delivered by 90 349 HIV-positive pregnant women annually. To achieve the UNGASS goal of 2005 for these states, 5427 babies need to be protected and nevirapine (NVP) need to be administered to 10 842 babies likely to be born from 35 799 HIV-positive mothers. In order to reach them, approximately 2.88 million pregnant women need to be covered.

The low-prevalence states (including the vulnerable states) have a combined population of 700 million contributing about 30 000 HIV-infected babies every year to the national pool of HIV-infected infants. To achieve UNGASS goals for this segment 6000 babies need to be protected through administering NVP to 12 000 babies, targeting 396 000 HIV-positive expectant mothers. To reach this figure 6.9 million pregnant women should access PPTCT services, of which only 2.9 million have been reached (NACO, 2005).

The number of HIV-positive women is increasing and, with it, the number of babies with HIV infection. UNAIDS estimates that between 54 000 and 270 000 children in India under the age of 15 years were living with HIV/AIDS at the end of 2003 (UNAIDS, Global report, December 2004). NACO estimates that there are 27 million pregnancies in India every year and around 30% of deliveries take place in government institutions, 40% in private institutions and about 30% are non-institutional deliveries. With a 0.7% prevalence rate among ANC attendees, this translates into 189 000 infected pregnancies per year. At the estimated rate of 30% transmission of HIV from mother to child, there exists a cohort of 56 700 infected newborns per year. PTCT can be prevented with a combination of low-cost, short-term preventive drug treatment, safe delivery practices, counselling and support, and safe infant-feeding methods.

ADVANTAGES OF VCT FOR PROSPECTIVE PARENTS

VCT is an important entry point for the prevention and care of those with HIV infection or AIDS. VCT provides the opportunity for people to know their HIV status with:

- quality counselling support to help them to cope with a positive or a negative test result;
- information and support for preventive measures to be taken for their unborn child;
- to deal with the related psychological impact including stress and trauma, and to develop coping skills;
- to prepare young mothers to deal with the social and cultural impact of HIV-related issues (particularly violence and community rejection); and
- to establish linkages with medical facilities needed for maternal and child care (including infant-feeding guidelines).

The Indian experience

As of end 2005, PPTCT services are available in all states at the tertiary and secondary levels and approximately 14% of all pregnant women access such services. However, in 2004, only 3.94% of all pregnant women received HIV counselling and testing and 2.35% of HIV-positive pregnant women received ARV prophylaxis. This shows the need for quality counselling services in PPTCT settings to strengthen the performance of the PPTCT programme.

VCT services are effective for both HIV-positive and -negative women. For HIV-negative women, counselling can reinforce the importance of risk reduction such as safe sexual behaviour and negotiating condom usage and can serve as a strong motivating factor to remain uninfected.

For women who are identified as being HIV-positive before or during pregnancy, HIV-related counselling can help them make decisions, linking them to antenatal and postnatal care, and further interventions including ARV prophylaxis and options for infant feeding. In addition, it can help HIV-positive pregnant women plan their future and the future of their families. Such counselling can also help a HIV-positive woman to take special steps to maintain her health, not infect her sexual partner, be linked with support groups and services, and make informed choices about her sexual behaviour and future childbearing (UNAIDS 1999, Global Report). VCT programmes for pregnant women benefit from the involvement of men, particularly motivating the sexual partner for seeking VCT services. Conflict and violence among couples after disclosure of HIV status have been reported. VCT and continuing counselling support can minimize these conflicts, violence and even abandonment by reaching out to the spouse and family members of the woman with HIV.

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In the absence of VCT services, most women have no definitive way of knowing their HIV status until they fall ill with identifiable symptoms of AIDS, or until they give birth to a baby who is diagnosed with HIV/AIDS. Thus, the time available for planning their future and that of their families is limited.

THE PPTCT PROGRAMME IN INDIA

The PPTCT of HIV has been given a high priority by the Government of India. The programme that was initiated in December 2002 has been scaled up to 488 PPTCT centres by December 2005. More than 90% of these centres are spread in 6 high-prevalence states, with Tamil Nadu having the maximum (193) centres. The objectives of the programme are:

- To reduce the proportion of infants affected with HIV by 20% by 2005 and by 50% by 2010.
- To reduce the prevalence of HIV infection among pregnant women in the age group of 15–49 years by ensuring that 80% of pregnant women accessing ANC services have information, counselling and other HIV prevention services available to them.
- To reduce MTCT of HIV through effective intervention for HIV-infected women, including VCT and access to ART.

Table 3.2 Risk factors for PTCT

Strong evidence	Limited evidence
Maternal	
<ul style="list-style-type: none">• High viral load• Viral characteristics• Advanced disease• Immune deficiency• HIV acquired during pregnancy• Breastfeeding	<ul style="list-style-type: none">• Maternal nutritional status• Vitamin A deficiency• Anaemia• Sexually transmitted infections• Chorioamnionitis• Frequent unprotected sex• Multiple sex partners• Smoking• Injecting drug use
Obstetric	Invasive obstetrical procedures
<ul style="list-style-type: none">• Vaginal delivery versus caesarean section• Prolonged rupture of the membranes• Intrapartum haemorrhage	<ul style="list-style-type: none">• Monitoring• Episiotomy
Infant	
<ul style="list-style-type: none">• Prematurity• Breastfeeding	<ul style="list-style-type: none">• Lesions of the skin and/or mucus membranes (oral thrush), including the gastrointestinal tract

MODES OF HIV TRANSMISSION FROM THE MOTHER TO THE CHILD

HIV transmission during pregnancy

In most HIV-infected women, HIV does not cross the placenta from the mother to the fetus. The placenta actually shields the baby from HIV. However, this protection may break down if the mother:

- Has viral, bacterial or parasitic (especially malaria) placental infection during pregnancy;
- Gets infected with HIV during pregnancy, developing high viral load at that time;
- Has severe immune deficiency associated with AIDS; and
- Has malnutrition during pregnancy which may indirectly contribute to PTCT.

HIV transmission during labour and delivery

Infants of HIV-infected mothers are at a greater risk of becoming infected during childbirth. Most infants who acquire HIV during labour and delivery do so by swallowing or aspirating maternal blood or cervical secretions. Factors associated with a high risk of PTCT during labour and delivery are as follows:

- Long duration following rupture of the membranes (ROM) often in the form of acute rupture of the membranes (ARM),
- Acute chorioamnionitis (resulting from untreated STIs or other infections),
- Invasive delivery techniques that increase the baby's contact with maternal blood, e.g. episiotomy, etc.
- First infant in a multiple birth.

HIV transmission through breastfeeding

HIV is present in breast milk, although viral concentrations are significantly lower than those in the blood. The risk of PTCT through breastfeeding depends on the following factors:

- The pattern of breastfeeding: Babies who are exclusively breastfed have a lower risk of being infected than those who are given mixed feeds.
- Breast pathologies: Mastitis, cracked nipples, bloody nipples and other breast infections.
- Duration of breastfeeding: The longer it is continued, the higher the risk of transmission.
- Maternal viral load: The risk is believed to double, 30% if a woman becomes infected with HIV for the first time while breastfeeding.
- Maternal immune status, advanced AIDS.
- Poor maternal nutritional status.

Timing of HIV transmission during breastfeeding

- Transmission can take place at any point during breastfeeding.
- About 70% of postnatal transmissions occur within the first 4–6 months.
- HIV has been detected in colostrum and mature breast milk but the relative risk of transmission has not been established.
- The risk is cumulative—the longer the duration of breastfeeding, the greater the additional risk. The overall risk of transmission via breastfeeding is about 15% over 24–36 months of feeding.

Table 3.3 The four-prong model for prevention of PTCT advocated by WHO/UNICEF/UNAIDS/UNFPA

Strategy	Key components
<p>Prong I: Primary prevention of HIV infection among women of child-bearing age and young people</p>	<ul style="list-style-type: none"> • Behaviour change interventions in the general population and couples • Information, education and counselling on HIV prevention and care • Better management of STIs • Reduction of unsafe transfusions • Addressing contextual factors that increase a woman’s vulnerability, i.e. stigma and discrimination • Condom promotion: Safe sex practice • Encouraging partners to be involved in safe sex discussions and VCT by couples <p>Note: Providing counselling to either HIV-negative or serodiscordant couples has been shown to be a highly effective primary intervention strategy.</p>
<p>Prong II: Prevention of unintended pregnancy among HIV-infected women</p>	<ul style="list-style-type: none"> • Increase the number of women who know their HIV serostatus—information, education and counselling on HIV prevention and care, including approach to PPTCT • Counselling of women and their partners to enable informed choice with regard to potential future pregnancy • Condom promotion as a valuable tool for family planning • Referral to family planning and other counselling services as necessary (knowledge of locally available counselling resources is therefore essential) <p>Note: Women who test HIV-positive in early pregnancy can make the decision to either continue with the pregnancy or to elect for termination when it is legal and safe.</p>
<p>Prong III: Prevention of HIV transmission from an infected mother to her infant</p>	<ul style="list-style-type: none"> • Ensure that HIV-positive women have access to antenatal care system and PPTCT services • Provision of ARV with counselling to HIV-infected pregnant women and their newborns • Safe delivery practices • Counselling and support for safer infant-feeding practices
<p>Prong IV: PPTCT plus providing care and support to HIV-infected women and their families</p>	<ul style="list-style-type: none"> • Medical and nursing care: VCT, OIs prevention therapy, HAART and palliative care • Psychosocial support: Counselling, spiritual support, follow-up counselling and community support • Human rights and legal support: PLHA participation and stigma/discrimination reduction • Socioeconomic support: Material support, microcredit and food support

INTEGRATION OF VCT INTO THE EXISTING MATERNAL AND CHILD HEALTH SYSTEM

VCT at the time of delivery—what are the issues?

While it is best if women receive VCT through ANC services, many women are present for delivery without having received ANC from that facility. On several occasions, women do not receive PPTCT interventions due to nonavailability of services, and the problem of testing is presented during labour. Most women in these circumstances will not know their HIV status.

Many settings utilize rapid HIV tests when a woman is in labour. A woman who is already in labour can learn of her HIV status and receive ARV prophylaxis to prevent PTCT. However, it can be difficult to offer counselling, obtain informed consent for testing, or give the result of a positive HIV test to a woman in labour. If time permits for pre-test counselling, the counsellor needs to make sure that the pregnant woman understands why VCT is important for her baby and that she is ready to make a decision about testing. Rapid HIV testing is used for preliminary diagnosis. The policy offering ARV prophylaxis varies according to the programme. Some programmes offer ARV based on preliminary HIV diagnosis by approved rapid tests because of the high sensitivity and specificity of these tests with low false-positive (~1%) rate. Pregnant women need to make choices for themselves and their babies to take medication if a rapid test is positive. Subsequently, on the next available working day, the woman can be subjected to two other rapid tests to confirm the diagnosis. Post-test counselling can be done comprehensively after HIV infection is confirmed, most likely in the postpartum ward.

Infant follow up

Under the programme, HIV testing of the baby is done >18 months with three HIV rapid tests in the VCTCs. This is ensured by counselling and follow up of the mother in the PPTCT centre and paediatrician in the ART centre. As the duration of follow up is long, less than 10% babies are being followed up at 2 months. This follow up progressively reduces to 1–2% at 12 and 18 months.

Basic PPTCT regimen

The basic PPTCT Regimen being followed in the National PPTCT programme is:

- Administration of single dose nevirapine (200 mg tablet) to the HIV-positive mother during early labour.
- Administration of single dose nevirapine (2 mg/kg body weight) to the baby within 72 hours of birth.

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PPTCT intervention package

1. Ante-natal care
2. Group education/pre-test counselling
3. HIV testing: After informed consent
4. Post-test counselling
5. Institutional delivery: Safe birth practices
6. Administration of nevirapine to the women during labour
7. Administration to the baby of single dose of suspension nevirapine (2 mg/kg) within first 72 hours
8. Counselling of mother for infant feeding options—PPTCT Plus
9. Care and support—PPTCT Plus
10. Follow-up—PPTCT Plus

Nevirapine administration

- Mother
 - Screened for contraindications
 - Single dose tablet of 200 mg during first stage of labour
- Baby
 - Single dose of suspension within first 72 hours
- Nevirapine courtesy
 - Donation from CIPLA

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Submodule 2: Counselling for the prevention of parent-to-child transmission of HIV

Session objectives

At the end of the session, trainees will be able to:

- Understand the aims of pre- and post-test counselling for pregnant women.
- Identify the concepts and impart the skills needed to provide effective counselling to women and their partners for prevention of parent-to-child transmission (PPTCT).

PRINCIPAL CONCEPTS AND ROLE OF A COUNSELLOR IN PPTCT

Voluntary counselling and testing (VCT) in PPTCT is a dialogue between a client who is a prospective parent and counsellor. The process seeks to serve at least three purposes:

1. Informative

To ensure that the client has a correct understanding of the facts that will enable them to take informed decisions. Education on HIV prevention should be included as a part of routine antenatal care (ANC):

- Knowledge of and information (basic facts) on HIV/AIDS in pregnancy
- Basic facts on issues related to HIV/AIDS, PPTCT and modes of transmission
- The importance and objectives of VCT for individuals and couples who are prospective parents
- Information related to access to services available for treatment, care and support
- Information related to referrals and linkages
- Knowledge about delivery options, infant feeding and antiretroviral therapy (ART) prophylaxis

2. Supportive

To help the client take voluntary, informed decisions about HIV/AIDS prevention and care, and to provide support for the feelings/emotions of the client as needed.

Voluntary, informed decisions include:

- HIV testing
- Planning or termination of pregnancy if desired by the couple
- PPTCT intervention, e.g. delivery options, entering an antiretroviral (ARV) programme, infant-feeding options

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- Disclosure issues

3. Preventive

The counsellor increases the client's awareness about measures they can take to protect themselves and others from HIV infection, and emphasize the possibility of preventing the transmission of HIV from the mother to the child. Client can adopt to ensure safe delivery of babies and follow up care for both mother and baby including immunization, nutrition and feeding options.

- Risk assessment and risk reduction
- Prevention of re-infection and spread of infection
- Assist clients in understanding their role in PPTCT in the context of the stage of impending or current parenthood, starting from the client's present condition

PSYCHOSOCIAL CONSEQUENCES OF HIV INFECTION AMONG WOMEN

These are detailed below:

1. Women often discover their status by accident, after the spouse or partner or child is already symptomatic; this presents the woman with a double crisis.
2. Women are often wrongly accused of having brought the infection into the family; this often causes conflicts with her spouse/family members and may lead to domestic violence.
3. The woman's infection may be the first indication that she or her partner has had another partner, and disclosure of this within the family unit may be traumatic.
4. Fear of social stigma and abandonment, and feelings of extreme isolation and loneliness may compel a woman to keep her condition secret.
5. Fear of violence may compel a woman to keep from disclosing her infection to her partner.
6. Infected women may be extremely concerned about the welfare of their children and underestimate their own needs.
7. Infected women may have to take tough and often painful decisions about their personal lives. Such decision include:
 - Who will take care of their children after their death?
 - Whether to take prophylactic ARV drugs
 - Whether to breastfeed
 - Whether to disclose their HIV status to their partners/family members
 - In case the spouse is HIV-negative, dealing with disclosure is crucial for women for fear of abandonment and violence
 - How her in-laws will react and the effect on family status, i.e. status of the woman in the family and of the family in the community.
 - Whether to avoid pregnancy and contraceptive options
 - Whether sexual relations should continue and whether condoms will be used

8. There are some reports that the incidence of postnatal depression is higher in HIV-positive women.

Reports from counsellors in some parts of India indicate that women found to be HIV-positive before their spouse is tested are victimized and labeled as having brought the infection into the family. Often, husbands do not accept counselling and testing, and the woman is abandoned. Women also report experiencing violence from family members.

EMOTIONAL REACTION OF HIV-INFECTED WOMEN

Women may require counselling assistance to cope with the following psychological reactions, which could surface during the pre- and post-test counselling sessions:

1. Anger towards the person who may have infected her
2. Grief at her loss of health and status, changed body image and sexuality, the possibility of having to give up her children, and of dying and leaving her children orphaned.
3. Shock at being HIV-positive as the client had not anticipated that she may contract HIV infection
4. Guilt relating to how she may have been the cause of her child's illness and burdened family members with caring for a sick person.
5. Fear of stigma, abandonment, social rejection and loss of self-esteem
6. Postpartum depression
7. On many occasions women have been reported to not react at all on hearing of their HIV-positive status. This could be due to the fact that the information has not been processed due to ignorance or shock.

Cultural and socioeconomic factors demanding attention

In most Indian marriages, decisions on issues related to reproductive health are not limited to women and their spouses. Family members, including members from the extended family, are involved in many health-related personal and social decisions.

SKILLS NEEDED TO PROVIDE EFFECTIVE COUNSELLING

To be able to develop the required basic and specific skills, a counsellor should be guided by certain principles. These principles promote the aims of counselling, and guide the conduct of the counsellor and the help given to the patient.

The process of VCT in PPTCT

HIV pre-test counselling

HIV pre-test counselling presents the counsellor with the challenge of balancing the provision of information, assessing the risk and responding to the clients' emotional needs. Many people are afraid to seek HIV testing because they fear stigma and

discrimination from their families and the community. VCT services should therefore always protect an individual's need for confidentiality. Trust between, the counsellor and the client is essential, and is developed through the counsellor establishing a rapport, and showing respect and understanding.

PARTNER DISCLOSURE-RELATED VIOLENCE

The individual benefits that women may receive from sharing HIV test results with their partners need to be balanced against the potential risks that an individual may face when she discloses her status.

Counselling strategies to reduce partner disclosure-related violence

Fear of violence is a major barrier for disclosure of their HIV-positive status by women to their male partners. This may be a justified fear. Counselling strategies to follow are:

1. Create opportunities for the sexual histories of couples to be taken separately. This not only ensures accurate risk assessment but also offers the counsellor an opportunity to foresee potential relationship difficulties that may arise from the disclosure of an HIV-positive result. This could be facilitated with referrals to a voluntary counselling and testing centre (VCTC) as it may not be possible during counselling for PPTCT to involve the male partner/husband.
2. Assessment: In addition to engaging in the standard process of disclosure counselling, it is important to assess the couple's history and potential for violence, preferably at both the pre- and post-test counselling sessions. This should be done by interviewing women separate from their partners and reassuring them of confidentiality.
3. Where the threat is less tangible or there is little to suggest a real threat but the client is anxious, encourage disclosure of the results in the presence of the counsellor. The counsellor could facilitate disclosure, and violence may not occur in a therapeutic atmosphere.
4. Develop a 'disclosure plan' with the client and include planning for an aggressive response.
5. The client should be asked to rehearse the disclosure using role-play during the counselling session.
6. Maintain a referral directory of welfare agencies offering support to women, e.g. shelters for victims of domestic violence.

Various methodologies are used in the PPTCT programme to provide information during pre-test counselling. These include individual counselling, group information, information given through video sessions, and using other information, education and communication (IEC) material. The method used depends on the number of people accessing the service.

Pre-test counselling for PPTCT, apart from the regular pre-test information, should also include general information about care during pregnancy. The importance of regular visits to the ANC clinic, balanced diet, rest and other medications should be emphasized. Counsellors should also emphasize safe sex practices during pregnancy, and motivate the spouse or partner to undergo testing. The counsellor should explore the risk of depression, suicide and violence that may arise following the client's results.

HIV post-test counselling

The content of the HIV post-test counselling will depend on the test results. The foundation of good post-test counselling is laid during pre-test counselling. If pre-test counselling is done well, the counsellor will have already established a relationship with the client and will have laid the ground for any necessary changes in behaviour or planning for the future, and will know the client quite well. The client presenting for HIV test results is likely to be anxious, and those receiving positive HIV test results will usually be distressed. It is therefore desirable that, where possible, the counsellor who provided pre-test counselling also provide post-test counselling.

Clients should also be encouraged to revisit the PPTCT centres for the interventions available to reduce the risk of transmission to the fetus.

- Transmission of HIV from mother to child can be prevented through the administration of ARV prophylaxis.
- Assist the mother to take an informed decision regarding the following:
 - use prophylactic ARV drugs to prevent the baby from getting infected.
 - select feeding options, as well as explore the pros and cons of breast milk and breast-milk substitutes.
 - plan the delivery with the obstetrician.
 - practise safe sex to reduce the likelihood of further re-infections.

Counselling women to make an informed choice requires a deep understanding of social issues, compassion, knowledge of their household situation, the ability to communicate complex concepts, and the ability to emotionally support women in taking a decision that affects themselves, their children and their entire family.

Follow-up counselling

Disclosure and other supporting issues in subsequent counselling sessions with HIV-positive persons also provide an opportunity to protect sexual partners and to plan for the future from an informed position—deciding on marriage and childbearing, and preparing children and the family for the progression of the disease to death.

Table 3.4 Utopian framework for VCT within ANC/maternal and child health (MCH) service delivery

Pregnant women
who access antenatal services
who deliver within a health facility with a health care personnel present (including a traditional birth attendant [TBA])
receiving health education and pre-test counselling for HIV
who consent to HIV testing
who receive results and post-test counselling
who test HIV-positive
who test HIV-positive and are offered ARVs for PPTCT
who test HIV positive and take ARVs and
who receive a dose for protecting the baby within the efficacious time frame
mother–baby pairs who have access to and are offered comprehensive follow-up care and support

OTHER COUNSELLING ISSUES

Breastfeeding and ARVs

Most HIV-positive women live in deprived conditions, and lack access to clean water and sanitation. This limits their ability to employ safe breast-milk substitutes. Research on how to make breastfeeding safer is a high priority. Results from one study suggested that exclusively breastfed children are less likely to acquire HIV than those receiving ‘mixed feeding’ (breast milk along with other foods). Meanwhile, studies are under way to determine whether ARV provided to a mother or infant during the breastfeeding period can prevent the transmission of HIV.

All HIV-positive pregnant women should be enabled to make an informed choice on infant feeding options. A general summary of the UNICEF/WHO guidelines on infant feeding is given below:

- For HIV-negative or women of unknown status
 - Exclusive breastfeeding should be recommended, promoted and supported for six months, followed by adequate weaning and continuation of breastfeeding for as long as possible.
- For HIV-positive mothers
 - Breast-milk substitutes (formula or sterile animal milk) when replacement feeding is acceptable, feasible, affordable, sustainable and safe, otherwise exclusive breastfeeding is recommended during the first months of life with early cessation.
 - Breastfeeding should be discontinued as soon as feasible in order to minimize the risk of transmission of HIV

Always consider local customs, the individual woman's situation, and the risks of replacement feeding (*which can include an increased risk of other infections and malnutrition*).

Counselling of couples

The HIV status of the woman's partner is a critical part of the family's decision-making framework. Involving the partner in HIV test-related counselling can help ensure that he is supportive of his partner's dilemmas and choices related to the infection such as, infant feeding and family planning. Women coming for HIV/AIDS counselling should be encouraged, but not forced, to bring their partners. Counsellors need to have some knowledge of how to work with couples. In cases where it is not possible to involve the spouse/male partner, women should be encouraged to visit the VCTC so that the issue of disclosure to the partner becomes easier.

Rationale for couple counselling

- Some people seek counselling as a couple because they recognize that their problems are rooted in their relationship rather than attributable to individual issues.
- A change in either partner's sexual behaviour is bound to affect the other partner.
- When couples work in supportive partnership they are bound to succeed more than if one partner is kept in the dark.
- Disclosing HIV results to the other partner, which is usually a difficult task for most couples, is better handled if both agree to be seen as a couple.
- Couples are better able to cope with decisions such as whether or not to plan a child, terminate a pregnancy and breastfeed the baby if they are seen and supported together.

Guidelines for working with couples

1. Build a relationship
 - Create a conducive and trusting relationship with the couple. The counsellor should ensure that they follow the basic counselling skills while working with couples. In couple counselling, the counsellor should never be biased in favour of an individual. The goal has to be protecting the marriage and helping the clients make a collaborative effort to deal with various issues related to HIV. A nonjudgemental attitude facilitates disclosure and is more likely to result in a positive outcome.
 - Let both know that there will be equal opportunity for airing their views.
 - Let both know that their individual opinions are important.
 - Let the dominant-looking partner start, especially if it is the husband, as this may influence their behaviour once they get home. However, undue importance should not be given to the dominant partner and the counsellor

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- should handle the situation of emotional dominance firmly with a nonjudgemental approach (the counsellor can say, ‘I have heard you and now it is essential to listen to other partner’s point of view’).
- Pay attention to both their verbal and nonverbal communication.
 - Try politely to draw out the silent partner to share feelings and options.
 - Set aside your values, prejudices and beliefs and work with those of the couple.
2. Check their understanding of HIV/AIDS.
 3. Explain the process of testing and the meaning of the test results, both positive and negative.
 - Discuss the process of receiving the results: How do they want to get their results? Neither will be given the results of the other; either they get their results together or separately, and then negotiate a way of informing their spouse or partner. Ideally, they should get the results together. However, it is important to gauge the issue of violence and discordant outcome, and accordingly take a decision on individual/couple involvement for providing the test result. At this point also mention:
 - the possibility that their results may differ (discordant results), e.g. the husband is HIV-positive and the wife HIV-negative, or vice versa and the possibility of testing HIV-negative during the window period.
 - what will it mean to them if they do not get the same result?
 - Ask each one to explain the meaning of the result and how they will cope.
 - How will they protect themselves?
 - What will be the advantages of knowing their status as a couple? Any disadvantages?
 - Who else might be affected by the outcome of their test? If the clients are pregnant women and their partners, discuss issues of PPTCT and availability of appropriate interventions.
 4. Check their willingness to have the test done.

Table 3.5 Potential benefits and risks of disclosure of HIV serostatus to sexual partners

Potential benefits	Potential risks
<ul style="list-style-type: none">• Increases opportunities for receiving social support and long-term home-based care, as well as medical and nutritional support for the mother and support for infant-feeding adherence• Improves access to necessary medical care• Increases opportunities to discuss HIV risk reduction with partners• Increases opportunities to carefully and thoughtfully plan for the future	<ul style="list-style-type: none">• Loss of economic support• Blame• Abandonment• Physical and emotional abuse• Discrimination• Disruption of family relationships

It is reported that if the spouse/partner of an HIV-positive woman is seronegative, the woman has to face far greater difficulties dealing with social consequences as well as in getting support from the spouse/partner.

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Submodule 3: Case management in the prevention of parent-to-child transmission of HIV

Session objectives

At the end of the session, trainees will be able to:

- Understand the effects of HIV on pregnancy
- Describe how ART is used for the prevention of HIV infection
- Describe the various drug regimens for prevention of mother-to-child transmission (PMTCT) used during pregnancy, intrapartum and postpartum, including short-course ART
- Describing the postpartum care of HIV-infected women and those with unknown HIV status

EFFECTS OF HIV ON PREGNANCY

Some studies in Africa suggest that HIV may have an adverse affect on fertility in both symptomatic and asymptomatic women. When comparing changes in CD4 count/percentage over time, there is no difference between HIV-positive women who are pregnant and HIV-positive women who are not pregnant.

HIV does not appear to significantly cause congenital abnormalities or an increase in the incidence of spontaneous abortion. During the early stages of HIV infection, pregnancy does not accelerate progression of the disease. Late HIV disease may affect the outcome of pregnancy, i.e. poor fetal growth, preterm delivery, low birth weight, and prenatal and neonatal death. Regarding common HIV-related problems, there is no difference in the management of pregnant and nonpregnant women except drug management.

MEASURES TO REDUCE TRANSMISSION OF HIV

During labour and delivery

- Delay rupture of the membranes (ROM).
- Carry out minimum digital examinations after ROM.
- Cleanse the vagina with hibitane or other viricides, if available.
- Reduce the use of assisted delivery with forceps.
- Reduce the use of episiotomy.
- Elective caesarean section protects better against PTCT than vaginal delivery.
- If not already on ART, give nevirapine.

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After delivery

- Avoid mechanical nasal suction.
- Clean the newborn immediately of all maternal secretions and blood.
- Support safe infant feeding (according to national guidelines it is the mother's choice to put the infant to the breast within 30 minutes of birth).
- If breastfeeding is chosen as an option, encourage exclusive breastfeeding and advise early cessation (up to six months) or breast-milk substitutes.
- Advise milk substitutes where conditions are suitable and cessation of breastfeeding after six months.

ARV therapy and PPTCT

ARV therapy can produce a significant reduction in mother-to-child transmission of HIV

- Studies showed that administration of zidovudine to women from the 14th week of pregnancy and during labour to the newborn decreased the risk of MTCT by nearly 70% in the absence of breastfeeding.
- A shorter zidovudine-alone regimen starting from the 36th week of pregnancy was shown to reduce the risk of transmission of HIV at 6 months by 50% in nonbreastfed infants and by 37% in those who were breastfed.
- A short course of nevirapine (HIVNET 012) has been shown to reduce the risk of transmission by 47%.
- This protocol is the most commonly used because of its
 - demonstrated efficacy in clinical trials in reducing PTCT
 - low cost
 - ease of use in PPTCT programmes.

Women on treatment with ARVs for HIV infection have been shown to have a very low transmission rate if their viral load is <1000 copies/ml.

WOMEN FIRST DIAGNOSED WITH HIV INFECTION DURING PREGNANCY

- Women in the first trimester may consider delaying initiation of ART
- Weigh the severity of maternal HIV disease, and the potential benefits and risks of delaying ART until after first trimester
- For women who are severely ill, the benefit of early initiation may outweigh the theoretical risk to the fetus; in these cases, ART initiated with drugs such as zidovudine, 3TC, nevirapine or NVP is recommended

HIV-INFECTED WOMEN WHO BECOME PREGNANT

If on ART, options are

- Suspend therapy temporarily during the first trimester
- Continue the same therapy
- Change to a different regimen
- If not on ART—prophylaxis (PPTCT)

Issues to be considered

- Gestational stage of the pregnancy
- Severity of maternal disease—need for ART on PPTCT
- Tolerance of regimen during pregnancy
- Potential for adverse fetal effects

PPTCT IN HIV-INFECTED

ARV can reduce the concentration of HIV in maternal fluids, tissues and breast milk, which leads to a decreased risk of exposure of the infant to maternal HIV during the intrauterine, intrapartum and postpartum periods.

Nevirapine

Nevirapine (NVP) is an ARV drug that reduces the chances of a woman transmitting the virus to her baby. The usefulness of ARV drugs for PMTCT was demonstrated in 1994 and has now been adopted as part of the standard care of HIV-infected pregnant women in most countries. This intervention is an important component of the Government of India's National AIDS Control Programme. It is a simple two-dose regimen (one dose each to the mother and the newborn) to be taken orally (under supervision). A 200 mg pill is given to the mother with onset of labour and drops given to the baby (2 ml/kg body weight). It is inexpensive, does not require refrigeration, and no significant side-effects have been noticed, either in a clinical or laboratory setting, after single-dose administration. Adverse reactions to nevirapine have been observed in some cases. These allergic reactions include rash, erythema multiforme, vomiting, diarrhoea, hyperkalaemia or hypokalaemia, tachycardia, systolic hypertension and hepatotoxicity. The current national programme on PPTCT uses single dose of NVP to mother and baby.

Nevirapine gets rapidly absorbed and crosses the placenta efficiently after a single oral dose of 200 mg is given to the mother. In infants, the median half-life ranges from 45 to 72 hours for the elimination of maternal nevirapine, and 37 to 46 hours for a single 2 mg/kg neonatal dose (HIVNET 012 regimen). Metabolism of nevirapine to hydroxylated compounds occurs via cytochrome P450 in the liver; these are further

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metabolized by glucuronide conjugation. Elimination of nevirapine and its metabolites is mainly through urine.

Research in Uganda (HIVNET) and later in South Africa showed that a single dose of nevirapine given during labour and a single dose given to babies 48–72 hours after birth decreased the transmission rate by 50% in babies who were 3 months old and were breastfed. This regimen of single-dose intrapartum/newborn nevirapine prophylaxis was considered ideal for PPTCT in developing countries for the following reasons:

- It is a single drug given at the onset of labour.
- It is cheap and simple.
- Mothers can take the medication if they want to deliver at home.
- Mothers can still breastfeed.

In 2000, the manufacturers of nevirapine, in partnership with the Government of India and the United Nations system, offered the drug free of charge to developing countries for a period of five years.

Findings on ARV prophylaxis for PPTCT in countries with limited resources

- ARV prophylaxis has higher efficacy in nonbreastfeeding settings
- Short-term use of zidovudine antepartum is effective, but less than long antepartum therapy.
- Intrapartum/newborn prophylaxis with zidovudine/3TC or nevirapine can also reduce transmission, although less than that with three-part antepartum–intrapartum–newborn regimens.
- Persistent (though decreased) efficacy was seen with short-course zidovudine and nevirapine regimens among 18–24-month breastfed infants.
- The addition of single-dose nevirapine may provide added benefit to short-course zidovudine (study of nevirapine resistance is needed)
- When maternal antepartum/intrapartum ARV is not received, post-exposure infant prophylaxis should be given; however, the best regimen is yet to be defined.

A pregnant HIV-positive woman who opts to breastfeed should still be given ARVs for PPTCT, although the efficacy of ARV in preventing transmission will be decreased. If short-course zidovudine is used, the efficacy is reduced from 50% in nonbreastfed infants to 37% at 3 months of breastfeeding. With nevirapine, the efficacy at 3 months of breastfeeding is 50%. In babies who are breastfed longer, the efficacy diminishes with the duration of breastfeeding.

SHORT-COURSE ARV PROPHYLAXIS AND TREATMENT POSTPARTUM

- Short-course ARV regimens that do not fully suppress viral replication may be

associated with the development of drug resistance to ARVs.

- The Ugandan HIVNET 012 study of single-dose intrapartum/newborn nevirapine for PMTCT found that 19% of the women developed resistance to the drug. This was associated with vaginal delivery, HIV viral load and CD4 cell count.

Based on current information (until further data are available), prior administration of short-course zidovudine/3TC or single-dose nevirapine for PMTCT should not preclude the use of these agents as part of a combination ARV drug regimen initiated for the treatment of these women.

ADHERENCE TO THERAPY DURING PREGNANCY AND POSTPARTUM

- Adherence is more difficult in pregnant and postpartum women.
- Obstacles to adherence: morning sickness, gastrointestinal upset, fears about ARV harming the fetus, physical changes in the postpartum period and demands of caring for a newborn.
- Many of the common minor complaints may be managed with simple drugs during pregnancy.
- If the need to temporarily discontinue therapy during pregnancy arises, stop all drugs and then re-start all simultaneously. This reduces the potential for emergence of resistance.
- It is important to provide additional support for monitoring adherence to therapy during the ante- and postpartum periods.

IMMEDIATE POSTPARTUM CARE OF WOMEN WITH UNKNOWN HIV STATUS AND HIV-INFECTED WOMEN

Testing and counselling after childbirth

Although testing the mother for HIV after childbirth is too late to modify any labour and delivery procedures, it can still make a difference. The results of an HIV test may influence the mother's choice of infant-feeding options and could initiate post-exposure ARV prophylaxis for the child, if needed. If otherwise eligible, she can also opt for ART as part of the care and support programme.

Postpartum care of women with unknown HIV status

Women whose HIV status is unknown should receive the same programme of postpartum care as HIV-infected women (outlined below). They should be encouraged to undergo testing for HIV and to follow recommendations for feeding their infants.

Postpartum care of HIV-positive women

Postpartum care of HIV-positive women can follow routine protocols, but several areas require additional attention.

Feeding the newborn

Women should be counselled on infant-feeding options.

When replacement feeding is 'AFASS', i.e. acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding is recommended. Otherwise, exclusive breastfeeding is recommended for the first six months of life with early and abrupt cessation. Counselling should include information about the risks and benefits of various infant-feeding options, and guidance in selecting the most suitable one.

The mother can choose replacement feeding or breastfeed exclusively to reduce the risk of PTCT during the postpartum period. New mothers should choose feeding options before they leave the clinic or hospital after childbirth, and they should receive support in making and executing their decisions (see Module 3 Submodule 3: Infant feeding in the context of HIV infection).

Signs and symptoms of postnatal infection

HIV-infected women may be at increased risk for postnatal infection, especially if the disease is in a more advanced stage. Women should be given information before they leave the clinic or hospital about the early symptoms of infection and where to seek treatment. Symptoms can include the following:

- Burning during urination
- Fever
- Foul-smelling lochia
- Cough, sputum, shortness of breath
- Redness, pain, pus, or drainage from the incision or episiotomy
- Severe lower abdominal tenderness

Women should also be instructed on perinatal and breast care, and potential problems. It should be explained that lochia and blood-stained sanitary pads or other material can be infectious, and mothers should be taught the proper method of disposing of potentially hazardous materials.

Family planning

Contraception and child spacing should be discussed with every woman antenatally and again in the immediate postpartum period. The main family planning goals for HIV-infected woman are

- prevention of unintended pregnancy
- appropriate child spacing, which can help reduce maternal and infant morbidity and mortality.

Continuing care

HIV-infected women should be encouraged to seek continuing health care in the following areas:

- Regular gynaecological care, including Pap smears, if available
- Regular HIV/AIDS care: medical follow up; where possible, women should receive referral to a specialist in HIV/AIDS care including ARV
- Nutrition and dietary care
- Family planning services

Feasibility studies carried out with support from UNICEF India have demonstrated that it is possible to implement a cost-effective approach to the PPTCT programme in the public sector in India. The PPTCT Feasibility Study using the drug zidovudine was conducted from March 2000 to September 2001 in 11 medical colleges. A second feasibility study using nevirapine commenced in October 2001 in the same medical colleges and ended in September 2002. Counselling of pregnant women was carried out prior to their undergoing an HIV test. If found HIV-positive, they were offered counselling, regular antenatal monitoring and supervised delivery. The women were then introduced to support groups. The results of the study clearly established the effectiveness of PPTCT interventions by reducing the transmission rate to about 8%–9%.

As knowledge and experience increases globally in PMTCT, the guidelines and PMTCT regimes may change. Updated information will be available on the WHO website.

Module 3

Submodule 4: Infant feeding in the context of HIV infection

Session objectives

At the end of the session, trainees will be able to:

- Understand the advantages and disadvantages of breast milk and nutrient contents of animal milk
- Understand why mixed feeding is harmful
- Understand methods that can prevent transmission of HIV through feeding options
- Describe current global recommendations for infant feeding in the context of HIV infection
- Define the main options for infant feeding, and the benefits and risks of each
- Describe and follow the steps for counselling HIV-positive mothers about infant feeding
- Understand the importance of postnatal follow up and support required for appropriate infant feeding
- Describe complementary feeding after six months of age

BASIC FACTS ABOUT MALNUTRITION, INFANT FEEDING AND CHILD SURVIVAL

The 2002 WHO World Health Report provides the following data on malnutrition, infant feeding and child survival:

- Worldwide, malnutrition is the underlying cause of about 60% of deaths in children younger than 5 years of age; in Africa the figure is about 50%.
- Being underweight was associated with 3.7 million deaths worldwide in the year 2000, mostly of children younger than 5 years of age.
- Poor feeding practices, such as those that provide insufficient nutrients and energy or contribute to diarrhoea, are a major cause for being underweight and of morbidity in children.
- Counselling and support for infant feeding can improve feeding practices and in turn, prevent malnutrition and reduce the risk of death in children.
- For HIV-infected mothers, counselling and support will also help prevent PPTCT.

GLOBAL RECOMMENDATIONS FOR INFANT AND YOUNG CHILD FEEDING

ARV prophylaxis administered to the mother during labour and to the child shortly after birth has substantially reduced PTCT of HIV during labour and childbirth. ARV

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prophylaxis, however, does not provide long-term protection to the infant. It is estimated that 10%–20% of infants breastfed by HIV-infected mothers remain at risk of acquiring HIV infection. Infant-feeding practices that carefully follow national or WHO guidelines can reduce the likelihood of PTCT through breastfeeding, and reduce the risk of infant death from diarrhoea and other childhood infections.

WHO infant-feeding recommendations for HIV-negative mothers and mothers with unknown HIV status

WHO recommends exclusive breastfeeding (see definition in box) for six months and continued breastfeeding for up to two years or beyond for the health, nutritional and psychosocial benefits it provides to mothers and their infants. Women should also be given support to

- breastfeed according to the WHO recommendations
- introduce nutritionally adequate and safe complementary family foods after the infant reaches six months of age, while continuing to breastfeed for two years or beyond.

Mothers should also receive information about the risk of becoming infected with HIV late in pregnancy or while breastfeeding. Women whose HIV status is unknown should be counselled to be tested for HIV.

Definition

Exclusive breastfeeding: The mother gives her infant only breastfeeds (including expressed breast milk), except for drops or syrups consisting of vitamins, mineral supplements, or medicines. The exclusively breastfed child receives no food or drink other than breast milk—not even water.

WHO infant-feeding recommendations for HIV-positive mothers

Because of the risk of PTCT of HIV through breastfeeding, WHO/UNICEF's recommendations to HIV-positive women vary according to the setting, depending on the following factors:

- Acceptability of replacement feeding
- The amount of time, knowledge, skill and other resources available to the mother to provide replacement feeding
- Whether replacement feeding is affordable and sustainable
- Whether replacement feeding is safe

In some settings, national policy recommends that HIV-positive women breastfeed exclusively for the first six months. In other settings, national policy recommends replacement feeding. Mixed feeding is not recommended; infants given replacement feeds and breast milk during the first six months are more likely to acquire HIV

infection through breast milk than those who are exclusively breastfed.

When acceptable alternatives are not available, affordable, feasible, sustainable and safe, exclusive breastfeeding provides for balanced nutrition, protects infants against certain infections and chronic diseases, and reduces infant mortality associated with childhood illnesses such as diarrhoea or pneumonia.

WHO/UNICEF infant-feeding recommendations for HIV-infected mothers

When replacement feeding is acceptable, feasible, affordable, sustainable and safe (AFASS), avoidance of all breastfeeding by HIV-infected mothers is recommended. Otherwise, exclusive breastfeeding is recommended during the first months of life.

Definitions

Acceptable: The mother perceives no barrier in choosing a feeding option for cultural or social reasons, or for fear of stigma and discrimination.

Feasible: The mother (or family) has adequate time, knowledge, skill and other resources to prepare feeds and to feed her infant, and the support to cope with family, community and social pressures.

Affordable: The mother and family, with available community and/or health system support, can pay for the purchase, production, preparation and use of the feeding options—including all ingredients, fuel and clean water—without compromising the family's health and nutrition spending.

Sustainable: The mother has access to a continuous and uninterrupted supply of all ingredients and commodities needed to implement the feeding option safely for as long as the infant needs it.

Safe: Replacement foods are correctly and hygienically stored, and prepared in nutritionally adequate quantities; infants are fed with clean hands using clean utensils, preferably with cups.

Recommendations on guidance and support

Note the following recommendations on guidance and support for implementing the WHO feeding recommendations:

- Provide all HIV-positive mothers with feeding counselling that includes general information about the risks and benefits of various infant-feeding options as well as specific guidance in selecting the option most suitable for their situation.
- Support the mother's choice, whichever feeding option she chooses.
- Conduct local assessments to identify the range of feeding options that are acceptable, feasible, affordable, sustainable and safe in particular contexts.
- Develop information and education materials about PPTCT of HIV, including facts about breast-milk transmission, and disseminate the material to the public, affected communities and families.
- Train, deploy, supervise and support adequate numbers of people who can counsel HIV-infected women on infant feeding.

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- Provide updated training to counsellors when new information and recommendations emerge.
- Empower health-care workers to provide effective feeding counselling.
- Extend the services of health-care workers to the community using trained lay or peer counsellors.

FEEDING OPTIONS

Mothers with HIV infection and their families must consider many factors when deciding which feeding option is the best for their infants. Health-care workers providing PPTCT services play a critical role in facilitating and guiding the decision-making process, and in helping mothers and families balance the many risks and benefits of each option. Mothers and families should receive information about the benefits and risks of each available method. All education and counselling should be in accordance with national guidelines and adapted to reflect local customs, practices and beliefs.

Breast-milk feeding options

Option 1: Exclusive breastfeeding

The benefits/motivation and risk/constraints of exclusive breastfeeding are presented in Table 3.6.

Option 2: Exclusive breastfeeding with early cessation

HIV-positive mothers who choose to breastfeed may select this option. Before stopping breastfeeding, which may take from a few days to 2 or 3 weeks, HIV-infected mothers should receive formal or informal support and guidance to maintain breast health and to comfort her infant, along with psychosocial and infant nutritional support.

The benefits/motivation and risks/constraints of exclusive breastfeeding with early cessation are presented in Table 3.7.

Option 3: Using wet nurses

An HIV-positive mother, in keeping with local custom, may ask another woman who is HIV-negative to breastfeed her baby. When a woman breastfeeds a baby to whom she has not given birth, it is called wet nursing. If a woman expresses her milk for another baby it is called donor breast milk. Table 3.8 presents the benefits/motivation and risks/constraints of using wet nurses.

Option 4: Expressed and heat-treated breast-milk feeding

Expressing and heat-treating breast milk is another option to consider:

Table 3.6 Exclusive breastfeeding

Benefits/motivation of exclusive breastfeeding

- Breast milk is easily digestible and gives infants all the nutrition and water they need. They do not need any other liquid or food for the first six months of life. Nutrients in breast milk that may not be available in other foods include high-quality protein, certain fatty acids thought to be essential for the infant’s developing brain and micronutrients, including iron in an efficiently absorbed form.
- Breast milk is always available and does not need any special preparation.
- Breast milk protects infants and children up to at least two years of age from diseases, particularly diarrhoea and pneumonia. It contains numerous anti-infective and growth factors, which stimulate development of the infant’s gut. Even with optimal hygiene, nonbreastfed infants have higher rates of diarrhoea, respiratory, ear and other infections compared with breastfed infants. Additionally, some chronic diseases in later life are less common in children who were breastfed as infants.
- Breastfeeding prevents anaemia and certain types of cancers in the mother. It also delays the next pregnancy.
- Breastfeeding provides the close contact that deepens the emotional relationship or bonding between the mother and her child.

Risks/constraints of exclusive breastfeeding

- The risk of PTCT exists as long as the HIV-infected mother breastfeeds since breastfeeding exposes the infant to HIV.
- Breastfeeding increases the risk of HIV transmission if the mother has a breast infection (e.g. mastitis) or cracked and bleeding nipples or the baby has ulcers in the mouth.
- Family, friends and neighbours may pressurize the mothers to give water, other liquids or foods to the infant.
- Although 99% of mothers have sufficient milk to feed their infants, many are concerned that they do not have enough milk to exclusively breastfeed.
- Breastfeeding requires feeding on demand at least 8–10 times a day, and working mothers may find it difficult to exclusively breastfeed once they return to work (unless they can privately express milk as required during the workday and can arrange to store it in a cool place).
- Breastfeeding mothers require an additional 500–750 kcal/day for their own health.

- If a mother wishes to give her own milk to her infant
- If options for alternative types of milk are too expensive or difficult to procure
- For sick and low-birth-weight babies who are more at risk from artificial feeding and may otherwise require special types of formulas

Table 3.9 presents the benefits/motivation and risks/constraints of this infant-feeding option.

Replacement feeding

Option 1: Replacement feeding using commercial formulas

The benefits/motivation and risks/constraints of using commercial feeding formulas are presented in Table 3.10. Table 3.11 summarizes how much commercial formula is required by infants at various ages.

Table 3.7 Exclusive breastfeeding with early cessation

Benefits/motivation of exclusive breastfeeding with early cessation

- The baby gets all the advantages of breastfeeding in the early months of life.
- Early cessation of breastfeeding terminates the infant's exposure to HIV through breastfeeding.
- Early cessation of breastfeeding also reduces the period during which the infant receives mixed feeds.

Risks/constraints of exclusive breastfeeding with early cessation

- Infants may become malnourished if suitable breast-milk substitutes are unavailable or are inappropriately provided.
- Infants may be at increased risk of diarrhoea if breast-milk substitutes are not prepared safely.
- Cup feeding requires patience and time. If possible, mothers should be taught how to feed infants using a cup before cessation of breastfeeding, using expressed breast milk.
- Infants may become dehydrated, anxious, disoriented and unhappy if cessation of breastfeeding is too rapid, and they are unprepared for the transition. They may cry excessively or refuse food, making the transition more difficult for themselves and their families.
- Complementary foods must be available once breastfeeding has ceased. Information on complementary feeding after 6 months is included.
- The mother's breasts may become engorged and infected during the transition period if some amount of milk is not expressed and discarded.
- Mothers are at risk of becoming pregnant if they are sexually active.*

*As a population, breastfeeding women have a lower fertility rate than women who are not breastfeeding; but on an individual basis, breastfeeding (and the delay in ovulation as a consequence of lactation) is an unreliable form of contraception. Therefore, breastfeeding women who do not want to conceive should use another, more reliable form of contraception.

Table 3.8 Using wet nurses

Benefits/motivation of using wet nurses

- Use of a wet nurse poses no risk of HIV transmission provided the wet nurse is not infected with HIV.
- Many of the other benefits of breastfeeding described above also apply to breastfeeding using a wet nurse.

Risks/constraints of using wet nurses

- The baby may get attached to the wet nurse.
- The wet nurse must protect herself from HIV infection during the entire time she is breastfeeding.
- The wet nurse must be available to breastfeed the infant frequently, throughout the day and night, or she must be able to express the milk to be provided when she is away from the infant.
- People might ask the mother why someone else is breastfeeding her infant.
- There is a risk of transmission of HIV from an infected infant to a wet nurse.

Additional education and support may be necessary to assist mothers who choose to use wet nurses. For example, mothers and wet nurses should be familiar with the techniques for breast-milk expression, use of heat-treated breast milk and the option of using breast milk banks.

Table 3.9 Expressed and heat-treated breast-milk feeding

Benefits/motivation of expressed and heat-treated breast-milk feeding

- Heat treatment destroys HIV in the breast milk, making it safe to feed one's baby.
- The mother feels more confident.
- Bonding between the mother and baby is optimum.

Risks/constraints of expressed and heat-treated breast-milk feeding

- Heating reduces the level of some anti-infective components of breast milk. However, heat-treated expressed breast milk remains superior to infant milk substitutes.

Table 3.10 Replacement feeding using commercial formulas

Benefits/motivation of replacement feeding using commercial formulas

- Commercial formulas pose no risk of transmitting HIV to the infant.
- Commercial formulas are made especially for infants and young children.
- Commercial formulas include most of the nutrients an infant needs.
- Other adult family members can help feed the infant.
- If the mother falls ill, she can be sure that others can feed her infant while she recovers.

Risks/constraints of replacement feeding using commercial formulas

- Commercial formula does not contain antibodies which protect infants and young children from infection. An infant who is exclusively fed a commercial formula is more likely to get sick from diarrhoea and pneumonia, and may develop malnutrition.
- A continuous and reliable supply of the formula is required to prevent malnutrition.
- Commercial formula is expensive.
- Families must buy feeding cups and soap for cleaning the cups and utensils used for preparing the formula.
- Safe preparation of commercial formula requires clean water boiled for 10 minutes.
- The mother or caretaker must prepare fresh formula for each feed, according to directions, day and night.
- The infant needs to drink from a cup, which can be time-consuming.
- In some settings, a mother who does not breastfeed may be questioned about her HIV status by the family, neighbours or friends (see 'When cup feeding may not be acceptable').
- Formula feeding offers the mother no protection from pregnancy.

Table 3.11 Commercial infant formula requirements in the first six months of life

Month	500 g tins/month	450 g tins/month
1	4	5
2	6	6
3	7	8
4	7	8
5	8	8
6	8	9
Total	40	44

Option 2: Replacement feeding using home-prepared modified animal milk

Formula can be prepared at home using fresh animal milk, dried milk powder or evaporated milk. Preparing formula with any of these involves modifications to make it suitable for infants up to six months of age. Modifications include diluting the milk with boiled water in precise amounts to reduce the formula's concentration and adding sugar to increase its energy density. The required dilution varies for milk of different animals. Directions for modifying animal milk for feeding infants up to six months old are given in Table 3.13. Dilution is not required for infants aged six months and older.

Suitable and unsuitable milk

Not all types of milk are suitable for use in home-prepared infant formulas. The types of milk suitable for home-prepared formula are the following:

- Fresh cow, goat, sheep, buffalo, or camel milk (full-cream or whole)
- Full-cream or whole dried milk powder
- Evaporated milk
- Ultra-heat treated milk (pasteurised milk)
 - animal milk contains nearly 3 times more proteins than human milk.
 - fat content varies from 3.4% in human milk to 8.8% in buffalo milk.
 - human milk contains more sugar than animal milk

Types of milk and liquids that are not suitable for home-prepared formulas are the following:

- Fresh animal milk already diluted by an unknown amount
- Skimmed or low-fat milk powder
- Sweetened or condensed milk
- Thin cereal-based gruels
- Fruit juice, teas or sodas

Use of supplements

Infants who are fed home-modified animal milk formulas require additional micronutrient supplements because animal milk is relatively low in iron, zinc, vitamins A and C, and folic acid.

Table 3.9 lists the benefits/motivation and risks/constraints of using home-prepared infant formulas.

Mixing home-prepared formula

For infants up to the age of 6 months, modify animal milk to create an infant formula following these directions:

Table 3.12 Replacement feeding using home-prepared, modified animal milk

Benefits/motivation for replacement feeding using home-prepared, modified animal milk

- Home-prepared formulas present no risk of HIV transmission.
- Home-prepared formula may be less expensive than commercial formula, and is easily available if the family has milk-producing animals.
- Mothers and caregivers can use a home-prepared formula when supplies of commercial formula run out.
- Other adult family members can help feed the infant.

Risks/constraints for replacement feeding using home-prepared, modified animal milk

- Home-prepared formula does not contain antibodies which protect infants from infection. An infant who is exclusively fed a home-prepared formula is more likely to fall sick from diarrhoea and pneumonia, and may develop malnutrition.
 - The infant may develop malnutrition if the formula is not prepared and stored correctly or if nutritional supplements are not used. Home-prepared formula does not contain all the nutrients that infants need; in particular, it may not provide adequate nutritional support for infants up to six months of age. Multivitamin supplements, in liquid or powder form, are needed to prevent anaemia and other forms of malnutrition.
 - Formulas based on animal milk are more difficult for infants to digest. The mother or caregivers must prepare fresh formula for each feed, day and night.
 - The mother or caregiver must dilute home-prepared formula with clean water (boiled for 10 minutes) and add the correct amount of sugar in accordance with policy.
 - The mother must stop breastfeeding completely, or the risk of transmitting HIV to her infant will continue.
 - Infants require about 15 litres of modified animal milk formula per month for the first six months. Families will need access to a regular supply of animal milk; they will also need to buy sugar and multivitamin syrup or powder, fuel for boiling water, and soap for cleaning the feeding cups and utensils used in preparing the formula.
 - The mother must learn to measure milk, water and sugar, and prepare the feed safely.
 - Babies must be fed from a cup which can be time-consuming.
 - In some settings, a mother who does not breastfeed may be questioned about her HIV status by family, neighbours or friends (see 'When cup feeding may not be acceptable').
 - Formula feeding offers the mother no protection from pregnancy.
-

Reconstitute evaporated milk with boiled and cooled water according to the label, to the strength of fresh milk. Then modify it as you would fresh milk by diluting and adding sugar.

If the mother plans to use powdered full-cream milk or evaporated milk, provide a recipe specific to the brand she will be using. State the amount of water necessary to reconstitute it to the strength of milk, and the dilution required to prepare a breast-milk substitute.

Micronutrient supplements should be given with all the above home-prepared breast milk substitutes.

Benefits of cup feeding

Replacement or complementary feeds should be given from a cup. Health-care

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Table 3.13 Directions for mixing home-prepared formula

60 ml (one feed for a 1-month-old infant)			
Type of milk	Milk	Water	Sugar
Cow, goat or camel	40 ml	20 ml	4 g (1 teaspoon)
Sheep and buffalo	30 ml	30 ml	3 g (3/4 teaspoon)
90 ml (one feed for a 2-month-old infant)			
Type of milk	Milk	Water	Sugar
Cow, goat or camel	60 ml	30 ml	6 g (1 1/4 teaspoons)
Sheep and buffalo	45 ml	45 ml	5 g (1 teaspoon)
120 ml (one feed for a 3–4-month-old infant)			
Type of milk	Milk	Water	Sugar
Cow, goat or camel	80 ml	40 ml	10 g (2 teaspoons)
Sheep and buffalo	60 ml	60 ml	6 g (1 1/4 teaspoons)
150 ml (one feed for a 5–6-month-old infant)			
Type of milk	Milk	Water	Sugar
Cow, goat or camel	100 ml	50 ml	10 g (2 teaspoons)
Sheep and buffalo	75 ml	75 ml	10 g (2 teaspoons)

This material is also available as a wall chart.

workers should receive training so that they can show mothers and families how to cup feed. They should also explain to mothers and families that cup feeding is preferable for the following reasons:

- Cups are safer, as they are easier to clean with soap and water than bottles.
- Cups are less likely than bottles to be carried around for a long time (which gives bacteria the opportunity to multiply).
- Cup feeding requires the mother or other caregiver to hold and have more contact with the infant, and provides more psychological stimulation than bottle feeding.
- Cup feeding is better than feeding with a cup and spoon because spoon feeding takes longer and the mother may stop before the infant has had enough. However, some caregivers prefer to use a cup and spoon.
- Feeding bottles are usually not necessary, and for most purposes they are not the preferred option. Using feeding bottles and artificial teats should be actively discouraged because
 - bottle feeding increases the infant’s risk of diarrhoea, dental disease, and ear infections.
 - bottle feeding increases the risk that the infant will receive inadequate stimulation and attention during feedings.
 - bottles and teats need to be thoroughly cleaned with a brush and then boiled to sterilize them; this takes time and fuel.
 - bottles and teats cost more than cups, which are more readily available.

How to feed an infant using a cup

- Hold the infant sitting upright or semi-upright on your lap.
- Hold the cup of milk to the infant's lips.
- Tip the cup so that the milk just reaches the infant's lips. The cup should rest lightly on the infant's lower lip, and the edges of the cup should touch the corners of the infant's upper lip.
- At this point, the infant will become alert and open her or his mouth and eyes. A low-birth-weight infant will start to take in the milk with the tongue. A full-term or older infant will suck the milk, spilling some of it.
- *Do not pour the milk into the infant's mouth.* Simply hold the cup to the infant's lips and let the infant take it.
- When the infant has had enough, her mouth will close and she will not take any more. If the infant has not taken an adequate amount, she may take more during the next feed, or the mother may need to provide feeds more often.
- Measure the infant's intake over 24 hours, not just during one feed.

When cup feeding may not be acceptable

In many cultures, women are expected to breastfeed their infants for a year or longer. If the infant is not breastfed or if breastfeeding is discontinued early, questions about the mother's HIV status may arise. Once a woman decides how she plans to feed her infant, ideally during the antenatal period, the health-care worker should help her prepare answers to questions about her choice. If the woman decides to use a replacement feeding option from birth or stops breastfeeding early, she should receive information about replacement feeds.

During the counselling process, health-care workers should ask the woman specific questions, such as 'What will you say when your mother-in-law or neighbour asks you why you are not breastfeeding or why you have stopped breastfeeding?' The health-care worker can help the mother come up with an explanation with which she is comfortable. For example, some mothers may choose to say, 'The doctor said my baby is not doing well, so he needs to get formula milk', or 'I'm having breast problems, so I had to stop'. The counselling session may also be an opportunity to further discuss issues related to the disclosure of the mother's HIV status to the family.

COUNSELLING AND SUPPORT FOR INFANT FEEDING

Counselling about infant feeding

An HIV-infected woman should receive counselling that includes

- general information about the risks and benefits of various infant-feeding options
- guidance in selecting and adhering to the option most suitable for her situation.

Additional training on counselling and support for infant-feeding

Infant-feeding counselling for HIV-positive women is an integral part of every PPTCT programme and requires counsellors to have many specific skills. Special WHO training courses exist for general breastfeeding and infant-feeding counselling and support (a 40-hour course), and for HIV and infant-feeding counselling (a 3-day course). It is important that participants providing infant-feeding counselling be fully trained and have the necessary skills. Specific infant-feeding counselling skills include listening and learning, building the client's confidence, giving support and providing information.

Vide: '**Infant feeding and HIV counselling training course**' for PPTCT counsellors.

Unicef, NACO , BPNI, 2004

The final decision on an infant-feeding strategy should be taken by the woman, and she must receive support for her choice.

Infant-feeding counselling, education, and support should

- be provided during both the antenatal and postnatal periods;
- be based on country or local protocol and include an understanding of the sustainable resources accessible to the mother and her family;
- be based on an individual woman's circumstances, including her health, social and financial status, as well as her customs and beliefs;
- include information on factors affecting transmission of HIV through breastfeeding.
- include information on various feeding options, including the risks and benefits of each;
- provide women with the skills needed to feed their infants safely;
- include demonstrations or opportunities for practice;
- encourage partner or family involvement in infant-feeding decisions; and
- support women when they disclose their HIV status to their loved ones.

Table 3.14 lists questions that health-care workers can ask an HIV-infected woman to help her decide on an infant feeding strategy

Counselling visits

- HIV-infected mothers should receive infant-feeding counselling over the course of several sessions.
- At least one counselling session should take place during the antenatal period. If possible, this should be undertaken some time after post-test counselling, but not immediately after the mother learns her test results. More than one session is ideal.

Table 3.14 Deciding how to feed your infant: A checklist for the HIV-positive pregnant woman

-
- How do you want to feed your baby?
 - What feeding options are available to you?
 - What are the pros and cons of each feeding option, for you and for your baby?
 - Can you minimize the risks of your preferred option?
 - What do you think about the risk of your preferred option?
 - Breastfeeding:
 - Are you willing to take a 10%–20% risk of transmitting HIV to your infant?
 - Are you able to breastfeed exclusively?
 - How do you visualize breastfeeding exclusively but stopping early?
 - Replacement feeding:
 - Will you be able to buy infant formula or the ingredients for a home-prepared formula?
 - Have you thought of the equipment and supplies needed to prepare feeds hygienically?
 - Do you have a health-care worker who can offer care if you or your infant should get sick?
 - Partner and family:
 - What expectations do your partner or family have?
 - What will happen if you take a decision contrary to their expectations?
-
- The next visit should occur immediately after birth, followed by another within 10 days. For mothers giving birth at home, recommend a follow-up visit within six days of the baby's birth.
 - Schedule monthly follow-up sessions whenever the mother brings the child to the clinic for well-baby check-ups, immunizations, or when the child is sick.
 - Additional sessions may be required during special high-risk periods, such as
 - when the child is sick,
 - when the mother returns to work, and
 - when she decides to change the feeding method.

Infant-feeding counselling for HIV-positive mothers

Figure 3.1 explains the seven steps of counselling HIV-positive mothers about infant feeding. You may want to look at the following directions to help you understand the flow chart.

If this is the mother's first infant-feeding counselling session and she is in the early stages of pregnancy

- Follow steps 1–5.
- Ask her to return in her third trimester to learn how to implement the feeding method (Step 6).

She is in a late stage of pregnancy

- Follow steps 1–6.

She already has a child and is breastfeeding

- Follow steps 1–5, the relevant part of step 6, and step 7

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She already has a child and has opted for replacement feeding

- Follow the relevant parts of steps 6 and 7

If the mother has already been counselled and has chosen a feeding option

- Follow the relevant part of step 6

If this is a follow-up visit

- Follow step 7

Postnatal visits

During each postnatal visit, the clinic staff should review information from the infant-feeding counselling session and focus on issues most relevant to the mother. Reinforcing essential and relevant points supports optimal nutrition, growth and development of the infant while minimizing the risk.

COMPLEMENTARY FEEDING AFTER SIX MONTHS

All infants require nutritious complementary foods beginning at about six months of age. The term complementary food refers to any food, whether manufactured or locally prepared, suitable as a complement to breast milk, or a commercial or home-prepared replacement feed or breast-milk substitute, when either becomes insufficient to satisfy the nutritional requirements of the infant. This term is preferred because it implies that the newly introduced foods are provided in addition to the milk feeds; they are not intended to replace milk at this point. The term weaning incorrectly suggests the cessation of breast milk or formula. Infants should receive continued frequent breastfeeding or cup feeding with a commercial or home-prepared formula into the second year of life.

Recommendations for complementary feeding should be based on locally available foods and feeding practices. General principles for complementary feeding include the following.

Beginning complementary foods

Begin complementary feeding at six months of age with small amounts of food. The amount of food required will increase as the child gets older. Complementary foods should be appropriate for the infant's age. The average healthy infant requires the following amounts:

- At 6–8 months, approximately 200 kcal per day
- At 9–11 months, approximately 300 kcal per day
- At 12–23 months, approximately 550 kcal per day

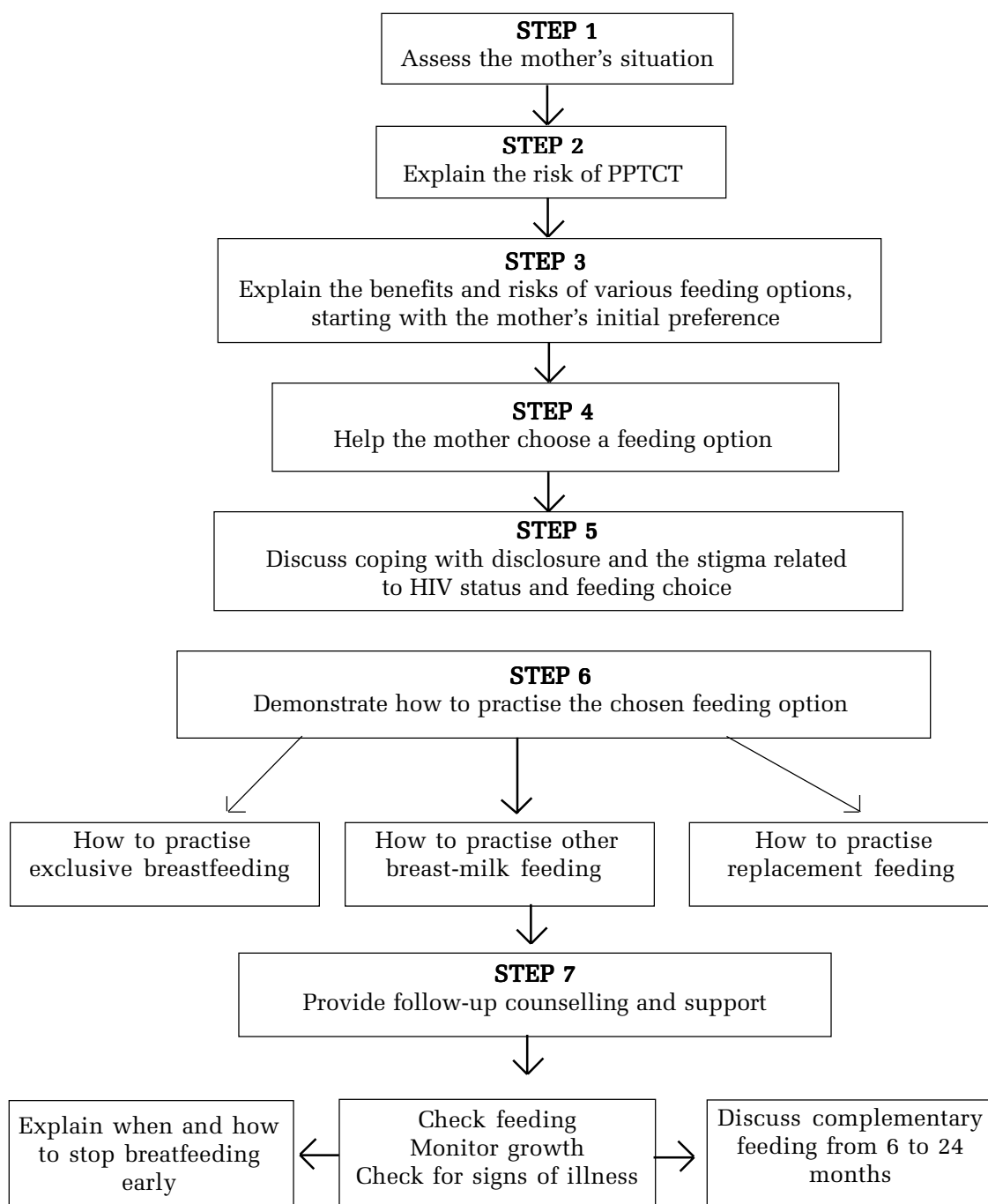


Figure 3.1. Infant-feeding counselling for HIV-positive mothers (Source: WHO 2003)

After complementary foods have been started, breast milk or nutritionally fortified breast-milk substitutes will continue to be needed frequently throughout the day. The requirement for breast-milk substitutes after six months is as follows:

- At 6–8 months, 600 ml per day
- At 9–11 months, 550 ml per day
- At 12–23 months, 500 ml per day

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Infants older than six months do not require dilution of animal milk. However, special preparation is still required for fresh and powdered milk, as follows:

- For fresh animal milk, boil the milk to kill any bacteria.
- For powdered or evaporated milk, add enough clean water, according to the directions on the tin, to make full-strength milk.

No special preparation is needed for processed, pasteurized, or ultra-heat treated milk. However, the mother or caregiver should increase the number of complementary feeds as the child gets older. The appropriate number of feeds depends on the energy density of the local foods and the amount usually consumed at each feed. For the average healthy infant

- At 6–8 months, provide complementary foods 2–3 times a day.
- At 9–24 months, provide complementary foods 3–4 times per day, with nutritious snacks offered 1–2 times per day.

If the energy density or the amount of food taken per meal is low, more frequent feeds may be required.

Energy requirements are higher for unhealthy infants because of the metabolic effects of infections. Energy requirements are also higher for infants who are severely malnourished and undergoing nutritional rehabilitation.

Feeding older infants

Gradually increase food consistency and the variety of foods offered as the infant gets older, adapting to the infant's requirements and abilities.

- By 6 months, infants can eat pureed, mashed and semisolid foods.
- By 8 months, most infants can eat finger foods, snacks that they can pick up and eat by themselves.
- By 12 months, most young children can eat the same types of foods as eaten by the rest of the family, keeping in mind their need for nutrient-dense foods.
- Offer children 12 months and older a variety of nutrient-dense foods. On a daily basis, or as often as possible, they should eat eggs, dairy products, legumes, pulses, rice, wheat or other adequate sources of protein. Children should eat fruit and vegetables that are rich in vitamin A every day.

If nutritionally adequate or fortified complementary foods are not locally available, consider giving the child a vitamin–mineral supplement to avoid growth and development deficiencies.

Mothers and caregivers should avoid giving children drinks with low nutrient value, such as tea and coffee (which interfere with iron absorption), and sugary drinks such as soda. Limit the amount of juice offered to avoid displacing more nutrient-rich foods.

Avoid offering foods that may cause choking, such as those that have a shape or consistency that could cause them to become lodged in the trachea. Foods to be avoided may include nuts, grapes and raw carrots.

Responsive feeding

- Feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues.
- Feed slowly and patiently, encouraging the child to eat, but do not force food.
- Encourage food intake by experimenting with different food combinations, tastes and textures, especially if the child refuses to eat.
- Minimize distractions during meals if the child loses interest easily.
- Remember that feeding times are periods of learning and love: talk to children during feeding, using eye-to-eye contact.

Good hygiene and proper food handling

- Wash hands before preparing and eating food.
- Store foods safely and serve them immediately after preparation.
- Use clean utensils to prepare and serve food.
- Use clean cups and bowls to feed children.
- Avoid using feeding bottles since they are difficult to keep clean.

Feeding children with allergies and illnesses

Mothers and caregivers of infants and young children with a family history of allergies or food sensitivities should delay introducing cow's milk, egg white and fish until after the infant reaches 12 months of age and should not feed the child peanuts or other nuts until after the child is 3 years old.

Mothers and caregivers should give their children increased amounts of fluids when they are ill and encourage them to eat semisolid or solid foods. After the illness, mothers and caregivers should offer their children at least one extra meal a day, and encourage them to eat more.

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Infant feeding in the context of HIV infection

Key points

- The risk of HIV transmission continues during the entire period an HIV-infected mother breastfeeds her child.
- HIV-infected women and women whose HIV status is unknown need infant-feeding counselling and support.
- The mother has the right to choose how she wants to feed her infant; the health-care worker's job is to support her choice.
- HIV-infected mothers should avoid breastfeeding when replacement feeding is acceptable, feasible, affordable, sustainable and safe.
- Exclusive breastfeeding with early cessation at or before six months is appropriate when breastfeeding is the chosen option.
- Counselling, education and support are key to establishing and maintaining safe infant-feeding practices.
- Postnatal counselling and infant follow-up sessions are required whenever a mother elects to change her feeding practice, especially in the first 2 years of the infant's life.
- PPTCT staff can prevent spillover or misuse of replacement feeding in two ways: promote exclusive breastfeeding for the general population, and discourage the use of replacement milk supplies by mothers whose infants do not need them.