



## **Module 5** Infant and Young Child Feeding in the Context of HIV Infection

### **SECTION 1** Epidemiology of Mother-to-Child Transmission of HIV through Breastfeeding

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#### **Objectives**

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

- Describe the epidemiology of MTCT through breast milk.
- Discuss Nigerian policy on infant and young child feeding.
- List the advantages and disadvantages of various infant-feeding options.
- Describe infant and young child counselling for HIV-positive mothers.
- Discuss the interventions to reduce the risk of MTCT through breastfeeding.

#### **Introduction**

Breast milk is the best form of nutrition for infants. In Nigeria, breastfeeding is very popular as a means of feeding infants, with 97% of women breastfeeding. However, only 17% breastfeed exclusively for the first six months. This implies that the mixed feeding rate is very high. The promotion of exclusive breastfeeding has great significance in reducing morbidity and mortality in infants particularly in less developed countries like Nigeria. It is important to appreciate also, that breastfeeding accounts for about a third of the transmission of HIV infection from mother-to-child. This is an important challenge to the breastfeeding campaign. Avoidance of breastfeeding by HIV-infected mothers certainly blocks transmission through breast milk, but introduces the problems of use of breast milk substitutes (BMS), especially diarrhoeal disease and malnutrition. There has been a lot of controversy related to the issue of feeding in HIV-infected mothers and transmission of HIV to their infants. A clear understanding of the determinants of transmission through breastfeeding helps in individualizing feeding options for HIV-exposed infants.

This module discusses factors that determine transmission of HIV through breast feeding and the challenges associated with different feeding options. Basic principles of making infant feeding safer are also discussed. It is hoped that the participants will learn how to counsel HIV-infected mothers and families to choose feeding options appropriate for their peculiar circumstances.

### Definitions

The following terms will be used repeatedly in the module and so are defined below.

- **EBF – Exclusive Breastfeeding:** The mother gives her infant only breast milk except for drops or syrups consisting of vitamins, mineral supplements, or medicines prescribed by a qualified health professional. The exclusively breastfed child receives no food or drink other than breast milk—not even water.
- **MF – Mixed feeding:** The mother gives other things in addition to breastfeeding
- **RF – Replacement feeding:** The feeding of a diet to infant other than breast milk, which provides all the required nutrients in both quantity and quality.

Antiretroviral (ARV) treatment and prophylaxis have substantially reduced mother-to-child transmission (MTCT) of HIV. ARV prophylaxis provided during the vertical period, however, does not provide long-term protection for the infant who is breastfeeding.

Without intervention, 5% to 20% of infants who are breastfed by mothers who are HIV-positive may acquire HIV-infection through breastfeeding. Infant-feeding practices correctly implemented can reduce the likelihood of MTCT through breastfeeding and reduce the risk of infant death from diarrhoea and other childhood infections.

There are certain factors which make MTCT through breastfeeding more likely. These include:

- **High maternal viral load:** Viral load refers to the number viral particles in a unit of blood. This is the most important single determinant of transmission of the virus from mother to child. In situations where the viral load is high, such as *recent infection in mother* or *deterioration to AIDS*, transmission rates are much higher. Where viral load is low, such as mothers who are placed on Highly Active Antiretroviral Therapy during pregnancy, transmission is known to drop to very low levels. It needs to be emphasised that there is no viral load levels below which MTCT is considered impossible.
- **Duration of breastfeeding:** Risk of MTCT is highest in the first 3 months of breastfeeding. While this decreases overtime, the cumulative effect definitely increases. Consequently, prolonged breastfeeding in children of HIV infected mothers is associated with increased risk of MTCT. This has resulted in the suggestion of early cessation of EBF.
- **Mixed feeding (MF):** The feeding of breast milk with other foods is associated with increase in MTCT. It is thought that artificial foods may cause some bowel irritation which may ease the passage of the HIV through the bowel mucosa. It is generally agreed that MF is to be discouraged due to both risk of MTCT and the morbidity and mortality associated with the practice.
- **Maternal mastitis:** Breast inflammation increases the sequestration of blood and blood products into breast milk, thereby increasing the risk of MTCT.
- **Oral infections in infant:** Exposure of tissues and blood vessels in oral infections presents a larger surface across which the virus can be transmitted.

## **Basic facts on malnutrition, infant and young child, and child survival**

- Inadequate nutrition contributes significantly to morbidity and mortality of children irrespective of HIV status. Malnutrition is the underlying cause of death in about 50% of children younger than 5 years old worldwide in Africa.
- Being underweight was associated with 3.7 million deaths worldwide in the year 2000, and most of the deaths occurred in children younger than 5 years old.
- Poor feeding practices, such as those that provide insufficient nutritional balance or contribute to diarrhoea, are a major cause of low weight and morbidity and mortality in children.
- Counselling and support for infant and young child can improve feeding practices and, in turn, prevent malnutrition and reduce the risk of death in children.
- For mothers who are HIV-positive, counselling and support may lead to improved infant-feeding practices that may also help prevent MTCT.

## **National infant and young child feeding policy**

*For infants and young children of mothers who are HIV-negative or mothers of unknown HIV status*

The national infant and young child feeding policy was designed to reduce the problems associated with poor nutritional practices by promoting, protecting and supporting proper childhood nutrition. The policy recommends the following:

- Breastfeed exclusively for the first six (6) months of life
- Subsequently combination of breastfeeding and complementary foods from 6–9 months
- Then, continuation of breastfeeding and additionally giving household foods; continue breastfeeding till the child is aged 2 years

The policy recommends modification of the infant feeding guidelines on medical grounds including maternal HIV. Every effort must be made to encourage EBF in HIV negative women as well as women with unknown HIV status, since this has obvious advantages over formula feeds in these infants.

## **Infant-feeding recommendations for mothers who are HIV-infected**

*For infants and young children of mothers who are HIV-positive (See Appendix 5-B for the UN infant-feeding recommendations for mothers who are HIV-infected)*

Infant-feeding recommendations for mothers who are HIV-positive include the following:

- When replacement feeding is acceptable, feasible, affordable, sustainable, and safe, mothers who are HIV-infected should avoid all breastfeeding.
- Otherwise, exclusive breastfeeding is recommended during the first months of life. However, such mothers should be informed about the following:
  - To minimise HIV transmission risk, mothers who are HIV-positive should discontinue breastfeeding as soon as feasible, taking into account local circumstances and the individual woman's situation.

- The risks of replacement feeding (which include malnutrition and infections other than HIV) manifest especially when the practice is implemented without proper guidance.

All mothers who are HIV-positive should receive counselling, which includes general information about the risks and benefits of infant-feeding options and support on selecting the option most likely to be suitable for their situation. Whatever choice a mother makes, she should be supported.

There is evidence indicating that early cessation of breastfeeding is associated with reduction in risk of MTCT.

<b>Definitions</b>	
<b>Acceptable:</b>	The mother perceives no significant barrier(s) to choosing a feeding option for cultural or social reasons or for fear of stigma and discrimination.
<b>Feasible:</b>	The mother (or other family member) has adequate time, knowledge, skills, and other resources to prepare feeds and to feed the infant as well as the support to cope with family, community, and social pressures.
<b>Affordable:</b>	The mother and family, with available community and/or health system support, can pay for the costs of the replacement feeds—including all ingredients, fuel and clean water—without compromising the family's health and nutrition spending.
<b>Sustainable:</b>	The mother has access to a continuous and uninterrupted supply of all ingredients and products needed to implement the feeding option safely for as long as the infant needs it.
<b>Safe:</b>	Replacement foods are correctly and hygienically stored, prepared, and fed in nutritionally adequate quantities; infants are fed with clean hands using clean utensils, preferably by cups.

### International Code of Marketing of Breast Milk Substitutes

The importance of supporting safer infant-feeding practices is exemplified in the International Code of Marketing of Breast Milk Substitutes (Appendix 5-A). This code helps provide safe and adequate nutrition for children by:

- Protecting and promoting breastfeeding
- Supporting proper and informed use of breast milk substitutes when necessary
- Promoting acceptable marketing and distributing practices

Even in countries that have decided to provide infant formula to HIV-positive mothers, healthcare workers should resist all commercial promotion of formula under the Code, for example by removing advertisements from health facilities, and refusing to accept free samples of formula.

<b>Exercise 5.1 Strategies for optimal feeding: large group discussion</b>	
<b>Purpose</b>	<p>To review global strategies recommending optimal feeding for infants and young children.</p> <p>To identify local practices and application of the national HIV infant-feeding policy or protocol.</p>

<b>Duration</b>	15 minutes
<b>Activities</b>	<ul style="list-style-type: none"> <li>▪ Identify the national HIV infant and young child policy or protocol.</li> <li>▪ Is it clear? Is it consistent with international recommendations? Does it provide guidance for your health care setting?</li> <li>▪ Read the criteria on the flip chart, white board or blackboard.: <ul style="list-style-type: none"> <li>▪ Acceptable</li> <li>▪ Feasible</li> <li>▪ Affordable</li> <li>▪ Sustainable</li> <li>▪ Safe</li> </ul> </li> <li>▪ Consider the mothers you have met in your work. Would they be prepared to implement replacement feeding based on the above criteria?</li> <li>▪ What other things can you think of that influence a mother's feeding options? Example: cultural influences</li> </ul>

## SECTION 2                      Feeding Options during the First 6 Months

### **Making decisions about infant and young child**

Mothers with HIV infection must consider many factors when deciding on a feeding option that is best for their infants. Healthcare workers play an important role in guiding their decision-making process by providing infant-feeding counselling that includes the following:

- Information about the risk of HIV transmission through breastfeeding
- Advantages and disadvantages of each available option
- The need to make the partner central to the decision making process

Healthcare workers share in the responsibility to protect, promote, and support safe and appropriate feeding practices. In addition to supporting women's infant-feeding decisions, referral is needed to trained infant-feeding counsellors for continued support during the first two years of a child's growth and development. (See Section 4 HIV Infant-Feeding Counselling and Support.)

### **Replacement feeding during the first 6 months of life**

Replacement feeding means feeding infants who are receiving no breast milk with a diet that provides most of the nutrients infants need until the age at which they can be fully fed on family foods. Unlike breastfeeding, it does not provide immune protection against other diseases. During the first 6 months of life, replacement feeding should be with a suitable breast-milk substitute. After six months the suitable breast-milk substitute should be complemented with other foods.

**If a woman is considering replacement feeding for the first six months there are two types of breast milk substitutes: commercial infant formula or home-modified formula with micronutrient supplements. Cup feeding is recommended. Bottle feeding is discouraged. (Refer to Appendix 5-C.)**

#### **Option 1: Commercial infant formula**

Advantages and disadvantages of using commercial infant formulas are presented in Table 5.1. Table 5.2 summarises how many tins of commercial infant formula are required to feed infants each month.

**Table 5.1 Commercial infant formula****Advantages**

- Commercial formula poses no risk of transmitting HIV to the infant.
- Commercial formulas are made especially for infants.
- Commercial formula includes most of the nutrients that an infant needs.
- Other family members can help feed the infant.
- If the mother falls ill, others can feed her infant while she recovers.

**Disadvantages**

- Commercial formula does not contain antibodies, which protect infants from infection. An infant who is fed commercial formula exclusively is more likely to get diarrhoea and pneumonia and may develop malnutrition.
- A continuous, reliable formula supply is required to prevent malnutrition.
- Commercial formula is expensive.
- Families need soap for cleaning cups and utensils used in preparing the formula.
- Safe preparation of commercial formula requires clean water and fuel.
- Formula should be made fresh for each feed, according to directions, day and night, unless she has access to a refrigerator.
- In some settings, family neighbours, or friends may question a mother who does not breastfeed about her HIV status. (See Section 4 of this module.)
- Formula feeding offers the mother no protection from pregnancy.

**Table 5.2 Commercial infant formula requirements in first 6 months**

<b>Month</b>	<b>500 g Tins/Month</b>	<b>450 g Tins/Month</b>
1	4	5
2	6	6
3	7	8
4	7	8
5	8	8
6	8	9
<b>Total</b>	<b>40</b>	<b>44</b>

## Option 2: Home-modified animal milk

Home-modified animal milk is **only suitable** when commercial formula is not available. There are many challenges associated with this method of feeding that the hidden costs outweigh the apparent advantages. Infants require about 15 litres of modified animal milk formula per month for the first 6 months. Babies also require multi-nutrient supplements, in liquid or powder form, to help prevent anaemia and other forms of malnutrition. Safe preparation and storage of the home-modified animal milk is also essential for preserving nutritional value and minimising the risk of malnutrition.

Formula may be prepared at home using fresh animal milks, dried milk powder, or evaporated milk. Preparing formula with any of these types of milk involves modifications to make the formula suitable for infants up to 6 months old. Modifications include diluting the milk with boiled water in precise amounts to reduce the formula's concentration and adding sugar to increase the formula's energy density. The required dilution amount varies for different animal milks. Dilution is not required for infants 6 months and older who should also be receiving complementary foods.

Table 5.3 lists the advantages and disadvantages of using home-modified infant formulas.

### Suitable and unsuitable milks

Not all milks are suitable for use in home-modified infant formula.

The following milks are suitable for home-modified animal milk:

- Fresh (full-cream or whole) cow, goat, sheep, buffalo, or camel milk
- Full-cream or whole dried milk powder
- Evaporated milk
- Ultra-heat treated (UHT) milk

The following milks and liquids are not suitable for home-modified animal milk:

- 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

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

**Table 5.3 Home-modified animal milk**

**Advantages**

- Home-modified formula presents no risk of HIV transmission.
- Home-modified formula may be less expensive than commercial formula and is readily available if the family has milk-producing animals.
- Mothers and caretakers already using commercial formula can use home-modified formula when commercial formula is not available.
- Other family members can help feed the infant.
- If the mother falls ill, others can feed her infant while she recovers.

**Disadvantages**

- Home-modified formula does not contain antibodies, which protect infants from infection.
- An infant who is fed home-modified formula exclusively is more likely to get diarrhoea and pneumonia and may become malnourished.
- Home-modified formula does not contain all of the nutrients and micronutrients that infants need. Micronutrient concentrates are not readily available in institutions in Nigeria. This is a major set back which adds to the hidden costs of home-modified formula.
- May be more expensive than commercial formula
- The mother or caretaker may need to make fresh formula for each feeding, day and night, unless she has access to a refrigerator.
- The mother or caretaker must dilute home-modified formula with clean water (boiled vigorously for 1–2 seconds) and add sugar in the correct amount.
- The mother must stop breastfeeding completely, or the risk of transmitting HIV to her infant will continue.
- Families will need access to a regular supply of animal milk, sugar, multi-nutrient syrup or powder, fuel for boiling water, and soap for cleaning feeding cups and utensils used in preparing the formula.
- In some settings, a mother who does not breastfeed may be questioned about her HIV status by family, neighbours, or friends. (See Section 4 of this module.)
- Formula feeding offers the mother no protection from pregnancy.

## Breast milk feeding options

Mothers who choose to breastfeed should be made aware that:

- From 5% to 20% of infants breastfed by HIV-positive mothers may acquire HIV-infection through breastfeeding.
- ARV prophylaxis provided during labour and to the infant shortly after birth does not provide long-term protection for the infant who is breastfeeding.
- The risk of transmitting HIV to her infant during breastfeeding is greater:
  - When the woman is more ill (by clinical or laboratory measures)
  - When she has mastitis, breast abscess or other similar conditions
  - When the child has ulcers in the mouth

### Option 1: Exclusive breastfeeding for 6 months

Advantages and disadvantages of exclusive breastfeeding are presented in Table 5.4.

<b>Table 5.4 Exclusive breastfeeding</b>
<p><b>Advantages</b></p> <ul style="list-style-type: none"><li>▪ Breast milk is easily digestible and gives infants all the nutrients and water they need. They do not need any other liquid or food for the first 6 months.</li><li>▪ Breast milk is always available and does not need any special preparation.</li><li>▪ Breast milk protects infants and children from diseases, particularly diarrhoea and pneumonia.</li><li>▪ Breastfeeding provides the close contact that deepens the emotional relationship or bond between mother and child.</li><li>▪ Breastfeeding reduces mother's risk of some cancers and helps space her pregnancies.</li></ul> <p><b>Disadvantages</b></p> <ul style="list-style-type: none"><li>▪ Risk of MTCT exists as long as the mother who is HIV-infected breastfeeds because breastfeeding exposes the infant to HIV. Even if the mother is using antiretroviral drugs, there is always that risk of transmission if an infected woman gives breast milk to her infant.</li><li>▪ The risk of transmitting HIV through breastfeeding is increased if the mother has a breast infection (e.g., mastitis) or cracked and bleeding nipples.</li><li>▪ Women who are worried about the risk of transmission to their infants and about their disease general may have suppression of lactation.</li><li>▪ Breastfeeding requires feeding on demand at least 8–10 times per day.</li><li>▪ Working mothers may need to find a strategy to continue to breastfeed exclusively once they return to work, e.g. privately expressing milk during the workday and arranging to store milk in a cool place.</li><li>▪ Breastfeeding mothers require an additional 500 kcal/day to support exclusive breastfeeding during the infant's first 6 months.</li></ul>

### Option 2: Exclusive breastfeeding with early cessation

Mothers who are HIV-positive and choose to breastfeed should discontinue breastfeeding as soon as replacement feeding is acceptable, feasible, affordable, sustainable, and safe for them and their babies, given local circumstances, the

individual woman's situation, and the risks of replacement feeding for the infant's age.

Before entering the period of breastfeeding cessation, which may take from a few days to two weeks, mothers who are HIV-positive should receive support and guidance to maintain breast health, psychosocial support, and infant nutritional support.

Advantages and disadvantages of exclusive breastfeeding with early cessation are presented in Table 5.5.

<b>Table 5.5 Exclusive breastfeeding with early cessation</b>
<p><b>Advantages</b></p> <ul style="list-style-type: none"><li>▪ Early cessation of breastfeeding terminates the infant's exposure to HIV through breastfeeding.</li></ul>
<p><b>Disadvantages</b></p> <ul style="list-style-type: none"><li>▪ Infants may become malnourished after breastfeeding stops if suitable breast milk substitutes are unavailable or are provided inappropriately.</li><li>▪ Infants may be at increased risk of diarrhoea especially if breast milk substitutes are not prepared safely.</li><li>▪ Cup feeding requires caregiver patience and time. If possible, mothers should be taught how to feed infants, using a cup and expressed breast milk, before breastfeeding cessation. (See <i>Appendix 5-C</i> for a summary of the advantages of cup feeding and practical suggestions for cup feeding an infant.)</li><li>▪ Infants may become anxious and even dehydrated if breastfeeding cessation is too rapid.</li><li>▪ After six months, a milk source should continue to be given along with appropriate other foods, see <i>Appendix 5-D</i>.</li><li>▪ Mothers' breasts may become engorged and infected during the transition period if some milk is not expressed and discarded.</li><li>▪ Mothers are at risk of becoming pregnant if they are sexually active.</li><li>▪ Early breastfeeding cessation is not recommended for infants who are already infected with HIV.</li></ul>

### Option 3: Wet nursing

Wet nursing in the Nigerian context, with high prevalence of HIV and many people of unknown HIV status, is potentially dangerous and should not be encouraged. Because of the ethical dilemmas highlighted below, the National PMTCT task team recommends that this practice be discouraged in Nigeria

The HIV status of the wet nurse could be difficult to establish in a high prevalence environment.

It is difficult to establish the infant's HIV status.

Transmission of HIV from infant to wet nurse has been reported.

### Option 4: Expressing and heat-treating breast milk

Table 5.6 presents advantages and disadvantages of expressing and heat-treating breast milk.

<b>Table 5.6 Expressing and heat-treating breast milk</b>	
<b>Advantages</b>	
<ul style="list-style-type: none"><li>▪ The HIV virus is killed by heating the milk.</li><li>▪ Breast milk is the perfect food for babies, and most nutrients remain in breast milk after heating.</li><li>▪ Breast milk is always available.</li><li>▪ Other responsible family members can help feeding the baby.</li></ul>	
<b>Disadvantages</b>	
<ul style="list-style-type: none"><li>▪ Expressing and heating breast milk takes time and must be done frequently.</li><li>▪ The baby will need to drink from a cup, and it may take time to learn.</li><li>▪ The breast milk needs to be stored in a cool place and used within one hour of heating.</li><li>▪ Families will need clean water and fuel to wash the baby's cup and the container used to store the breast milk.</li><li>▪ People may wonder why the mother is expressing her milk.</li></ul>	

### Exercise 5.2 National and local policies on infant and young child: large group discussion

<b>Purpose</b>	To critically review the national policy on infant and young child in the light of HIV in Nigeria.  To convey an understanding of the advantages and disadvantages of feeding options and how to make each option safer and healthier for the infant and mother.
<b>Duration</b>	20 minutes
<b>Activities</b>	<ul style="list-style-type: none"><li>▪ Review Tables 5.1 to 5.6 in the Participant Manual. Share perceptions of the advantages and disadvantages of the infant-feeding options. Write the responses on the flip chart.</li></ul>

**Exercise 5.2 National and local policies on infant and young child: large group discussion**

- Review the responses written on the flipchart.
- Review the barriers to meeting the following criteria as discussed in the previous exercise (Exercise 5.1).
  - Acceptable
  - Feasible
  - Affordable
  - Sustainable
  - Safe
- For each feeding option, share your perspective on strategies to minimise the barriers to safe infant–feeding practices.
- For each feeding option, record on the flipchart the strategies for minimising the barriers to safe infant–feeding practices.

## **SECTION 3: Making Infant Formula Safe**

Infant formula requires preparation by mother or other care-givers. This requires a lot of handling at different stages, giving room for disease-causing germs to contaminate the food. This is a major challenge in the management of this method of feeding. Contamination of infant formula may be decreased by careful attention to the following important principles.

### **Manufacturers' details**

Mothers should be encouraged and empowered to obtain formula from reputable sources and to check the National Agency for Foods and Drugs Administration and Control (NAFDAC) registration number on the product as well as expiry dates. Where these details are absent or tampered with, the formula should not only be rejected, the suppliers should be reported to appropriate authorities.

### **Clean hands and utensils**

Washing of hands requires emphasis because hands are a major source of contaminants. Hands need to be washed with clean water involving vigorous hand rubbing after procedures as cleaning an infant's stool, or handling any soiled articles, including visiting the toilet. It is important to wash hands prior to preparing food for the infant. The idea that infant stools are not infective needs to be discarded. This wrong notion has caused the perpetuation of diarrhoeal diseases in infants. Cups and spoons used for feeding infants should be washed in clean warm water and soap immediately after use and stored properly from contact with flies.

### **Safe water and food**

There are still very serious challenges with water supply in Nigeria, with only 42% of Nigerians having access to safe water supply (NDHS 2004). Consequently, access to treated water is very difficult. In recent times in Nigeria, the production and distribution of table water has been on the increase. NAFDAC certification for safety is being implemented. Sachets of 500mls are available for as cheap as N5.00. This is currently widely available. All water used for preparing infant food should be boiled, irrespective of the source of such water. Containers of infant formula need to be kept tightly covered, to prevent contact with infective organisms. Milk should be freshly prepared each time an infant needs it. Where refrigerators are available, large volume of feeds for the day could be prepared and stored. Small aliquots should then be taken and warmed in hot water prior to feeds. Where refrigerators are not available or practically non-functional due to unstable electricity, feeds should be prepared in small quantities for immediate use only. It is important to note that milk should be discarded if it is not consumed within one hour of preparation.

### **Safe storage**

Water and infant feeds need to be stored in clean containers tightly covered to prevent contamination by other family members such as older children. Milk should be used within 1 hour after preparation and milk stored in the fridge should be discarded or used for older children's food if not consumed within 24 hours. Storing milk and sugar is best when they are dry.

### **Cup feeding**

Bottle feeding is considered by many mothers as easier and more convenient. It is important to appreciate the view of these mothers who would want anything that would ease the pressures of frequent preparation of formula milk. However, major challenges of using the feeding bottle include the process of keeping the bottle clean, risks of aspiration of food when an infant is left to feed on the bottle alone and

reduced attention to infant by mother during feeding. The principle of cup feeding can be learned with a little patience. Patient hospital staff may be able to get mothers to see reason with cup feeding rather than bottle feeding. Areas that need emphasis to the mother or other care-giver are control of infection through easier methods of cleaning cups and spoons, and the fact that small infants can learn to love this method within a short period. It also helps the mother to supervise feeding and consequently reduce the risks of aspiration.

## **SECTION 4 Infant-Feeding Counselling and Support**

### **Counselling about infant and young child**

A woman who is HIV-infected should receive counselling that includes:

- Information about the risk of HIV transmission through breastfeeding
- Information about the advantages and disadvantages of various infant-feeding options
- Guidance in selecting and adhering to the option most suitable for her situation
- Consideration of individual family and local customs, practices, and beliefs when presenting infant-feeding choices

### **Morbidity associated with replacement feeding**

Certain common illnesses are known to be associated with the practice of replacement feeding. These include:

- Diarrhoeal diseases with consequent
  - Dehydration
  - Electrolyte imbalance
- Infections such as:
  - Otitis Media
  - Pneumonias
- Malnutrition
  - Protein Energy Malnutrition
  - Micronutrient deficiencies
- Oral candidiasis

The frequency of these tends to be less when basic principles of replacement feeding are adhered to (see *SECTION 3. Making Infant Formula Safe*). These morbidities may result in premature mortality.

### **How to prepare non-breastfeeding women for questions**

In many cultures, women are expected to breastfeed their infants for one 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 family decides how they plan to feed their infant, ideally during the antenatal period, the healthcare worker should help them prepare to answer questions about their choice. This is particularly so when the choice is not the conventional exclusive breastfeeding practice. Similar questions were asked in the early days of the promotion of exclusive breastfeeding as to why babies should not be given water to drink. It is important to note that spouses should be involved in this counselling if the modification of infant and young child must succeed. Nigeria still has a very strong male dominant culture and this must be respected if any meaningful success is desired in the issues of infant and young child. Counselling the woman in isolation from the man, not only puts the baby at risk of getting the HIV, but also the man who may not be aware of the status of the woman.

During the counselling process, healthcare workers should ask women 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 healthcare worker may help the mother prepare to answer these questions. The

counselling session may also be an opportunity to further discuss issues that relate to disclosure of the mother's HIV status to the family.

As PMTCT programmes expand, community education and mobilization activities should be developed to help couples undertake the choice of not breastfeeding or stopping breastfeeding early. They should also be aimed at helping mothers who choose to exclusively breastfeed to maintain that choice.

For information on stigma related to replacement feeding or early cessation of breastfeeding, see *Module 7*.

### **Infant-feeding counselling, education, and support is**

- Provided during both the antenatal and postnatal periods
- Based on National PMTCT guidelines and includes an understanding of the sustainable resources accessible to the mother and her family
- Based on the individual woman's circumstances, including her health, social, and financial status as well as her customs and beliefs

### **Infant-feeding counselling, education, and support also**

- Includes information on various feeding options, including the advantages and disadvantages of each
- Provides women with the skills needed to feed their infants safely
- Includes demonstrations and/or opportunities for practice
- Involves partners as integral part of infant-feeding decisions
- Supports women when they disclose their HIV status to loved ones.

***The final decision about her infant-feeding strategy should be the couple's and must be supported.***

#### **Additional training in infant-feeding counselling and support**

Infant-feeding counselling for women who are HIV-positive is an integral part of every PMTCT programme, and requires that counsellors have many specific skills. Special WHO training courses exist about general breastfeeding and infant-feeding counselling and support (a 40-hour course) and for HIV and infant-feeding counselling (a 3-day course). Healthcare workers who are expected to provide infant-feeding counselling should have this type of training. Specific infant-feeding counselling skills include listening and learning, building the client's confidence, giving support, and providing information.

### **Counselling visits**

Mothers who are HIV-positive 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, do this some time after post-test counselling, but not immediately after the mother learns her test results.

The counsellor should visit the mother and infant immediately after the birth and schedule another visit within 7 days to monitor postpartum and infant-feeding progress. More frequent visits at say fortnightly till 2 or 3 months of age may be

crucial in situations where extended families pose serious threats to use of replacement feeding. Exclusive breastfeeding is common, so does not attract undue attention in Nigerian experience, but replacement feeding does.

It is advisable to schedule monthly follow-up sessions whenever the mother brings the child to the clinic for well-baby checkups or immunisations. Additional sessions may be required during special high-risk periods, such as when the:

- Child is sick
- Mother returns to work
- Mother decides to change feeding methods

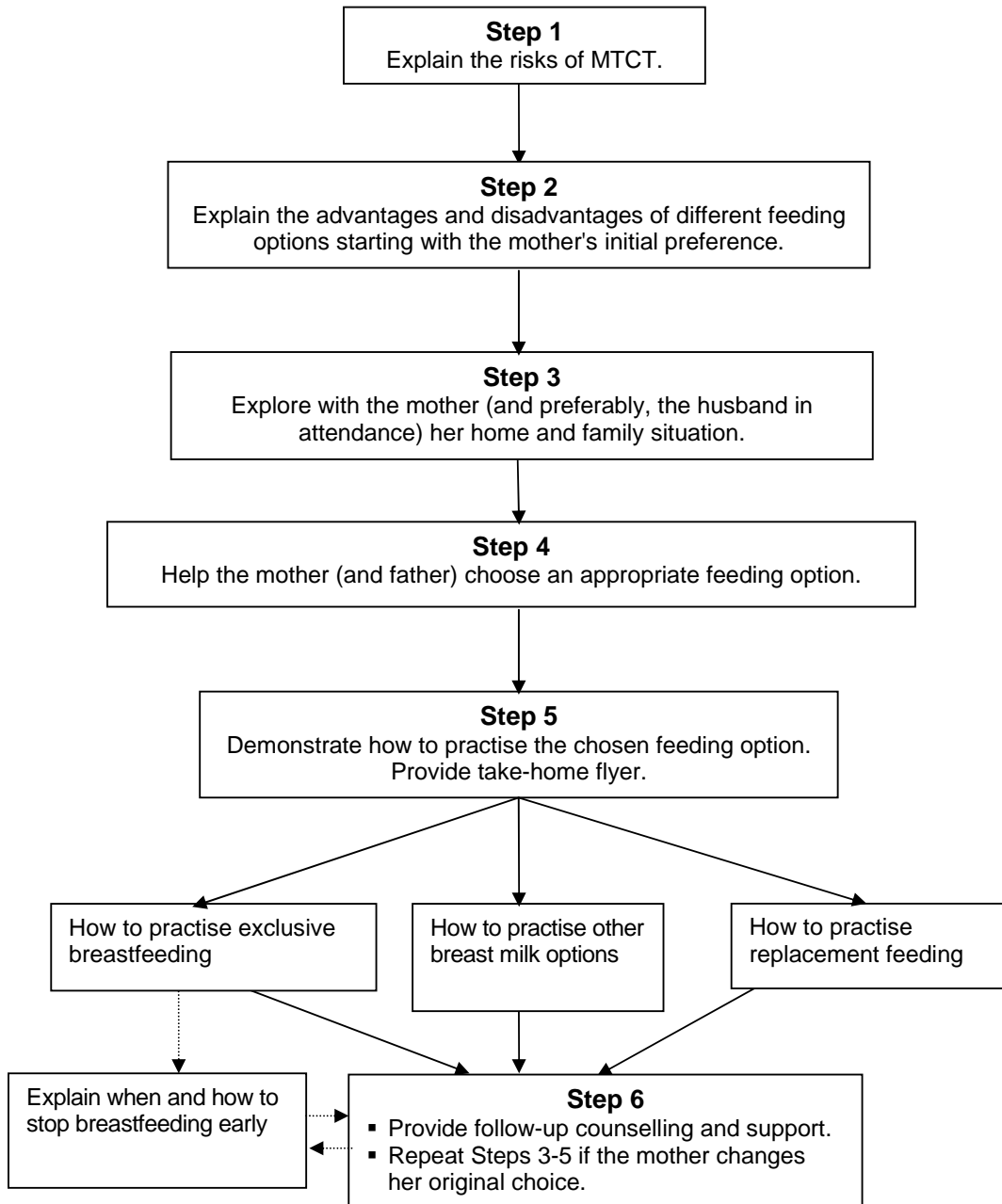
**During these visits, blood samples may be collected for testing the HIV status of the infants, depending on the facilities available at the site.**

#### **Infant-feeding counselling steps for women who are HIV-infected**

The flowchart in Figure 5.1 illustrates the six steps for counselling mothers infected with HIV about infant and young child. Use the flowchart on the next page as follows:

<b>If this is the mother's first infant-feeding counselling session and...</b>
<p><i>She is early in her pregnancy:</i></p> <ul style="list-style-type: none"> <li>▪ Do Steps 1–4.</li> <li>▪ Ask her to return in her third trimester to learn how to implement the feeding method (Step 5).</li> </ul> <p><i>She is late in her pregnancy:</i></p> <ul style="list-style-type: none"> <li>▪ Do Steps 1–5.</li> </ul> <p><i>She already has a child and is breastfeeding or mixed feeding:</i></p> <ul style="list-style-type: none"> <li>▪ Do relevant parts of Steps 1–5.</li> </ul> <p><i>She already has a child and is using only replacement feeding:</i></p> <ul style="list-style-type: none"> <li>▪ Do relevant parts of Step 5 and Step 6.</li> </ul>
<b>If the mother has already been counselled and chosen a feeding option and...</b>
<p><i>She is still pregnant or newly delivered, but has not yet been counselled on how to succeed in her selected feeding method:</i></p> <ul style="list-style-type: none"> <li>▪ Begin with relevant parts of Step 5.</li> </ul> <p><i>If she already has a child:</i></p> <ul style="list-style-type: none"> <li>▪ Begin with Step 6.</li> </ul>
<b>If this is a follow-up visit...</b>
<ul style="list-style-type: none"> <li>▪ Begin with Step 6.</li> </ul>

**Figure 5.1 Infant-feeding counselling for women who are HIV-positive  
Counselling Flow Chart**



## Breast management for mothers who choose replacement feeding

Due to lack of breast emptying, there may be engorgement with pain in mothers who choose to use replacement feeding. This is best handled by:

Use of a firm brazier

Expression of small quantities of milk to be thrown away

Analgesics

Measures that are not recommended include:

Fluid restriction

Use of hormonal agents

Diuretics

### Postnatal visits

During each postnatal visit, clinic staff should review information from the infant-feeding counselling session and focus on issues most relevant to the mother.

Reinforcing essential and relevant information supports optimal infant nutrition, growth, and development while minimising risks.

<b>Exercise 5.3 Infant-feeding counselling and support: role play</b>	
<b>Purpose</b>	To provide information on issues that may arise when counselling for infant and young child.
<b>Duration</b>	70 minutes
<b>Activities</b>	<p>Join with one other person as requested by facilitator and review the “Infant-feeding counselling for women who are HIV-positive” flowchart in Figure 5.1.</p> <p>Decide which member of your pair will play the role of the infant-feeding counsellor and which will play the role of the mother.</p> <p>The participant who will play the role of the mother will meet with the facilitator in a separate section of the training room to receive the role-play scenario.</p> <p>The “mothers” will then introduce themselves to the “infant-feeding counsellors” while the latter will take the lead in following the flow chart steps.</p> <p>Change roles to repeat the role-play as requested by the facilitator. After 30 minutes, join the entire group and share your experiences by answering the following questions:</p> <p>“Infant-feeding counsellors”:</p> <ul style="list-style-type: none"><li>▪ Were there difficulties with any of the steps?</li><li>▪ Which steps were most troublesome?</li><li>▪ What can you do to become more competent in providing infant-feeding support?</li><li>▪ Did you feel that you had the skills to work with a “mother” who was fearful, anxious, or upset about her own or her child’s</li></ul>

**Exercise 5.3 Infant-feeding counselling and support: role play**

welfare?

“Mothers” :

- What were the main points you learned in the session?
- How has the session changed the way you would feed your infant?
- If you will not make any changes, why not?
- What issues came up in the counselling session that no one anticipated?
- How would you have liked to address those issues?

## Suggested patient roles for Exercise 5.3, infant-feeding counselling and support

### **Antenatal visit**

Your name is Jennifer. You are HIV-infected and will probably breastfeed because you know that you cannot afford to buy commercial infant formula. You breastfed your first baby. This is your second child, due in 1 month.

### **Antenatal visit**

Your name is Jasmine. You are HIV-infected and expect to give birth next month. Because you want to protect your baby from HIV infection, you want to know more about home-modified formulas. You and your husband own two cows, so it would be convenient and inexpensive to make your own home-modified formula, but you understand that it is quite complicated.

### **Antenatal visit**

Your name is Maya. You are HIV-infected and expect to give birth in 3 months. Your home and financial situation are such that you feel confident that you could purchase and prepare commercially available infant formula. However, you have heard that many infants get diarrhoea when fed formula, so you are concerned.

### **Postnatal visit**

Your name is Mercy. You have been breastfeeding your baby for 3 months and would like advice on reducing your baby's risk of HIV. You are willing to stop breastfeeding and start cup feeding the baby, but you are worried about discomfort from engorged breasts and how to comfort your baby during the transition period.

### **Postnatal visit**

Your name is Pairing. You have been feeding your 3-month-old baby commercial formula since he was born. You have several questions about cleaning the cups and equipment, diluting formula when the money is tight, and introducing complementary foods.

## Module 5: Key Points

- Maternal viral load and duration of breastfeeding are major determinants of MTCT through breastfeeding.
- All women who are HIV-positive need infant-feeding counselling and support.
- HIV transmission risk continues the entire time a mother who is HIV-infected breastfeeds her child.
- The mother has the right to choose how she wants to feed her infant; the healthcare worker's job is to support her choice.
- Mothers who are HIV-positive should avoid breastfeeding when replacement feeding is acceptable, feasible, affordable, sustainable, and safe.
- Respect the International Code of Marketing of Breast Milk Substitutes
- Exclusive breastfeeding and early breastfeeding cessation are appropriate when breastfeeding is the chosen option.
- Economic considerations for infant and young child options go beyond monetary terms.
- Infant formula can be made safer by careful attention to the following issues:
  - Manufacturers details
  - Clean hands and utensils
  - Safe water and food
  - Safe storage
  - Cup feeding
- Counselling, education, and support are key to establishing and maintaining safer infant-feeding practices.
- Postnatal counselling and infant follow-up are required throughout the first 2 years of the infant's life.
- PMTCT staff can prevent spillover or misuse of replacement feeding in three ways:
  - Promote exclusive breastfeeding for the general population
  - Discourage use of replacement milk supplies by mothers whose infants do not need them

## **APPENDIX 5-A      International Code of Marketing of Breast Milk Substitutes**

### **Summary of International Code**

The International Code of Marketing of Breast milk Substitutes seeks to encourage and protect breastfeeding and to control marketing practices so they do not inappropriately promote products for artificial feeding. The code applies to artificial milk for infants and to other products used to feed infants, especially when they are meant for use in a feeding bottle. The code also applies to feeding bottles and teats. Poor breastfeeding practice that leads to the development of breast and nipple disease and mixed feeding are dangerous for the infant of an HIV-infected mother because they increase the likelihood of breast milk transmission of HIV. Since most women do not know their HIV-infection status, it is imperative that we promote good breastfeeding practice universally.

Important provisions of the code:

- No advertising of breast milk substitutes and other products to the public
- No free samples to mothers
- No promotion of products in the health service
- No company personnel to advise mothers
- No gifts or personal samples to healthcare workers
- No pictures of infants, or other pictures idealising artificial feeding, on the labels of products
- Information to healthcare workers should be scientific and factual
- Information on artificial feeding, including that on labels, should explain the benefits of breastfeeding and the costs and dangers associated with artificial feeding
- Unsuitable products, such as sweetened condensed milk, should not be promoted for babies

The code helps provide safe and adequate nutrition for children by:

- Protecting and promoting breastfeeding.
- Supporting proper and informed use of breast milk substitutes when necessary.
- Promoting acceptable marketing and distributing practices.

## **APPENDIX 5-B United Nations infant-feeding recommendations for mothers who are HIV-infected**

UN infant-feeding recommendations (2001) for mothers who are HIV-infected are as follows:

- When replacement feeding is acceptable, feasible, affordable, sustainable, and safe (terms defined in Session 1), avoidance of all breastfeeding by HIV-infected mothers is recommended.
- Otherwise, exclusive breastfeeding is recommended during the first months of life.
- To minimise HIV transmission risk, HIV-positive mothers should discontinue breastfeeding as soon as feasible, taking into account local circumstances, the individual woman's situation, and the risks of replacement feeding (which include malnutrition and infections other than HIV).
- The UN suggests early cessation of breastfeeding with safe transition (over a period of a few days or up to 2 weeks), recognising that this is difficult and that the mother and infant will require support.
- When HIV-positive mothers choose not to breastfeed from birth or stop breastfeeding later, counsellors or healthcare workers should provide them with specific guidance and support for at least the first 2 years of the child's life to ensure adequate replacement feeding.
- Programmes should make replacement feeding safer for HIV-positive mothers and families.
- All HIV-infected mothers should receive counselling, which includes promotion of general information about the risks and benefits of various infant and young child options, and specific guidance in selecting the option most likely to be suitable for their situation.
- Whatever a mother decides, she should be supported in her choice.

This appendix was adapted from the following:

- WHO and UNAIDS. 2003. *HIV and infant feeding: Guidelines for decision-makers*, Retrieved 30 July 2004, from [http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/HIV\\_IF\\_DM.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_DM.pdf)
- WHO and UNAIDS. 2003. *HIV and infant feeding: Guidelines for health care managers and supervisors*. Retrieved 30 July 2004, from [http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/HIV\\_IF\\_MS.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_MS.pdf)

## APPENDIX 5-C Advantages of cup feeding

*Breast milk substitutes should be given from a cup.*

Healthcare workers should 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 psychosocial 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 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 for sterilisation; this takes time and fuel.
- Bottles and teats cost more than cups and are less readily available.

*Healthcare workers should receive training to show mothers and families how to cup feed.*

### How to feed an infant with 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 and it rests lightly on the infant's lower lip.
- The infant will become alert and open its mouth and eyes.\*
- **Do not pour** the milk into the infant's mouth. Hold the cup to the infant's lips and let the infant take it.
- When the infant has had enough, he/she will close its mouth and take in no more milk.
- Measure the infant's intake at each feeding over 24 hours.

- \*Low-birthweight infants will start to take milk with the tongue. A full-term or older infant will suck the milk, spilling some.

This appendix was adapted from the following:

- WHO, UNICEF and USAID. 2004. *HIV and infant feeding counselling tools*. Currently in print, to be available in late 2004 from [http://www.who.int/child-adolescent-health/NUTRITION/HIV\\_infant.htm](http://www.who.int/child-adolescent-health/NUTRITION/HIV_infant.htm)
- WHO and UNAIDS. 2003. *HIV and infant feeding: Guidelines for decision-makers*, Retrieved 30 July 2004, from [http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/HIV\\_IF\\_DM.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_DM.pdf)
- WHO and UNAIDS. 2003. *HIV and infant feeding: Guidelines for health care managers and supervisors*. Retrieved 30 July 2004, from [http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/HIV\\_IF\\_MS.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_MS.pdf)

## APPENDIX 5-D Feeding from 6–24 months

All infants, including infants who continue to be breastfed, require nutritious foods beginning at about 6 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 breast milk substitute. 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. Replacement feeding describes the use of alternative foods when there is no breastfeeding, such as a commercial or home-modified breast milk substitute.

*Infants should receive continued frequent breastfeeding or cup feeding with commercial infant formula or other milk 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:

### Introducing complementary foods

- Begin introducing complementary foods in small amounts at 6 months of age. The amount of food required will increase as the child gets older. (See table below.)
- After complementary foods have been introduced, the infant will continue to need breast milk or milk in some form frequently throughout the day.
- For infants who are not breastfed, animal milk requirements after 6 months are about 1 to 2 cups per day.
- Infants older than 6 months do not require dilution of animal milks. However, fresh animal's milk should still be boiled.
- No special preparation is needed for processed, pasteurised, or ultra-heat treated (UHT) milk. However, the mother or caregiver should increase the number of complementary feedings as the child gets older. The appropriate number of feedings depends on the energy density of the local foods and the usual amounts consumed at each feeding. When no milk is available, the diet should include other animal-source foods and/or enriched foods.
- The table on the next page shows the type, frequency, and amounts of complementary foods that the average healthy infant requires at different ages. If the energy density or the amount of food per meal is low, more frequent feedings may be required.
- Energy requirements are higher for unhealthy infants because of the metabolic effects of diseases. Energy requirements also are higher for infants who are severely malnourished and undergoing nutritional rehabilitation.
- Gradually increase food consistency and the variety of foods offered as the infant gets older, adapting to the infant's nutritional requirements and physical abilities.

## APPENDIX 5-D Feeding from 6–24 months *(continued)*

Age	Texture	Frequency	Amount at each meal*
6 months	Soft porridge; well-mashed vegetable, meat, or fruit	2 times a day plus frequent milk feeds	2–3 tablespoons
7–8 months	Mashed foods	3 times a day plus frequent milk feeds	2/3 cup <sup>+</sup>
9–11 months	Finely chopped or mashed foods, and foods that baby can pick up	3 meals plus 1 snack between meals plus milk feeds	2/3 cup <sup>+</sup>
12–24 months	Family foods, chopped or mashed if necessary	3 meals plus 2 snacks between meals plus milk feeds	1 full cup <sup>+</sup>
If baby is not breastfed, give in addition: 1-2 cups of milk per day, and 1-2 extra meals per day.			

\* This chart should be adapted to the local context, using local utensils to show the amount.

<sup>+</sup> One cup = 250 ml

- Offer children 6 months and older an increasing variety of nutrient-dense foods. On a daily basis, or as often as possible, they should eat animal foods such as meat, poultry, fish, eggs, dairy products, or other adequate local sources of protein. Children should also eat fruit and vegetables that are rich in vitamin A daily. Satisfying the nutritional needs of children in this age group through a vegetarian diet is difficult.
- If nutritionally adequate complementary foods or fortified complementary foods are not available locally, consider giving the child a vitamin-mineral supplement to avoid growth and development deficiencies.
- Mothers and caregivers should avoid giving drinks with low nutrient value, such as tea and coffee (which interfere with iron absorption) and sugary drinks such as soda. The amount of juice offered should be limited 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 the food to become lodged in the trachea. Foods to avoid include nuts, grapes, and raw carrots. These will need grating before they are given

### Responsive feeding

- Feed infants directly and assist older children when they feed themselves, being sensitive to when the infant or child is hungry or full.
- Feed slowly and patiently, encouraging the child to eat, but *do not* force feed.
- Encourage food intake by experimenting with different food combinations, tastes, and textures, especially if the child refuses to eat.
- Minimise 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.

## **APPENDIX 5-D Feeding from 6–24 months** *(continued)*

### **Good hygiene and proper food handling**

- Wash hands before food preparation and eating.
- Store foods safely and serve foods immediately after preparation.
- Use clean utensils to prepare and serve food.
- Use clean cups and bowls to feed children.
- Avoid using feeding bottles, which 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 whites, 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.

When the child's age permits, mothers and caregivers should give the child 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.

This appendix was adapted from the following:

- WHO, UNICEF and USAID. 2004. *HIV and infant feeding counselling tools*. Currently in print, to be available in late 2004 from [http://www.who.int/child-adolescent-health/NUTRITION/HIV\\_infant.htm](http://www.who.int/child-adolescent-health/NUTRITION/HIV_infant.htm)
- WHO and UNAIDS. 2003. *HIV and infant feeding: Guidelines for decision-makers*, Retrieved 30 July 2004, from [http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/HIV\\_IF\\_DM.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_DM.pdf)
- WHO and UNAIDS. 2003. *HIV and infant feeding: Guidelines for health care managers and supervisors*. Retrieved 30 July 2004, from [http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/HIV\\_IF\\_MS.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/HIV_IF_MS.pdf)