HIV and infant feeding

A guide for health-care managers and supervisors

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Explanation of terms

Artificial feeding means feeding an infant on breast-milk substitutes.

Bottle-feeding means feeding an infant from a bottle, whatever is in the bottle, including expressed breast milk.

Breast-milk substitute means any food being marketed or otherwise represented as a partial or total replacement for breast milk, whether or not suitable for that purpose.

Cessation of breastfeeding means stopping breastfeeding.

Commercial infant formula means a breast-milk substitute formulated industrially in accordance with applicable Codex Alimentarius standards to satisfy the nutritional requirements of infants up to between four and six months of age.

Complementary food means any food, whether manufactured or locally prepared, suitable as a complement to breast milk or to infant formula, when either becomes insufficient to satisfy the nutritional requirements of the infant. (Such food was previously referred to as 'weaning food' or 'breast-milk supplement').

Cup feeding means feeding an infant from an open cup, whatever is in the cup.

Exclusive breastfeeding means giving an infant no other food or drink, not even water, apart from breast milk (including expressed breast milk), with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

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Human immunodeficiency virus (HIV) means HIV-1 in this codument. Cases of mother-to-child transmission of HIV-2 are very rare.

HIV-positive and HIV-infected mean women and men who have taken an HIV test whose results have been confirmed as positive and who know that they are positive. HIV-positive women are also sometimes referred to as women living with HIV. HIV-negative refers to women and men who have taken a test with a negative result and are assumed to be uninfected and who know their result. HIV-status unknown refers to women and men who have not taken an HIV test or who do not know the result of their test.

HIV counselling and testing means HIV testing, which is voluntary, with fully informed consent, and confidential with pre- and post-test counselling. This means the same as the terms voluntary counselling and testing (VCT) and voluntary and confidential counselling and testing (VCCT).

Home-prepared formula means infant formula prepared at home from fresh or processed animal milks, suitably diluted with water and with the addition of sugar.

Infant means a child from birth to 12 months of age.

Mother-to-child transmission (MTCT) means transmission of HIV to a child from an HIV-positive woman during pregnancy, delivery or breastfeeding. The term is used in this document because the immediate source of the child's HIV infection is the mother. The more technical term is vertical transmission. Use of the term MTCT does not imply blame whether or not a woman is aware of her own infection status. A woman can acquire HIV through unprotected sex with an infected partner, through receiving contaminated blood or through unsterile instruments or medical procedures. However, HIV is usually introduced into the family through the woman's sexual partner.

Replacement feeding means the process of feeding a child who is not receiving any breast milk with a diet that provides all the nutrients the child needs. During the first six months this should be with a suitable breast-milk substitute – commercial formula or home-prepared formula – with micronutrient supplements. After six months it should preferably be with a suitable breast-milk substitute, and complementary foods made from appropriately prepared and nutrient-enriched family foods, given three times a day. If suitable breast-milk substitutes are not available, appropriately prepared family foods should be further enriched and given five times a day.

Universal precautions means a set of simple guidelines applicable in all health care settings, including the home, to prevent the transmission of blood-borne infections. The guidelines include: taking care to prevent injuries when using, handling, cleaning or disposing of sharp instruments; avoiding the recapping, breaking or bending of used needles; avoiding the recapping, breaking or bending of used needles; disposing of sharp items in puncture-proof containers; using protective barriers (gloves, eye glasses, waterproof aprons and footwear) to prevent exposure to blood and other potentially infective body fluids; washing immediately skin surfaces which are contaminated with blood or or other potentially infective body fluids.

Introduction

Breastfeeding is a significant and preventable mode of HIV transmission to infants and there is an urgent need to educate, counsel and support women and families so that they can make decisions about how best to feed infants in the context of HIV.

Faced with this problem, the objective of health services should be to prevent HIV transmission through breastfeeding while continuing to protect, promote and support breastfeeding as the best infant feeding choice for women who are HIV-negative and women who do not know their status.

Achieving this objective requires organising services that:

- provide and promote voluntary and confidential HIV counselling and testing. Improved access to HIV counselling and testing is necessary for preventing mother-to-child transmission (MTCT) of HIV, including through breastfeeding. Women can make informed decisions about infant feeding only if they know their HIV status
- encourage use of antenatal care and strengthen antenatal care services so that they can provide information about prevention of HIV infection, offer referral for HIV counselling and testing, and offer interventions to reduce mother-to-child transmission. These should be provided in addition to the basic package of antenatal care
- provide infant feeding counselling for all pregnant women and mothers. This includes support of and counselling about breastfeeding for mothers who are HIV-negative or of unknown status, and counselling about replacement feeding for women who are HIV-positive
- support HIV-positive women in their choice of infant feeding method, whether they choose breastfeeding or replacement feeding. This should include facilitating access to replacement feeds where appropriate
- prevent any 'spillover' effect of replacement feeding which may undermine breastfeeding among HIV-negative women and those of unknown status and which may weaken commitment among health workers to support breastfeeding
- prevent commercial pressures for artificial feeding, including protecting parents from inappropriate promotion of breast-milk substitutes and ensuring that manufacturers and distributors of products which fall within the scope of the International Code of Marketing of Breast-milk Substitutes conform to its principles and aim and to subsequent relevant resolutions of the World Health Assembly
- consider infant feeding as part of a continuum of care and support services for HIV-positive women and ensure that they and their families

have access to comprehensive health care and social support

- provide appropriate follow-up care and support for HIV-positive women and their children, particularly up to the age of two years
- promote an enabling environment for women living with HIV by strengthening community support and by reducing stigma and discrimination
- consider HIV and infant feeding in the broader context of preventing HIV infection in women through provision of information, promotion of safer sex, condom availability, and early detection and appropriate treatment of sexually transmitted diseases (STDs).

This Guide is intended to assist mid-level health care managers and supervisors to plan and implement appropriate services. The Guide is generic, in recognition of the fact that different countries are at different stages of the HIV/AIDS epidemic and have varying resources available for dealing with it. It focuses specifically on HIV and infant feeding issues and readers will need to refer to other documents for more detailed information about strengthening some of the services mentioned.

Health care managers will need to adapt the guidelines so that they are consistent with national policies and appropriate to local circumstances. They will also need to ensure that activities are consistent with the rights described in Box 1 opposite.

The Guide is organised in three sections. Section 1 provides an overview of MTCT, Section 2 discusses infant feeding options for HIV-positive women, and Section 3 describes practical steps for implementing services. Additional information about HIV counselling and testing, antiretroviral therapy, breastfeeding and distribution of breast-milk substitutes is provided in Annexes 1-4.

1. Protect, respect and fulfill human rights

- The right of all women and men, irrespective of their HIV status, to determine the course of their reproductive lives and health and to have access to information and services that allow them to protect their own and their family's health
- The right of children to survival, development and health
- The right of a woman to make decisions about infant feeding, based on full information and as wide a range of choices as possible, and appropriate support for the course of action she chooses
- The right of a woman and girls to information about HIV/AIDS and to access to the means to protect themselves against HIV infection
- The right of women to know their HIV status and to have access to HIV counselling and testing that is voluntary and confidential
- The right of women to choose not to be tested or to choose not to know the result of an HIV test

SECTION 1

Overview: mother-to-child transmission

It is estimated that worldwide three million children under the age of 15 years have been infected with HIV. Mother-to-child transmission of the virus – during pregnancy, delivery or breastfeeding – is responsible for more than 90 per cent of HIV infection in children.

Of those infants who are infected through MTCT, it is believed that about two thirds are infected during pregnancy and around the time of delivery, and about one third are infected through breastfeeding.

Using the most widely available tests, it is not possible to tell whether a newborn infant has already been infected with HIV. These tests detect antibodies to HIV rather than the virus itself (see Annex 1). The child of an infected mother may have maternal antibodies in his or her blood until 18 months of age. Antibody tests cannot identify whether an infant is infected with HIV until after the age of about 18 months, and therefore cannot help with infant feeding decisions.

MTCT rates vary considerably. In the industrialised world, the risk of an infant acquiring HIV from an infected mother ranges from 15-25 per cent, compared with 25-45 per cent in developing countries, and differences in breastfeeding rates may account for much of this variation. The additional risk of infection when an infant is breastfed is around 15 per cent. We know that HIV can be transmitted through breast milk because:

- the virus has been found in components of breast milk
- HIV infection has been found in breastfed infants of mothers who were not infected with HIV during pregnancy or at delivery but who were infected while they were breastfeeding, either through receiving an infected blood transfusion or through sexual transmission
- infants of HIV-negative mothers have been infected through exposure to HIV in unpasteurised pooled breast milk from unscreened donors, and through receiving breast milk from an HIV-infected wet-nurse
- infants of HIV-infected women who were born without infection, and who were diagnosed as HIV negative at six months of age, have been found to be infected after this age and breastfeeding was the only risk factor.

Factors increasing the risk of transmission

The risk of MTCT, including transmission through breast milk, is increased by:

- recent infection with HIV – a woman who has been infected with HIV during pregnancy or while breastfeeding is more likely to transmit the virus to her infant. Unprotected sex

during pregnancy and lactation not only places a woman at risk of HIV but also increases the risk to her infant

- AIDS – a woman who develops AIDS is more likely to transmit HIV infection to her infant
- infection with certain sexually transmitted diseases (STDs) – maternal STD infection during pregnancy may increase the risk of HIV transmission to the unborn child
- vitamin A deficiency – the risk of MTCT appears to be greater if an HIV-positive woman is deficient in vitamin A, and increases with the severity of her deficiency
- breast conditions – cracked or bleeding nipples, or breast abscess, may increase the risk of HIV transmission through breastfeeding
- duration of breastfeeding – an infant continues to be exposed to the risk of HIV transmission for as long as he or she is breastfed. The longer the duration of breastfeeding, the longer the infant is exposed to the risk of HIV infection. (There is no evidence that colostrum increases or decreases the risk of HIV transmission or that withholding colostrum reduces the risk.)

Strategies to prevent and reduce MTCT

Prevention of breast milk transmission should be integrated into an overall approach by health services to preventing HIV infection in women and their partners and reducing MTCT.

Specific measures to prevent HIV infection in women and their partners include:

- providing information about transmission of HIV and STDs
- promoting safer sex and making condoms widely available

E Rice/WHO

Two thirds of mother-to-child transmission of HIV occurs during pregnancy and delivery.

- providing early detection and appropriate treatment of STDs
- ensuring the safety of medical procedures such as blood transfusion and ensuring that universal precautions are implemented in all health facilities.

Proven strategies to reduce or prevent MTCT when a woman is known to be infected with HIV include:

- antiretroviral therapy (see Annex 2)
- restricted use of invasive obstetric procedures such as artificial rupture of membranes and episiotomy to reduce the exposure of the infant to the blood of an infected mother
- replacement feeding for the infant.

Strategies which may potentially reduce MTCT, but where further studies are needed, include:

- vitamin A supplementation during pregnancy
- cleansing of the birth canal with a microbicide during labour and delivery
- detection and treatment of STDs.

SECTION 2

Infant feeding options

Breastfeeding is normally the best way to feed an infant (see Annex 3). However, if a mother is infected with HIV, it may be preferable to replace breast milk to reduce the risk of HIV transmission to her infant.

The risk of replacement feeding should be less than the potential risk of HIV transmission through infected breast milk, so that infant illness and death from other causes do not increase; otherwise there is no advantage in replacement feeding. The main issues which need to be considered are:

- nutritional requirements – replacement feeding needs to provide all the infant's nutritional requirements as completely as possible. However, no substitute exactly replicates the nutrient content of breast milk (see Annex 3)
- bacterial infection – breast-milk substitutes lack the properties of breast milk which protect against infections. Bacteria may contaminate breast-milk substitutes during preparation, so it is essential that feeds are prepared and given hygienically (see page 12). This requires access to clean water and fuel as well as sufficient time. When feeds cannot be kept in a refrigerator or a cool place, they should be made up one at a time to prevent bacteria multiplying if contamination has occurred during preparation. Even where hygiene is good, artificially fed infants suffer five times as many bacterial infections as breastfed infants, and in situations where hygiene is poor, the risk of death from diarrhoea in artificially fed young infants may be 20 times that of breastfed infants. Families feeding their infants with breast-milk substitutes therefore need access to appropriate health care
- cost – to buy enough of a breast-milk substitutes to feed an infant can cost a considerable proportion of family income. In Pakistan, for example, purchasing commercial infant formula costs the equivalent of 31 per cent of the monthly urban minimum wage, and in Kenya the figure is 84 per cent. In addition to formula, the costs of fuel, water and health care need to be taken into account. Families may need help to obtain sufficient quantities of a breast-milk substitute, as there is a danger that they may give other foods that are expensive but also nutritionally less adequate
- family planning – women who do not breastfeed lose the child-spacing benefits that breastfeeding can provide. Another pregnancy too soon can cause the health of an HIV-positive woman to deteriorate, and results in more potentially HIV infected children to care for. Thus it is essential that HIV-positive women have access to affordable and appropriate family planning methods
- psychosocial stimulation – not breastfeeding can be detrimental to mother-infant bonding, resulting in lack of stimulation for the infant.

Steps need to be taken to help mothers ensure that replacement-fed infants receive as much attention as breastfed infants

- social and cultural factors – where breastfeeding is the norm, women who do not breastfeed may be stigmatised, resulting in a range of other problems. Measures are thus required to provide social support to HIV-positive mothers who use replacement feeding.

Feeding options for HIV-positive mothers

BIRTH TO SIX MONTHS

From birth to six months, milk in some form is essential for an infant. If not breastfed, an infant needs about 150 ml of milk per kg of body weight a day. So, for example, an infant weighing 5 kg needs about 750 ml per day, which can be given as five 150 ml feeds a day.

1 Breast-milk substitutes

Commercial infant formula

Commercial infant formula, based on modified cow's milk or soy protein, is closest in nutrient composition to breast milk, though it may lack some substances such as long-chain essential fatty acids present in breast milk. It is usually adequately fortified with micronutrients, including iron.

Formula is usually available as a powder to be reconstituted with water. The instructions on the tin for mixing the formula should be followed exactly to ensure that it is not too concentrated or diluted. Over-concentration can overload the infant with salts and waste amino acids, which can be dangerous, and over-dilution can lead to malnutrition.

Feeding an infant for six months requires on average 40 x 500 g tins (44 x 450 g tins) of formula. Up to at least four, and usually six, months of age, infants who are fed on commercial infant formula do not need complementary foods if they are gaining weight adequately.

Commercial infant formula could be considered as an option by HIV-positive women when:

- the family has reliable access to sufficient formula for at least six months
- the family has the resources – water, fuel, utensils, skills and time – to prepare it accurately and hygienically.

Home-prepared formula

Home-prepared formula can be made with fresh animal milks, with dried milk powder or with evaporated milk. Preparation of formula with any of these types of milk involves modification to make it suitable for infants, and care is needed to avoid over-concentration or over-dilution. Micronutrient supplements are recommended, as animal milks may provide insufficient iron, zinc and may contain less vitamin A, C and folic acid. If micronutrient supplements are unavailable, complementary foods rich in iron, zinc, vitamin A and C and folic acid should be introduced at four months of age. However, it is unlikely that they will provide sufficient amounts of the required nutrients.

M Crozet/WHO

Preparing breast-milk substitutes safely requires access to clean water and fuel.

Modified animal milks

Cow's milk has more protein and a greater concentration of sodium, phosphorous and other salts than breast milk. Modification involves dilution with boiled water to reduce the concentration. Dilution reduces the energy concentration so sugar must be added. The milk, water and sugar should be mixed in the following proportions and then boiled to make up 150 ml of home-prepared formula: 100 ml of cow's milk with 50 ml of boiled water and 10 g (2 teaspoons) of sugar.

Feeding an infant for six months requires an average 92 litres of animal milk (500 ml per day).

Goat's milk is similar in composition to cow's milk and so needs to be modified in the same way. It is deficient in folic acid which infants need to be given as a micronutrient supplement. Camel's milk is very similar in composition to goat's milk and should be modified and supplemented in the same way.

Both sheep and buffalo milk have more fat and energy than cow's milk. The protein content of sheep milk is very high. Using either for infants would therefore require more dilution than cow's milk, in the following proportions: 50 ml of milk with 50 ml of water and 5 g sugar.

Dried milk powder and evaporated milk

The full cream variety of dried milk powder or evaporated milk should be used. Normally, reconstitution involves adding a volume of boiled water to a measure of powdered or evaporated milk, as instructed on the container or packet. To make up a milk formula that is suitable for infants, however, the volume of water added needs to be increased by 50 per cent and 10 g of sugar added for each 150 ml of the feed. This is the equivalent of the recipe for the modification of cow's milk.

Home-prepared formula could be considered as an option by HIV-positive women when:

- commercial infant formula is not available or is too expensive for the family to buy and prepare
- the supply of animal milk or other milk is reliable and the family can afford it for at least six months
- the family has the resources to prepare it hygienically and can make the required modifications accurately
- micronutrient supplementation is possible.

Felicity Savage/WHO

Even newborns and low-birth-weight babies can feed from an open cup.

Unmodified cow's milk

During the first few months of life, feeding with unmodified cow's milk can cause serious problems, particularly if the infant becomes dehydrated. Infants need to be offered extra water (that has been boiled and cooled) and monitored carefully for dehydration if they have fever, respiratory infection or diarrhoea. To ensure that the infant gets enough milk and that water does not displace milk, drinks of water should be offered after feeds.

Unmodified cow's milk could be considered as an option by HIV-positive women when:

- commercial infant formula is not available or is too expensive for the family to buy and prepare
- the supply of cow's milk is reliable and the family can afford it for at least six months
- the family lacks the resources, time and fuel to modify cow's milk to make home-prepared formula
- micronutrient supplementation is possible.

2 Modified breastfeeding

Early cessation of breastfeeding

Early cessation of breastfeeding reduces the risk of HIV transmission by reducing the length of time for which an infant is exposed to HIV through breast milk. The optimum time for early cessation of breastfeeding is not known. However, it is advisable for an HIV-positive woman to stop breastfeeding as soon as she is able to prepare and give her infant adequate and hygienic replacement feeding. The most risky time for artificial feeding in environments with poor hygienic conditions is

the first two months of life, and family circumstances will therefore determine when the mother is able to stop breastfeeding and start replacement feeding.

Early cessation of breastfeeding is also advisable if an HIV-positive mother develops symptoms of AIDS.

J Littlewood/WHO

For mothers who are HIV-negative or are of unkown status, breastfeeding is the best option.

Early cessation of breastfeeding could be considered as an option by HIV-positive women who:

- find it difficult for social or cultural reasons to avoid breastfeeding completely
- develop symptoms of AIDS during the breastfeeding period
- can provide adequate replacement feeds, and can prepare and give these hygienically, only after their infants are a few months old.

Expressed and heat-treated breast milk

Heat treatment of expressed breast milk from an HIV-positive mother kills the virus in the breast milk. Heat-treated breast milk is nutritionally superior to other milks but heat treatment reduces the levels of the anti-infective factors.

To pasteurise the milk in hospital, it should be heated to 62.5°C for 30 minutes (the Holder pasteurisation method). If home, it can be boiled and then cooled immediately by putting it in a refrigerator or standing the container in cold water.

To minimise contamination, heat-treated breast milk should be put in a sterilised or very clean container and kept in a refrigerator or in a cool place before and after heat treatment.

Expressing and heat-treating breast milk is time consuming and women may not find it a practical option for long-term infant feeding at home. However, if they are motivated and have the time, resources, and support, they may wish to consider this option. It may be most useful for sick and low-birth-weight babies in a hospital setting.

3 Other breast milk

Breast-milk banks

In some settings, milk is available from breast-milk banks. Breast-milk banks are generally used as a source of breast milk for a short time, for example, for sick and low-birth-weight newborns. They are not usually an option for meeting the nutritional needs of infants for a long period.

Given the risk of HIV transmission through unpasteurised pooled breast milk from unscreened donors, breast-milk banks should be considered as an option when:

- they are already established and functioning in accordance with standard procedures and safety precautions
- it is certain that donors are screened for HIV and that the donated milk is correctly pasteurised (using the Holder method.)

Wet-nursing

In some settings there is a tradition of wet-nursing in the family context, where a relative breastfeeds an infant. However, there is a risk of HIV transmission to the infant through breastfeeding if the wet-nurse is HIV-infected. There is also a potential risk of transmission of HIV from the infant to the wet-nurse, especially if she has cracked nipples.

Wet-nursing should be considered only when:

- a potential wet-nurse is informed of her risk of acquiring HIV from an infant of an HIV-positive mother
- the wet-nurse has been offered HIV counselling and testing, voluntarily takes a test and is found to be HIV-negative

- the wet-nurse is provided with the information and is able to practise safer sex to ensure that she remains HIV-negative while she is breastfeeding the infant
- wet-nursing takes place in a family context and there is no payment involved
- the wet-nurse can breastfeed the infant as frequently and for as long as needed
- the wet-nurse has access to breastfeeding support to prevent and treat breastfeeding problems such as cracked nipples.

Unsuitable breast-milk substitutes

Skimmed and sweetened condensed milk are not recommended for feeding infants aged six months. Skimmed milk has had all of the fat removed and does not provide enough energy.

Fruit juices, sugar-water and dilute cereal gruels are sometimes mistakenly given instead of milk feeds but these, and milk products such as yoghurt, are not recommended for replacement feeding for infants under six months of age.

SIX MONTHS TO TWO YEARS

After the age of six months, breast milk is normally be an important component of the diet, providing up to half or more of nutritional requirements between the age of 6 and 12 months and up to one-third between the age of 12 and 24 months. An infant who is not breastfed needs replacement feeding which provides all the required nutrients.

After six months of age, replacement feeding should preferably continue to include a suitable breast-milk substitute. In addition, complementary foods made from appropriately prepared and nutrient-enriched family foods should be given three times a day.

If suitable breast-milk substitutes are no longer available, replacement feeding should be with appropriately prepared family foods which are further enriched with protein, energy and micronutrients, and given five times a day. If possible other milk products, such as unmodified animal milk, dried skimmed milk, or yoghurt should be included as a source of protein and calcium; other animal products such as meat, liver and fish should be given, as a source of iron and zinc; and fruit and vegetables should be given to provide vitamins, especially vitamin A and C. Micronutrient supplements should be given if available.

J Mohk/WHO

Meals for young children should be rich in energy and nutrients.

Health workers need to discuss with families how to prepare an adequate diet from local foods and how to make sure that the infant eats enough.

Preparing and giving feeds

Managers and supervisors need to ensure that health workers know what is required to prepare and give feeds and can teach mothers and families how to do this. Particular attention needs to be paid to hygiene, correct mixing and feeding method.

Hygienic preparation

Preparing breast-milk substitutes to minimise the risks of contamination and bacterial infection requires health workers to be able to:

- teach mothers and families to wash their hands with soap and water before preparing feeds
- teach mothers and families to wash the feeding and mixing utensils thoroughly or boil them to sterilise them before preparing the feed and feeding the infant
- ask mothers to demonstrate preparation of a feed and watch them to ensure that they can do it hygienically.

Preparation of safe foods requires health workers to be able to teach mothers and families to follow these basic principles:

- wash their hands with soap and water before preparing and cooking food or feeding a child
- boil water for preparing the child's food and any necessary drinks
- cook food thoroughly until it bubbles
- avoid storing cooked food or, if this is not feasible, store in a refrigerator or a cool place and reheat thoroughly before giving to the infant
- avoid contact between raw and cooked foods
- wash fruits and vegetables with water that has been boiled. Peel them if possible or cook thoroughly before giving to infants
- avoid feeding infants with a bottle; use an open cup
- give unfinished formula to an older child, rather than keep it for the next feed
- wash the cup or bowl for the infant's food thoroughly with soap and water or boil it. Bacteria breed in food that sticks to feeding vessels and utensils
- store food and water in clean covered containers and protect from rodents, insects and other animals
- keep food preparation surfaces clean.

Correct mixing

Health workers need to ensure that families have some means for accurate measuring of both the water and the powdered or liquid milk. Health workers need to be able to demonstrate to mothers and families how to mix breast-milk substitutes accurately, and to ask them to show how they will prepare feeds to ensure that they can do this correctly.

Feeding method

Health workers should be trained to show mothers and families how to cup feed (see Box 2) and to explain that it is preferable to feed infants this way because:

- 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 giving bacteria the opportunity to multiply
- cup-feeding requires the mother or other caregiver to hold and have more contact with the infant, providing 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.

Feeding bottles are not usually necessary and for most purposes are not the preferred option. The use of feeding bottles and artificial teats should be actively discouraged because:

- bottle-feeding increases the risk of diarrhoea, dental disease and otitis media
- bottle-feeding increases the risk that the infant will receive inadequate stimulation and attention during feeds
- bottles and teats need to be thoroughly cleaned with a brush and then boiled to sterilise them and this takes time and fuel.

2. 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. The cups rests lightly on the infant's lower lip, and the edges of the cup touch the outer part of the infant's upper lip.
- The infant becomes alert and opens his or her mouth and eyes. A low-birth-weight infant will start to take the milk into his or her mouth with the tongue. A full-term or older infant sucks the milk, spilling some of it.
- DO NOT POUR the milk into the infant's mouth. Just hold the cup to the infant's lips and let him or her take it.
- When the infant has had enough, he or she will close his or her mouth and will not take any more. If the infant has not taken the calculated amount, he or she may take more next time, or the mother needs to feed more often.
- Measure the infant's intake over 24 hours, not just at each feed.

SECTION 3

Organising health services

STEP 1 Assess the situation

Health care managers should assess the situation, using existing information and data available from health facilities reports and surveys, and by talking to staff. Managers should:

- find out how many women and children are affected by HIV, and whether this varies between areas or population sub-groups. This will help them to decide how many women and children will need HIV counselling and testing services, infant feeding counselling, and follow-up care and support
- find out the extent to which people with HIV are stigmatised and whether not breastfeeding will signal to others that a woman has HIV. This will help to determine whether it will be feasible for HIV-positive mothers not to breastfeed, and how much support may be available to them and their families
- find out about infant feeding practices. Ask about how women currently feed their infants, including those who are HIV-positive. Find out about the prevalence of exclusive breastfeeding and the duration of breastfeeding. Find out how women feed their infants if they do not breastfeed including any tradition of wet-nursing within the family or use of breast-milk banks. This will help to determine common and culturally acceptable feeding practices, and the extent to which it might be necessary to promote and support breastfeeding for HIV-negative women and those of unknown status
- find out what milks are given to infants, what commercial infant formula is available on the market, what animal milks are available to families and whether these can be modified to make them suitable for infants. Assess the nutritional quality and costs of these milks, including working out the cost of providing enough to meet an infant's needs for six months. This will help to decide what might be the most appropriate and affordable breast-milk substitutes
- find out what complementary foods are given to infants. Also find out which of these are high in the nutrients lacking in breast-milk substitutes and can be given daily to infants
- find out about the health and growth of infants fed without breast-milk, the main causes of infant illness and death, and the prevalence of malnutrition in infants and young children. Find out whether communities have access to clean water and fuel. Talk to health workers about family capacity and resources for replacement feeding. This will help with decisions about which options might be feasible and whether families will be able to prepare and give feeds in a way that minimises the risk to their infants of infections other than HIV
- find out if micronutrient supplements can be provided for the infants of women who are using home-prepared formula or unmodified animal milks.

STEP 2 Assess health services and resources

To address the issue of HIV and infant feeding, health services need to include:

- community education
- antenatal care
- HIV counselling and testing
- strengthened delivery services to reduce risk
- infant feeding counselling for HIV-positive women
- infant feeding counselling for HIV-negative women and those of unknown status
- support for infant feeding decisions
- follow-up care for all mothers.

P Almasy/WHO

Fathers as well as mothers have a key role to play in decisions about infant feeding.

To assess the capacity of existing health services and the potential for integrating these activities, managers need to:

- find out about national HIV prevention policies including MTCT, HIV testing and counselling, AIDS care, and infant feeding and breastfeeding. This will determine what services can be provided and how they should be implemented
- find out what education activities related to HIV, MTCT and infant feeding are being conducted in communities and in health facilities
- assess the capacity of antenatal care services, the proportion of women who attend and how many times, and what would be needed to enable more women to attend
- assess whether it would be feasible for health services to provide antiretroviral (ARV) therapy for HIV-positive women, and suitable breast-milk substitutes for those who are unable to buy them
- review available health facilities, their numbers and location, and consider which may be possible sites for HIV counselling and testing and infant feeding counselling and support. These might include antenatal and family planning clinics or baby-friendly hospitals. Find out who uses these facilities and also how many mothers have no contact with the health services
- find out what existing HIV counselling and testing services are available, where these are provided, whether they are voluntary and confidential, and who uses them. Assess the capacity for expanding existing services or establishing new ones
- find out how many staff are available and trained in HIV prevention and care, including pre-test and post-test counselling, and where these staff are located
- evaluate the availability and reliability of the supply of HIV test kits, and the capacity and quality of laboratory support services
- find out how many staff have been trained in breastfeeding management and infant feeding counselling, including through the Baby-friendly Hospital Initiative (BFHI), and in their responsibilities under the International Code of Marketing of Breast-milk Substitutes. Find out where these staff are posted, and whether they are available
- find out about organisations to which HIV-positive women and their families could be referred for follow-up support, for example breastfeeding support groups, AIDS support and self-help groups, community-based home-care programmes organised by communities, churches and NGOs, and social services.

STEP 3 Consider activities for implementing services

Community education

Managers should decide:

- what messages need to be conveyed
- who the target audience is
- how education can be effectively conducted.

Messages will be determined by local circumstances but could include information about the risk of HIV transmission through breastfeeding, promotion of safer sex and condom use to prevent transmission between sexual partners, where to find HIV counselling and testing, antenatal care, family planning and STD services, and the importance of breastfeeding for infants of mothers without HIV.

Messages may be directed at the whole community in order to, for example, address stigma and discrimination or to raise awareness of HIV and how it is transmitted between adults and from mother to child. Health care managers may also wish to reach different audiences with specific messages, for example information about antenatal care for pregnant women and their mothers-in-law, and messages for men about preventing HIV transmission to women and children. To avoid stigmatising women, couples could be targeted concerning promotion of HIV counselling and testing and information about HIV and infant feeding.

Education can be conducted through health facilities or workplaces or in community settings. The specific setting will determine who will carry out education activities, and health care managers should decide what role could be played by primary health care and community workers, nurses and other clinic staff, HIV and infant feeding counsellors and peer educators. The choice of materials and methods will depend on the type of messages, and the target audience and the most effective way to reach it.

Antenatal care

Antenatal care services should be strengthened so that they can:

- provide information to pregnant women and their partners about MTCT and about how risk is increased if a mother becomes infected with HIV during breastfeeding
- provide information about the risks of unprotected sex and counselling about safer sex and preventing infection
- provide information about the benefits of breastfeeding and the risks of artificial feeding
- counsel women about improving their own nutrition, which may reduce the risk of MTCT
- refer women and, where possible, their partners for HIV counselling and testing, and explain about measures taken to maintain confidentiality.

HIV counselling and testing

A priority for health care managers should be to ensure that HIV counselling and testing services are available. Access to HIV counselling and testing is essential for women to be able to make informed decisions about infant feeding.

HIV counselling and testing services require:

- adequate space that provides privacy, security and confidentiality
- counsellors who have been selected on the basis of their skills and personal qualities and who have been provided with appropriate training
- procedures to ensure the confidentiality of test results and secure methods for sending blood samples to the laboratory
- trained staff available to conduct testing, and laboratory staff and facilities
- regular and adequate supply of reliable test kits including kits for supplementary tests
- convenient location and opening hours
- measures for supervision and monitoring to ensure that counselling is of high quality and for quality control of testing and laboratory procedures
- referral for infant feeding counselling and other care and support services
- support for the staff who provide counselling. The work can be stressful, and staff need opportunities to discuss their own feelings and difficulties, for example in support groups with their colleagues.

More detailed information about HIV testing and counselling is provided in Annex 1.

J/L Roy/WHO

Preventing HIV infection in women is the most effective strategy for preventing HIV infection in children.

Infant feeding counselling for HIV-positive women

Managers and supervisors need to arrange for health workers to receive training in counselling HIV-positive women about infant feeding. Counselling should include discussing with the mother:

- all infant feeding options and their risks
- whether she has resources for adequate and hygienic replacement feeding
- what effect buying commercial infant formula or other milk for her infant, will have on the health and nutrition of other family members, especially other children
- whether she has family and community support for replacement feeding
- whether her other children, if they have been artificially fed, whether they have grown well and been healthy
- if she will be able to attend regularly for follow-up care for this infant
- whether there are other factors such as social or cultural pressures, fear of violence or abandonment, which may influence her choice of feeding method.

Health workers should be able to give HIV-positive women full information about the risks and benefits of breastfeeding and of the various alternatives, and help them to make the most appropriate decision. This will depend on a woman's individual circumstances and the age of her infant, and it may be useful to discuss with her the questions listed below.

In some settings, consideration could be given to providing HIV-positive mothers with free or subsidised commercial infant formula if they are unable to buy it themselves. If this is government policy, formula should be provided for as long as the infant needs it, normally for six months.

If commercial infant formula is available:

- Does the mother have access to a reliable supply?
- Does she know how many tins are required?
- If she has to buy it, what would be the cost of providing complete commercial formula feeding for six months?
- Can she read, understand and follow the instructions for preparing infant formula?
- Can she demonstrate how to prepare the formula accurately?

If commercial infant formula is not available:

- Does she have access to a reliable supply of safe animal milk, at home or from a shop? Is it already diluted?
- How much does animal milk cost? Can she afford to buy enough to feed her infant for six months (about 92 litres)?
- Can she make the necessary modifications to animal milk so that it is suitable for her infant?

- Is sugar available for making home-prepared formula, and can she afford it?
- Can she give her infant micronutrient supplements or, if these are not available, appropriate complementary foods after the age of four months to provide some of the nutrients lacking in home-prepared formula?

If using commercial or home-prepared formula:

- Does she have the utensils to make feeds, an open cup, and the time and facilities to keep these clean?
- Does she have access to a reliable supply of safe water for mixing or diluting feeds or for preparing drinking water for her infant if needed; and for washing utensils and feeding cups?
- Does she have access to enough fuel to boil water and to clean mixing and feeding utensils?
- Can she store prepared feeds safely or make up one feed at a time?
- Does she have time to prepare feeds safely?
- What complementary foods would she give to her infant?
- Can she continue to give formula and give nutrient-rich complementary foods after her infant is 4-6 months old?

If a mother chooses not to use infant formula or animal milk:

- Can she consider options for modified breastfeeding, such as early cessation of breastfeeding or heat-treated expressed breast milk?
- Can she consider options for using breast milk from other sources, such as breast-milk banks or wet-nursing?
- Would she be able to provide her infant with adequate replacement food made from family foods five times a day from the age of six months up to at least two years?

Ideally, other family members should be encouraged to decide together about infant feeding because of the financial implications and because the mother will need her partner's and family's support if she decides not to breastfeed. However, the final decision about infant feeding method is the mother's, particularly if she is living without the father of the child or wishes to keep her HIV status confidential.

Having considered all the issues, some HIV-positive women may decide not to breastfeed. Others may decide to breastfeed. A woman's decision and, if she opts not to breastfeed, her choice of breast-milk substitute, should not be influenced by commercial pressures. Once she has made a decision about the feeding method that she feels is best for her and for her infant, she needs support for her decision and advice about the safest way to feed the baby.

Health workers should counsel HIV-positive mothers about the need to avoid mixing breastfeeding and artificial feeding, since this exposes the infant both to the risks of infectious diseases and malnutrition and of HIV infection.

Breastfeeding counselling for HIV-negative mothers and those of unknown status

Managers should ensure that health workers continue to protect, promote and support breastfeeding by women who are HIV-negative and those of unknown status. Women who think they may have been at risk of HIV should be offered HIV counselling and testing so that they can make an informed decision about infant feeding.

Information for HIV-negative mothers and those whose status is unknown should include:

- the benefits of breastfeeding
- the importance of rooming in
- the importance of feeding on demand and of exclusive breastfeeding for at least four months and if possible six months

B Geniek/WHO

Strengthening antenatal services and encouraging more women to attend are key strategies.

- how to ensure enough milk, correct positioning and attachment, and where to obtain help for breastfeeding problems
- the negative effect on breastfeeding of introducing partial artificial feeding, bottles and pacifiers
- the difficulty of reversing a decision not to breastfeed
- the particular importance of avoiding HIV infection while breastfeeding to protect the infant from HIV, and information about safer sex and use of condoms
- the risks of artificial feeding
- the costs of artificial feeding.

Support for infant feeding decisions

Support for replacement feeding

Health care managers should ensure that:

- HIV-infected women who choose not to breastfeed are not discriminated against, and that they receive help to decide how to deal with difficult questions or situations, especially in settings where breastfeeding is the norm
- HIV-infected mothers are assisted in private, in fulfilment of their right to confidentiality
- mothers receive help to prevent breast engorgement. Drugs are not recommended and the preferred method is to leave the breasts unstimulated and well supported. If they become full, enough milk should be expressed to relieve the fullness and to keep the breasts healthy while the milk naturally dries up
- health workers teach HIV-positive mothers how to prepare adequate amounts of replacement feeds as safely as possible to minimise the risk of diarrhoea and malnutrition, and to give feeds using a cup. This should include clear instructions, demonstrating how to clean utensils, prepare feeds and cup feed, and then observing the mother prepare and give at least one feed to ensure that she has understood the instructions. Suitable cups could be provided if families do not have them
- where possible, other family members are also shown how to prepare and give replacement feeds, especially if the mother is too ill to feed the infant herself. Consistent routines should be emphasised
- health workers explain that, because of the risk of exposure to HIV, once replacement feeding has begun, no breastfeeds at all should be given
- health workers can provide support for modified breastfeeding or infant feeding with breast milk from other sources.

Support for breastfeeding

HIV-positive mothers who decide to breastfeed should be supported in their choice. Measures which can be taken by health services include:

- making sure that HIV-infected mothers who decide to breastfeed are not discriminated against or blamed by health workers for placing their infants at risk of HIV
- providing support for exclusive breastfeeding and discussing the option of early cessation of

OHW/WHO

Appropriate messages and materials need to be developed for education and information activities.

breastfeeding as soon as the mother is able to provide adequate replacement feeding

- advising an HIV-infected mother how to minimise the risks of HIV transmission through breastfeeding, including seeking treatment promptly for breastfeeding difficulties or infant mouth problems. Health workers need to be trained to prevent and manage breast conditions, especially cracked and bleeding nipples, by helping women to position and attach the infant correctly at the breast, and to treat infant mouth problems such as thrush, ulcers or candidiasis
- referring mothers to a breastfeeding counsellor or a breastfeeding support group.

Preventing spillover to uninfected and untested women

HIV-negative women and those who do not know their status may decide not to breastfeed because of fears about HIV or as a result of misinformation. This would deprive their infants of the benefits of breastfeeding and put them at risk of other infections and malnutrition.

Health care practices

All health workers have a responsibility to protect, promote and support breastfeeding. Possible ways in which managers and supervisors can help to prevent this spillover effect are:

- ensure that all health education programmes continue to emphasise the benefits of breastfeeding and the dangers of artificial feeding, and that breastfeeding should be the norm for infants of women who are not HIV positive
- ensure that all health workers know about their responsibilities under the International Code and subsequent relevant World Health Assembly resolutions (see Box 3) and apply these in their work
- ensure that the Baby-friendly Hospital Initiative (see Box 4) is strengthened and that good practices to support breastfeeding which are consistent with the 'Ten steps to successful breastfeeding' are implemented in health facilities
- ensure that all staff who counsel mothers on replacement feeding are also trained in breastfeeding counselling, and that breastfeeding counselling is available for all mothers, whatever their HIV status
- ensure that instructions on the use of replacement feeding are only given to HIV-positive mothers and their family members. Demonstrations of feeding with breast-milk substitutes should be given only by health workers, and they should be given separately from breastfeeding mothers. Group instructions should be avoided. Ensure that mothers are taught to use cups to feed their infants, and that no bottles are given out
- ensure that any commercial infant formula that is used in the health facility for infants of HIV-positive mothers is kept out of sight of other mothers and pregnant women
- ensure that measures to protect confidentiality are implemented
- ensure that exclusive breastfeeding rates are carefully monitored in order to detect spillover effects and take remedial action.

3. The International Code: health workers' responsibilities

1. There should be no advertising or other forms of promotion to the general public of breast-milk substitutes and other products covered by the Code, such as bottles and teats.
2. Mothers should not be given samples (small amounts) of a breast-milk substitute. If HIV-positive mothers are given breast-milk substitutes, they should be given a supply, that is, sufficient milk for as long as their infants need it.
3. There should be no promotion of breast-milk substitutes in the health service. This means that there should be no calendars, pictures or other items which show the brand name of formula, or bottles or teats. Cans of formula should be kept out of sight of breastfeeding mothers.
4. Company personnel should not advise mothers, or show them how to use breast-milk substitutes.
5. Health workers should not accept gifts or free samples from companies.
6. Any information given to health workers from manufacturers should be scientific and factual.

Management of breast-milk substitute distribution

If HIV-positive mothers are to be provided with breast-milk substitutes:

- ensure that, as a rule, breast-milk substitutes made available in health facilities are purchased in the same way as medicines and foodstuffs
- ensure that breast-milk substitutes are provided only to women who have been tested for HIV and found to be positive
- ensure that an adequate supply is provided for at least six months or for as long as the infant requires it
- ensure that the distribution and use of breast-milk substitutes is strictly controlled and monitored, and provided only through an accountable prescription or coupons system, for example dispensed through pharmacies in the same way as medicines, or through social welfare organisations and other available distribution systems
- ensure that, if possible, breast-milk substitutes for HIV-positive mothers are in generic, non-brand packaging
- ensure that substitutes are ordered in appropriate quantities for the expected number of HIV-positive mothers and their infants to give an adequate supply without an excess that may be used by other mothers to feed their infants
- ensure that supplies are stored securely to prevent loss and deterioration and so that they are not seen by breastfeeding mothers
- ensure that provision of breast-milk substitutes is linked to follow-up visits, ideally at two- to four-week intervals.

Follow-up care

HIV-positive women and their infants need careful monitoring and ongoing follow-up care to ensure that they maintain good health.

Maternal health and family planning

Managers need to ensure that:

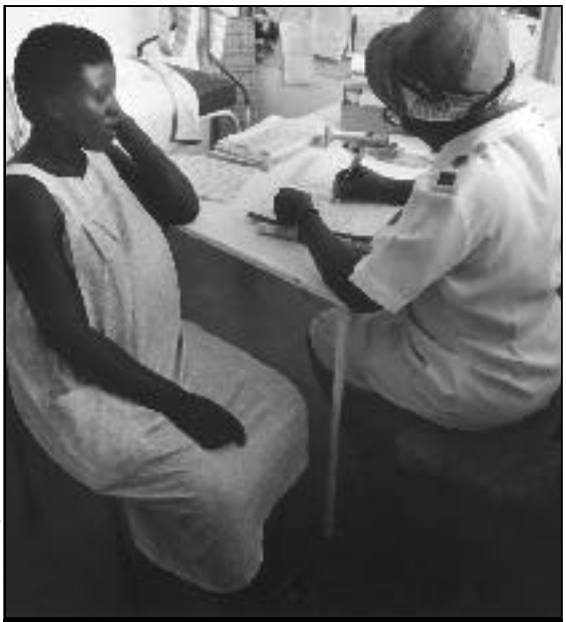
- HIV-positive women who do not breastfeed are provided access to family planning counselling and a choice of effective and appropriate contraceptive methods
- sufficient supplies of contraceptives are available through health facilities and family planning clinics are prepared to deal with the increased demand resulting from the loss of breastfeeding child-spacing benefits.
- services provide follow-up care for HIV-positive women, including information about good nutrition and treatment for general health problems and of opportunistic infections
- health workers can refer HIV-positive women to other support services, since social, psychological and practical concerns may be as important as the need for medical care

4. The Baby-friendly Hospital Initiative

Baby-friendly hospitals are hospitals that have changed their practices to support breastfeeding, according to the ten steps below:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they are separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in – allow mother and infants to stay together – 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from hospital or clinic.

Baby-friendly hospitals may be one possible place to introduce HIV counselling and testing and counselling about replacement feeding. Some of the ten steps can also benefit and support mothers who are not breastfeeding, for example, encouraging rooming in and bedding in (where the infant and the mother share a bed) to promote mother-infant closeness.



Bruce Paton/Panos Pictures

Access to voluntary and confidential counselling and HIV testing is important in helping women make an informed choice about infant feeding, safer sex and family planning.

- if the infant is wet-nursed, both the mother and the wet-nurse attend the clinic or are seen at home.

Infant and child health

Infants given replacement feeds are more likely to get sick, develop malnutrition, grow less well, and may lack the close contact with their mothers that is necessary for full psychosocial development.

Managers need to ensure that:

- health workers monitor the health and general development of infants of HIV-positive women
- preparation of feeds and feeding techniques are checked at one week post partum and subsequently at regular intervals
- health workers can recognise whether or not an infant is gaining weight and growing well
- health workers discuss with mothers and families the importance of holding, talking to and playing with their infants to ensure adequate psychosocial stimulation
- health workers can counsel women whose infants are ill or not growing well and can identify why an infant is not gaining weight, in particular checking that the mother is giving replacement feeds correctly and in sufficient quantities
- health workers can provide practical assistance to resolve feeding problems. This may include providing mothers with breast-milk substitutes or micronutrient supplements or help to obtain these, and reinforcing earlier teaching about preparation and feeding
- health workers teach mothers how to treat diarrhoea to prevent dehydration
- health workers know when to refer a sick child and referral services are available
- health workers pay adequate attention to the health and nutritional status of other children in the family who may be affected by household expenditure on breast-milk substitutes, as well as by the mother's health.

STEP 4 Decide what needs to be done to implement services

Health care managers should consider what may need to be done to implement necessary services. For example, they may need to:

- develop messages and materials for community education and information provision within health facilities to provide consistent facts about HIV and infant feeding
- decide on the role of different types of health facilities, for example antenatal clinics, family planning clinics and primary health care facilities, in providing different services related to HIV and infant feeding
- identify ways in which antenatal care services can be strengthened and use of care services by pregnant women can be improved
- decide where HIV counselling and testing services could be made available and how these can be promoted
- ensure that there is a reliable supply of adequate HIV test kits and laboratory equipment, and establish quality control and confidentiality procedures
- identify personnel to be trained and specific training needs, and plan and organise training to upgrade skills. This may include training:
  - laboratory staff
  - HIV counsellors for pre- and post-test counselling
  - infant feeding counsellors for both breastfeeding and replacement feeding

A Rougemont/WHO

Health workers need to be trained to provide skilled professional support for breastfeeding mothers.

- in addition, ensure all health workers who have contact with mothers and children are trained so that they have a basic knowledge of HIV and infant feeding issues and are able to refer women for HIV counselling and testing and for infant feeding counselling
- ensure that responsibilities for pre- and post-test counselling, infant feeding counselling and teaching mothers are clearly allocated and included in job descriptions, and that staff have the time to carry out the necessary tasks
- ensure that health facility premises and timetables are organised so that they can provide private consultations, counselling and infant feeding instruction
- decide, if commercial infant formula is procured by the government for HIV-positive mothers, how distribution will be managed and what measures to take to prevent spillover (see earlier section and Annex 4)
- consider what organisations outside the health care system might be able to help to counsel HIV-positive mothers about replacement feeding, and perhaps help with the distribution of breast-milk substitutes to HIV-positive mothers who choose not to breastfeed, and with provision of other support. Health care managers also need to consider how HIV-positive women can be referred to such organisations
- consider how the health care system can provide micronutrient supplements for infants of HIV-positive mothers that are not breastfed and who do not get commercial infant formula
- consider how the health care system can provide or refer for follow-up care and other services needed by HIV-positive mothers and their infants, including family planning
- decide who to obtain support from, for example, organisations with expertise in breastfeeding and infant nutrition, political leaders or older women in the community for interventions to prevent HIV transmission through breastfeeding.

STEP 5 Prepare a budget

Prepare a budget by estimating the cost of what needs to be done, based on the coverage of services and the extent to which these are new areas of activity. The budget should be divided into initial set-up costs and running costs once services are established, and should also take account of savings that might be achieved from preventing HIV transmission to infants through breastfeeding.

Examples of some of the likely activities that will need to be costed for each of the areas discussed in Step 3 are included below, but this is not a comprehensive list.

Community education

- training health workers in health education, and their subsequent employment
- production or purchase of health education materials

Antenatal care

- training and employment of antenatal clinic workers
- strengthening referral systems
- adaptation of premises
- provision of ARV therapy
- procurement of condoms
- provision of STD detection and treatment

HIV counselling and testing

- training and employment of pre- and post-test counsellors
- training and employment of laboratory staff

- upgrading laboratory equipment and procedures
- procurement of HIV test kits
- adaptation of premises
- production of information materials
- introduction of confidentiality procedures

Infant feeding counselling

- training and employment of infant feeding counsellors
- production of information materials
- adaptation of premises

Support for infant feeding decisions

- provision of micronutrient supplements
- provision of breast-milk substitutes and cups
- training and employment of health workers to teach mothers to prepare replacement feeds
- adaptation of premises

Follow-up care

- training and employment of health workers in monitoring, follow-up care and family planning counselling
- procurement of additional contraceptives
- procurement of additional oral rehydration salt and other essential drugs for treating sick children

Health care managers should assess whether the costs can be covered with existing resources or by reallocation of resources, or whether additional resources are required. Consideration should also be given, where resources are limited, to the introduction of activities in a phased manner.

J Littlewood/WHO

Mothers and fathers should be encouraged to reach decisions together about infant feeding.

Useful resources and reference materials

UNAIDS 'Best Practice' series:
Access to Drugs
Community Mobilisation and HIV/AIDS
Mother-to-child transmission of HIV
Counselling and HIV/AIDS
HIV testing methods
Women and AIDS

These documents can be obtained from UNAIDS Information Centre, 27 Avenue Appia, 1211 Geneva 27, Switzerland, web site address: http://www.unaids.org.

Relevant HIV counselling guides and ARV book:
Source book for HIV/AIDS counselling training, WHO/GPA/TCO/HCO/HCS/94.9

Counselling for HIV/AIDS: A key to caring. For policy makers, planners and implementors of counselling activities, WHO/GPA/TCO/HCS/95.15

Implications of ARV treatments, WHO/ASD/97.2

For further information, contact Office of HIV/AIDS and Sexually Transmitted Diseases, (ASD), WHO, Geneva, Switzerland.

Indicators for Assessing Breastfeeding Practices. Document WHO/CDD/SER/91.14

Indicators for Assessing health facility practices that affect breastfeeding. Document WHO/CDR/93.1

Breastfeeding counselling: A Training Course. WHO/CDR/93.3-6, and UNICEF/NUT/93.1-4. The course develops skills in counselling and breastfeeding support that could be applied to infant feeding counselling for HIV-positive mothers.

For further information, contact the Director, Division of Child Health and Development, WHO, Geneva, Switzerland.

WHO Global Data Bank on Breastfeeding. (WHO/NUT/96.1). This document presents breastfeeding definitions and indicators and provides useful tools for assessing breastfeeding practices.

Promoting breastfeeding in health facilities: a short course for administrators and policy-makers. WHO/NUT/96.3. The course is intended to help administrators and policy-makers promote breastfeeding in health facilities and make them aware of specific policy and administrative changes that can have major impact on breastfeeding practices.

For further information, write to: Programme of Nutrition, WHO, 1211 Geneva 27, Switzerland, E-mail: saadehr@who.ch.

HIV and Infant Feeding: Guidelines for Decision-makers. WHO/FRH/NUT98.1, UNAIDS/98.3. UNICEF/PD/NUT/(J) 98-1

HIV and Infant Feeding: A review of HIV transmission through breastfeeding, WHO/FRH/NUT/98.3, UNAIDS/98.5, UNICEF/PD/NUT/(J) 98-3

ANNEX 1

HIV counselling and testing

Counselling is a dialogue, which aims to enable an individual to take decisions and find realistic ways of coping. Counselling is not the same as giving advice or telling people what they should do. A counsellor's role is to listen to an individual's concerns, ask questions, and provide information and emotional support.

HIV testing must be voluntary and carried out with informed consent. Testing without consent is unacceptable and a violation of human rights. A pregnant woman tested without her full consent may also be less likely to use antenatal and other health services through fear of disclosure or discrimination. Consent must be expressed and specific. Informed consent means not only agreeing to the test itself, but also understanding the implications of a positive or negative result. An informed choice is one made freely without pressure.

Counselling and testing must be confidential. Confidentiality is a right and only the person concerned has the right to know his or her status. Breaking confidentiality can expose an individual to discrimination however, too much emphasis on secrecy can increase stress and make it more difficult for someone with HIV to cope. Promoting shared confidentiality means encouraging an individual to identify others they can trust such as their partner, a friend or health worker. Testing must always be accompanied by pre-test and post-test counselling.

Pre-test counselling

Anyone considering an HIV test should always have pre-test counselling, to provide them with full information about HIV and the test, to help assess if he or she has been at risk, to learn about the implications of testing, decide whether or not to be tested, to consider the implications of a positive or negative result, and think about preventing HIV infection.

Pre-test counselling is also essential to obtain informed consent. If after counselling an individual is unwilling to have an HIV test, the health worker has no right to compel that person or to refuse to treat her or him.

For pregnant women, an important consideration in deciding about testing is whether knowing their HIV status will make a difference to their decisions about breastfeeding and enable them to access services to improve their own health care.

Pre-test counselling involves the counsellor:

- providing information about HIV and AIDS and how HIV is transmitted
- explaining or determining the reasons for HIV testing and assessing risk through sensitive discussion of possible sexual exposure, intravenous exposure or blood contact
- providing information about the HIV test and how it works, including explaining about the window period of infection (see next page)

and that, if the person has recently been infected, the result may be negative

- providing information about the benefits and possible disadvantages of testing.
- explaining the steps that will be taken to maintain confidentiality
- reviewing the implications of a positive test result, including explaining about supplementary testing to confirm the initial positive result
- in the case of possible recent infection and in case this is the window period, discussing the possible need for another HIV test 3-8 weeks later
- discussing what the individual will do if the test result is positive, who they might plan to tell and where they can obtain support
- discussing, for pregnant women specifically, the implications of a positive result for the unborn child, interventions available to reduce MTCT, and infant feeding issues
- discussing the implications of a negative result and issues related to safer sex and prevention of HIV infection and the importance of remaining negative while breastfeeding
- providing information about test procedures, that it involves taking a blood sample, how many tests might be required, and how long it will take for the result to come back from the laboratory
- giving the individual enough time to think about whether or not they wish to take an HIV test, and if undecided to make another appointment
- obtaining informed consent if the individual has decided to go ahead with a test.

HIV tests

HIV tests are used for screening donated blood, epidemiological surveillance of HIV prevalence or trends, and diagnosis of infection in individuals. A qualified person should take blood samples, using universal precautions against accidental transmission, which include safe disposal of needles and syringes. In most cases, blood specimens will be sent to a laboratory. Any testing strategy must be undertaken with appropriate laboratory and quality control procedures in place.

Most tests are based on detection of antibodies to HIV in serum or plasma (using a sample of a person's blood). HIV antibodies are produced from within three to eight weeks of infection. The period before antibodies become detectable is called the window period. Antibody tests detect the presence of HIV indirectly, by checking for antibodies to the virus. Antibodies are much easier to detect than the virus itself.

All infants born to mothers with HIV have maternal antibodies in their blood at birth, but this does not mean that the child is infected. By the age of 18 months all children of HIV-infected mothers have lost the maternal HIV antibodies, and only those children who have been infected with the virus, either before or during birth or through breastfeeding, will produce their own antibodies to HIV. Antibody tests cannot, therefore, detect HIV-infected children until the age of about 18 months. However, an earlier test may be negative, which means that the child is not infected.

The most commonly used type of antibody test is the ELISA (enzyme-linked immunosorbent assay). ELISA testing requires skilled technical staff, well-maintained equipment and a steady power supply. The price of ELISA and other screening tests ranges from around US$0.45 to $2.00.

Rapid and simple antibody tests do not need such specialised equipment or staff but can equal the performance of ELISA. They are called rapid if they take less than 10 minutes and simple if they take longer. These tests are appropriate for use in small laboratories and for emergency testing, but they are more expensive than ELISA and require refrigeration facilities.

For individual diagnosis, if the initial result is positive, it must always be confirmed using a supplemental test, usually another type of ELISA and/or a simple or rapid assay.

Post-test counselling

Counselling after an HIV test is as important as pre-test counselling, whether or not someone is infected with HIV. It should be private and the individual or couple should be asked if they wish to know the result, and told that, whether or not they do, the result will be kept confidential.

Where the result is negative, the counsellor needs to:

- deal with the feelings arising from the result
- discuss prevention of HIV infection.

Where the result is positive, the counsellor needs to:

- inform the individual or couple clearly and as gently and humanely as possible, deal with the feelings arising, and explain again about the need for supplementary testing
- give them time to understand and discuss the result
- provide information in a way that they can understand, give emotional support, and help them to discuss how they will cope including identifying what support is available at home
- refer, where possible, to a community support organisation and for follow-up care and counselling
- explain the steps that will be taken to ensure confidentiality and that no-one will know the result unless the person being tested chooses to tell them
- discuss whom they may want to tell about the result, risks to sexual partners and partner notification. If a pregnant woman has not been tested with her partner, find out if she intends to tell her partner and help her to decide whether and how to do this
- discuss infant feeding choices, explaining that it is the woman's right to make decisions about infant feeding, and refer her for infant feeding counselling
- explain how the woman and her partner can take care of their own health as well as that of their infant, and refer them for treatment if required.

ANNEX 2

Antiretroviral therapy

Antiretroviral (ARV) therapy for women whom testing shows to be already infected with HIV is an intervention for which there is clear evidence of effectiveness in reducing MTCT.

Two ARV regimens have been shown to be effective with mothers who do not breastfeed. A study carried out in the USA and France (the ACTG076 study) found that the antiretroviral drug, zidovudine (AZT), reduced MTCT by two-thirds. The therapy was given to HIV-positive women, from between 14 and 34 weeks of pregnancy and intravenously during labour, and to their infants for six weeks after delivery. None of the mothers breastfed their infants. Recent results from a study in Thailand showed that a shorter regimen, where AZT is given orally during the last four weeks of pregnancy and during labour, reduced MTCT by 50 per cent. Again, none of the infants were breastfed.

Ongoing trials are assessing the effectiveness of other regimens in reducing MTCT, including in infants breastfed by HIV-positive mothers who receive ARV therapy during pregnancy and delivery.

Where an HIV-positive woman is offered ARV therapy to reduce the risk of MTCT during pregnancy and delivery, she should be counselled and given full information in order to decide whether or not she wishes to accept the therapy. She should also be provided with information about the risk of HIV transmission through breastfeeding, informed that if she breastfeeds there is no guarantee that the reduction in transmission through ARV therapy will be achieved, and offered support for replacement feeding.

ANNEX 3

Breastfeeding

Nutritional benefits

- Breast milk is the best food for infants. It provides an infant's complete nutritional needs up to the age of at least four and usually six months, up to half of nutritional requirements between 6 and 12 months and up to one third between 12 and 24 months. The unique nutritional properties of breast milk include the right amounts of protein, iron and other micronutrients, and long-chain polyunsaturated fatty acids which may be essential to development of the brain. There is evidence of higher intelligence scores in children who have been breastfed.
- Colostrum, the milk produced in the first few days of life, normally contains a high concentration of vitamin A, which is essential for the proper functioning of the infant's eyes, skin, mucous membranes and immune system.
- Breast milk contains enough water even in very dry and hot areas.
- Breast milk is easily digested and its composition changes to meet the developing needs of the growing infant. It contains enzymes that help the complete digestion of fat.

Protection against infections and other illness

- Breast milk, especially colostrum, has anti-infective properties that help to protect the infant against infections.
- Infants who are breastfed have fewer illnesses than those fed with breastmilk substitutes, in all countries and socio-economic settings.
- Breastfeeding helps to protect infants against diarrhoeal diseases, acute respiratory infections and otitis media, and reduces the risk of infant death from infections and malnutrition in developing countries. A study in a situation of poor hygiene found that the risk of death from diarrhoea in artificially fed infants was 14 times that of breastfed infants. Breastfeeding during illnesses such as diarrhoea promotes recovery.
- Breastfeeding can reduce the risk of neonatal necrotising enterocolitis and septicaemia in newborn infants.
- Breastfeeding may also reduce the risk of meningitis, urinary tract infections, eczema, respiratory wheeze, diabetes, chronic intestinal disease, and sudden infant death syndrome.

Contribution to maternal health

- Exclusive breastfeeding on demand, including at night, delays the return of fertility and plays an important role in birth-spacing, especially where women lack access to other forms of contraception. Longer birth intervals are beneficial for the health of mothers and their children.

- Breastfeeding promotes bonding between the mother and her infant.
- Breastfeeding helps the uterus to contract after delivery and reduces bleeding.
- Breastfeeding protects women's health because it reduces the risk of ovarian, breast and other reproductive cancers later in life.

Economic benefits

- Breastfeeding is the most economical method of infant feeding, saving money and time and reducing the costs of health care for sick infants. Providing breast-milk substitutes for an infant may cost more than half of the per capita GNP in some countries (see table below).

Costs of infant formula, March 1998, based on figures reported by UNICEF field offices and counterpart NGOs.

Country	Formula cost (cheapest commercial infant formula)	Full cream powdered milk cost	Cost of 6 mos formula, 20 kg	Cost of 6 mos full cream powdered milk, 20 kg	**Total cost of breast-milk substitutes for one year**	GNP/capita from SOWC 1998	**Total cost as percent of GNP/capita** (without fuel, water, health care)	Cost as % of minimum urban wage (where known)
Central African Republic	$2.63/250g	$2.92/200g	$210	$292	**$502**	$340	**148%**	
Kenya	$5.00/500g	$4.73/500g	$200	$189	**$389**	$280	**139%**	84%
Malawi	$2.80/500	$3.80/500	$112	$152	**$264**	$365	**72%**	
Zimbabwe	$2.81/500g	$1.83/500g	$112	$74	**$186**	$540	**34%**	
Nigeria	$2.50/450g	$1.50/450g	$110	$66	**$176**	$260	**68%**	
Sri Lanka	$3.21/450g	$1.05/400g	$143	$53	**$196**	$700	**28%**	
India	$3.00/500g	$1.60/500g	$120	$64	**$184**	$340	**54%**	
Pakistan	$3.00/400g	$12/2500g	$150	$96	**$246**	$460	**53%**	31%
China	$2.00/500g	$1/500g	$80	$40	**$120**	$620	**19%**	
Viet Nam	$2.50/400g	$3.00/450g	$125	$132	**$257**	$240	**107%**	
Thailand	$1.98/450g	$1.76/1000g	$87	$35	**$122***	$2740*	**–***	
Philippines	$2.01/400g	$1.65/400g	$100	$83	**$183***	$1050*	**–***	
Argentina	$20/1000g	$3.40/500g	$400	$136	**$536**	$8030	**7%**	22%
Nicaragua	$3.00/450g	$2.50/450g	$132	$110	**$242**	$380	**64%**	
Haiti	$4.00/100g	$10/2000g	$800	$100	**$900**	$350	**257%**	
Ecuador	$3.32/500g	$11/2500g	$133	$88	**$221**	$1390	**16%**	
Mexico	$3.05/450g	$4.80/900g	$134	$107	**$241**	$3320	**7%**	
Brazil	$4.00/454g	$2.68/500g	$176	$107	**$283**	$3640	**8%**	22%
USA	$6.59/340g	$6.59/340g**	$389	$389	**$778**	$26980	**3%**	6%

* GNP/capita figure from SOWC 1998 precedes current Asian financial crises, while costs of formula and milk reflect current exchange rates. No percentage can be calculated.

**American Academy of Pediatrics recommends use of infant formula for a full year by all children who are not breastfed. No calculation is made for use of whole milk in first year.

ANNEX 4

Making breast-milk substitutes available to infants of mothers living with HIV

The International Code of Marketing of Breast-milk Substitutes recognizes that the encouragement and protection of breastfeeding is an important part of the health, nutrition and other social measures required to promote healthy growth and development of infants and young children, and that breastfeeding is an important aspect of primary health care. It was adopted in response to concerns that the inappropriate marketing of breast-milk substitutes and related products was contributing to unsuitable feeding practices that placed infant health at risk. The Code aims to prevent the promotion of breast-milk substitutes and related products to the general public or through the health care system. These Guidelines are intended to be applied in accordance with all provisions of the Code and subsequent relevant World Health Assembly resolutions.

The Code does recognise that there are exceptional situations when alternatives to breastfeeding are necessary . The present guidelines provide advice concerning such an exceptional situation. They address the pressing public health issue of how best to meet the nutritional requirements of infants of HIV-infected mothers. The guidelines suggest ways in which decision-makers can ensure such infants have access to breast-milk substitutes for as long as they need them. At the same time, again recognizing that breastfeeding remains the best way to feed the vast majority of infants, the guidelines suggest ways in which breast-milk substitutes that are intended for infants who are at risk of HIV infection through breastfeeding reach only these children in need.

World Health Assembly Resolution WHA 47.5, paragraph 2(2) helps to ensure that the aforementioned conditions are satisfied by urging Member States "to ensure that there are no donations of free or subsidized supplies of breast-milk substitutes and other products covered by the International Code of Marketing of Breast-milk Substitutes in any part of the health care system". In other words, Members States are urged to take measures to ensure that there is no donation of supplies of breast-milk substitutes from manufacturers and distributors in maternity and pediatric wards, MCH and family planning clinics, private doctorís offices and child-care institutions. However, the competent national authorities may wish to consider negotiating prices with manufacturers and make breast-milk substitutes available at subsidized price, or free of charge, for use by infants of mothers living with HIV. It is recommended that this be done in a manner that:

- is sustainable. A long term, reliable supply of a suitable breast-milk substitutes and a dependable system for their distribution should be identified and secured
- does not create dependency on donated or low-cost supplies of breast-milk substitutes since such an arrangement is subject to the

good will and generosity of the donor. If the donation ceases there may be no system in place to make breast-milk substitutes available to the infants who need them

- does not undermine breastfeeding for the majority of infants who would benefit from it
- does not have the effect of promoting breast-milk substitutes to the general public or the health care system
- assures individual infants sufficient quantities for as long as they need them (six months).

Where the health care authorities or other competent authorities wish to make subsidized breast-milk substitutes available, these should, as a rule, be purchased through normal procurement channels. This ensures that they are made available only to infants that need to be fed artificially. Infants of mothers who have tested positive for the HIV virus fall into this category. This helps prevent the "spillover effect" to infants who would otherwise benefit from breastfeeding

It is recommended that the following considerations be taken into account in organizing a distribution system:

- On average, forty 500g tins of commercial infant formula will be required during the first six months of the infant's life. Free or subsidized quantities of breast-milk substitutes should thus be made available at a local, decentralized level to avoid the need for frequent trips to a distant distribution point.
- The receipt of free or subsidized breast-milk substitutes is likely to become associated with HIV infection, and care is therefore needed to protect the anonymity of those receiving them to prevent potential stigmatization.

A general reduction is permitted in the wholesale price of breast-milk substitutes by manufacturers as a part of a pricing policy intended to provide products at low prices on a long-term basis.