SECTION 4: Counselling HIV-positive mothers about how to feed their babies using current HIV and infant feeding recommendations

This Section outlines:

- Current recommendations for breastfeeding with ARV interventions.
- The role of counselling to assist and support exclusive and continued breastfeeding.
- Current criteria for deciding if replacement feeding is appropriate:
  - reduction of spill over of replacement feeding into the wider community,
  - control of marketing of breastmilk substitutes.

Current HIV and Infant Feeding Recommendations

In late 2009 the WHO reviewed significant programmatic experience and research emerging since the previous review in 2006 [1] Updated guidelines were published In July 2010 [2] showing for the first time that:

- Provision of appropriate antiretroviral (ARV) interventions to either the HIV-infected breastfeeding mother or her infant can significantly:
  - reduce the mother's viral load, thereby improving her health and reducing her infectivity,
  - reduce the risk of postnatal transmission to the HIV-exposed infant. [3]

  While replacement feeding unquestionably prevents all new postnatal infections, efforts to reduce transmission of HIV by suspending breastfeeding have resulted in increased risk of infant death from other causes. [2]
- The known benefits of breastfeeding to reduce mortality from other infections, justify an approach that strongly recommends the option of breastfeeding plus ARVs as the standard of care. [4]

This evidence has major implications for how women living with HIV might feed their infants, and how health workers should counsel them.

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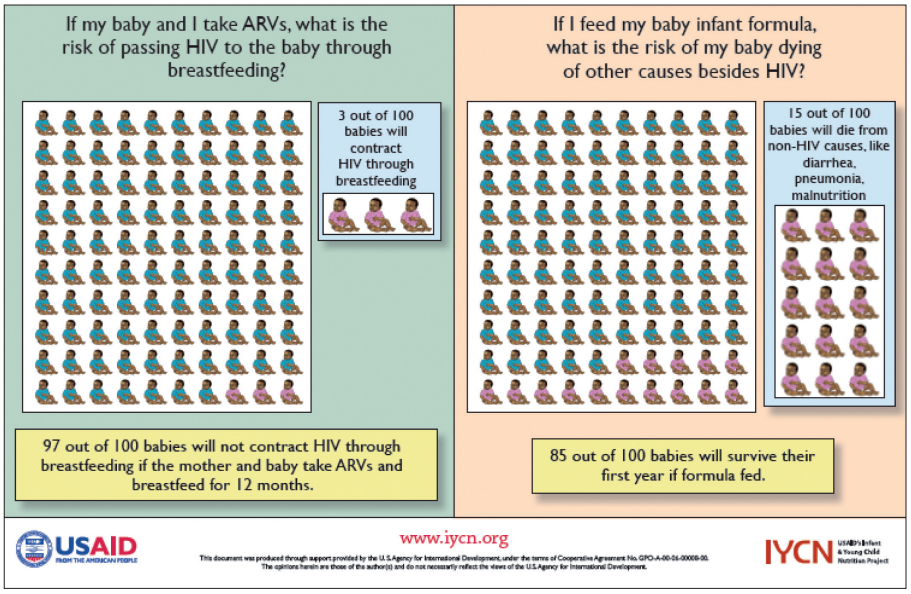
1. WHO, UNICEF, UNAIDS, UNFPA 2007, HIV and infant feeding, new evidence and programmatic experience, Report of a Technical Consultation held on behalf of the Inter-agency Task Team (IATT) on prevention of HIV infections in pregnant women, mothers and their infants, Geneva, Switzerland, 25-27 October 2006, ISBN 978 92 4 159597 1
   Available at http://whqlibdoc.who.int/publications/2007/978241595971_eng.pdf
2. WHO 2010. Guidelines on HIV and infant feeding. 2010. Principles and recommendations for infant feeding in the context of HIV and a summary of evidence available at http://www.who.int/child_adolescent_health/documents/9789241599535/en/index.html
3. Rapid Advice: revised WHO principles and recommendations on infant feeding in the context of HIV November 2009.
4. UNICEF 2011 Programming Guide, Infant and Young Child Feeding, 26 May 2011, available at http://oneresponse.info/GlobalClusters/Nutrition/publicdocuments/Final%20IYCF%20prog%20guide%20May%2026%202011.pdf

For HIV Positive Women: Does Exclusive Breastfeeding or Replacement Feeding with Formula Better Protect my Baby's Life?



Source. Infant and Young Child Nutrition Project, 2012. [5]

Main Provisions of Current Recommendations

Principally, **national or sub-national health authorities are advised to decide whether their health services will principally counsel and support mothers known to be HIV-infected**:

- **to breastfeed and receive ARV interventions, or**
- **to avoid all breastfeeding**.

In settings where national authorities have decided that maternal, newborn and child health services will principally promote and support breastfeeding and ARVs, recommending a single option within a national health framework does not remove the need for skilled counselling and support to be available to pregnant women and mothers. However, counselling services should be directed primarily at supporting mothers in their feeding practices, rather than focused on a process of decision-making.

Dissemination and Implementation of Current Recommendations

The new recommendations pose a particular communication challenge: how to ensure that the public understands that breastfeeding has been made significantly safer with the new protocols on antiretroviral (ARV) regimes, but at the same time avoid the perception that HIV-positive women can only breastfeed safely if they are on ARVs. Therefore, it is essential to communicate the new policy correctly and effectively. [4]

Shift in Focus of Infant Feeding Counselling

Based on the findings that infant HIV-free survival is increased in most settings by not interrupting breastfeeding, the 2010 recommendations contain several important differences compared to previous guidance:

- The principle of HIV-free survival of HIV-exposed babies and young children **should be stated before all else** to highlight the need to consider all the risks to the infant's life and not solely prevention of HIV infection or maintaining growth.

5. Infant and Young Child Nutrition Project, 2012. Counselling Card for HIV positive women: Does exclusive breastfeeding or replacement feeding with formula better protect my baby's life? Available at http://www.iycn.org/files/IYCN-Counseling-Card-Risk-of-IF-options-020912.pdf

- Decision-making about infant feeding:
  - is shifted away from counsellors (who were previously expected to individually counsel mothers about various feeding options so that mother could choose between them) and instead placed on national authorities in each country (to decide which infant feeding practice will be primarily promoted and supported by Maternal and Child Health Services). [2]
  - Counselling will focus on informing mothers about the practice which is recommended, and how to feed the baby accordingly. Information about options should be made available, but services would principally support the one approach.
- Recommending a single option within a national health framework does not remove the need for skilled counselling and support to be available to pregnant women and mothers, e.g.:
  - *a country which chooses replacement feeding* as its recommendation should still provide information and counselling on breastfeeding plus ARVs and support women who opt out of replacement feeding. More detailed definitions for conditions for decision-making about safer replacement feeding are shown later in this section.
  - *a country which principally recommends breastfeeding* should still provide information about safe replacement feeding for mothers who request it. Counsellors should be able to provide additional information on the alternative options (Key Principle 5 of the WHO guidelines). This may be particularly relevant in countries where mothers have already been exposed to PMTCT counselling and information directed towards choice. [4]

Revised Training Needs

HIV and infant feeding counselling has proven to be extremely challenging in many countries (as set out in Section 3). All workers who are in contact with pregnant women and mothers, e.g., those in PMTCT sites, and all MCH and community workers, should be well trained in:

- Reorientation on the new recommendations which their respective national and sub-national health authorities have set.
- Updated guidelines, training materials, counselling tools, job aids, communication messages and materials which address the new guidance. [6,7] (Up-to-date training materials are listed in Section 6 of this Kit)

The Role of the Community

The needs and priorities of HIV-positive mothers and their babies should be identified by the whole of the community. Politicians, local leaders and support groups should all be involved, and men and other decision-makers should be specifically targeted. [8]

Priority should be given to developing the knowledge and skills of resource persons such as community educators, counsellors, and health and development workers, in supporting mothers to feed their babies in the safest way. Mother support close to where mothers live has proved to be the most effective intervention in helping mothers to successfully breastfeed. A gender-sensitive, community development

6. UNICEF Community based infant and young child feeding materials available at http://www.unicef.org/nutrition/index_58362.html (accessed 14 Feb 2012)
7. Yezingane Network/UNICEF, Infant feeding in the context of HIV in South Africa, July 2011 available at http://www.crc-sa.co.za/site/files/6592/Infant_feeding_FAQ_July_2011.pdf
8. IYCN Project 2012, Community interventions to promote optimal breastfeeding; evidence on early initiation, any breastfeeding, exclusive breastfeeding and continued breastfeeding; literature review, January 2012, available at http://www.iycn.org/files/IYCN_Literature_Review_Community_Breastfeeding_Interventions_Feb_121.pdf

approach is required, to build on and strengthen existing community structures. Activities can include:

- National social marketing, helping affected women and their families towards acceptance of HIV testing and understanding of PMTCT,
- Mother-to-mother support group meetings and peer counselling, leaflets and items on public media as useful ways to provide information and educate a whole community,
- Supporting mothers in national infant feeding recommendations and ensuring that families are protected from inappropriate interventions, to prevent spill over of inappropriate feeding methods.
- Promoting exclusive and continued breastfeeding as the safest feeding method for the population in general, as well as for mothers who are HIV-positive,
- Facilitating formation of breastfeeding support groups for all mothers, including those who are HIV positive.
- Preventing and overcoming stigma, since exclusive breastfeeding should be promoted for all mothers, not just for those who are HIV-positive. [9,10]
- Educating grandmothers, men, community workers and volunteers about the importance of exclusive breastfeeding in the first six months of life, and continued breastfeeding:
  - for 12 months or beyond by HIV-positive mothers,
  - for 24 months or beyond, by the general population.

Care for the Mother's Health and Nutrition

Good general health and nutrition of the mother helps her to have a stronger immune system and to care for her baby. There is no evidence of harm to the mother's health if she continues breastfeeding.

Services should be available to assist uninfected women to remain HIV-negative. This is especially important during pregnancy or lactation, to avert the high risk of vertical HIV infection to infants during a new maternal infection.

Mothers whose status is unknown should be offered HIV testing.

Mothers who are HIV uninfected should be counselled about ways to prevent HIV infection and about the services that are available, such as family planning, to help them to remain uninfected. Every man and woman needs to know that unprotected sex can expose them to HIV infection, and in turn expose babies to infection with HIV. Precautions to decrease the potential of transmitting or acquiring HIV include:

- reducing the number of sexual partners,
- ideally having a sexual relationship with one partner only, who is faithful and monogamous;
- using a condom correctly for every occasion of sexual intercourse
- HIV-prevention counselling for HIV-negative pregnant women in early pregnancy and the early postpartum. [12]

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9. IYCN Project, Mother-to-Mother Support Groups, Trainer's Manual available at http://iycn.org/files/FINALIYCNMSGTrainingManual071411.pdf
10. IYCN Project, Mother-to-Mother Support Groups, Facilitator's Manual with Discussion Guide available at http://iycn.org/files/FINALIYCNMSGDiscussionGuide031411.pdf
11. Johnson, L.F., Stinson, K., Newell, M.L., Bland, R.M., Moultrie, H., Davies, M.A., Rehle, T.M., Dorrington, R. E. and Sherman, G.G. The Contribution of Maternal HIV Seroconversion During Late Pregnancy and Breastfeeding to Mother-to-Child Transmission of HIV. 2012. Journal Acquire Immune Deficiency Syndrome.59 (4) 417 – 425.
12. WHO-UNAIDS/UNICEF 2011, Global HIV/AIDS response: epidemic update and health sector progress towards universal access, available at http://whqlibdoc.who.int/publications/2011/9789241502986_eng.pdf

Where HIV testing is not available, **and if, for this or any other reason, mothers do not know their HIV status, then the recommended feeding method is breastfeeding, in all populations** since avoiding breastfeeding for all infants would increase overall child mortality.

A woman severely ill with HIV or AIDS with a CD4 count of <200 cells/mm^3 is more likely to have higher levels of virus in her breastmilk and to transmit the infection to her baby through all routes. ARVs can help to reduce her viral load and keep her CD4 cell count high. With a high CD4 cell count, >500 cells/mm^3. the risk of transmission is lower. Current guidelines recommend commencing ARVs for all HIV-infected pregnant women beginning in the antenatal clinic and continuing this therapy for all of these women for life. [13]

A mother newly diagnosed with HIV in late pregnancy or in the early postpartum can be offered the option of feeding her own heat-treated expressed breastmilk to her baby (see below) pending sufficient duration of ARV therapy to reduce her viral load and elevate her CD4 count to safer levels.

Breastfeeding Counselling

Advocacy and recommendations about the duration of exclusive and continued breastfeeding, while important, are often insufficient on their own for mothers to achieve these goals. To prevent and resolve common breastfeeding difficulties, and overcome pressure to follow inappropriate traditional infant feeding practices, e.g., premature mixed feeding, mothers need:

- Accurate, consistent information, guidance and skilled assistance from knowledgeable and sympathetic health care personnel and community workers who have received up-to-date training. [14, 15]
- Regular counselling and support provided in their homes and in the community close to where mothers live. [16]
- Dissemination of accurate information to key family members. [17, 18, 19]

The Counselling Process

Counselling is a helping relationship specific to the needs of the individual. Most women benefit from a respectful, empathetic discussion of their situation. Counselling a woman and her partner together as a couple, or including other key family members, is especially helpful. Counselling is particularly important at certain times:

- Before pregnancy, to discuss the question and risks of becoming pregnant.
- During pregnancy for guidance about infant feeding.
- During labour and delivery, or shortly after the birth.
- On-going counselling is needed to help the mother with the recommended feeding method as part of routine follow-up visits for care of the mother and child.

13. WHO 2012, Programmatic update; Use of antiretroviral drugs for treating pregnant women and preventing HIV infection in infants, Executive Summary April 2012, available at http://whqlibdoc.who.int/hq/2012/WHO_HIV_2012.8_eng.pdf
14. IYCN Project, Infant Feeding and HIV: A guide for training community-based workers and volunteers, 2010, available at http://iycn.org/files/FINALIYCNHIVTrainingManual031411.pdf
15. IYCN Project, Infant Feeding and HIV: Participant's manual for community-based workers and volunteers, 2010, available at http://iycn.org/files/FINALIYCNHIVParticipantManual071211.pdf
16. Bland RM, Little KE, Coovadia HM, Coutsoudis A, Rollins NC and Newell M-L. Intervention to promote exclusive breast-feeding for the first 6 months of life in a high HIV prevalence area. AIDS 2008, 22:883–891
17. IYCN Project, The roles of grandmothers and men: evidence supporting a family-focused approach to optimal infant and young child nutrition, available at http://iycn.org/files/FINALIYCNGMandMenLitReview060311.pdf
18. IYCN Project, Infant and Young Child Feeding and Gender: A Training Manual for Male Group Leaders available at http://iycn.org/files/FINALIYCNMensTraining031411.pdf
19. IYCN Project, Infant and Young Child Feeding and Gender: A participant Manual for Male Group Leaders, available at http://iycn.org/files/FINALIYCNMensParticipant031411.pdf

Importantly, it is necessary for healthworkers to be fully trained to teach mothers how to exclusively breastfeed and continue breastfeeding for the first year. An HIV-positive mother will require both:

- Anticipatory care to provide accurate information about *how* to avoid preventable difficulties and prepare for any changes in feeding method, starting other foods, weaning, or mother-baby separation, eg working outside the home.
- Remedial care to overcome any breastfeeding or breast problems should they arise, e.g., latching, breast refusal, painful/damaged nipples, mastitis, not-enough-milk.

Exclusive Breastfeeding for the First Six Months

Repeated emphasis needs to be placed on the importance and feasibility of exclusive breastfeeding. Many health workers, family members, and mothers believe incorrectly that breastmilk alone contains inadequate fluids and food to sustain a baby for the first six months of life. This belief is a common reason for supplementing the breastfed baby and many believe that mixed feeding with early introduction of solids and other liquids is inevitable. However, several studies now show that skilled support of mothers can be very effective in achieving exclusive breastfeeding and delaying the premature introduction of complementary foods. [20, 21] A priority for counsellors and mothers is a clear understanding of how the breasts make milk, and of factors which interfere with that process.

Exclusive breastfeeding (as set out more fully in Section 3):

- Provides the perfect food for babies. Breastmilk alone contains sufficient fats, proteins and sugars to enable a baby to grow and thrive for a full six months. [22] Breastmilk is mostly water (88%) [23] and has a low solute load so that a healthy baby does not need extra drinks.
- Reduces the risk of infant mortality from other infectious diseases and malnutrition on average by 4 – 6 fold in the first six months. [24]
- Is associated with a 3 – 4-fold decreased risk of transmission of HIV compared to non-exclusive (mixed) breastfeeding, due to gut damage caused by other foods and liquids, allowing the virus to be transmitted more easily. [25]

Mixed feeding before 6 months of age:

- Poses the same risks of contamination as artificial feeding, increasing the risk of HIV-transmission, diarrhoea, pneumonia and malnutrition and diminishing the chances of survival. [26]

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20. Haider R, Kabir I, Huttly SR, Ashworth A. Training peer counselors to promote and support exclusive breastfeeding in Bangladesh. J Hum Lact. 2002 Feb;18(1):7-12.
21. Morrow AL, Guerrero ML, Shults J, Calva JJ, Lutter C, Bravo J, Ruiz-Palacios G, Morrow RC, Butterfoss FD. Efficacy of home-based peer counselling to promote exclusive breastfeeding: a randomised controlled trial. Lancet. 1999 Apr 10;353(9160):1226-31.
22. Lawrence RA and Lawrence RM, 1999, Breastfeeding: a guide for the medical profession, 5th ed, Mosby Inc, St Louis, Missouri.
23. Linkages Project, Exclusive Breastfeeding: The Only Water Source Young Infants Need, June 2004, available at http://www.linkagesproject.org/media/publications/frequently%20asked%20questions/FrequentlyAskedQuestions_Water_eng.PDF
24. WHO Collaborative Study Team. On the role of breastfeeding on the prevention of infant mortality, effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. Lancet 2000; 355:451-55.
25. Smith MM and Kuhn L, Exclusive breast-feeding: does it have the potential to reduce breast-feeding transmission of HIV-1?. Nutrition Reviews 2000;58(11):333-340.
26. Kuhn L et al. High Uptake of Exclusive Breastfeeding and Reduced Early Post-Natal HIV Transmission. Public Library of Science ONE. 2007, 2(12):e1363

- Leads to a compromised breastmilk supply by replacing breastmilk with other foods. [22, 27]
- Should be strongly discouraged.

ARV During Breastfeeding

WHO currently recommends that HIV-positive mothers should be provided with lifelong ARV treatment and infant prophylaxis interventions. Every effort should be made to accelerate access to ARVs for both maternal health and prevention of vertical transmission. [2, 13, 28]

Pending universal access to ARVs, national authorities should not be deterred from recommending that HIV-infected mothers should breastfeed. Current guidance states:

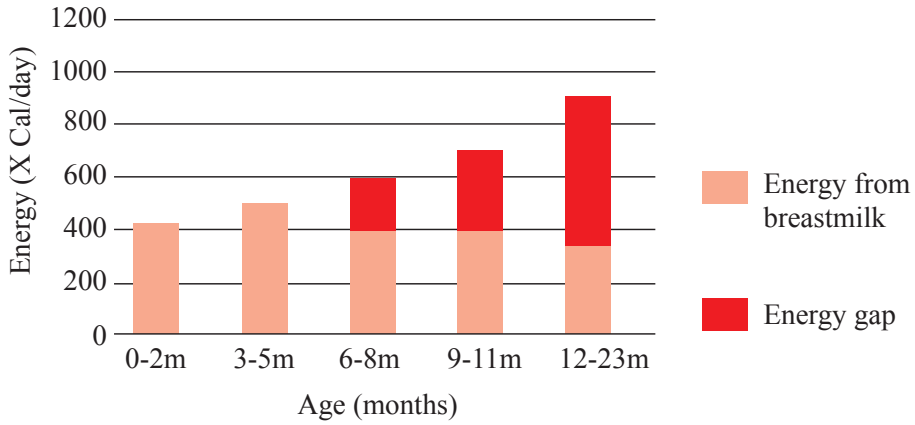
> *"Even when ARVs are not available, breastfeeding may still provide infants born to HIV-infected mothers with a greater chance of HIV-free survival. Mothers should be counselled to exclusively breastfeed in the first six months of life and continue breastfeeding thereafter unless environmental and social circumstances are safe for, and supportive of replacement feeding".*

Breastfeeding with Complementary Foods After Six Months

All children 6 – 24 months old or beyond need safe, adequate, complementary feeding. Breastmilk continues to help meet a child's nutrient needs for at least two years (Figure 1.) Breastmilk typically provides the following percentage of energy needs for older babies and young children at the following ages: [29]

- 70%: 6 – 8 months
- 55%: 9 – 11 months
- 40%: 12 – 23 months.

Figure 1. Infant and Young Child Feeding: Model Chapter for Textbooks for Medical Students and Allied Health Professionals



Source: World Health Organization 2009. Page 21.

27. Riordan J & Auerbach K, 1999. Breastfeeding and Human Lactation, Second Edition, 1999, Jones & Bartlett Publishers.
28. WHO 2010. Antiretroviral drugs for treating pregnant women and preventing HIV infections in infants: Recommendations for a public health approach, 2010 version, available at http://www.who.int/hiv/pub/mtct/antiretroviral2010/en/
29. Williams C. Breastfeeding and Family Foods: loving and healthy. Briefing Documents. World Breastfeeding Week 2005, World Alliance Breastfeeding Action, Penang, 2005, see http://www.waba.org.my/whatwedo/wbw/wbw05/actionfolder.pdf citing Food and Nutrition Bulletin. 2003, 24 (1) Special Issue Based on World Health Organisation Expert Consultation On Complementary Feeding.

Duration of Breastfeeding: In the second six months of life, the ongoing possible risk of transmission of HIV through breastfeeding by an untreated HIV-positive mother is less than 1% per month. This needs to be weighed against the greater risk of infant death from other infections and malnutrition when a child is not breastfed (as set out in Section 3). If the mother continues to receive, and takes, appropriate ARVs beyond 6 months, then the risk of HIV continues to be almost negligible. [30, 31] In contrast to previous recommendations, the 2010 Guidelines (Recommendation 2) [2] propose that:

- Mothers known to be HIV-infected (and whose infants are HIV uninfected or of unknown HIV status) should continue breastfeeding for the first 12 months of life. Breastfeeding should then only stop once a nutritionally adequate and safe diet without breastmilk can be provided. ARV drugs, if available, should also be given to further reduce the risk of HIV transmission
- When stopping breastfeeding, the mother should do so slowly over a 4-week period. Abrupt or rapid cessation of breastfeeding is not generally recommended at any time because it can cause painful breast engorgement and mastitis for the mother, and distress for the infant or young child.

These revised recommendations capitalise on the maximum benefit of breastfeeding to improve the infant's chance of survival while reducing the risk of HIV transmission. In the presence of ARV interventions, being able to breastfeed for 12 months or longer avoids many of the difficulties due to stopping breastfeeding, ie providing a safe and adequate diet without breastmilk.

Expressing Breastmilk

Skilled health and community workers should know how to show mothers to express their breastmilk. Expressing can be a useful technique:

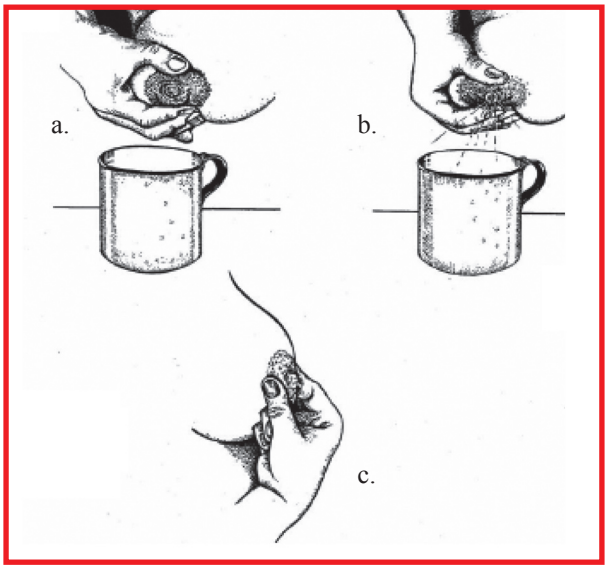
- To avoid postpartum breast over-fullness which, if left untreated, may lead to increased levels of HIV in breastmilk, [25] and impacts negatively on the mother's future breastmilk supply.
- To provide adequate milk for a baby who is not yet breastfeeding effectively, e.g., who cannot latch, or stay attached to the breast, is premature or who has neurological impairment or congenital abnormalities (e.g., Down Syndrome, or cleft lip/palate).
- To provide milk if breastfeeding needs to be interrupted (eg for a baby if the mother has painful/abraded nipples or mastitis) or if a mother has to be separated from her baby (e.g., for work).
- To stimulate a dwindling milk supply or treat a breast condition (e.g., plugged ducts)
- To use for heat-treating (see below).

30. Ngoma M, Raha A, Elong A, Pilon R, Mwansa J, Mutale W, Yee K, Chisele S, Wu S, Chandawe M, Mumba S and Silverman MS Interim Results of HIV Transmission Rates Using a Lopinavir/ritonavir based regimen and the New WHO Breast Feeding Guidelines for PMTCT of HIV International Congress of Antimicrobial Agents and Chemotherapy (ICAAC) Chicago Il, Sep19,2011. H1-1153. available at http://www.icaac.org/index.php/component/content/article/9-newsroom/169-preliminary-results-of-hiv-transmission-rates-using-a-lopinavirritonavir-lpvr-aluvia-based-regimen-and-the-new-who-breast-feeding-guidelines-for-pmtct-of-hiv-
31. Morrison P, Greiner T, Israel-Ballard K, Informed choice in infant feeding decisions can be supported for HIV-infected women even in industrialized countries, AIDS 2011, 25:1807–1811 e-pub ahead of print AIDS, 1 August 2011, http://www.ncbi.nlm.nih.gov/pubmed/21811145
32. Semrau K, Kuhn L, Brooks DR, Cabral H, Sinkala M, Kankasa C, Thea DM, Aldrovandi GM. Exclusive breastfeeding, maternal HIV disease, and the risk of clinical breast pathology in HIV-infected, breastfeeding women. Am J Obstet Gynecol. 2011 Oct;205(4):344.e1-8. Epub 2011 Jun 15.

How to Express Breastmilk by Hand [33]

The mother needs to:

- Have a clean, dry, wide-necked container for the expressed breastmilk;
- Wash her hands thoroughly;
- Sit or stand comfortably and hold the clean container under her nipple and areola;
- Cup the breast with the thumb on top of her breast and her index finger underneath so that they are opposite each other about 4 cms from the tip of the nipple;
- Compress the breast tissue between her fingers and thumb, pushing back into the chest wall, and then squeezing the thumb and fingers gently together to express the milk, before releasing and using the back-squeeze-release motion again. After several breast compressions milk starts to drip or spray from the breast.
- Avoid rubbing or sliding fingers along the skin or squeezing or pinching the nipple itself. Hand-expressing should not hurt – if it does, the technique is wrong.
- When the flow of milk slows, the mother should move her fingers around the nipple/areola, in order to continue expressing different milk-producing lobes of breast tissue and can use gentle massage prior to expressing to increase/re-stimulate milk flow.
- Express each breast until the milk drips slowly (milk will appear creamy when the breast is well drained). Express each breast several times until there is enough milk for the baby and until both breasts are soft and comfortable.



Source: WHO

Heat-treating the Mother's Own Expressed Breastmilk

As reviewed in Section 3, heat-treated expressed breastmilk is a safe alternative to breastfeeding.

Holder Pasteurisation, is routinely used by human milk banks. The milk is heated to 62.5^{O}C for 30 minutes. [34] Banked milk, if available, is suitable for feeding HIV-exposed babies.

33. WHO, Infant and Young Child Feeding: model chapter for textbooks for medical students and allied health professionals (2009)
34. Orloff SL, Wallingford JC, McDougal JS 1993, Inactivation of human immunodeficiency virus type 1 in human milk: effects of intrinsic factors in human milk and of pasteurization. J Hum Lact 9(1):13-17.

Heat-treatment at home is possible using simple household implements:

1. Pretoria Pasteurisation [35]

- Place 50ml – 150ml breastmilk into a clean glass jar and cover.
- Boil 450ml water in a small aluminium pot, and remove from the heat source.
- Place covered milk jar upright in the pan of boiled water, cover the pan and leave for 15 – 20 minutes before removing.
- Milk may be fed to the baby once cooled

2. Flash-heating [36, 37, 38]

- Place 50 – 150ml milk in a clean covered 450ml glass jar.
- Place the jar upright in a small pan of cold water. The level of water in the pan should be two finger-widths above the level of the milk in the jar.
- Place the pan on the stove and heat until the water reaches a rolling boil.
- Remove the pan from the heat and remove the jar from the hot water.
- Put the lid on the jar, and cool the milk before feeding to the baby.
- Flash-heating is a somewhat superior method to inactivate viral activity, compared to Pretoria pasteurization, and retains more nutrients. [39, 40]

Storage of Expressed Breastmilk

- Fresh expressed breastmilk should be stored in covered containers, e.g., jam jars.
- Feeding bottles and teats, if used, should be sterilised.
- For reasons of safety, cup-feeding is recommended over bottle-feeding. Containers for storing breastmilk, cups and spoons for feeding should be washed and clean, but need not be sterilised.
- Fresh breastmilk can be safely stored as follows:

Location of storage	Temperature	Maximun recommended storage duration
Room temperature	16 – 29°C (60 – 85°F)	3-4 hours optimal, 6 – 8 hours under very clean conditions
Refrigerator	≤ 4°C (39°F)	72 hours optimal, 5 – 8 days under very clean conditions
Freezer	< –17°C (0°F)	6 months optimal, 12 months acceptable

Source: Academy of Breastfeeding Medicine, 2010 update [41a]

35. Jeffery BS, Webber L, Mokhondo KR, Erasmus D. Determination of the effectiveness of inactivation of human immunodeficiency virus by Pretoria pasteurization. J Trop Pediatr. 2001;47:345–9.
36. Israel-Ballard K, Donovan R, Chantry C, Coutsoudis A, Sheppard H, Sibeko L and Abrams B. Flash heat inactivation of HIV-1 in human milk. A potential method to reduce postnatal transmission in developing countries. J Acquir Immun Defic Syndr 2007;45 (3): 318-323. (May 2007)
37. Israel-Ballard K, Flash-heated and Pretoria Pasteurized destroys HIV in breast milk & Preserves Nutrients!, Advanced Biotech Sept 2008, available at http://www.advancedbiotech.in/51%20Flash%20heated.pdf
38. See demo video at http://www.berkeley.edu/news/media/releases/2007/05/21_breastmilk-video.shtml
39. Israel-Ballard K, Chantry C, Dewey K, Lonnerdal B, Sheppard H, Donovan R, Carlson J, Sage A, Abrams B. Viral, nutritional, and bacterial safety of flash-heated and Pretoria-pasteurized breast milk to prevent mother-to-child transmission of HIV in resource-poor countries:a pilot study. J Acquir Immune Defic Syndr. 2005;40:175–81.
40. Israel-Ballard, K., Maternowska, M.C., Abrams, B.F., Morrison, P., Chitibura, L., Chipato, Z.M., Padian, N.S. and Chantry, C.J. 2006. Acceptability of Heat-treating Breast milk to Prevent Mother-to-child Transmission of HIV in Zimbabwe: A Qualitative Study. Journal of Human Lactation. 22(1): 48 – 60

41a. ABM Clinical Protocol #8: Human Milk Storage Information for Home Use for Full-Term Infants (Original Protocol March 2004; Revision #1 March 2010) http://www.bfmed.org/Media/Files/Protocols/Protocol%208%20-%20English%20revised%202010.pdf

- Previously heat-treated breastmilk can be stored as follows:

Pretoria pasteurization method	12 hours, room temperature, unopened jar
Flash-heating	8 hours, room temperature (23^{O}C)

- If refrigerated, previously heat-treated breastmilk is fed to the baby, it should be re-heated very gently to conserve its nutritional and immunological components, e.g., by holding the sealed container under a warm running tap.

Exceptions to National One-policy Recommendations

HIV-positve Mothers Who Wish to Replacement-feed in Settings Where the National Policy Supports Breastfeeding:

> 'Formula feeding has not become any safer as a result of the discovery that HIV could be transmitted through breastfeeding. Mothers and families need to be informed of the risks.' [41b]

Simplification of the AFASS Criteria

Previous guidance from 1998 – 2009 stated that when formula-feeding was acceptable, feasible, affordable, sustainable and safe (known as the AFASS criteria), then, by avoiding all risk of postnatal transmission, HIV-exposed infants would be safer if not breastfed. [42, 43, 44, 45] This guidance proved difficult for health workers to explain and for mothers to understand, and they have now been clarified with the WHO 2010 HIV and infant feeding guidelines.

New Conditions Needed for Safe Replacement Feeding [46]

Mothers known to be HIV-infected should only give commercial infant formula as a replacement feed to their uninfected infants when **all six** specified conditions are met:

1. safe water and sanitation are assured at the household level and in the community, **and**
2. the mother, or other caregiver can reliably provide sufficient infant formula milk to support normal growth and development of the infant, **and**
3. the mother or caregiver can prepare it cleanly and frequently enough so that it is safe and carries a low risk of diarrhoea and malnutrition, **and**
4. the mother or caregiver can, in the first six months, exclusively give infant formula milk, **and**
5. the family is supportive of this practice, **and**
6. the mother or caregiver can access health care that offers comprehensive child health services.

41b.. WABA 2012, 21 Dangers of Infant Formula the Infant Formula Companies don't want you to know! (www.waba.org.my/whatwedo/advocacy/pdf/21dangers.pdf)

42. WHO 1998. WHO – UNAIDS - UNICEF, Technical Consultation on HIV and Infant Feeding Implementation of Guidelines Report of a Meeting - Geneva, 20-22 April 1998 http://data.unaids.org/Publications/IRC-pub03/jc180-hiv-infantfeeding-4_en.pdf

43. WHO 2000, Technical Consultation on behalf of the UNFPA/UNICEF/WHO/UNAIDS Inter-Agency Task Team on Mother-to-Child transmission of HIV, New data on the prevention of mother to child transmission of HIV and their policy implications: conclusions and recommendations, Geneva 11-13 October 2000, World Health Organization 2001. WHO document WHO/RHR/01.28. Available from: http://whqlibdoc.who.int/hq/2001/WHO_RHR_01.28.pdf

44. WHO/UNICEF 2004, UNICEF and WHO call for stronger support for the implementation of the joint United Nations HIV and infant feeding framework, available at http://www.who.int/maternal_child_adolescent/documents/pdfs/hiv_if_who_unicef.pdf

45. WHO 2006, HIV and Infant Feeding Technical Consultation Held on behalf of the Inter-agency Task Team (IATT) on Prevention of HIV Infections in Pregnant Women, Mothers and their Infants Geneva, October 25-27, 2006, Consensus Statement, available at http://www.who.int/maternal_child_adolescent/documents/pdfs/who_hiv_infant_feeding_technical_consultation.pdf

46. WHO 2009, Rapid Advice: revised WHO principles and recommendations on infant feeding in the context of HIV November 2009 Recommendation 5.

Replacement Feeding

Replacement feeding means feeding a child who is not receiving any breastmilk with a diet that contains adequate nutrients until s/he is fully fed on family foods. This means infant formula manufactured commercially in accordance with the Codex Alimentarius Standards.

Home conditions WHO suggests that mothers known to be HIV-infected should only give commercial infant formula as a replacement feed to their HIV-uninfected infants or infants who are of unknown HIV status when specific conditions are met: [2]

a. safe water and sanitation are assured in the home and in the community, **and**
b sufficient infant formula milk can reliably be provided to support normal growth and development of the infant, **and**
c. the mother can prepare it cleanly and frequently enough so that it is safe and carries a low risk of diarrhoea and malnutrition, **and**
d the mother or caregiver can, in the first six months, exclusively feed infant formula; **and**
e. the family is supportive of replacement feeding; **and**
f the mother or caregiver can access health care that offers comprehensive child health services.

Formula feeding requires sufficient formula to feed the baby for the time that he would have been breastfed (40 kg of powdered infant formula to feed one baby for one year). The caregiver should be able to follow directions regarding hygiene, measuring and mixing formula powder and water sufficient for the baby's needs (150ml formula per kg of infant's weight per day divided into 8 or more feeds). Recently boiled water should be mixed with the powdered formula milk when it is still hot (>70° C) to kill micro-organisms in the water and harmful bacteria which are sometimes present in the milk powder. [47]

If replacement feeding is used in the first six months for HIV-exposed babies, it must be fed exclusively – with no breastfeeding at all – to avoid the high risk of HIV transmission associated with premature mixed feeding. [48]

Home-modified animal milk is no longer recommended by WHO for replacement feeding, due to concerns about nutritional adequacy, [49] except for the shortest possible time in an emergency setting until another source of donated breastmilk or commercial infant formula becomes available. However, there is some concern that there is insufficient evidence for these recommendations, and several countries are still recommending animal milk as the first choice for replacement feeding.

Non-breastfed infants aged 6 – 12 months may receive commercial infant formula or boiled animal milk, as part of a diet providing adequate micronutrient intake, as long as home conditions outlined above are fulfilled,. Meals, including milk-only feeds, other foods, and combinations of milk and other foods, should be provided 4 – 5 times per day. [2]

Cup-feeding is safer for feeding replacements than bottle-feeding because cups are easier to clean than bottles, and cup-feeding requires the mother's full attention during feeding.

Cup feeding

47. WHO 2007, Safe preparation, storage & handling of powdered infant formula. http://www.who.int/foodsafety/publications/micro/pif_guidelines.pdf
48. Coutsoudis A, Pillay K, Kuhn L, Spooner E, Tsai W-Y, Coovadia HM for the South African Vitamin A Study Group. Method of feeding and transmission of HIV-1 from mothers to children by 15 months of age: prospective cohort study from Durban, South Africa. AIDS 2001;15:379-387
49. Briend A, Home-modified animal milk for replacement feeding: is it feasible and safe, Discussion Paper Prepared for HIV and infant feeding Technical Consultation, World Health Organization, Geneva, 25-27 October 2006.

The Criteria for Safe Replacement Feeding Apply Even in Emergency Settings

Emergencies such as conflicts, floods, earthquakes, fires and power supply failures can occur in both affluent and poor communities. Refugees, internally displaced populations, asylum-seekers and homeless people, are often in situations where the criteria for replacement feeding cannot be met. [50]

In unstable situations, ARVs may not be available, formula donations may not be sustainable, water and fuel supplies may be limited, and the risk of infection may be high. In emergencies, breastfeeding of HIV-exposed infants is recommended to increase survival. [2, 51, 52]

Wet-nursing is recommended in emergency settings. However, there may be concerns because of cultural and religious values.

- In most cultures, the mothers and the members of the mother's family only accept wet-nursing if the wet-nurse belongs to the same family.
  - This can be protective to the infant since it is important to know the wet-nurse well, including her HIV status.
  - The wet-nurse may also require HIV counselling to prevent the risk of HIV-infection.
- For Muslims, the Koran refers to breast milk as white blood, thus the infant effectively becomes a blood relation to the wet-nurse.
- Jehovah's Witnesses may refuse the donation of fresh breast milk in the same way as they refuse blood transfusions.
- Wet nurses should be aware that HIV can transmit from an HIV-infected infant via breastfeeding. They should be vigilant to avoid breastfeeding when there is either an oral lesion in the infant or a breast lesion and in such cases give expressed heat treated breast milk. [53]

HIV-positive Mothers Who Wish to Breastfeed in Settings Where the National Recommendation Mainly Supports Replacement Feeding

Current British guidelines provide the following recommendations for an HIV-positive mother who is on HAART with an undetectable viral load and who wishes to breastfeed: [54]

- The mother's decision does not warrant automatic referral to child protection teams.
- Intensive support and monitoring of mother and infant are recommended during any breast-feeding period.
- Education to identify factors that might increase the risk of transmission, e.g., mastitis or painful/abraded nipples, should be given.

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50. ICDC Focus, The Code and infant feeding in emergencies, available at http://worldbreastfeedingweek.net/wbw2009/images/icdc_%20focus_english.pdf
51. Emergency Nutrition Network 2007, Infant Feeding in Emergencies: Version 1.1 for health and nutrition workers in emergency situations, Developed through collaboration of ENN, IBFAN-GIFA, Fondation Terre des hommes, Action Contre la Faim, CARE USA, Linkages, UNICEF, UNHCR, WHO and WFP. for training, practice and reference, December 2007 http://www.ennonline.net/pool/files/ife/module-2-v1-1-core-manual-english.pdf
52. Wellstart International, Infant and Young Child Feeding in Emergency Situations, updated 2005, available at http://www.wellstart.org/Infant_feeding_emergency.pdf
53. Little KM, Kilmarx PH, Taylor AW, Rose CE, Rivadeneira ED, Nesheim SR. A Review of Evidence for Transmission of Human Immunodeficiency Virus from Children to Breastfeeding Women and Implications for Prevention. Pediatr Infect Dis J. 2012 Jun 4. [Epub ahead of print] http://www.ncbi.nlm.nih.gov/pubmed/22668802
54. Taylor GP, Anderson J, Clayden P, Gazzard BF, Fortin J, Kennedy J, Lazarus L, Newell M-L, OsoroB, Sellers S, Tookey PA, Tudor-Williams G, Williams and De Ruiter A for the BHIVA/CHIVA Guidelines Writing Group. British HIV Association and Children's HIV Association position statement on infant feeding in the UK, 21 March, 2011. HIV Medicine DOI: 10.1111/j.1468-1293.2011.00918.x

- The HIV-positive mother should remain on HAART. Effectiveness should be carefully monitored until one week after all breastfeeding has ceased, with monthly viral load testing, to ensure a repeatedly undetectable viral load.
- The infant should have monthly assessments to identify any drug toxicity or HIV transmission.
- Breast feeding should be exclusive up to six months, and weaning at this time is recommended.
- Factors leading to the maternal decision to breastfeed should be regularly reviewed.

Protecting Infants from Unnecessary Formula Feeding

Programmes to protect children in families with HIV also need to protect children who are not at risk of HIV infection

Reducing spillover of artificial feeding to unexposed infants

In communities where many HIV-positive mothers artificially feed their infants due to unfounded fears that breastfeeding is risky and better avoided, the unnecessary spread of artificial feeding is called 'spillover'. Spillover is often aggravated by:

- Misinformation about the risk of HIV transmission through breastfeeding.
- Free supplies of formula provided by PMTCT sites.

The consequences of spillover

- Uninfected mothers may breastfeed for a very short time, or not at all, or they may mix-feed.
- When the community accepts artificial feeding, it may reduce stigma, but places the health of greater numbers of infants at risk
- Free supplies make replacement feeding easier for mothers who are HIV-positive, but the formula may be sold or otherwise reach the wider community, thereby increasing the risk of artificial feeding among infants who are not exposed to HIV.

When funders, directors, and policy makers also lose confidence in breastfeeding it can result in:

- Displacement of funding and support for breastfeeding, eg the Baby Friendly Hospital Initiative, breastfeeding support groups, training of healthworkers on breastfeeding, Code monitoring and implementation, and World Breastfeeding Week.
- Public information campaigns focussing on the risks of breastfeeding rather than on the risks of formula-feeding.
- An overall decrease in breastfeeding rates and an increase in morbidity/mortality.

Actions to reduce spillover include:

- Strengthening public information, action to support breastfeeding and monitoring feeding practices.
- Training of breastfeeding counsellors to help mothers to initiate, establish and sustain effective breastfeeding.
- Teaching only those mothers who need to know about replacement feeding. If the majority do receive more information than needed, this may encourage its use.
- Phasing out distribution of free supplies of infant formula. [55]

55. Tshwane declaration of support for breastfeeding in South Africa, South African Journal of Clinical Nutrition, 2011;24(4):214, available at http://www.sajcn.co.za/index.php/SAJCN/article/viewFile/586/820

- Awareness of and implementation of the policies supported by the Global Strategy for Infant and Young Child Feeding. [56]
- Compliance with the provisions of the International Code of Marketing of Breastmilk Substitutes and subsequent World Health Assembly Resolutions. [55]

Protection from Marketing of Breastmilk Substitutes

The Code and HIV

In 1981 the World Health Assembly adopted the International Code of Marketing of Breastmilk Substitutes (the Code) [57]. The aim of the Code is to contribute to the provision of safe and adequate nutrition of infants:

- by the protection and promotion of breastfeeding;
- by ensuring the proper use of breastmilk substitutes, when they are necessary, on the basis of adequate information and through appropriate marketing and distribution;
- by controlling incorrect marketing practices used to sell products for artificial feeding. [58]

Infant feeding, even in settings where HIV is not highly prevalent, has been complicated by messaging from the food industry and other groups so that mothers, who have every reason to breastfeed, choose not to do so based on unfounded fears. [2] In settings where HIV-prevalence among women is high, application of the International Code of Marketing of Breast-milk Substitutes and subsequent relevant Health Assembly Resolutions has particular importance. Implementation protects the babies whose mothers may inappropriately opt for artificial feeding.

While the status of the International Code varies by country in terms of drafting, voluntary application, few or many provisions enacted into law, or a combination of both voluntary and regulatory provisions, most transnational infant food companies have pledged to abide by the International Code at least in all low-income countries and should be held up to criticism any time they do not. [59]

The Code does not prevent infant formula or other products being manufactured, available, sold or used when necessary. It also does not prevent governments or aid agencies from making breastmilk substitutes available to HIV-infected mothers, for free or at a subsidised price, if health institutions purchase them at normal market prices. It does, however, aim to prevent manufacturers from donating supplies of breastmilk substitutes or providing them at reduced cost to any part of the health care system as a sales inducement. It is also designed to prevent marketing and advertising to the general public, including pregnant women and mothers. It requires that donations of formula are only provided to infants who are identified to be in need of them, according to specific criteria, and must be provided for the full period of need, which is usually for at least one year, to prevent increased morbidity and malnutrition. [60, 61]

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56. WHO 2003, Global strategy for infant and young child feeding, Geneva: World Health Organization, 2003, available from http://www.who.int/maternal_child_adolescent/documents/9241562218/en/index.html
57. WHO 1981. International code of marketing of breast-milk substitutes. Geneva: WHO. http://www.who.int/nutrition/publications/code_english.pdf Also see subsequent related World Health Assembly Resolutions, usually made about every two years, at http://www.ibfan.org/english/resource/who/fullcode and responses to frequently asked questions on the Code at http://www.who.int/entity/nutrition/publications/infantfeeding/9789241594295/en/index.html
58. IOCU/IBFAN. 1990. Protecting Infant Health – A Health Workers' Guide to the International Code of Marketing of Breast Milk Substitutes. 6th ed. Penang: IBFAN/IOCU
59. ICDC 2010. State of The Code By Country 2010. Penang: available at www.ibfan.org
60. WHA 47.7 resolution(1994), reproduced by IBFAN, at http://www.ibfan.org/issue-international_code-full-475.html
61. ICDC 2007. International Code of Marketing of Breastmilk Substitutes and relevant WHA resolutions. 2nd ed. Penang: IBFAN Penang, pp. 44

It is the responsibility of governments to ensure that the Code is implemented in their country and that manufacturers comply with it, and in fact several countries have enacted legislation which limits the marketing of infant formula and related products even more stringently than the Code. Members of the public also have an important role to play in noticing advertisements in the media, promotion in shops, and reporting what they see to the responsible national authority and to the local Code monitoring groups in their countries.

Key Points Section 4: Counselling

- HIV-positive mothers need consistent, up to date informaton and close practical assistance to feed their babies in the safest way. In most settings this means breastfeeding exclusively for the first 6 months, and continued breastfeeding with appropriate nutrient-dense complementary foods and other liquids for the first year, or until safe replacements for breastfeeding can be provided.
- Wherever possible, an HIV infected mother and her child should be given ARV treatment or prophylaxis, while practising exclusive and continued breastfeeding
- If ARV drugs are not yet available, exclusive breastfeeding in the first six months and continued breastfeeding with adequate complementary foods remain the safest option.
- If an infant has confirmed HIV-infection, the mother should be strongly encouraged to continue breastfeeding for long as possible.
- Maternity and community services for HIV-positive mothers should provide up to date help to initiate and maintain exclusive and continued breastfeeding.
- Mixed feeding in the first six months after birth can increase the risk of HIV transmission compared to exclusive breastfeeding, and therefore should be avoided.
- If breastfeeding is discontinued, this should be over a period of four weeks
- Some HIV-infected women may seek information about alternative infant feeding options outside the national recommendations.
- A simpler description of the conditions for safe replacement feeding has been developed to replace the AFASS description. All criteria should be in place in all settings where mothers might consider replacement feeding
- Action to avoid spillover of artificial feeding to women who do not need to use it is important for all infants including HIV-exposed infants. The International Code can protect women and children from marketing of breastmilk substitutes.

Section 5 records the evolution of changing policy on HIV and infant feeding between 1985 and 2012.

References and further reading are listed in Section 6.

The World Alliance for Breastfeeding Action (WABA) is a global network of individuals and organisations concerned with the protection, promotion and support of breastfeeding worldwide. WABA action is based on the Innocenti Declaration, the Ten Links for Nurturing the Future and the Global Strategy for Infant & Young Child Feeding. WABA is in consultative status with UNICEF and an NGO in Special Consultative Status with the Economic and Social Council of the United Nations (ECOSOC).