Safer Infant Feeding for Prevention of Mother-to-Child Transmission of HIV

In many contexts, exclusive breastfeeding combined with antiretroviral treatment ensures the best chance of HIV-free survival of infants exposed to HIV. Counseling, peer support, education and community awareness can increase uptake of exclusive breastfeeding.

This document is part of a series of briefs for health program managers interested in implementing evidence-based programs. With a special emphasis on underutilized interventions, they present evidence on programs that work and provide guidance and resources for replication.

What Works: Clinical Evidence and International Guidance

In 2010, the World Health Organization (WHO) updated its *Guidelines on HIV and Infant Feeding* in order to advance practices based on the latest evidence regarding infant feeding and prevention of mother-to-child transmission (PMTCT) of HIV. In particular, the new guidelines incorporate evidence that provision of antiretroviral treatment (ART) to either mother or child can significantly reduce postnatal transmission of HIV through breastfeeding.[1-3] One of the most important revisions to the guidelines is that WHO now advises countries to choose a single infant feeding practice to advocate to all mothers with HIV, based on local conditions, instead of relying on individual health workers to counsel women to choose the PMTCT method they prefer.[4]

Specifically, the guidelines advise governments to choose between counseling HIV-positive mothers to breastfeed and receive ART interventions or to avoid all breastfeeding as the strategy most likely to give infants the greatest chance of HIV-free survival.

The revised guidelines encourage country-level decision makers to balance prevention of HIV with meeting infants' nutritional needs and preventing other causes of child mortality. In deciding which strategy is best for the local context, decision makers should consider the socioeconomic and cultural contexts of the populations served, the availability and quality of health services, local epidemiology, and the main causes of maternal and infant under-nutrition and infant and child mortality.[4]

The guidelines further specify that even when ART is not available, breastfeeding may provide infants of HIV-positive mothers with the greatest chance of HIV-free survival. WHO recommends that if an infant's HIV status is negative or unknown:*

- Mothers with HIV should be counseled to exclusively breastfeed for the first six months of the child's life; and
- After six months, mothers with HIV should continue breastfeeding, introducing complementary foods, for the first 12 months of life unless environmental and social conditions are safe for, and supportive of, replacement feeding.[4]**

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* If an infant is known to be HIV positive, WHO strongly recommends that mothers exclusively breastfeed.
** The guidance also notes that heat treating expressed milk may be an option for interim feeding only (e.g., if a woman is temporarily too ill to breastfeed, has mastitis or other breast problems).

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THE SCIENCE OF IMPROVING LIVES

This recommendation is grounded in evidence that exclusive breastfeeding (EBF) offers greater likelihood of HIV-free survival than either mixed feeding or replacement feeding via infant formula when environmental and social conditions are not fully safe and supportive.[5-7] The guidance further advises that PMTCT programs should avoid undermining optimal breastfeeding practices of the overall population.[4]

Indeed, modeling exercises conducted during the development of the guidelines found that provision of free infant formula is 2 to 6 times more costly than breastfeeding and provision of ART. In contexts where malnutrition, pneumonia and diarrhea are significant causes of infant mortality, breastfeeding with ART interventions result in more children alive without HIV at 18 months of age than avoidance of all breastfeeding.[4] Moreover, several systematic reviews have found that even without the use of ART, replacement feeding of HIV-exposed infants results in higher overall infant mortality than does breastfeeding alone,[8-10] especially in areas with high prevalence of infant mortality resulting from diarrhea and malnutrition.

For these reasons, resource-constrained countries may be more likely to promote EBF and ART as the primary means of supporting HIV-free survival of infants exposed to HIV. It is critical that countries just beginning to secure funding and establish systems for greater access to ART also focus on increasing uptake of and adherence to EBF among mothers with HIV. This brief thus outlines the barriers to EBF, several proven program approaches to increasing uptake of the practice in the context of PMTCT, and guidance for replication of those approaches.

Why EBF is Underutilized

International consensus itself is not likely to affect local cultural beliefs about breastfeeding. The WHO guidelines recognize that EBF is non-normative in many contexts. For instance, research has found that people in a number of cultural contexts believe that EBF is insufficient for nutrition and that the introduction of complementary fluids or foods is necessary.[11-18] Mothers with HIV specifically may believe that they do not have enough milk, a perspective that may be further reinforced if they are malnourished.[19-22]

Other cultural norms provide opportunities for increasing uptake of EBF, including the association of breastfeeding with being a good mother.[13, 23] Care must be taken, however, not to stigmatize women who make an informed choice not to breastfeed.

Socioeconomic or other structural factors also affect EBF practices. Economic conditions may have an impact on women's choice of infant feeding method. Studies have found that higher-income women are less likely to exclusively breastfeed and are likely to stop EBF earlier than lower-income women.[14, 24] This may be because women with more economic resources can better afford infant formula.[14, 25, 26]

Studies have also found that women who work in the formal sector are less likely to choose EBF, [27, 28] suggesting a structural barrier related to lack of accommodation for EBF in places of employment. Other socioeconomic factors affect uptake and duration of EBF as well, including a woman's educational status[14, 16, 22] and age.[20, 29] These associations are not consistent across contexts, suggesting a more complex interplay exists between demographics and culture. When designing programs, program managers should carefully examine their own contexts for factors that may affect uptake and duration of EBF.

Provider and counselor attitudes are also critical in the uptake of EBF. Studies have found that health care workers may struggle with normative beliefs that do not support EBF[30] and may be misinformed or confused about the international guidance on infant feeding and PMTCT.[30, 31]

Gender inequality may also be a barrier to uptake of EBF, as women's limited autonomy may constrain their power to choose the most effective feeding option. Several studies have found that male partners or mothers-in-law may not support women's choice of EBF.[20, 21, 25, 26, 32, 33] Other studies have found that when men know their female partners' HIV status and are educated about PMTCT, they may support the woman's choice of EBF[21, 22, 34] or replacement feeding.[24, 35, 36]

Incomplete knowledge and inaccurate perceptions about the risks of breastfeeding vs. formula feeding also pose barriers to uptake of EBF. For instance, knowledge that breast milk can transmit HIV has been found to result in extreme fear of breast milk by some mothers with HIV and nurses. However, perceived risk is often higher than actual risk.[26, 37] Knowledge that breast milk can transmit HIV is also associated with choosing mixed feeding and formula feeding.[14, 37-39]

Limited knowledge about postnatal PMTCT in the community may also be a barrier, as women known to be HIV positive have been found to experience stigma when they choose EBF.[20, 24-26, 31, 33]

Where and How EBF Has Worked

Because norms related to EBF, as well as knowledge and perceptions about PMTCT, vary in different cultures, there is probably no one programmatic approach effective in increasing uptake of EBF to optimize feeding of infants exposed to HIV. Further, because the guideline to primarily promote one infant feeding practice in each country is new, few evaluated interventions exist that primarily sought to increase uptake of EBF among mothers with HIV. However, there are programmatic elements shared (in different combinations) among the few evaluated interventions that successfully increased uptake of EBF. By far the most common element is counseling women in health clinics and in their homes to encourage EBF. Given the cultural barriers to EBF cited above, activities such as peer support from other

Country	Citation	Counseling by health care workers	In-home counseling	Information, education, communication (IEC)	Peer support from other HIV-positive women	Community education and awareness-raising
South Africa	Bland et al., 2008 Desmond, et al., 2008	X	X			
Uganda	Matovu et al., 2008	X		X		
Zambia	Kuhn et al., 2007	X	X		X	X
Zambia	Torpey et al., 2011	X				
Zimbabwe	Piwoz et al., 2007			X		

women with HIV and raising community awareness should also be considered. Studies that used more than one programmatic approach found that exposure to more than one programmatic approach increased the effectiveness — and often cost-effectiveness — of the intervention.[11, 22, 40, 41] The table above displays the existing evaluated programs and the range and combinations of approaches taken in each.

COUNSELING BY HEALTHCARE WORKERS

By far the most common intervention to promote EBF to increase the likelihood of HIV-free survival among infants exposed to HIV is counseling women with HIV in clinics during antenatal visits and/or post-delivery, usually as a part of a package of PMTCT services. As the WHO guidelines for preventing postnatal MTCT were only recently updated, the interventions identified above provided women with individualized counseling on multiple infant feeding methods instead of promoting EBF or any other single method. Nonetheless, the studies found that — among women who choose breastfeeding over formula feeding — counseling by clinicians on the benefits of EBF can be effective in increasing uptake of and adherence to EBF for the recommended six months.[22, 40-42] However, clinical counseling alone may not be sufficient. Several studies found that pairing clinical counseling with another program approach, such as in-home counseling; information, communication and education (IEC); or community awareness-raising can enhance the impact and/or cost-effectiveness of counseling by health care workers.[22, 40, 41]

IN-HOME COUNSELING

In-home counseling most often involves training lay counselors to support women in the practice of EBF. Counselors make home visits with women on an ongoing basis, providing support and encouragement for women to continue EBF for the recommended six months. In-home counselors may also provide information and advice in the event of difficulties with breastfeeding, including latching difficulties, cracked/sore nipples or mastitis. In one South African study — that included both HIV-positive and HIV-negative women — breastfeeding counselors visited all nursing mothers and were blind to their HIV status.[40] This provides a model that potentially reduces the stigma associated with breastfeeding in mothers with HIV and supports best practices in infant feeding across the entire population.

In-home counseling was also found to be a cost-effective supplement to counseling by health care workers post-delivery and during postnatal clinic visits, as lay nurses and other clinicians require higher salaries than lay counselors.[11]

INFORMATION, EDUCATION AND COMMUNICATION

IEC has been used to provide mothers with HIV and their male partners with technically sound and consistent information about infant feeding and PMTCT. It has been used in the clinical setting both as a stand-alone intervention, as in Zimbabwe,[43] as well as being provided as a way to supplement individual counseling, as in Uganda.[22] In the studies reviewed, IEC materials included videos, flyers, flip charts and group lectures provided by nurses. In Zimbabwe, an intervention developed videos, pamphlets and lectures to be given by nurses about EBF's nutritional benefits, breastfeeding and PMTCT, and healthy breastfeeding practices (avoiding breast health problems, safer sex during breastfeeding, etc.). The IEC was given to mothers both with and without HIV who were choosing to breastfeed, as well as breastfeeding women who chose not to learn their status.[43] This approach should be noted because it provided information without singling out or stigmatizing women with HIV, while at the same time it promoted optimal breastfeeding practices in the general population, per WHO guidelines.

PEER SUPPORT FROM OTHER HIV-POSITIVE WOMEN

Similar to the way in which in-home counseling provides ongoing support to mothers with HIV to help them adhere to EBF, support can come from other women with HIV in the

community. In Zambia, formation of positive mothers' support groups allowed the women to work together on income-generation and other "self-help" activities and served as an empowering, morale-boosting source of social support.[41] Though the evaluation did not measure the impact of this dimension of the multi-pronged intervention, the social support these groups provided is likely to have contributed to the program's overall success in increasing uptake of EBF.

COMMUNITY EDUCATION AND AWARENESS-RAISING

An intervention in Zambia conducted awareness-raising in the community on the benefits of EBF, including dramas and community discussions.[41] Though this was only one dimension of the effective intervention package, and it was not evaluated independently of the other program elements, this approach deserves further consideration and study, given that community norms affect uptake of EBF among women with or without HIV.

Main Points from EBF Evidence and Experience

- Promotion and support of EBF is a critical component of any intervention that primarily promotes breastfeeding with ART to enhance HIV-free survival of infants exposed to HIV.
- In many contexts, there are cultural and economic barriers to increasing uptake of EBF in resource-constrained settings — especially among mothers with HIV.
- Evidence shows that increasing uptake of EBF is possible and can be achieved through methods including counseling, peer support, education and raising community awareness. Multiple methods may be beneficial.

Increasing Uptake of and Adherence to EBF: How to Get Started

In response to the 2010 WHO guidelines, many countries are likely to choose to promote EBF — with provision of ART, as available — as the form of infant feeding most likely to result in HIV-free survival of infants exposed to HIV.

As this brief demonstrates, infant feeding practices are complex and culturally driven. This means that, while there may be no standard, packaged intervention likely to be fully effective in increasing uptake and adherence to EBF in all contexts, culturally driven practices and beliefs are somewhat fluid and changeable. Increasing uptake of and adherence to EBF is possible and can be achieved through interventions that use counseling, behavior change and peer support, as well as community education and awareness-raising. Program designers must draw on proven approaches and combine and adapt them to best meet the challenges and opportunities specific to the cultural and socioeconomic context. The following paragraphs provide information for how to approach replicating those program approaches proven to increase uptake and adherence to EBF — ideally with ART treatment — for optimal chances of HIV-free survival of infants exposed to HIV.

SITUATIONAL ASSESSMENT

Understanding the culturally driven beliefs, practices, barriers and opportunities related to EBF among mothers with HIV is a critical first step in designing an evidence-based program. WHO's tool, *Infant and Young Child Feeding: A Tool for Assessing National Practices, Policies and Programs* (http://www.who.int/nutrition/publications/infantfeeding/9241562544/en/index.html), can help program managers identify health data, policies and frameworks that may be relevant; however, further exploration related to cultural attitudes and norms may be required. This can be done through focus groups; knowledge, attitudes, practice surveys; or any number of methods for gathering data on norms and behaviors related to breastfeeding in the target community.

PROGRAM DESIGN

The barriers and opportunities related to uptake of EBF by mothers with HIV identified in the assessment should inform the program designer's decision about which intervention types or combinations will be most appropriate and feasible. As in all programs that intend to scale up to some degree, it is important that this decision be made with the participation or buy-in of government bodies that will eventually take ownership of sustaining the intervention. Additionally, programs should be designed to be reasonably cost-effective, so scale-up is more likely if the program is found to be effective.

Once the basic structure of the intervention is designed, (e.g., whether it utilizes clinical counseling only or combines counseling with home visits and community awareness-raising or other approaches) it is necessary to create or adapt the actual components of the activities to the specific cultural context, including training curricula and job aids for clinicians and lay counselors, IEC materials, community education methodologies, etc. Adaptations might include translation to local languages and terminology, addressing any common myths or misperceptions, and working to accommodate any economic impact that breastfeeding women may face.

OTHER RESOURCES

The following resources have not yet been updated to reflect recent changes in international guidance on enhancing HIV-free survival of infants exposed to HIV. Nonetheless, these resources contain useful information that may be easily adapted for programs focusing more narrowly on EBF.

Resources for clinicians

WHO "HIV and Infant Feeding Counseling Tools" (including counselors' job aids) found at: http://www.who.int/child_adolescent_health/documents/9241592494/en/
Additional materials at:
http://www.iycn.org/resources-infant-feeding.php

UNICEF and AED 2004 training course on integrated PMTCT and EBF (for both clinicians and lay counselors) found at: http://www.iycn.org/resources-infant-feeding.php

Resources for community workers:

APHIA and ICYN/USAID project training materials for community workers found at:
http://www.iycn.org/resources-infant-feeding.php

UNICEF and AED, 2004 training course on integrated PMTCT and EBF (for both clinicians and lay counselors) found at: http://www.iycn.org/resources-infant-feeding.php

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