

Wider promotion of exclusive breastfeeding could prevent 1.3 million child deaths each year. The discovery that the HIV virus can be transmitted through breastmilk therefore created a critical dilemma throughout the public health community.

1 Helping Mothers Make Informed Choices Infant Feeding and the Prevention HIV/AIDS

The Challenge

A 2003 article in the *Lancet* reported that breastfeeding is one of the most effective child survival interventions. Wider promotion of exclusive breastfeeding could prevent 1.3 million child deaths each year.¹ In an infant's vulnerable first months, the nutritional qualities and the antibodies supplied by breastmilk—as well as its naturally hygienic delivery system—protect against water-borne diseases and other infections responsible for the high early mortality in developing countries.

The discovery in the 1980s that the HIV virus can be transmitted through breastmilk therefore created a critical dilemma throughout the public health community. What are the risks of breastfeeding vs. replacement feeding (such as infant formula) that confront mothers who know, and do not know, their HIV status? How does this risk vary for their infants at different ages? And how can women be empowered to make informed choices about feeding and protecting their infants?

AED has been in the forefront of analyzing and modeling the *balance of health risks* for a range of possible situations; helping countries translate the scientific evidence into both national policies and community strategies; and creating practical tools to help counsel mothers.

Partly because of these efforts, *nutrition* is now playing a central role in programs to prevent mother-to-child-transmission of HIV (or PMTCT).

¹ Jones G, et al. and the Bellagio Child Survival Study Group. (2003) *How many child deaths can we prevent this year?* *Lancet* 362:65-71.



Clarifying the Balance of Risks

An estimated 700,000 children are infected with HIV each year; about 42 percent of this transmission is through breastfeeding.² Several simulation studies have calculated mortality risks for infants of HIV-positive mothers under different conditions. The Academy carried out an investigation to calculate survival for *five different feeding scenarios at seven age intervals* in resource-poor settings. (See figure 1.1.)

The analysis, published in the *American Journal of Public Health*,³ demonstrates that the risk of death from replacement feeding *exceeds* the risk of mother-to-child transmission from breastfeeding throughout the first four months of life. After six months, replacement feeding is the safest alternative.

The simulation also accounts for certain strategies that can make breastfeeding “safer”—especially exclusive breastfeeding and prevention and treatment of breast problems—and demonstrates how much the risk of transmission can be reduced in different months.

The month-by-month analysis⁴ provides policy makers with important evidence for formulating national policies and providing practical guidelines for counseling mothers. (See box on next page.)

At the same time, it demonstrates the complexity of variables that affect the risks of transmission for any mother and her infant. Transforming this information into effective counseling materials and training programs presents enormous challenges, which the Academy has also attempted to meet.

Providing Evidence from the Field

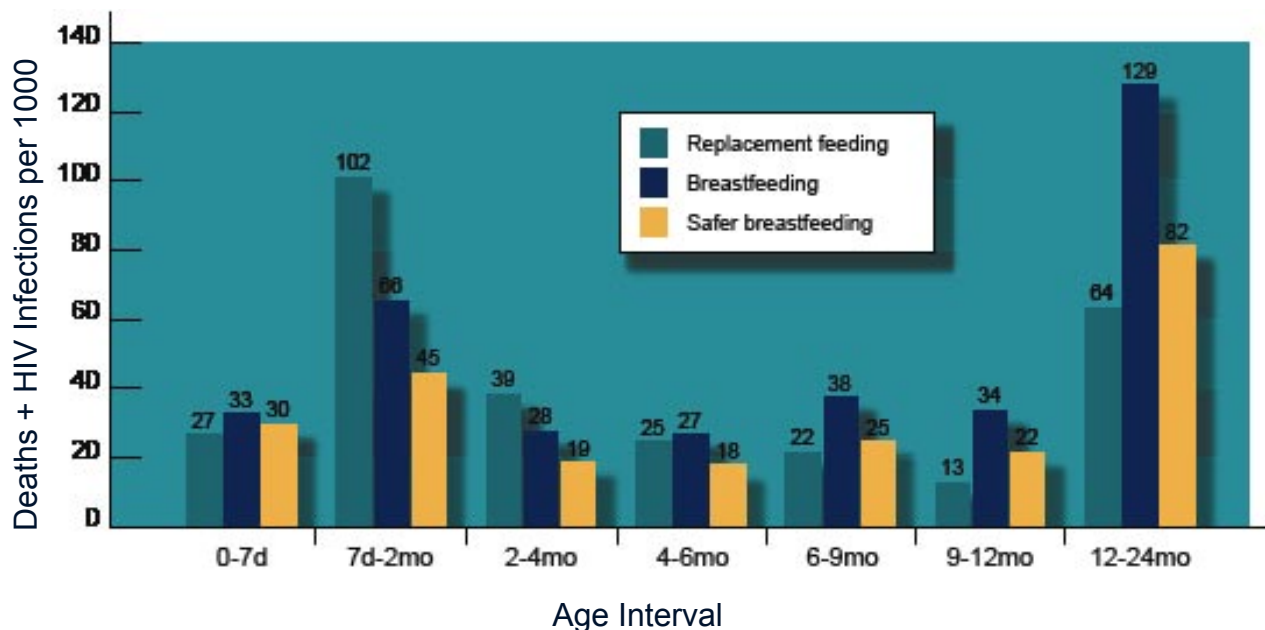
In 1997, AED joined the University of Zimbabwe and the Johns Hopkins University in carrying out the ZVITAMBO trial. The trial was designed to look at the impact of postpartum vitamin A supplementation on maternal and infant health outcomes. However,

² Coutoudis A, et al. and the Breastfeeding and HIV International Transmission Study Group. (2004) Late postnatal transmission of HIV-1 in breastfed children: An individual patient data meta-analysis. *J Infect Dis* 189:2154-2166.

³ Ross, JA, Labbok MH. (2004) Modeling the effects of different infant feeding strategies on infant survival and mother-to-child transmission of HIV. *American Journal of Public Health*. 94/7: 1174-1180. The study was carried out under AED's LINKAGES project, funded by USAID.

⁴ The full spreadsheet model is available at http://www.linkagesproject.org/media/static_pdfs/riskmodel.xls.

Figure 1: Simulated risk for each of three infant feeding strategies*



* Simulated risk of infection or death from other causes in interval for each of 3 infant feeding strategies: replacement feeding (RF), breastfeeding (BF), and safer breastfeeding (SBF), calculated per 1000 infants entering the period HIV-free. Reprinted with permission from the *American Journal of Public Health*.



Nutrition education and counseling can make a measurable difference in transmission of HIV from mother to newborn—and in the health of any newborn, regardless of a mother’s status.

Helping Policy Makers Balance the Risks of Many

Individual decisions about infant feeding in the context of HIV should be a matter of informed personal choice. Policy makers, however, also want to know what the statistical “best choice” would be for large numbers of mothers, so they can decide how best to allocate resources.

Academy nutrition experts used mathematical simulation modeling to estimate the HIV-free survival of children up to two years old under three different feeding scenarios and in three different mortality settings. This analysis built upon the earlier study described here on risks of transmission at different ages.

The simulation showed that, where the infant mortality rate (IMR) is under 25 deaths per 1000 live births, replacement feeding up to 24 months of age results in the greatest HIV-free survival. Where IMR is greater than 25/1000 (the case in most developing countries) exclusive breastfeeding up to six months followed by early cessation is best. Where IMR is greater than 101/1000, even where there is no intervention to lower the risk of transmission, breastfeeding “as usual” results in higher survival rates than replacement feeding.

Piwoz E and Ross J. (2005) Use of population-specific infant mortality rates to inform policy decisions regarding HIV and infant feeding. American Society for Nutritional Sciences.

when WHO and national policy regarding breastfeeding for HIV-positive mothers changed in 1998, AED worked with ZVITAMBO to develop and evaluate an education and counseling intervention for mothers.

The intervention, which lasted until 2000, was carried out in Harare. It showed that culturally sensitive and personalized nutrition education and counseling can make a measurable difference in HIV transmission.⁵

Formative research with community members revealed important beliefs and concerns about HIV testing, mother-to-child transmission, and feeding options. A majority of men and women believed that *nothing* could be done to prevent HIV transmission to infants. Some erroneously thought mixed feeding could reduce transmission. All agreed that husbands have the final say about how long a baby is breastfed. The program had to address these and other barriers through materials and training of counselors.

ZVITAMBO experts designed counseling tools (videos, pamphlets, and fact sheets) to help explain the benefits of HIV testing and describe the risks, benefits, and costs of four feeding options. They trained HIV counselors and health educators to discuss choices with mothers. Men were reached through work-place outreach.

A carefully designed evaluation followed 14,110 mother-newborn pairs over two years. At the end of this time, mothers who were enrolled in the full program were 8.4 times more likely to exclusively breastfeed for at least three months and 70 percent more likely to learn their HIV status within that time than those who attended the clinic before the program began.⁶

Results also confirmed predictions of the “balance of risks” model. HIV-positive mothers who introduced solid foods or animal milks along with breastmilk before their infants reached three months of age had a four-fold greater risk of transmitting the virus by six months than those who exclusively breastfed.⁷

⁵ *Funding for AED’s participation was provided by USAID’s SARA Project.*

⁶ *Piwoz, EG, Iliff PJ, et al. (2005) An education and counseling program for preventing breastfeeding-associated HIV transmission in Zimbabwe: Design and impact on maternal knowledge and behavior. J Nutr 135(4):950-5.*

⁷ *Iliff PJ, Piwoz EJ, et al. and the ZVITAMBO study group. Early exclusive breastfeeding reduces the risk of postnatal HIV-1 transmission and increases HIV-free survival. AIDS 19(7):699-708.*

Making a Difference in Country Programs

Lessons from Ndola

For the last eight years, AED has helped build local capacities to carry out country-level programs to help mothers make informed choices for themselves and their infants.

Many early lessons emerged from a ground-breaking program in Zambia, centered in Ndola District. Up to one third of women attending antenatal clinics there were HIV-positive. As in many African communities, women did not have access to anti-retrovirals when the program began. Activities were launched in 1997 by AED's LINKAGES project and the Ndola District Health Management Team and other partners. The collaboration demonstrated that it is feasible to integrate infant feeding and HIV counseling and testing with maternal and child health and community services.

A series of systematic assessments looked at national policies, health facility activities, referral mechanisms, and current training. Formative research investigated local beliefs and behaviors. Stakeholders identified community groups and providers who should be engaged in the program.

AED designed distinct curricula and training-of-trainer workshops for program managers, health care providers, community workers, and community outreach groups (such as members of village health committees). The intervention provided mothers with infant feeding counseling at multiple points: as part of the voluntary counseling and testing (VCT) if they chose to be tested, after delivery, at growth monitoring visits, and at outreach posts.

An external evaluation of the project after two years showed that women remained reluctant to find out their HIV status because of the fear of stigma or the absence of anti-retrovirals. Nevertheless, they were receptive to counseling and communication activities about nutrition behaviors that can reduce transmission. Infant feeding practices improved significantly among both mothers who knew their HIV status as well as those who did not. The percent of women who believed nothing could be done to prevent mother-to-child transmission dropped from 31.8 percent to 3.9 percent. By midterm this message had diffused into the community, reaching both mothers and male community members. After four years, research showed that the number of children under six months of age who were given "mixed

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feeding" (a harmful practice for infants of any status) had fallen from 44 to 26 percent.

Scaling up in Zambia

The Zambian Ministry of Health, with assistance from the LINKAGES Project, expanded the Ndola model to 66 sites in nine districts.

Between 2004 and 2005 the LINKAGES Project also mounted an intensive media campaign throughout the country aimed at several audiences. The campaign, called *Act Now!* included print materials for women and health workers as well as seven radio and seven television spots aimed at the general public. Messages encouraged men to be tested for HIV for the sake of their partners and unborn children, and also urged them to support their partners in being tested and in making decisions about infant feeding. After one year, exposure to the seven spots ranged from 41 to 63 percent of the target population (with variation according to the spot). In areas that only received the media portion of the intervention, "viewers" were also significantly more likely to practice desired behaviors than "non-viewers." Among viewers, 30 percent had been tested for HIV, in contrast to 19 percent of non-viewers. And 22 percent of viewers had used a condom at last sexual encounter, as opposed to only 6 percent of non-viewers.

Expanding in the Region

AED training experts refined the 12-day integrated curriculum on infant feeding and PMTCT originally designed for Zambia with feedback from participants in several sub-Saharan African countries. Between 1999 and 2004 nine countries sent representatives to Ndola to gain practical experience and observe the model in action.

In 2002 AED opened a regional office in Lusaka, Zambia, to provide PMTCT assistance to countries throughout the region. AED also operates field offices in South Africa, Tanzania, and Swaziland, and currently supports integration of infant feeding in the context of PMTCT into health activities in 13 countries. (See box on next page.)

Expanding PMTCT In Africa

The Academy helps countries develop national guidelines on PMTCT, design skills training, and strengthen counseling and referral and community mobilization. Special emphases include:

In Haiti

Training for doctors and nurses in 36 sites. Special focus on reviving interest in the Code of Marketing of Breastmilk Substitutes in the context of HIV.

In Malawi

With Save the Children, capacity building for a large network of NGOs (the Umoyo Network) to deliver VCT and infant feeding counseling. With the University of North Carolina and the U.S. Centers for Disease Control and Prevention, research on breastfeeding, antiretroviral drugs, and nutrition interventions to prevent postnatal HIV transmission and improve maternal health.

In Malawi, South Africa, and Tanzania

Training for facility assessors on how to apply certification criteria for the Baby-Friendly Hospital Initiative in the context of HIV.

In Mozambique

Support for a targeted evaluation on therapeutic nutrition for HIV-affected infants and young children. Assistance with a targeted evaluation of infant feeding options following early cessation of breastfeeding.

In South Africa

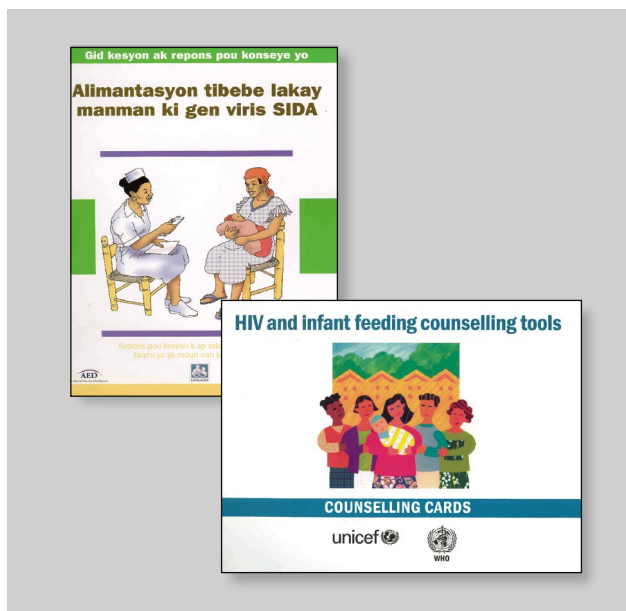
Assistance to the Nutrition Directorate to develop guidelines for pregnant and lactating women to improve their own nutritional status. Development of messages for radio and television activities.

In Swaziland

Collaboration with the MOH and the Elizabeth Glaser Pediatric AIDS Foundation to assess hospital and community capacity to carry out programs.

In Tanzania

Collaboration with the Food and Nutrition Commission to review national Infant and Young Child Feeding Legislation.



AED has helped produce manuals and counseling tools for mothers and health workers.

Practical Tools for Health Workers and Mothers

Successful counseling is not a matter of *teaching* but of *negotiating* with each individual mother to decide what feeding strategy is most acceptable, feasible, affordable, and sustainable in her own situation. To help providers learn these skills, AED has developed three different curricula, with funding from USAID. These include a course for health providers, a course for community motivators, and a course on adult learning principles, using PMTCT as the core examples.

For the World Health Organization, the Academy also assisted in developing a manual on how to identify locally appropriate infant feeding options using formative research methods and a set of counseling materials that support health workers in talking with HIV positive mothers about how to weigh different feeding options and carry them out correctly.

While AED's initial commitment to preventing mother-to-child transmission of HIV/AIDS thus began at somewhat remote scientific and policy levels, it has persisted down to the level of the individual mother and the challenges she faces in carrying out the implications of what we have learned. It is her actions, and her courage, after all, that will actually save a life. ■