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Challenges for Safe Replacement Feeding among HIV-Positive Mothers in Vietnam: A Qualitative Study of Mothers, Fathers, Health Care Providers, and Other Experts

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Acknowledgments

This study of infant and young child feeding practices of HIV-positive women in two cities in Vietnam was conducted by Boston University's Center for Global Health and Development[1] and the Institute of Social and Medical Studies (ISMS)[2] in Vietnam. The Food and Nutrition Technical Assistance II Project (FANTA-2)[3], supported by the U.S. Agency for International Development (USAID)/Vietnam and managed by FHI 360, provided technical and financial support.

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Abbreviations and Acronyms

AFASS	acceptable, feasible, affordable, sustainable, and safe
ART	antiretroviral therapy
ARV	antiretroviral drug
BFHI	Baby-Friendly Hospital Initiative
CDC-GAP	Centers for Disease Control and Prevention Global AIDS Programs
CHS	commune health station
EID	early infant diagnosis
FHI	Family Health International
GF	Global Fund to Fight AIDS, Tuberculosis, and Malaria
HCMC	Ho Chi Minh City
IDU	intravenous drug user
ISMS	Institute of Social and Medical Studies, Vietnam
IYCF	infant and young child feeding
LIFE-GAP	Leadership Investment Fighting Epidemic-Global AIDS Program (Vietnam)
MARP	most at-risk population
MCH/FP	maternal and child health/family planning
MICS	multiple indicator cluster survey
MOH	Ministry of Health
MSM	men who have sex with men
MTCT	mother-to-child transmission of HIV
NGO	nongovernmental organization
NIN	National Institute of Nutrition
OPC	outpatient clinic
PEMC	Protein-Energy Malnutrition Control
PCR	polymerase chain reaction y
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PLHIV	person or people living with HIV
PMTCT	prevention of mother-to-child transmission of HIV
SBCC	social and behavior change communication
UNICEF	United Nations Children’s Fund
VAAC	Vietnam Administration of HIV/AIDS Control
VCT	voluntary counseling and testing
WHO	World Health Organization

Executive Summary

Infant and young child feeding (IYCF) practices are critical for HIV-positive mothers and their children because of the risk of HIV transmission through breast milk and the risk of diarrhea and malnutrition from unhygienic replacement feeding. This study is one of few that provide insight into the challenges that HIV-positive mothers face trying to provide safe replacement feeding in Vietnam.

The World Health Organization (WHO) (2010) recommends that HIV-infected mothers whose infants are HIV negative or of unknown status breastfeed exclusively for the first 6 months, then introduce complementary foods and continue to breastfeed for the first 12 months of life. Breastfeeding should only stop once caregivers can provide a nutritionally adequate and safe diet without breast milk. Infant formula should only be provided when specific conditions are met. The 2010 WHO guidelines urge national authorities to decide whether to promote avoidance of all breastfeeding by HIV-positive mothers or exclusive breastfeeding as long they receive antiretroviral drugs (ARVs), depending on which strategy is likely to give infants the greatest chance of HIV-free survival. WHO recommends that health services inform HIV-positive pregnant women and mothers of the national infant feeding recommendation as well as alternatives HIV-positive women may wish to adopt.

In October 2009 the Food and Nutrition Technical Assistance II Project (FANTA-2), managed by FHI 360 and with support from USAID/Vietnam, in partnership with the Institute of Social and Medical Studies (ISMS) in Vietnam and the Center for Global Health and Development at Boston University, completed data collection for a qualitative study of IYCF practices in the context of HIV in two cities in Vietnam. Although the country's HIV prevalence rate was estimated at 0.43 percent in 2009, this figure is significant in a population of over 85 million. The primary purpose of the study was to determine whether HIV-positive women could safely follow the advice of health care providers to provide replacement feeding to their infants. The findings are timely because in 2011 Vietnam will update its prevention of mother-to-child transmission (PMTCT) recommendations based on the latest WHO guidelines, and the National Institute of Nutrition (NIN) will develop national nutrition guidelines for people living with HIV (PLHIV) that will include infant feeding recommendations. The study findings can inform the development of counseling materials and job aids, capacity-strengthening initiatives, and training to reduce high-risk infant feeding practices in the context of HIV.

Findings

The study found that sub-optimal infant feeding practices among HIV-positive women reflected challenges at all levels, including among households, health care services, programs, and policies.

None of the mothers interviewed practiced exclusive replacement feeding, and most had introduced complementary foods before their infants were 6 months old. None of the households met all six WHO conditions for safe replacement feeding. The findings of this study are summarized below according to each of these conditions.

1. Safe water and sanitation are assured at the household level and in the community.

In the interviews, lack of safe water and poor hygiene emerged as important barriers to safe formula feeding. Mothers and other caregivers did not consistently wash their hands before preparing and feeding infant formula. Nor did they consistently use safe water to prepare formula. Many caregivers said they discarded leftover formula, but a few stored it and used it again later.

2. The mother or other caregiver can reliably provide sufficient infant formula to support the normal growth and development of the infant.

The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis and Malaria (GF) support the provision of free infant formula to HIV-positive mothers. However, gaps in free formula provision affect how much formula families feed their infants and how soon they introduce other foods or liquids. In both cities, Hai Phong and Ho Chi Minh City (HCMC), mothers reported not always receiving enough free formula to meet their infants' needs. Moreover, free formula was provided only to women who were confirmed as HIV positive. However, many women are not tested for HIV until delivery. The delay between HIV testing during labor and the confirmatory test results complicates infant feeding counseling for health care providers, as women can be counseled only after they are confirmed as HIV positive. The delay could lead mothers who are later confirmed as HIV negative to miss the opportunity to breastfeed their children. In addition, some mothers said that they did not receive enough free formula to feed their infants, which led them to introduce foods such as rice flour soup to infants as young as 2 months old, although complementary feeding should not begin until the age of 6 months. Some mothers reported introducing other foods because they felt it was the right thing to do regardless of the child's age. Despite widespread access to free formula, informants consistently identified the high cost of formula as a barrier to exclusive formula feeding. A few mothers complained of the time and distance they had to travel to pick up free formula and of long waits at health facilities.

3. The mother or other caregiver can prepare infant formula safely and frequently enough so that it is safe and carries a low risk of diarrhea and malnutrition.

The 2010 *WHO Guidelines on Infant Feeding 2010: Guidelines and Principles for Infant Feeding in the Context of HIV and a Summary of the Evidence* state that all HIV-positive pregnant women and mothers should have access to skilled counseling and support for appropriate infant feeding practices and ARV interventions to promote HIV-free survival of infants. One of the most common themes to emerge from key informant interviews was the lack of time health care providers had to provide adequate infant feeding counseling. Some key informants suggested that health care providers charged with counseling on IYCF—including clinicians at provincial, district, and commune levels and support group leaders—lacked the necessary training. Mothers and families who did not consistently go to health facilities got infant feeding information from HIV support group members, who were eager to counsel them but did not have accurate information.

4. The mother or other caregiver can feed the infant formula exclusively for the first 6 months of life.

Only 3 of the 30 HIV-positive mothers interviewed in this study mentioned breastfeeding their infants. The rest of the informants reported formula feeding, but whether they practiced exclusive formula feeding was not known. Mixed feeding (feeding an infant under 6 months breast milk in addition to other foods and liquids, including formula) increases the risk of mother-to-child transmission of HIV compared with exclusive breastfeeding and exclusive formula feeding. In a study conducted from 2001 to 2005 in South Africa, infants who were fed formula in addition to breast milk were nearly twice as likely to be infected with HIV as infants who were fed only breast milk. Infants who were breastfed but also received solids were nearly 11 times more likely to become infected with HIV than those who received breast milk only (Coovadia et al. 2007).

Given the stigma associated with not breastfeeding reported by several mothers, it is not unlikely that some HIV-positive women at least partly breastfeed their infants. Many informants thought that infant formula was not adequate or healthy enough to feed exclusively before the age of 6 months. Sometimes this information was conveyed by health care providers. Others felt the free formula they received was of poor quality and inadequate to nourish their infants. The reported influence of mothers-in-law on infant feeding decisions was common across the sample. Some mothers reported that their mothers-in-law had strong beliefs that formula did not provide adequate nutrition for infants and pressured them to introduce other foods early. Some mothers said their mothers-in-law had introduced solids to their infants against

their wishes and despite their and other family members' protests that this was inappropriate and despite the advice of health care providers. Even if they received counseling on appropriate IYCF from a health care provider, some mothers could not follow through because of the power their mothers-in-law exerted in their households.

5. The family and community are supportive of this practice.

HIV is still highly stigmatized in Vietnam, associated with marginalized groups and condemned as a "social evil." Interviews for this study found that HIV-related stigma had many manifestations and affected parents and their children in diverse ways, all of which made it difficult for HIV-positive mothers to formula-feed exclusively. Eligibility for free formula could be seen as a sign of HIV-positive status and discouraged some families from picking up their supplies. Not breastfeeding also raised questions in many informants' families, leading some HIV-positive mothers to pretend to breastfeed in front of relatives. For some mothers, exclusive replacement feeding resulted in involuntary disclosure of their HIV status to family and friends.

6. The mother or caregiver can access comprehensive child health services.

To minimize the risk of child mortality from diarrhea and respiratory diseases associated with unhygienic or inadequate formula feeding, the 2010 WHO recommendations state that "National programs should provide all HIV-exposed infants and their mothers with a full package of child survival and reproductive health interventions with effective linkages to HIV prevention, treatment and care services." The informants interviewed in this study indicated that services for pregnant women, women in labor and delivery, and postpartum and infant care were compartmentalized, with little connection between antenatal care and postnatal maternal checks and antiretroviral therapy (ART) services in outpatient clinics (OPCs).

The findings of this qualitative study are meant to provide insights into behaviors, knowledge, perceptions, and challenges related to IYCF in the context of HIV in Vietnam but not to describe or characterize any particular reference population or HIV program. The data represent the experiences of a small number of HIV-positive people and should be considered with some caution. However, mothers from both the north and south were included in the sample, and the consistency of findings across the two sites strongly suggests that they reflect key issues regarding infant feeding in the context of HIV in Vietnam.

Recommendations

The interfaces between infant feeding, HIV, and child survival are critical and multi-layered. A mother's decision whether to breastfeed and take ARVs or to avoid all breastfeeding needs to balance the risk of HIV transmission through breast milk and the risk of death from infections such as diarrhea and respiratory disease. For either decision, the study findings show a clear need to:

1. Address stigma and discrimination at the community level and within the health system to improve access to and uptake of PMTCT and ART services.
2. Counsel and test pregnant women for HIV during antenatal care visits wherever possible.
3. Counsel caregivers of HIV-positive infants on sanitation and hygiene and identify ways to improve access to safe water.
4. Train health care providers to deliver consistent messages on infant nutritional needs and the timely introduction of complementary feeding.
5. Institute regular follow-up of HIV-exposed infants for six-week testing and use this opportunity to counsel HIV-positive mothers on optimal infant feeding.
6. Build a collaborative approach among health care providers at all contact points for HIV-positive women and their infants to promote and monitor optimal infant feeding.
7. Improve tracking systems to reduce loss to follow-up after HIV-positive mothers give birth.

If Vietnam decides to recommend ARVs and exclusive breastfeeding for all HIV-positive women:

1. Increase access to voluntary counseling and testing (VCT) for pregnant women, ARVs for HIV-positive pregnant and postpartum women, and ARV prophylaxis for HIV-exposed infants.
2. Discontinue the provision of free infant formula in a phased withdrawal accompanied by a campaign to inform health care providers and mothers of the policy change.
3. Implement a vigorous social and behavior change (SBCC) campaign to support exclusive breastfeeding for the first 6 months of life.

If Vietnam decides to recommend exclusive formula feeding for all HIV-positive mothers:

1. Invest in improving IYCF practices to prioritize HIV-free infant survival by training health care providers, including home-based care providers and commune-level midwives, as well as PLHIV support group members to counsel HIV-positive women on the conditions needed for safe formula feeding and the dangers of mixed feeding.
2. Streamline and coordinate free formula provision to ensure adequate, consistent, and equitable supply.

1 Global and National Recommendations on HIV and Infant Feeding

HIV transmission through breastfeeding has complicated the promotion of exclusive breastfeeding in Vietnam as in other countries. Mothers can transmit HIV to their infants during pregnancy, during delivery, and through breastfeeding, although not all infants of HIV-positive mothers are infected. With no medical interventions to prevent transmission, 5 percent–10 percent of infants of HIV-infected mothers are infected in utero, 15 percent during delivery, and 5 percent–20 percent through breastfeeding, depending on the duration (De Cock et al. 2000).

Infant feeding practices are critical for HIV-positive mothers and their children because appropriate infant feeding practices can reduce the risk of HIV transmission through breast milk and the risk of diarrhea and malnutrition from unhygienic replacement feeding. Simulated estimates of adverse outcomes in impoverished developing countries have shown that the risk of mortality from infectious diseases in non-breastfed infants under 6 months old would surpass the risk of HIV transmission among breastfed infants (Ross and Labbok 2004). Coutsoudis et al. (1999) and other studies have suggested that feeding infants under 6 months old breast milk in addition to other foods and liquids, including formula (mixed feeding) confers excess risk of mother-to-child transmission of HIV compared with exclusive breastfeeding and exclusive formula feeding. Coovadia et al. (2007) found that infants who received formula in addition to breast milk were nearly twice as likely to be infected with HIV as infants who received breast milk only.

Weighing the risk of HIV transmission against the risk of increased morbidity and mortality associated with replacement feeding in resource-poor settings, WHO (2010) recommends that HIV-infected mothers whose infants are HIV negative or of unknown status breastfeed exclusively for the first 6 months, then introduce complementary foods and continue to breastfeed for the first 12 months of life. Breastfeeding should only stop once a nutritionally adequate and safe diet without breast milk can be provided. Infants of HIV-infected mothers who decide to stop breastfeeding should receive commercial infant formula only if the following conditions can be met:

1. Safe water and sanitation are assured.
2. The caregiver can provide sufficient formula to support normal infant growth and development.
3. The caregiver can prepare formula cleanly and frequently enough so that it is safe.
4. The caregiver can give infant formula exclusively for the first 6 months.
5. The family supports this practice.
6. The caregiver can access comprehensive child health services.

These conditions are simpler and more explicit definitions of the AFASS (acceptable, feasible, affordable, sustainable, and safe) concepts used in previous recommendations and listed in Annex 1. WHO (2010, p. 10) explains the decision to express these conditions in common language: “It was felt that such language would better guide health workers regarding what to assess, and to communicate this to mothers who were considering if their home conditions would support safe replacement feeding. Using these descriptions does not invalidate the concepts represented by AFASS (p. 37).”

Key Principle 6 in the 2010 WHO *Guidelines on Infant Feeding 2010: Guidelines and Principles for Infant Feeding in the Context of HIV and a Summary of the Evidence* states that all HIV-positive pregnant women and mothers should have access to skilled counseling and support for appropriate infant feeding practices and ARV interventions to promote HIV-free survival of infants.

The implications of formula feeding without adequate infrastructure to ensure its safety were demonstrated in Botswana after the national PMTCT program recommended replacement feeding for all HIV-positive mothers, accompanied by a year’s supply of free formula. Between January and March 2006 there were 23,998 cases of diarrhea and 486 deaths as a result of water contamination and infant formula feeding, a

fourfold increase in diarrhea cases, and a 25-fold increase in diarrhea deaths in children under 5 compared with the 2004-2005 period (Creek et al. 2007).

Although Vietnam's HIV prevalence rate is low, estimated at 0.43 percent among people 15–49 years old in 2009 (National Committee for AIDS, Drugs, and Prostitution Prevention and Control 2010), this figure is significant in a population of over 85 million (General Statistical Office 2010). The country's epidemic is concentrated in most-at-risk populations (MARPs), including intravenous drug users (IDUs), female sex workers, and men who have sex with men (MSM) along with their partners and clients. Prevalence varies by province and among urban and rural areas. HIV prevalence among IDUs is highest in HCMC (48 percent), Hai Phong (48 percent), and Quanh Ninh (56 percent) (IBBS, Round II, 2009). Prevalence among female sex workers averages 16 percent in HCMC, Hanoi, Hai Phong, and Can Tho.

While the major mode of HIV transmission in Vietnam is through shared needles and other equipment among IDUs, HIV transmission through heterosexual intercourse is increasing because of the spread of HIV from MARPs, including infected IDUs and clients of sex workers, to their spouses or other regular partners. Although men accounted for 73.2 percent of all reported cases of HIV in 2009, the proportion of women living with HIV appears to be increasing (IBBS Round II, 2009). Annual sentinel surveillance data from antenatal clinics show that HIV infection among women, while still low, increased more than 20 times between 1994 and 2007, from 0.02 percent to 0.53 percent (WHO, UNAIDS, and UNICEF 2008). Since 2005 there has been rapid scale-up of antiretroviral drugs (ARVs) in Vietnam; 53.7 percent of adults with HIV were receiving antiretroviral (ART) in 2009 (VAAC 2009a). With new infections and increased access to ART to prolong life, the number of people living with HIV (PLHIV) was expected to increase to 280,000 in 2010 and the proportion of HIV-positive adults with access to ART to increase to 75 percent by 2012 (MOH and VAAC 2010).

Vietnam has had numerous Plans of Action for Infant and Young Child Feeding, and MOH policy guidance on infant feeding for HIV-positive mothers has evolved since 2000. An assessment in HCMC (Uhrig 2001) found directives to "strongly or exclusively encourage bottle feeding" and "counsel the mother not to breastfeed her baby to prevent transmission and give [counseling] on how to use formula milk." The 2003 *National Standards and Guidelines for Reproductive Health Care Services* advised health care providers to counsel mothers on the risk of transmission of HIV through breastfeeding and the use of replacement milk. The *MOH Infant and Young Child Feeding Plan of Action for Vietnam 2006–2010* contained explicit, if scant, guidance on IYCF in the context of HIV: "Counsel the mother not to breastfeed her baby to prevent transmission and give [counseling] on how to use formula milk."

In contrast, the 2007 *Procedure of Care and Treatment for Prevention of Mother-to-Child Transmission of HIV* recommended that health care providers counsel and support mothers in their choice of infant feeding and counsel on the nutritional and immunological benefits of breastfeeding, the risks of HIV transmission through breast milk, and the benefits and risks of replacement feeding. The guidance stated that mothers who opted to breastfeed should be instructed to breastfeed exclusively, manage breast hygiene, and wean their infants before they are 6 months old and that mothers who opted for replacement feeding should be instructed on how to prepare and feed replacement food safely and hygienically. The guidance stated explicitly that mothers should switch to exclusive replacement feeding if they decided to stop breastfeeding and should avoid mixed feeding (feeding an infant both breast milk and replacement milk before the age of 6 months). The current policy framework, while it continues to recommend replacement feeding for HIV-positive mothers, acknowledges the importance of allowing mothers to breastfeed exclusively if the WHO criteria for safe formula feeding cannot be met.

The 2009 Vietnam *Guidelines for HIV/AIDS Diagnosis and Treatment* (2009) specify two options for infant feeding in the context of HIV, replacement feeding or exclusive breastfeeding. The guidelines call for providing infants of HIV-positive mothers with adequate doses of ARVs and counseling mothers on the benefits and risks of breastfeeding, correct breastfeeding positioning, and the use of full replacement feeding if caregivers can guarantee a sustainable supply of formula and can prepare it hygienically. They also recommend weaning as soon as possible to avoid the risk of mother-to-child transmission of HIV but do not state the conditions under which infants should be weaned or stress the risks of mixed feeding. The MOH is currently developing a National Plan on Infant and Young Child Feeding.

2 Infant Feeding and Child Nutrition in Vietnam

After slow growth in the early 1980s, Vietnam launched the *Đổi mới* ("Renovation") program in 1986 to promote a shift from a centrally planned economy to a multisector, market-based economy. From 1990 to 2004, economic growth averaged 7.5 percent and poverty fell rapidly. An impressive improvement in child outcomes, including a decrease in the prevalence of child malnutrition, followed these reforms. The implementation of the National Plan of Action for Nutrition for the Period 1995–2000 and other interventions to improve food production and consumption, as well as earlier laws and programs to strengthen child care and protection, also helped improve children's well-being during this period. On average, the prevalence of stunting (low height for age) in children under 5 declined by 2 percent per year from 1990 to 2000 and by 1.5 percent per year from 2000 to 2004. The improvement in nutritional status was greatest in urban areas. Between 1990 and 2004 the proportion of children under 5 who were stunted had decreased from 56.5 percent to 30.7 percent; the proportion who were wasted (low weight for height) had decreased from 9.4 percent to 7.7 percent; and the proportion who were underweight (low weight for age) had decreased from 45.0 percent to 22.8 percent (Khan et al. 2007).

Despite these gains, child and maternal malnutrition and nutritional disparities between rural and urban areas and ethnic groups remain high in Vietnam, exacerbated by inflation and the vicissitudes of the global economy. The 2009 National Nutrition Surveillance found that one in three children was stunted and one in five was underweight. There was wide variation in the prevalence of malnutrition among children under 5 years old among the 10 provinces surveyed, with 13.7 percent to 30.6 percent of children underweight, 18.2 percent to 48.3 percent of children stunted, and 4.9 percent to 12.2 percent of children wasted (Nguyen et al. 2009). The Central Highlands provinces had the highest prevalence of both underweight and stunting.

As a result of these and earlier findings, nutrition has been a priority issue in Vietnam for the past decade and a half. In 1995 the National Plan of Action for Nutrition 1995–2000 called on authorities at all levels to integrate nutrition goals into their development plans and resulted in the National Protein-Energy Malnutrition Control (PEMC) Program and an iron supplementation program for women supported by UNICEF. The National Nutrition Strategy 2001–2010[4] expanded the PEMC program along with iron and multi-micronutrient supplementation and vitamin A distribution. The National Vitamin A Deficiency Control Program has been in place since the early 1990s.

IYCF practices contribute significantly to malnutrition in Vietnam. The country recognizes the critical role of breastfeeding in growth and development and in prevention of childhood illness and has promoted breastfeeding since the 1980s. The National Nutrition Strategy 2001–2010 recommended initiation of breastfeeding in the first hour after birth and exclusive breastfeeding for 6 months. Nevertheless, timely initiation of breastfeeding and exclusive breastfeeding are far from ideal and contribute to high rates of malnutrition among children under 5 years old. The 2009 National Nutrition Surveillance in 10 provinces found that only 55 percent of children 0–6 months old had received breast milk within an hour of birth and only 10 percent were exclusively breastfed (Nguyen, Menon, and Hajeebhoy 2010).

Increases in the numbers of working women with less time to breastfeed have contributed to the low rates of exclusive breastfeeding in Vietnam, but another important factor is the aggressive marketing of breast milk substitutes by infant formula companies. National Decree 21, enacted in 2006, prohibits formula companies from approaching health care providers or mothers at health care facilities. However, formula companies offer hospitals benefits to advertise and sell their products to mothers after delivery or circumvent the regulation by calling mothers at home and promoting their products at fairs and meetings of professional organizations. Public awareness of the content of Decree 21 is weak, and resistance to its provisions is based on financial considerations and ambivalence about the benefits of breastfeeding. In addition, only 59 of Vietnam's 12,146 hospitals and health centers with maternal services are certified as Baby Friendly under the Baby-Friendly Hospital Initiative (BFHI), a global program sponsored by WHO and UNICEF to help hospitals give mothers the information and skills to breastfeed exclusively (Stocking 2009).

[4] The National Nutrition Strategy 2011–2020 will be released in 2011.

When infants reach the age of 6 months, breast milk is no longer enough to meet their nutritional needs and complementary foods should be added to the diet along with breast milk. The transition from exclusive breastfeeding to family foods is the time when malnutrition begins in many infants, with lifelong consequences. Early introduction of complementary foods is common in Vietnam. The National Nutrition Strategy for the Period 2001–2010 (MOH 2001) reported common early introduction of foods such as rice porridge, often within the first week of delivery, despite national health education programs promoting introduction of complementary foods at the age of 6 months. The 2009 National Nutrition Surveillance found that 56.3 percent of infants in the 10 provinces surveyed had been fed food or drinks during the first 3 days of birth (Nguyen et al. 2009).

A 2009 study by the National Institute of Nutrition (NIN) and Alive & Thrive found that premature introduction of complementary foods in Vietnam was affected by, among other things, a perception of insufficient breast milk, advice from grandmothers and other mothers, and advertising of semi-solid food products that claim to promote intellectual development. Health care providers and health facilities might also encourage early introduction of complementary foods by advising mothers to begin giving foods and liquids other than breast milk at 4 months rather than 6 months (Hoat et al. 2010). UNICEF/Vietnam and Alive & Thrive/Vietnam are working with the MOH and the Vietnam Women's Union to increase the rate of exclusive breastfeeding and improve complementary feeding practices.

3 PMTCT Services in Vietnam

In 2001 the Government of Vietnam and UNICEF/Vietnam initiated a 5-year PMTCT pilot in five provinces with high rates of HIV. In 2002 the government began implementing a program that included Nevirapine prophylaxis for HIV-infected mothers and community mobilization to increase the use of antenatal care and promote voluntary counseling and testing (VCT). In 2003 the Global Fund to Fight AIDS, Tuberculosis and Malaria (GF) approved financing to implement a comprehensive care program that included PMTCT and was rolled out in 20 provinces. The MOH and U.S. Centers for Disease Control and Prevention (CDC)/Vietnam instituted the Global AIDS Program (CDC-GAP) in 1998 and the Leadership Investment Fighting Epidemic-Global AIDS Program (LIFE-GAP) in 2001 in three high-prevalence provinces to inform the development of a comprehensive national approach to reducing HIV transmission. Part of this project focused on identifying factors that reduce the percentage of HIV-infected mothers who breastfed. These programs contributed to current government policy and action on improved counseling on alternatives to breastfeeding and provision of free formula to HIV-positive mothers. The MOH/LIFE-GAP Care and Treatment Program collaborates with the National Institute of Clinical Research in Tropical Medicine-Bach Mai Hospital, regional hospitals, and provincial and district hospitals in 40 provinces to provide outpatient services to PLHIV.

Women who test positive for HIV are given prophylaxis or treatment for opportunistic infections and assessed for eligibility for ARV prophylaxis. In 2009, an estimated 32.3 percent of HIV-positive women received ARVs to reduce the risk of mother-to-child transmission of HIV (UNAIDS 2010). Pregnant women who are eligible for ARVs based on their health status and CD4 count[5] start as soon as possible after 14 weeks. Others receive AZT starting at 28 weeks, followed by intrapartum AZT/3TC and a single-dose of Nevirapine and 1 week of AZT/3TC postpartum. Women who find out they are HIV positive during labor or go to a PMTCT site for the first time for delivery receive a single dose of Nevirapine and one week of AZT+3TC. Infants of HIV-positive mothers receive a single dose of Nevirapine at birth, followed by one to four weeks of AZT, depending on how long the mothers received AZT before labor. Infants receive Cotrimoxazole at four to six weeks, growth monitoring, monitoring of nutritional status and symptoms, and early infant diagnosis (EID), according to the 2009 MOH protocol.

The 2009 HIV sentinel surveillance in Vietnam recorded HIV prevalence among pregnant women at 0.3 percent (VAAC 2009b). With an estimated 1.5 million deliveries annually, 3,750 HIV-positive pregnant women were giving birth each year (The U.S. President's Emergency Plan for AIDS Relief [PEPFAR]/Vietnam 2010). The concentrated and heterogeneous nature of the HIV epidemic poses many challenges to the National PMTCT Program.

In 2009 Vietnam had 223 PMTCT facilities, 96 of them providing comprehensive PMTCT services and 127 providing VCT and referral (Socialist Republic of Vietnam 2010). For women with unknown HIV status or a previously negative HIV test, pretest counseling and voluntary HIV testing is a first step. The number of pregnant women who received HIV pretest counseling doubled between 2008 and 2009, from 351,625 to 762,323. The number of pregnant women tested for HIV who knew their results also nearly doubled during the period, from 249,278 to 480,814. However, because many pregnant women received antenatal care at commune health stations where HIV testing was not available, only one-quarter of women were tested for HIV (UNAIDS 2010). HIV-related stigma and lack of information about the benefits of PMTCT also contribute to low rates of HIV testing among pregnant women.

The number of new infections caused by transmission from members of high-risk groups to their partners will require scaled-up care and treatment and expanded comprehensive PMTCT services. As more pregnant women become infected with HIV, the number of HIV-positive newborns will steadily increase. In 2007 the country counted 3,750 children under 15 infected with HIV. The number is expected to increase to 5,700 by 2012.

[5] According to Vietnam MOH guidelines, pregnant women are eligible for highly active antiretroviral therapy (HAART) at clinical stage I or II with CD4 count ≤ 250/mm^3, at clinical stage III if CD4 count is < 350 mm^3, and at clinical stage IV regardless of CD4 count. If CD4 testing is unavailable, pregnant women should receive ART at clinical stage III or IV.

3.1 National PMTCT and related Protocols

PMTCT is one of the most important components of Vietnam's National HIV/AIDS Program. The following documents guide Vietnam's policies and programs for PMTCT:

- *National Plan of Action on Prevention of Mother to Child Transmission for the Period 2006–2010*, in accordance with Decision No. 20/2006/QD-BYT, July 7, 2006
- *Procedure for Care and Treatment for Prevention of Mother-to-Child Transmission of HIV*, 2007
- *Guidelines for HIV/AIDS Diagnosis and Treatment, Decision No. 3003/Qd-BYT*, August 19, 2009

The overall objective stated in the *National Plan of Action on Prevention of Mother to Child HIV Transmission for the Period 2006–2010* was to reduce the rate of mother-to-child HIV transmission to below 10 percent by 2010. Specific objectives are listed below.

- To reduce the percentage of HIV-infected pregnant women to below 0.5 percent
- To increase the percentage of pregnant women who are given HIV/AIDS counseling to 90 percent and the percentage of pregnant women who receive counseling and voluntarily attend HIV testing to 60 percent
- To provide 100 percent of pregnant women infected with HIV and their children (those who are registered) with HIV prophylactic treatment
- To provide 90 percent of HIV-infected mothers and their children (those who are registered) with post-delivery follow-up and care

The 2009 MOH *Guidelines for HIV/AIDS Diagnosis and Treatment* include the following procedures related to infant feeding and PMTCT:

1. Provision of care and treatment services for PMTCT for women during pregnancy

   [The] HIV status of pregnant women needs to be confirmed early for timely application of measures to prevent the transmission of the virus to the babies, which include ARV prophylaxis,[6] *substitution feeding [sic] for the infant and referral for postpartum care and treatment services* (p. 81).

2. Provision of care and treatment services for PMTCT for women of unknown HIV status during labor

   Who needs prophylaxis with ARV[s] for PMTCT? HIV-infected pregnant women not attending antenatal care services or being diagnosed with HIV late during labor and delivery (p. 83).

3. Care and support of HIV-infected pregnant women

   [The] HIV status of pregnant women needs to be defined early for timely application of measures to prevent the transmission of the virus to the babies, which include ARV prophylaxis, substitution [sic] feeding for the infant and referral for postpartum care and treatment services (p. 81).

   2.2.1. Preferred regimen: AZT + single dose of NVP: This regimen is given to all HIV (+) pregnant women in antenatal care facilities to prevent HIV transmission from mother to child (p. 84).

   Counsel the mothers about the benefit of breastfeeding and the risk of HIV transmission with breastfeeding. Use full replacement feeding for infants if available (source of milk, clean water, food hygiene). If breastfeeding, counsel adequately on feeding position, how to hold the nipples and how to manage when the nipples fissure and breast abscess occurs and on weaning as soon as possible to avoid risk of mother to child transmission (p. 86).

[6] The 2009 Vietnam "Guidelines for HIV/AIDS Diagnosis and Treatment" specify that HIV-positive pregnant women should receive AZT any time from 28 weeks gestation up until labor and AZT/3TC plus Nevirapine during labor plus 7 days of AZT/3TC postpartum, or if the woman is diagnosed with HIV in labor, AZT/3TC plus Nevirapine during labor in addition to 7 days of AZT/3TC postpartum (p. 84).

Neither the 2007 nor 2009 MOH document specifies the duration of formula provision or the agency responsible for procuring and distributing free infant formula. PEPFAR/Vietnam supports this formula distribution in nine provinces. Annex 2 summarizes the procedures for free infant formula distribution in PEPFAR/Vietnam-supported sites.

3.2 Implementing Agencies

At the national level, the Department of Reproductive Health collaborates with VAAC, the National Hospital for Obstetrics and Gynecology, and other relevant agencies to coordinate PMTCT activities. At the regional level, regional steering committees of the HIV/AIDS Control and Prevention Program provide professional guidance and technical assistance. At the provincial level, the Centers for Reproductive Health Care collaborate with the Centers for HIV/AIDS Control and Prevention (or the Centers for Preventive Medicine in provinces where Centers for HIV/AIDS Control and Prevention are not yet established) to plan, organize, implement, monitor, supervise, and evaluate PMTCT services, which are provided at provincial hospitals, maternal and child health/family planning (MCH/FP) centers, and preventive health care centers. At the district level, the Centers for District Preventive Medicine are the PMTCT focal points. District hospitals, preventive health care teams, and MCH/FP teams supervise commune health stations, family planning at the community level, and antenatal care. At the commune level, commune health stations (CHS) staffed by doctors, assistant doctors, primary nurses, and midwives deliver primary health care and outreach. Not all commune health stations have doctors. Mobile teams provide outreach for family planning education, nutrition, and immunization, visiting households approximately once a month. In isolated areas, village health workers provide health education and antenatal care, perform normal deliveries, and refer abnormal pregnancies to higher levels.

Table 1 shows the general organization of government PMTCT efforts, although not all provinces and districts have hospitals that provide PMTCT services.

Table 1. Government of Vietnam PMTCT Structure

For HIV-infected pregnant women	For infants of HIV-infected mothers
• National OB/GYN hospital (1 PMTCT site) • Provincial OB/GYN hospital or provincial general hospital (OB/GYN department) (1 PMTCT site per province) • District general hospital (1 PMTCT site per district)	• National pediatric hospital (1 pediatric outpatient clinic [OPC]) • Provincial pediatric hospital or provincial general hospital (1 pediatric OPC per province or 1 combined adult/pediatric OPC per province) • District pediatric OPC (1 per district) or combined adult/pediatric OPC (1 per district)

Since 2002 PEPFAR/Vietnam has supported USG PEPFAR Partners in training health care providers, strengthening referral links, ensuring effective supply chain management of products and equipment, expanding access to short-course preventive ARVs, and expanding PMTCT services to include ART for both eligible HIV-positive mothers and other members of their children's immediate families, reflecting a family-focused approach. In 2009 PEPFAR/Vietnam directly supported PMTCT treatment at 600 sites in 19 high prevalence provinces. Fifty-one national, provincial, and district sites provided the minimum package of services. Provider-initiated testing and counseling was provided in 34 additional districts and 515 communes with linkages to designated antenatal sites, hospitals, and outpatient clinics that provide the minimum package of services. PMTCT and opt-out testing were part of the routine national antenatal care package.

UNICEF/Vietnam supports implementation of the National PMTCT Program of Action through development of national guidelines and training manuals on PMTCT and pediatric care and treatment, advocacy through the National Assembly and the Women's Union, development of provincial action plans, promotion of male partner involvement, and strengthening of linkages between PMTCT and other services. In 2008 PEPFAR/Vietnam extended its support for free infant formula to 18 months because of reported economic challenges faced by HIV-positive women in procuring formula on their own.

4 Objectives of the Study

Little is known about actual IYCF practices among HIV-positive mothers in Vietnam. Perhaps the most comprehensive study was undertaken by Stina Almroth in 2004 at the request of UNICEF, NIN, and the MOH. The study found that exclusive replacement feeding was highly unusual, with strong social and cultural barriers against not breastfeeding at all. Informants felt that women who did not breastfeed had a serious illness or had infants who were very ill. If neighbors and others suspected that mothers were HIV positive, considerable stigma was attached to replacement feeding. Even so, providing some formula or milk powder was not regarded as unusual. Various caregivers prepared formula, although not all were considered able to prepare it properly, especially grandmothers. Although infant formula was widely available, even in rural areas, the cost was high and consumed a large portion of a minimum wage earner's salary.

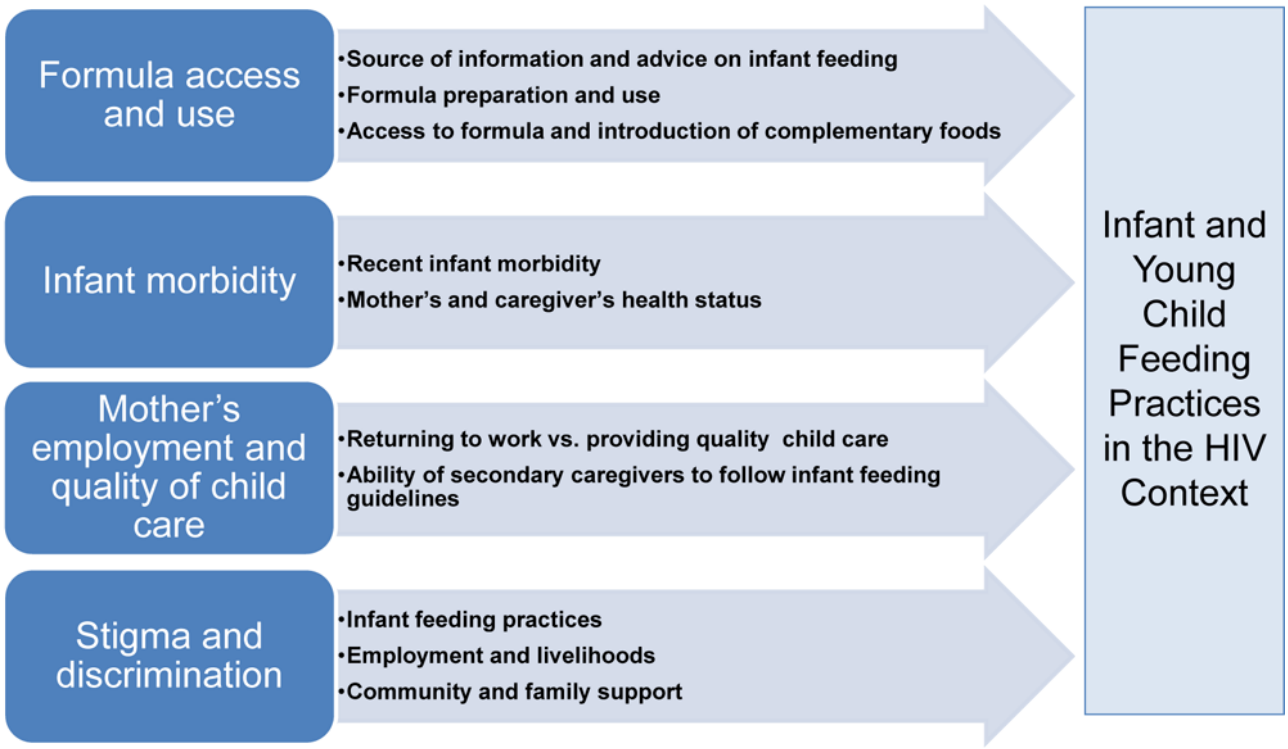
In 2009 FHI 360's Food and Nutrition Technical Assistance II Project (FANTA-2) supported a qualitative study of IYCF practices of HIV-positive women in Hai Phong and HCMC with funding from USAID/Vietnam. The study was conducted by Boston University and the Vietnamese research organization NEWCARE (now the Institute of Social and Medical Studies, or ISMS). The objective of the study was to understand whether HIV-positive women in Vietnam could provide safe replacement feeding for their infants, not to describe or characterize any particular reference population or HIV program. The study team was also interested in identifying 1) barriers and enablers for appropriate IYCF practices, 2) the effects of household income, HIV-related stigma, and the affordability and accessibility of replacement foods on infant feeding practices, 3) attitudes of HIV-positive women toward PMTCT measures and services, 4) health care providers' attitudes and behaviors regarding counseling on IYCF, and 5) perspectives on IYCF in the context of HIV among policy makers and program planners.

The results of the study will inform the development of policies on IYCF as well as counseling materials and job aids, capacity strengthening, and training to reduce high-risk infant feeding practices in the context of HIV.

5 Research Description

The study began with a literature review of IYCF policies and practices in Vietnam and Southeast Asia. The conceptual model below shows the areas of inquiry identified as important to understand IYCF practices in the context of HIV in Vietnam. The study focused on four themes at the outset: formula access and use, infant morbidity, mother's employment and quality of care, and stigma and discrimination. These themes and related factors are shown in the figure below.

Figure 1. Conceptual Model for IYCF Practices in the Context of HIV



5.1 Site Selection

The study was conducted in two areas of high HIV prevalence, Hai Phong in northern Vietnam and HCMC in southern Vietnam. Hai Phong is the major seaport for northern Vietnam and is in the Red River Delta about 60 miles from Hanoi. The population of approximately 646,000 is largely rural. HCMC is the largest city in Vietnam, with a population of over 7 million (GSO 2010). The study team interviewed informants in three rural districts of Hai Phong and eight urban/semi-urban districts of HCMC.

5.2 Sampling

Subjects included 64 Vietnamese men and women 18–64 years old from the Kinh ethnic majority. Informants from Hai Phong were from urban and rural areas, and informants from HCMC were from urban areas. Study subjects were identified through PEPFAR/Vietnam Partners that support services for PLHIV. Informants were excluded if they refused to provide informed consent or had a severe mental disability or illness that prevented them from answering questions.

Inclusion criteria for mothers were HIV-positive status and an infant 0–15 months old. Using a list of HIV-positive mothers, health care providers identified potential informants in their clinics, discussed the study with the clients in a non-coercive and non-incentivized way, and asked the clients whether they were willing to participate. If so, the health care providers provided their names to ISMS, which contacted the clients, confirmed their willingness to participate, and administered the informed consent process.

The study team used purposive and snowball sampling of fathers who provided at least some care for infants of HIV-positive mothers. In all but two cases, these were the infants' biological fathers. If the fathers lived in the same households as the HIV-positive mothers, the team approached the mothers who had agreed to participate in the study and asked whether they had disclosed their HIV status to the children's fathers. If so, the team asked their permission to contact the fathers. In some cases, the team interviewed fathers whose wives were not part of the study but were HIV positive. Health care providers (in Haiphong) and support group leaders (in HCMC) asked them whether they were willing to participate in the study. If so, the study team contacted them and confirmed their participation by obtaining informed consent in a non-coercive and non-incentivized way.

Caregivers other than the children's fathers or mothers were selected using purposive and snowball sampling, based not on their HIV status but on their relationship to the children. In the study sample, all caregivers were grandmothers. No older siblings were interviewed, even if they provided care for the children. Caregivers were identified through health care providers and PLHIV support groups in Hai Phong and PLHIV support group leaders in HCMC.

The study team also sampled health care providers who regularly saw HIV-positive mothers. Sampling was opportunistic because a limited number of people were available for interviews. In Hai Phong, the Provincial AIDS Center (PAC) helped identify health care providers, and in HCMC, ISMS identified one provider through Family Health International (FHI)/Vietnam and one through professional connections. There was no explicit attempt to interview and observe health care providers whose patients also participated in this study. No counselors were sampled because no non-clinicians in the sample provided counseling specific to HIV and IYCF.

HIV-positive women who were members of PLHIV support groups were also interviewed. The team purposively sampled women who participated in home-based care groups supported by FHI/Vietnam and LIFE-GAP. The criteria for inclusion were their HIV status and their participation in the support groups.

The study gathered information on infant formula and other nutrition products from clinics, commune health stations, and shops in Hai Phong. IYCF practices were observed during interviews with four mothers and one caregiver in Hai Phong and with three mothers and two caregivers in Ho Chi Minh.[7]

The team also spoke with key informants in Hanoi selected purposively from organizations directly involved in policy development or implementation, including VAAC, the MOH, PEPFAR/Vietnam, GF, CDC/Vietnam, and FHI/Vietnam.

The study team conducted 69 interviews (Table 2).

[7] These observations were not standardized or systematic, and households where children were not being fed during interviews were not revisited to observe feeding practices.

Table 2. Number of Informants

	Hai Phong	HCMC	Hanoi
Health care providers	2	3	
Support group members	3	3	
Mothers	14	16	
Fathers	6	2	
Other caregivers	5	5	
Key informants			5
TOTAL	**30**	**34**	**5**

5.3 Ethical Considerations

Ethical approval for the study came from the Institutional Review Boards (IRB) of the Boston University Medical Campus and NIN.

Practitioners identified clients in a non-coercive way, asking clients to voluntarily identify their willingness to be study subjects. The practitioners provided no incentives for participation. Practitioners made the names of interested clients available to the study team, who contacted the potential subjects, confirmed their willingness to participate, and administered the informed consent process. The study created minimal risk for study subjects. No biological samples were taken. Community stakeholder meetings explained the study in detail to correct any misunderstandings about its purpose.

The largest risk was disclosure of HIV status. The study team made every effort to maintain the confidentiality of informants' HIV status. Informed consent was secured from each informant, and all data collected were kept confidential. Text files had the individual identifiers removed, and the master key linking the identifiers to the specific households was accessible to the principal investigator only. Subjects were assigned study numbers on enrollment, and any identifiers were removed from the analytical dataset. Computer files were password protected with very limited access.

5.4 Data Collection and Analysis

FANTA-2 and Boston University developed data collection instruments based on the document *What Are the Options? Using Formative Research to Adapt Global Recommendations on HIV and Infant Feeding to the Local Context* (WHO 2004) and previous work in Vietnam, particularly that of Stina Almroth. The field guides were adapted to the local context before and after pretesting and translated by ISMS. During the pretests, each interviewer interviewed at least one informant. Informants included HIV-positive mothers, counselors and clinicians at a district VCT center, support group members, a father, and a grandfather. Because pretesting was done in a clinic, mothers were not asked to demonstrate hand washing or bottle cleaning. The guides were modified throughout the study depending on results reported daily. Annex 3 lists questions asked of mothers, fathers, other caregivers, health care providers, and PLHIV support group members. Annex 4 lists sample questions asked of key informants.

All six ISMS interviewers had master's degrees, and several also had doctoral degrees in public health. Some were physicians. Most had received graduate training in the United States, Europe, or Australia. Interviewers received 3 days of training from senior researchers at ISMS and the Boston University principal investigator in the purpose of the study, data collection instruments, procedures for obtaining consent as required by the IRB at Boston University and NIN, field practice, and feedback. The interviewers were able to simplify their language and dress (as appropriate) to establish rapport with informants.

Primary data collection included interviews with staff from government and non-governmental agencies, health care providers, and members of PLHIV support groups to determine whether HIV-positive mothers could formula-feed their infants safely. Semi-structured interviews were held with HIV-positive mothers with children 0–15 months old, as well as fathers and other caregivers of the same children. The original research protocol called for observations of counseling by HIV/AIDS counselors, but this was found to cover HIV in general and not infant feeding.

Interviews were done in health centers and clinics (for clinicians and counselors), homes (for mothers, fathers, caregivers, and mothers in support groups), and offices (for key informant interviews). For home interviews, if the presence of other family members and neighbors appeared to impede responses, interviews were conducted out of their earshot.

Once data were collected, ISMS transcribed the digital audio files and reviewed them for completeness and accuracy before translation into English. The translated transcripts were verified for accuracy and retranslated in some cases to reflect the original Vietnamese. FANTA-2 and Boston University coded and analyzed the interviews. Coding was partly inductive (building codes as transcripts were reviewed) and partly deductive (constructing codes based on pre-existing conceptual frameworks, including AFASS). Analysis was qualitative and designed to answer the central question of this research: Can HIV-positive women formula-feed their infants safely? Data were analyzed by grouping informants (mothers, fathers, caregivers, support group members, and health care providers) to identify consistencies and inconsistencies and gain insights from a variety of perspectives. ISMS contributed to the data analysis and interpretation by cross-checking themes that were reported against themes that they identified while collecting the data.

6 Findings

Across the study sample, informants reported low and unsteady incomes (ranging from 10,000 to 20,000 VND a day)[8], rented homes, and had few assets. The extended family structure (more commonly reported in Hai Phong than in HCMC) was reported to mitigate the effects of poverty because families often pooled resources and took care of one another, especially infants. A few families in HCMC had sufficient income from either formal salaried employment or small businesses. In Hai Phong, however, such income was rare, and only one or two households were economically better off than the other informants.

In Hai Phong, the few mothers interviewed who worked engaged in petty trade such as selling fruit, running small businesses such as hairdressing, or working as daily wage laborers or house cleaners. In HCMC, few mothers were working at time of the interviews. One or two worked as social workers with nongovernmental organizations (NGOs), and a few had small businesses. Fathers and grandmothers were the main caregivers of infants when mothers worked and contributed to sub-optimal replacement feeding practices. Some mothers had worked in factories until their children were born. Some mothers reported that stigma and discrimination had deterred them from returning to work or finding new employment.
Many mothers had contracted HIV from their husbands, a few from sex work and drug use, and a few did not know—or did not report—how they became infected.

The interviews and focus group discussions with HIV-positive mothers, fathers, caregivers, health care providers, and other key informants indicated that sub-optimal infant feeding practices reflect challenges at all levels, including households, health care services, programs, and policies. This section presents the findings of the study, according to the WHO conditions for safe replacement feeding.

6.1 WHO Condition 1. Safe water and sanitation are assured at the household level and in the community.

Lack of safe water and poor hygiene emerged from the interviews as important barriers to safe formula feeding.

Box 1. WHO Condition 1 Findings

1. Mothers and other caregivers did not consistently wash their hands before preparing and feeding formula.
2. Mothers and other caregivers did not use safe water consistently to prepare formula.

Finding 1. Mothers and other caregivers did not consistently wash their hands before preparing and feeding formula.

Some mothers and caregivers reported being careful to wash their hands with soap and water each time they prepared formula and fed their infants. Others said they washed their hands without soap or used soap inconsistently. Some said they washed their hands with soap and water only when they thought their hands were dirty but not each time they prepared and fed formula. Those who reported washing their hands consistently each time they prepared and fed formula clearly understood that hand washing was an important way to prevent infection and maintain their children's health. Others did not understand the connection between dirty hands and infection and poor child health and reported that they did not have the time, water, or soap to wash their hands consistently.

Q: Do you wash your hands when making formula?

A: Yes. I wash my hands before feeding my baby.

Q: Do you wash your hands with soap or water?

[8] US$0.55 to $1.11 at the exchange rate on October 28, 2009.

A: Sometimes I wash with soap, sometimes not.

HIV-positive mother, HCMC

Q: Did the doctors tell you to boil the bottle?

A: Yes. Each time before making milk for my daughter, I often boil the bottle, but I do not wash my hands with soap. I wash with water only.

Q: Why you do not wash your hands with soap?

A: I think I do not do anything dirty and I only hold my daughter, so I only wash with water.

HIV-positive mother, Hai Phong

Q: So did anyone tell you to wash your hand before making formula for the child?

A: Yes. Before preparing the milk, I had to wash my hands carefully. They also said on TV that before eating, we should wash our hands.

Grandmother, Hai Phong

Finding 2. Mothers and other caregivers did not use safe water consistently to prepare formula.

The quality of water used to prepare formula varied across households. Informants reported using bottled water, piped tap water, well water, or rainwater (the last was mentioned by informants in Hai Phong but not in HCMC). Many mothers reported using bottled water to prepare formula, but only when they could afford it. Most informants reported boiling water from sources other than bottled water to prepare formula. Some mothers also reported boiling bottled water. A few mothers reported boiling water with vegetables or herbs and using that liquid to prepare formula. Some mothers who reported unhygienic formula preparation knew the optimal practices but said that they did not have time to implement them consistently.

Q: Have you ever used rainwater to prepare formula?

A: Yes, I have. Earlier my mother-in-law went to our neighbors who had a water tank to ask for some rainwater. We used it to cook food and make boiled water for my baby.

Q: Did you boil the rainwater the way you boil tap water?

A: Yes, I did.

Q: Do you collect rainwater yourself [now]?

A: Yes, I do. It falls from the house's roof. I take it to cook.

Q: Do you wash the tank every year?

A: No, I don't.

HIV-positive mother, HCMC

It was common for other family members—older children, fathers (in a few cases), grandmothers, grandfathers, and mothers' sisters—to prepare the formula. Many mothers whose family members prepared formula reported that it was challenging to maintain hygienic conditions.

6.2 WHO Condition 2. The mother or other caregiver can reliably provide sufficient infant formula to support the normal growth and development of the infant.

Box 2. WHO Condition findings

1. Not enough free formula was provided.
2. There were gaps in formula supply from the health services.
3. The high cost of formula was a barrier to consistent formula feeding.
4. Inadequate access to free formula precipitated the early introduction of other foods.
5. For some mothers and other caregivers, the opportunity cost of picking up free formula was high.

Once HIV-positive mothers were told to formula-feed their infants and provided with free formula after delivery, health care providers and families expected easy and continued access to formula. In fact, the formula supply for infants from birth through 18 months was highly variable.

The amount of free formula mothers received was reported to decrease steadily with the infant's age, from 9–10 tins at delivery to 4–6 cans when the infants were 3–6 months old and fewer as the children reached 12–18 months.

HIV-positive mothers and their families did not always get consistent information about where and how to obtain free formula. In addition, distribution centers were often far away from mothers' homes and crowded, with long waiting times to obtain the free formula. These challenges affect how much free formula families use to feed their infants and how soon they introduce other foods. Overall, the responses of the informants indicated that gaps and inconsistencies in free formula provision jeopardized safe and exclusive formula feeding.

Finding 1. Not enough free formula was provided.

In both Hai Phong and HCMC, many mothers reported that they did not always receive enough free formula to meet their infants' needs.

Q: Has the formula given been enough to feed [your baby]?

A: It was enough during his first months, but now I have to buy additional formula. Now he receives three tins per month.

Q: When did you buy additional formula?

A: I have had to buy formula for the past 3 months.

HIV-positive mother, Hai Phong

Q: You were given Red Dilax formula free of charge for 6 months. Was it enough for [your baby] or you had to buy more?

A: It was enough for some months, but I had to buy one more tin every month for some months. The more he grows, the more milk he drinks. So six tins a month wasn't enough for him, and I had to buy more of the same brand.

HIV- positive mother, HCMC

Finding 2. There were gaps in formula supply from the health services.

The formula distribution systems implemented by different donors through government institutions vary. A few provide free formula conditionally, asking mothers to bring back parts of the formula tins to obtain the next batch. Informants reported receiving less free formula if they did not return the correct number of lids.

The length of time health care facilities provide free infant formula to HIV-positive mothers also varies, from 6 months to 12 or 18 months.

The system that informants described in the interviews has important gaps that make exclusive replacement feeding unlikely. Most informants reported that they received the first batch of free formula at the hospital after delivery (or after discharge, depending on when their HIV status was confirmed), and that the supply was expected to last 6 weeks. From the time their infants were 6 weeks to 6 months old, mothers received free formula at the pediatric hospitals. Afterward, children who were confirmed as HIV positive were referred to a pediatric AIDS hospital where they continued to receive free formula for 6 to 12 months or 6 to 18 months. Referrals to these formula pickup sites were not consistent, and many informants were unsure where to get free formula and how long their infants were eligible. Mothers with positive rapid test results who had not received their confirmatory test results were discharged without free formula but advised to replacement feed, which meant they would have to buy the formula themselves.

Q: Can you tell us briefly about how you refer HIV-positive mothers to the hospitals?

A: Before deciding to have a baby, they have tests and find out if they have contracted HIV. If they don't advise the hospitals that they have contracted HIV, the hospitals will do the HIV tests. When they deliver babies, they are moved to a separate area and the mothers and babies are given milk during the first days. When they come back home, they are referred to the pediatric hospital for milk until their babies are 6 months old. There is no problem for the mothers who have been referred. For the ones who have not, we have to take them to the hospital and complete the paperwork. The mothers need to get the birth certificates from the places where their babies were born and take these certificates to the pediatric hospitals for the hospitals to do the control and monitoring while they are giving formula. After 6 months, we have to bring the verification from the pediatric hospital to the AIDS center.

HIV support group member, Hai Phong

Q: Is there a large percentage of children who do not like this milk?

A: Many people use this milk, but some people do not use it and they don't take it. In the case of my second child, for a few months when I went to the hospital to get milk, it was said that milk was not available. Doctors told me that I would receive milk for that month in the following months. After a few months, when I went to the hospital, doctors told me that it was the business of previous doctors. The new doctors did not know. As a result, my child did not receive free milk for 2 or 3 months.

HIV-positive mother, Hai Phong

Finding 3. The high cost of formula was a barrier to consistent formula feeding.

Despite widespread access to free formula, informants across the data sources consistently identified the high cost of formula as a barrier to exclusive formula feeding. Most said they received enough free formula for the first month but had to begin buying it as the amount decreased. Exclusive formula feeding would have created a significant financial burden.

Q: What brand of milk did you get?

A: Dutch Lady. Under the provincial program at Nhi Dong Hospital 2, I received nine tins of milk for the first 6 months, six tins for the seventh month, and five tins for the eighth month. This is not enough to feed my baby. Every month I buy another tin of milk. [I bought] five tins of milk in the ninth month. It costs more than VND 60,000 per 400 g. A tin of milk is used up in 2–3 days.

HIV-positive mother, HCMC

Q. Here [at Tu Duc Hospital, HCMC], do they give free milk for 6 months only?

A. Yes, for 6 months only. For the first month, it was enough, but for the second month it was short one can. By the fourth month, I had to buy three or four cans because my baby ate so much. Sometimes she didn't drink the milk provided, and I had to exchange it for Dutch Lady milk and pay for the difference in value with cash.

HIV-positive mother, HCMC

Q: What do you think about disadvantaged cases who are not given free formula? What are their difficulties?

A: It would be very hard for them. In our countryside, everything depends on a piece of a rice field. For example, in H.'s case, she has to feed the baby with solid food early because of financial issues. The baby is only 3 months old. At this age, the baby should be fed milk exclusively, but the financial issues made them feed the baby with solid food. We also encouraged and counseled H. and her husband to let them understand the danger of feeding babies solids early. They must know about that, but because of their financial condition, they had to make that decision. Any parents who have a baby surely know about nutrition for the baby but [they feed solid food early] because of their economic condition and partly because they are unable to earn their living because of sickness [HIV].

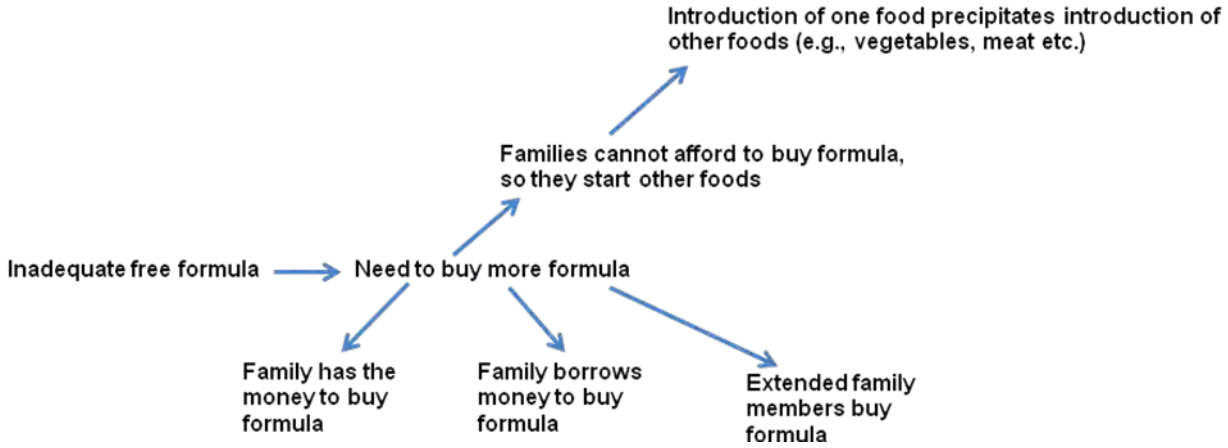
HIV support group member, Hai Phong

Key informants were ambivalent about whether formula should be free or subsidized, with one saying that the poor should be given bottles as well as formula and the wealthier should be expected to buy them.

Families managed to close the gap in different ways once the free formula was exhausted. A few families earned or borrowed enough to buy additional formula or were helped by extended family members. But the most common practice was to introduce foods such as rice flour soup early because families could not afford to maintain formula feeding (see finding 4).

Figure 2 illustrates the options families used to address the problem of inadequate free formula.

Figure 2. Ways Informants Addressed Inadequate Formula Supply



Finding 4. Inadequate access to free formula precipitated the early introduction of other foods.

Across the sample of mothers and caregivers in both Hai Phong and HCMC, the predominant practice was to introduce foods and fluids other than formula earlier than the recommended age of 6 months, either because they could not afford to buy more formula, because they felt the infants needed other foods, or because family members pressured them to begin complementary feeding early. Rice flour soup was the most commonly reported food, introduced when infants were as young as 3 months old.

Q: Have you just given your child rice flour for a month?

A: Yes.

Q : Who decided to do that?

A: That was the a decision made by my wife and mother-in-law. They said that earning money is difficult. In addition, we have to pay for many things, including money to attend a wedding party. Although we are supported with some milk from programs, we still need to spend an additional 400,000 to 500,000 VND a month for our child because the milk provided was not enough. Therefore, feeding our daughter with flour would save money, despite the fact that we all understood that feeding the baby flour early might result in child malnutrition.

HIV-positive father, Hai Phong

Q: In your opinion, what should a child 0–1 year old eat?

A: The doctor told me that my daughter should drink formula milk in the first 6 months. Children above 6 months can eat flour soup. However, in my case, it is difficult because the free milk that we receive is not enough for my child, and I cannot earn much money. I often receive a salary on a certain day a month, but my child needs milk daily.

Father, Hai Phong

Finding 5. For some mothers and other caregivers, the opportunity cost of picking up free formula was high.

A few mothers, especially in Hai Phong, complained about the time and distance they had to travel to pick up free formula and the long waits at health facilities. Some were asked to bring their infants with them for the formula pickup. If the infants started crying during the long waits, some returned home empty-handed. Several mothers chose to travel to clinics far from their homes so that they would not be seen getting free formula, which would be an admission of their HIV status.

Q: Did you get the formula from Nhi Duc Pediatric Hospital?

A: Yes, I received formula there. One day when my husband stayed at home, I went, [so] I took her there, but it was too crowded. I could not wait, so I took her home.

Q: If next time it is still crowded like that, will you wait to ask [for nutrition information]?

A: It will depend on the situation. If I am not busy, I will wait. It will depend on my work and my baby's health. She could not eat or sleep several times when she was in a strange place. So if she cries on the next visit, I will take her home.

HIV-positive mother, Hai Phong

Q. Do you find the procedures [to get free replacement milk] difficult or easy?

A. I notice that for people who have good conditions, vehicles, and acquaintances, it is not difficult, but for people who do not have vehicles or acquaintances, it is not easy.

Q: Why do they feel hesitant to go?

A: I really do not know. Perhaps they are afraid that people will know they are HIV carriers, or they are reluctant to travel far away when they don't know what they can receive there. And whether the procedures are complicated. And they worry about a lot of things and feel hesitant to go.

PLHIV support group member, Hai Phong

In contrast, a few mothers in HCMC said there were many programs and services for HIV-positive families that made accessing free formula easier.

Q: Is it easy for you to receive the free formula? Does anyone else who is infected like you find it hard to receive the formula?

A: In Ho Chi Minh City today, there are many outpatient clinics. They have their own programs for HIV-infected pregnant women. As far as I know, besides the free formula program, they also have a free tuition fee program. For nutrition, they would give milk or cheese. … That kind of milk was provided at the health centers for pregnant women and mothers with children under 9 months old. When the mothers were transferred to the place where they were followed up, they would be given 100,000 to 300,000 VND a month or paper-bag milk, cheese, and instant noodles. Usually they were given a bag of gifts, because after their children were 8 or 9 months old, they would not be given formula.

HIV-positive mother, HCMC

6.3 WHO Condition 3. The mother or other caregiver can prepare infant formula safely and frequently enough so that it is safe and carries a low risk of diarrhea and malnutrition.

Preparing formula safely and frequently enough to minimize the risk of diarrhea and malnutrition was a challenge for many mothers and caregivers in this sample. Because many family members prepared infant formula, the concentration of each feeding could vary, and not all family members used hygienic preparation practices. Similarly, key informants expressed concern about mothers being able to prepare formula hygienically and correctly (mixing the correct proportion of formula to water).

Finding 1. The concentration of formula prepared for each feeding varied.

Many mothers said they learned how to prepare formula by reading the instructions on the tins.

Box 3. WHO Condition 3 findings

1. The concentration of formula prepared for each feeding varied.
2. Mothers and other caregivers discarded leftover formula after a feeding, although a few stored prepared formula and used it later.
3. Health care providers rarely taught mothers or other caregivers how to prepare formula safely.
4. Health care providers had little time to counsel HIV-positive mothers on infant feeding options.
5. Health care providers lacked information and training to provide adequate counseling on infant and young child feeding in the context of HIV.

Q: Did anyone instruct you how to make formula for the baby?

A: No. My husband only read instructions in the formula package. Pour boiled water into a mug and then let it cool down. After that, pour water into a bottle, add formula, and shake well before feeding the baby. Mix 4 spoons of formula with 120 ml of water.

HIV-positive mother, HCMC

Although most mothers interviewed reported that they could easily follow instructions on how to prepare formula, actual practices varied among informants. Some reported following the instructions exactly, but several said that they understood the instructions but could not always follow them. Some informants reported that they prepared formula in containers of different sizes and estimated the amount of formula to add to the water in the containers. As a result, the concentration of formula was not always consistent.

Q: Where did you learn how to make formula for the baby?

A: I didn't learn anywhere, but I looked at a tin [that said, for example, to use] 30 ml. I would take 1 soup spoon. When I prepared 3 spoons, I had to add another half spoon and I had to taste for fear that it was too sweet. If it was too thin, I had to add more milk, because my baby was picky. If the milk was weak, she didn't suck. I didn't follow the formula [instructions], but followed my baby's behavior. When she was 3 months old, she couldn't distinguish, but when she was 4 months old, she could select milk. If it was too weak, she pushed out the milk with her tongue and didn't suck, so I had to taste the milk. If I found that it was too weak, I would add more milk so that it would be stronger for my baby to suck.

Q: Were you and your husband present in the ward when the consultants gave guidance on how to prepare formula?

A: No, they didn't give guidance on preparing the milk. I just read the instructions.

HIV-positive mother, HCMC

Q: After you delivered, did the doctors instruct you how to take care of your baby?

A: They only told me not to breastfeed him. Two days later, they told me about my disease. I was so down. I thought a lot.

Q: When you were depressed, what did the health care providers do?

A: The doctor talked to me and explained how to take care of my baby and how to keep my baby from touching my blood or wounds.

Q: Did they show you how to prepare formula?

A: Yes. The doctor gave me the formula and asked me to prepare it for my baby. At first, he drank about 50 (ml) made from 1.5 scoops.

Q: Who prepared the formula at that time? You, or the health care providers?

A: I prepared it.

Q: Did they instruct you?

A: No, they did not.

Q: How did you know how to prepare it?

A: I saw the label on the tin.

HIV-positive mother, HCMC

Q: Do you understand clearly and exactly what is described on the label? What are the same as and different from the steps you follow?

A: Absolutely not, because I could never measure the exact quantity of milk described. Also, bottles are different heights. I just estimated the quantity according to whether the bottle was long or roundish. When I made the formula, I made it in a cup and then I poured it into a bottle because I was afraid that the milk would curdle if I made it in a bottle. It may cause stomach ache. Since I made it in a cup, I did not know exactly the size of the cup to pour the water into. I just mixed half-hot and half-cool water in this cup and put the milk in.

HIV-positive mother, HCMC

Finding 2. Mothers and other caregivers discarded leftover formula after a feeding, although a few stored prepared formula and used it later.

Mothers and caregivers reported a range of practices for dealing with leftover formula. Most mothers said they discarded leftover formula either immediately or within three hours after preparation and consumption. A few said they prepared the formula in advance and kept it warm in a thermos. In rare cases mothers reported storing leftover formula for a few hours and reheating it for another feeding. Some family members seemed unclear about what to do with leftover prepared formula.

Q: Where do you keep the leftover portion [of formula]?

A: I throw out all the leftover milk and clean the bottle. I always make a new bottle of milk for the next time. If too much is left over, my baby's paternal grandmother wraps it in cloth, puts it on the shelf, and warms it up in boiled water before feeding him.

HIV-positive mother, HCMC

Finding 3. Health care providers rarely taught mothers or other caregivers how to prepare formula safely.

Only two mothers reported that their doctors or other health care providers at the hospital taught them how to prepare formula before discharging them. Key informants rarely mentioned mothers being counseled on formula preparation.

Q: When he was born, did any health worker or counselor instruct you on how to take care of your child?

A: Absolutely not. The hospital definitely did not [counsel me on how to feed my baby]. I was angry with the doctor who only examined me for 5 minutes. About the counseling, I asked some people. They told me about how HIV was transmitted and what to avoid, such as avoiding touching my baby because his skin was so thin. But they told me nothing about nutrition.

Q: When you took the prophylaxis to avoid transmission from mother to child, did anyone tell you what you should do after giving birth?

A: They just gave me the prescription but advised nothing. They also told me that my baby had to drink the prophylaxis syrup. He drank it right when he was in the hospital for the first week.

Q: Did they tell you how to take care of the child or what milk to feed?

A: The obstetrics and gynecological hospital told me nothing.

Q: How about the counseling site?

A: The counselors were specialists in HIV counseling. It's a VCT site, a place to do the test, so they generally counsel about HIV-infected children. They knew little about nutrition.

HIV-positive mother, HCMC

Q: Did they advise how to feed your baby when they informed you that you were HIV positive?

A: They told me not to breastfeed. Nothing more. I just take care of him as I think best. I don't dare stay too close to him.

HIV-positive mother, HCMC

Finding 4. Health care providers had little time to counsel HIV-positive mothers on infant feeding options.

One of the most common themes to emerge from key informant interviews was the lack of time health care providers had to provide adequate infant feeding counseling.

A: Because our medical workers are overloaded with work, they pay less attention to contacts with their patients. Attention is not being paid to consultations due to too much workload or little interest in [counseling].

A: Usually [health care providers] provide only some necessary information, not thorough knowledge, because they are busy.

A: The workload for each [clinician] is too heavy. [Health care providers] must be in charge of giving advice, not demonstrating skills.

OPC doctor

Finding 5. Health care providers lacked information and training to provide adequate counseling on IYCF in the context of HIV.

The 2010 WHO recommendations state that mothers who are not infected with HIV or are of unknown status should be counseled to breastfeed exclusively for the first 6 months and then introduce complementary foods while continuing to breastfeed for 24 months or beyond. The results of this study suggested that VCT centers rarely counseled mothers in infant feeding and that PLHIV support groups provided general information about infant feeding options but not individual counseling. Mothers reported that visits of health care providers to their homes signaled to neighbors that they were HIV positive. One key informant was vocal about which health care providers could counsel on IYCF.

Q: According to our initial results, some mothers reported minimal counseling on infant feeding in the context of HIV. What alternatives are there to ensure mothers receive the individually tailored counseling they need? What might be next steps to ensure that HIV-positive mothers receive good IYCF counseling?

A: At [the] PICT [Provider-Initiated Counseling and Testing Center], clinicians do not provide counseling for infant feeding. It doesn't fit with [our] scope of work or knowledge. … I would not expect PICT teams to do infant feeding counseling. In [our] program, infant feeding counseling is done by the OB/GYN department and the HIV OPC and then supported by the community and home-based care team. … .At the provincial level, hospitals are very crowded and doctors are very busy, too busy to counsel. [Counseling] at the district level is better. They have more time to counsel.

CDC/Vietnam staff member

Some key informants suggested that health care providers charged with counseling on IYCF—including clinicians at provincial, district, and commune levels and support group leaders—lacked the necessary training.

One informant said that mothers were receiving IYCF counseling from health care providers.

A: *Most of our PMTCT mothers agree to use formula. At this time, they are given some counseling by the nurses on how to prepare formula. This happens at the point of discharge from the hospital. And this information on how to prepare safe infant formula is strengthened at the pediatric site.*

Another suggested that PLHIV support groups could provide IYCF counseling to HIV-positive mothers.

A: Support groups may be able to help with individual-level counseling. If we provide the support groups or HBC [home-based care] teams with enough knowledge and skills, it will help with the individual-level counseling but also help mothers at home have the best practice. Support groups also know each other and help identify clients who need additional help or support. Many times clients don't express their problems or challenges with the health care providers but will express these things with the case manager or support person. They serve as a good bridge for us between health care providers and clients.

One mother suggested that there should be special centers for nutrition counseling.

Q: Which do you think is the best counseling source? The pediatrics hospital, the obstetrics hospital, counseling centers, or where?

A: I think the pediatrics hospital is specialized in so many things that they are too overwhelmed to consult patients about nutrition or show them how to plan meals. They don't have time to make a board showing the best diet for a month and while children are growing. Therefore, a counseling center specialized in nutrition for mothers should do counseling.

HIV-positive mother, HCMC

When health care providers gave infant feeding advice, it varied widely. Some recommended introducing foods early, others recommended introducing solids at 8–9 months, and some appropriately recommended introducing complementary foods at 6 months. Many families reported that they did not get any infant feeding information at all from health care providers. Mothers and families who did not consistently go to health facilities got infant feeding information from HIV support group members, who were eager to counsel them but did not have accurate information. These gaps and inconsistent information from providers and support group members left families, especially mothers, confused about infant feeding practices. Ultimately families did what they thought was appropriate, but many were eager to learn how to best feed their infants. In fact, many knew that introducing foods early has adverse consequences for infant health and nutrition, but because of their financial circumstances, they felt it was their only option.

Some informants said that mothers needed information to help them make appropriate decisions about infant feeding but that such information was not found in health care facilities.

Q: Do you think there are other ways for mothers to get information about nutrition and taking care of children?

A: I think if there's a special place for nutrition. I've seen many leaflets with the same information about HIV, especially how to use condoms or drug use, but none of them was about nutrition for HIV-infected people. There are no flyers telling about nutrition for people with diseases, such as what food is good or bad for your health. It's just spread through by word of mouth.

Q: In your opinion, if there were flyers like that, would mothers themselves find them, or how could they be delivered to HIV-infected mothers?

A: I think the mothers may not know if there are flyers or a counseling center, but they all want the flyers to be displayed in the consulting room, where there are many people, both infected and non-infected. There is only some information on the Internet, which is not detailed. I think if there's a good document, I'll be the first one to read it.

HIV-positive mother, HCMC

6.4 WHO Condition 4. The mother or other caregiver can feed the infant formula exclusively for the first 6 months of life.

Breastfeeding is not uncommon in Vietnam, but exclusive breastfeeding is rare. Mixed feeding with breast milk and formula and early introduction of complementary foods are more common practices. Several HIV-positive mothers reported that not breastfeeding raised suspicion of HIV infection, suggesting that some HIV-positive women breastfeed their infants at least partially. Only 3 of the 30 HIV-positive mothers interviewed in this study mentioned breastfeeding their infants, although two had been asked to stop by health care providers because of their HIV status.

Finding 1. Mothers and other caregivers felt they did not have a choice in how to feed their infants.

Box 4. WHO Condition 4 findings

1. Mothers and other caregivers felt they did not have a choice in how to feed their infants.
2. Early introduction of complementary foods was the norm.
3. Mothers and other caregivers introduced solid foods early based on the advice of health care providers and mothers-in-law and believed their children needed these additional foods for better health and nutrition.
4. Many mothers and other caregivers felt the free formula they received was of poor quality and inadequate to nourish their infants.

The way they were or were not told about their HIV status left many mothers confused and uncertain of whether to breastfeed or formula-feed. Some mothers did not learn about their HIV status directly from health care providers but second-hand through family members. Others were informed of their status by health care providers in a way that raised rather than assuaged their fears.

Q: Did you know the truth at that time?

A: No, they only told me when I got out of the hospital. At that time I thought I had liver disease. In the hospital I took medicine once a day to stop breast milk. The second day at the hospital I had a lot of breast milk. I asked the doctor whether I could breastfeed my baby, and she answered I could not. I thought perhaps she worried too much. I was going to hold my baby and breastfeed her, and at that very moment, she came and scolded me. She said, "What did I tell you? I asked you not to breastfeed your baby; why did you still do it?" I explained that in fact we did not have money to buy formula. The first day at the hospital I bought condensed milk but not powdered milk. I thought one can of formula

cost more than 100 VND and I had no money. To go to hospital I asked my relatives for some money. That's why I thought I should try to breastfeed. But when I bought condensed milk, the doctor scolded me again. She said, "Do you know how dangerous condensed milk is? First, it is hot, and second, if your baby is fed with it, she will be constipated." So I didn't dare feed her condensed milk.

HIV-positive mother, Hai Phong

Although all the mothers in the study sample were formula-feeding at the time of the interviews, several said that they had breastfed their other children before they were HIV positive. These mothers were concerned about not having the choice to breastfeed, particularly because they felt their current infants were at risk and would benefit from their breast milk. Although they understood the risk of HIV transmission through breast milk, these mothers struggled with their lack of feeding choice. They felt forced to formula-feed and worried that formula alone would not be enough for their infants in the early months:

Q: When you decided that you [would] only use the milk that was not breast milk, did you have any problems?

A: I only worried that this milk did not provide enough resistance [immunity] for my son.

Q: Enough resistance?

A: Because the breast milk often includes it [antibodies]. During the first half of the month, if my son had been fed on breast milk, his resistance would have been better.

HIV-positive mother, HCMC

Finding 2. Early introduction of complementary foods was the norm.

Across the sample of mothers and caregivers in both Hai Phong and HCMC, the predominant practice was to introduce foods and fluids other than formula within the first few months of life. Mothers and caregivers reported introducing sweetened rice flour soup when their infants were as young as 2 or 3 months old. Only a few mothers reported introducing complementary foods at the appropriate age of 6 months.

Q: You started feeding your baby rice flour soup when she turned 3 months old. Who gave you that advice, or was it your decision?

A: When she was over 3 months old, I started feeding her rice flour soup because my in-laws encouraged me to.

Q: Why did you feed her rice flour soup at such a young age?

A: Somebody told me to start solid food at her sixth month. Others told me to start at her eighth month. When she turned 3 months old, she was still on prophylaxis and did not like to take formula for a short time. I thought she did not like to take only formula. I tried to feed her rice flour soup to see if she liked it. She ate it well. I thought she was demanding rice flour soup and had transferred to the solid food period, so I have continued to feed her solid food until now.

HIV-positive mother, Hai Phong

Mothers first introduced thin and diluted rice flour soup to very young infants and gradually increased the thickness of the porridge and added other ingredients, such as bean flour and pureed vegetables. Across the sample, families fed infants under 6 months old a wide variety of foods (Box 5). Meat was usually introduced when the infants were older, as mothers thought it would be difficult to swallow.

Mothers' perceptions about which foods could be introduced and when, which were most or least nutritious, and which were most or least digestible varied widely. The feeding frequency also varied widely across mothers.

Finding 3. Mothers introduced solid foods early based on the advice of health care providers and mothers-in-law and believed their children needed these additional foods for better health and nutrition.

Reasons given for the early introduction of complementary foods included the advice of health care providers, inadequate access to free formula, the belief that formula alone was not adequate, the perception that free formula was of poor nutritional quality, and the influence of mothers-in-law. The availability of commercial "nutritious porridge" (*cháo dinh dưỡng*) also has significantly influenced complementary feeding practices.

Some mothers reported that because of health care providers' advice, they did not feel they had the option to breastfeed, which they felt could have closed the gap when they ran out of infant formula. Without the choice to breastfeed, many resorted to the early introduction of other foods and liquids. Sometimes health care providers advised mothers to introduce complementary foods earlier than 6 months.

Q: What advice would you give mothers who start feeding children other foods?

A: Regarding feeding other foods to their children, we provide instructions to mothers with babies 4 months old and older on how to feed other foods because those kinds of foods are available in the market, produced by Vinamilk or other brands. We tell them how to mix foods depending on the ages of their children, from watered to solid food, and tell them to increase the amount regularly.

Q: Which kinds of food do you encourage them to feed their children?

A: They should start with sweet and soft [foods] like soft rice soup and then step by step increase the amount. For example, at first they should mix one spoon of food with one spoon of water, then two spoons of food with one spoon of water. In addition, there are clear instructions on how to use food on the boxes. We ask them to check their children's feces. If they have a light yellow color, that means they are feeding their children correctly, but if the color is blue [there is] constipation, that means they have to make adjustments. To be more specific, in that case mothers need to increase the amount of water. Moreover, from the fourth month, children start eating other foods, so mothers should put one spoon of cooking oil into the child's meal, which will help the children digest better.

Health care provider, HCMC

Box 5. Foods offered to infants under 6 months old by HIV-positive mothers interviewed

- Sweetened rice flour soup made with water or meat/seafood broth
- Freshly squeezed orange juice with sugar
- Vegetable broth
- Mashed fruit such as banana or papaya
- Rice water
- Eggs
- Ground vegetables (rare)
- Ground meat/seafood/poultry (rare)
- Condensed milk

Q: According to you, why should mothers with HIV give thick soup to their babies early?

A: Because of the mother. Once the child is not breastfed, he can't receive the resistance that is transmitted from his mother, so his need for nutrition is different from [that of] other babies. The earlier we give him food to accustom him, the more we can meet his need for nutrition.

Q: In the past 2 years, have you attended any training courses in how to give additional food, late food, early food, or anything similar?

A: Not yet. No training in nutrition yet.

Q: Then where do you get advice for babies?

A: In general, from my own experience.

Health care provider, Hai Phong

Some mothers reported that when they offered food to very young infants, the infants either did not reject the food or seemed to want more. This led them to believe that their infants were ready for solid foods.

Q: Your baby is just 10 days old. When do you intend to give her additional kinds of food?

A: When she's 2 weeks or a month old, we'll prepare flour for her.

Q: As you have heard from the [baby's] grandmother?
A: My husband said so.

Q: What kind of flour?

A: Ground rice flour. My mother says to make the rice flour soup, so I'll grind rice and add some water and cook it to feed the baby.

Q: Do your husband's mother or sister have any ideas about your preparing food like this? Do they agree with the way you'll prepare the food or feeding [your baby] several meals a day? Or do they have other reactions?

A: They agree. My child must have that amount [of food], as she cries and snivels and I must feed her.

HIV-positive mother, HCMC

The reported influence of mothers-in-law on infant feeding decisions was common across the sample. Some mothers reported that their mothers-in-law had strong beliefs that formula did not provide adequate nutrition for infants and pressured them to introduce other foods early.

Q: In order of importance, who makes the decision about how to feed him?

A: His paternal grandmother. Whatever I said, she always insisted that she was the person who took care of him, so she fed him what she liked. She said feeding rice early would make him healthy and strong.

HIV-positive mother, HCMC

Some mothers said their mothers-in-law had introduced solids to their infants against their wishes and despite their and other family members' protests that this was inappropriate and despite the advice of health care providers. Even if they received counseling on appropriate IYCF from a health care provider, some mothers could not follow through because of the power their mothers-in-law exerted in their households.

Q: What else did they [health care providers] advise feeding?

A: They told us to feed sweet flour soup in the sixth month, flour with fish or meat in the seventh and eighth months, and porridge after a year. My mother-in-law has fed my child porridge since he was

3½ months old. Although we opposed that, she scolded us and said my child would be weak if we obeyed the doctor's orders. She said if we didn't feed him porridge, she would.

HIV-positive mother, HCMC

Finding 4. Many mothers and other caregivers felt the free formula they received was of poor quality and inadequate to nourish their infants.

There was a widely held perception among mothers, caregivers, and fathers that the free formula provided by the health facilities was of poor quality. As a result, they exchanged the free formula for other kinds of formula that they perceived were of better quality at stores.

Q: Have you given away or sold the free formula?

A: The free formula was taken to the formula shops to exchange for another kind of formula with some extra money. To be honest, the baby's father is my mother-in-law's only child. She thought that the grandson was important, so she only wanted good things for him.

HIV-positive mother, Hai Phong

6.5 WHO Condition 5. The family and community are supportive of this practice.

HIV is still highly stigmatized in Vietnam, associated with marginalized groups and condemned as a "social evil." Efforts to reduce stigma and discrimination to improve PMTCT and ART access and uptake have been limited.[9]

Box 6. WHO Condition 5 findings

1. Stigma and discrimination related to HIV were widespread and adversely affected livelihoods and IYCF practices.
2. Getting free formula could be seen as a sign of HIV-positive status and could increase stigma and discrimination.
3. Family members were suspicious if mothers did not breastfeed.

Q: Do you get free formula now? What are the criteria to get the support?

A: I don't know, because my husband often goes there to get milk for me. One month after delivery, I moved to my mother's house in Ninh Binh. Because the hospital informed the Commune Committee of my HIV status, the Commune Committee anounced [it] to all people in the commune. I felt ashamed and did not go out of my house. That was the reason I moved to my mother's house for 2 months. I just came back here 2 days ago.

Q: Can you tell me how people in the commune reacted at that time?

A: They avoided meeting me. Some whispered and commented about us. Some friends of mine stayed away from me. Life was difficult.

HIV-positive mother Hai Phong

[9] From 2002 to 2007, the International Center for Research on Women and Vietnam's Institute for Social Development Studies worked with the Communist Party of Vietnam to build community awareness of HIV-related stigma and capacity to reduce fear- and value-driven stigma and stigmatizing behavior. Although these efforts were successful, levels of stigma remained high (Nyblade et al. 2008).

Finding 1. Stigma and discrimination related to HIV were widespread and adversely affected livelihoods and IYCF practices.

Many mothers said they were afraid to reveal their HIV-positive status for fear of backlash from their spouses' families. At least four mothers and caregivers reported that they were separated from their children because of their HIV status. Some HIV-infected parents living in the same household as their infants said they were not allowed to care for their infants because their families feared that they would transmit HIV to them. Stigma and discrimination affected opportunities for employment and social interactions in their communities and families.

Q: Before you delivered, what did you do?

A: I did small trading. I sold prepared foods.

Q: How about since you delivered?

A: I have not worked.

Q: Have you tried to [work] again?

A: I tried, but everyone in the ward knows [that I'm HIV positive], so I could not sell things.

HIV-positive mother, HCMC

Q: Do you have any other thoughts about nutrition interventions?

A: I am afraid people will say I rely on my disease to keep asking [for services]. In fact, I don't dare work and don't dare apply for a job. If I work in a company, when I have to go to get drugs [ARVs], they will know. Some companies such as bread companies require a blood test. Now I have three children. Two of them get support from projects. This relieves some of my difficulties. I joined the Little Star Program recently. It supports tuition for one child, 150,000 VND a month, starting from this October. If I had a job, it would be easier.

HIV-positive mother, HCMC

A: A month ago, when my child came and played at a neighbor's where children my child's age are kept, one mother who took her child there for day care said, "Aunt, please do not let this little girl in to play, as her mother is an AIDS patient and this little one is infected, too." At that time, my child was just learning to walk, and as she was stepping in she was pushed out with the words, "Go home," and the door was shut tightly behind her.

Q: Did they talk about the fact that your child could get milk free of charge?

A: Yes, they said, "This child has surely caught [HIV]. Her mother has it, so she would certainly have it, too."

Q: What did you think when you heard them say that?

A: It actually felt very painful. My child just wanted to go and play, but she was chased away. I just wanted to cry. I embraced my child and thought that I had made her miserable. When they chased my child away, I resented it bitterly. It was lack of knowledge that made my child so miserable.

HIV-positive mother, Hai Phong

Finding 2. Getting free formula could be seen as a sign of HIV-positive status and could increase stigma and discrimination.

Unlike in some countries in Africa, formula feeding—and promotion of infant formula-- in Vietnam is widespread enough that replacement feeding itself is not seen as a sign of HIV-positive status.

Q: Do milk companies do their promotional campaigns here?

A: There's just [name of company].

Q: Do they promise a commission or any other kinds of benefits if you purchase their products? Do they have commercials or workshops here?

A: Yes, they had workshops right here at our communes. [Name of company] came here very often.

Q: Do they work directly with the center or the commune?

A: The health care department, health care center, and then the communes.

Q: How about financial assistance for these workshops? How do they compensate for your work?

A: Yes, compensation is available when we identify and invite targets. There might be up to thousands of them. And they can just give compensation or something equivalent.

Health care provider, Hai Phong

Stigma related to HIV, not formula feeding, made some families reluctant to obtain free formula from health care facilities because it could be seen as an admission of being HIV positive. Some mothers reported traveling to clinics far from their homes to get free formula so that other people would not know they were HIV positive. Some said they did not go themselves to get the free formula but sent family members. Others decided to buy formula rather than risk rejection by their neighbors.

Q: Have you heard about the program that gives mothers with HIV free milk for their children?

A: Yes, I have.

Q: When did you hear about it?

A: A long time ago, since I attended the class with my husband.

Q: Did you ask for free milk for your child?

A: My husband said he didn't want to.

Q: Why?

A: Because he wanted to save face there.

Q: Has any one given you free milk?

A: Not yet.

Q: Because your husband is afraid to disclose [your status] or because he wanted to save face?

A: They distributed free formula at the district health center, but he didn't want to get it there.

Q: But did they give you a box? Have they ever given it to you but you did not take it?

A: No. I haven't joined this program, so I don't know.

Q: So your husband doesn't want you to get the free milk for your child. Do you want to join this program?

A: Yes, I do.

HIV-positive mother, HCMC

Q: Do you know any other mothers' ideas about the fact that you can receive free milk while they can't?

A: I don't let anyone know. My husband and I stay at home all day. When I got free milk, I put it in a sachet and took my baby home. No one has known.

HIV-positive mother, HCMC

A: For commune health staff, because our epidemic is concentrated, we have only a few mothers who come from the communes. And usually they do not want to go to commune health staff because of stigma. They will travel much further to ensure confidentiality.

CDC/Vietnam staff member

Finding 3. Family members were suspicious if mothers did not breastfeed.

Not breastfeeding and receiving free formula raised questions in many informants' families. Some HIV-positive mothers interviewed reported that their not breastfeeding was a source of curiosity and suspicion. Mothers gave excuses such as not having enough breast milk and their infants' lack of interest in the breast. Some went so far as to pretend to breastfeed in front of visiting family members to keep them from asking more questions.

Q: After your operation (caesarean), did you think of breastfeeding your baby?

A: From my family's side, my younger siblings asked me why I didn't breastfeed my baby and told me the early breast milk was the best because they didn't know that I was infected. My sisters-in-law did not explain the reason. They said that my breast milk was not good and I should not give it to my baby. I told the doctor to give me medication to stop my milk production. At home, only my parents knew [about my infection]. My brother and sister did not know, and I told them a lie that I did not have any breast milk. People from my family's side who didn't know about my infection kept asking me to breastfeed my baby.

HIV-positive mother, Hai Phong

Q: After you came back home [from the hospital], did the people who visited know you fed your baby formula or ask you about formula feeding?

A: They asked me why I didn't breastfeed my young baby because breast milk is the best food. I told them that I had little breast milk so I only breastfed her as a supplement and saved breast milk to feed her at night. At night nobody visited, so nobody knew [that I didn't breastfeed my baby]. She had gotten used to taking the bottle by that time. When my breasts no longer produced milk, I pretended to breastfeed her in front of other people and she refused my breasts. The people said she did not want her mother's breast milk since she was born.

HIV-positive mother, Hai Phong

In contrast to mothers and caregivers, key informants had mixed feelings about how stigma affected mothers' behavior. One key informant felt there was little discrimination against mothers who formula-fed their infants.

A: I haven't heard of [discrimination]. Once [mothers] deliver, if they refuse to receive milk it is probably not for fear of discrimination but rather a concern about whether they can care for their babies using formula.

Q: Have you heard about mothers who do not travel to receive formula for fear of revealing their HIV status?

A: Very few. There have been some cases where babies are between 1 and 6 months old, were born in other places but arrive here for milk.

6.6 WHO Condition 6. The mother or other caregiver can access comprehensive child health services.

Box 7. WHO Condition 6 findings

1. Services for pregnant women, women in labor and delivery, postpartum women, and infants were compartmentalized.
2. HIV-positive women had no access to IYCF counseling once they left the hospital.

To minimize the risk of child mortality from diarrhea and respiratory diseases associated with unhygienic or inadequate formula feeding, the 2010 WHO recommendations state that "National programs should provide all HIV-exposed infants and their mothers with a full package of child survival and reproductive health interventions with effective linkages to HIV prevention, treatment and care services."

Children of HIV-positive mothers are at risk of mother-to-child-transmission of HIV and well as mortality from common diseases such as diarrhea, malaria, pneumonia, and malnutrition. Evidence suggests that during the first 2 months of life, children receiving replacement feeding in resource-poor settings are nearly six times more likely to die from infectious diseases than breastfed children (WHO 2000). PMTCT programs should aim to not only prevent the transmission of HIV from mother to child but also maximize HIV-free survival by providing a comprehensive package of services including the following:

1. Universal HIV testing of women in antenatal care (and male partners)
2. Appropriate HIV treatment or prophylactic regimens for ante- and post-natal women and infants
3. Obstetric and post-delivery care of mothers and infants to reduce neonatal mortality
4. Infant feeding counseling and support
5. Routine growth monitoring and promotion
6. A full package of basic preventive health care interventions, particularly basic immunizations, Cotrimoxazole, routine vitamin A supplementation, insecticide-treated bednets, and appropriate referral and treatment of illness

Health insurance is free for children under 6 years old in Vietnam, including children living with HIV. The 2009 national *Guidelines for HIV/AIDS Diagnosis and Treatment* specify that infants of HIV-positive mothers should receive Cotrimoxazole prophylaxis at 6 weeks, growth and development monitoring, health checkups, follow-up HIV testing, immunizations, and diagnosis and treatment of opportunistic infections. The guidelines also call for infant feeding counseling for the children's mothers.

Dispense adequate dose of ARV[s] to the infant and instruct the mother or caregiver about ART adherence. Schedule follow-up visits for dispensing drugs and further counseling if necessary (p. 85).[10]

Refer the infant to HIV care and treatment facilities for children for long-term care and monitoring when the infant is 4–6 weeks of age (p. 85).

Instruct replacement feeding with formula, if available or breastfeeding and other nutritional care according to age-related needs. For breastfed infants with positive virological test, instruct the mother to continue breastfeeding (p. 97).

Children who test positive receive treatment at pediatric ART clinics. The *Guidelines for HIV/AIDS Diagnosis and Treatment* specify that HIV-exposed children under 18 months old should receive a polymerase chain reaction (PCR) test at 4–6 weeks or soon afterward, a confirmatory PCR if the first test is positive, and an HIV antibody test at 18 months if the first PCR test is negative or the confirmatory PCR is positive.

Q: Do they come to the National Pediatrics Hospital for consultation?

A: Yes, we refer all children to Pediatrics Hospital #1 or Pediatrics Hospital # 2 for checkups. They require three HIV tests during the first year. We do that to find out which children have HIV. We often use PCR to test at 8 weeks, then test again at 6 months.

Health care provider, HCMC

This study of IYCF practices among HIV-positive mothers did not ask specifically about health services for their children, but some informants indicated gaps in the continuum of care from their pregnancy through the first two years of their children's lives. These gaps include barriers to HIV testing in some areas—stigma that prevents women from seeking VCT or lack of testing facilities at local levels—that make it difficult to provide antiretroviral prophylaxis and treatment for eligible mothers and infants, as well as weak referrals for receiving formula and IYCF counseling among different segments of the health care system. A significant gap in services for HIV-affected women and children was the lack of IYCF counseling in the context of HIV. Health care providers did not seem to counsel on the importance of good hygiene to prevent infection or on the risks of mixed feeding and early introduction of complementary foods.

Finding 1. Services for pregnant women, women in labor and delivery, postpartum women, and infants were compartmentalized.

A number of mothers said they were not informed of their HIV status until sometime after delivery, when decisions about infant feeding had already been made. The delay between HIV testing in labor and the confirmatory test results can precipitate sub-optimal replacement feeding and complicates counseling for health care providers. Women cannot be counseled on IYCF until after they receive a confirmatory test for HIV. But before receiving their confirmatory HIV test results, mothers might initiate breastfeeding or begin feeding their infants other foods or liquids.

Q: Some mothers said doctors and family members did not disclose the mothers' HIV status until several weeks after giving birth. They just told the mothers not to breastfeed, but not why. What do you think makes them hide the mothers' status like that?

A: Only up to the time of labor can mothers receive a rapid test. If the test is positive, the blood sample is sent for a confirmatory test. Only then can it be determined whether the mother has HIV. While the result of the confirmatory test is pending, counseling falls into two parts. One rule of counseling is

[10] The 2009 Vietnam "Guidelines for HIV/AIDS Diagnosis and Treatment" specify single-dose Nevirapine within 24 hours of birth for children born to HIV-infected mothers plus 1–4 weeks of AZT depending on how long the mother received ART (p. 84).

that only after the confirmatory test can the woman be told her status. If she tests positive after the rapid test, counseling cannot begin at once. So the counselor has to be prudent to provide correct advice to the mother while waiting for the confirmatory result, which can take a week. Then when the confirmatory result is available, counseling can begin. Women who are tested in labor have to wait for the results of the rapid test and then a confirmatory test. They can't receive formula until the results of the confirmatory test are received.

Doctor, GF/Vietnam PMTCT Division

One key informant explained some reasons for the delay in receiving HIV test results.

Q: The research results indicate that some mothers reported receiving little or no counseling on IYCF from the obstetrics hospital where they delivered. While the pediatrics hospital does provide counseling, mothers don't receive the counseling until approximately 1 month postpartum. What explains the gap and what can be done to close it? Who should close it and how (for example, working with whom)?

A: So many women get diagnosed in labor because it is really hard for women to accept VCT. Most women go to the antenatal clinic at the commune so [there is] no option for VCT. [They] may go to the district hospital from time to time. No blood test is done at the commune. Many women go to the district hospital to deliver. Actually, there are a lot of barriers for a woman to get tested when they should and before 28 weeks to start their prophylaxis.

Technical officer, PEPFAR/Vietnam Implementing Partner

The same informant explained that a delay in HIV testing until a woman is in labor might result in a gap in formula provision:

A: The gap might be in the formula provision and knowing the HIV status. There's a gap between the rapid test and the confirmatory test. Generally, 50 percent of women are diagnosed in labor. The 50 percent who are diagnosed before should be all right because they have had the confirmatory test. They should get formula, in theory, from day one. The problem is when they do not get diagnosed until labor. It is a problem when you are in a site that is 4 or 5 hours from the provincial hospital. It could take 2, 3, or 4 weeks to get the confirmatory test back. So what to do in these cases? What I've said is that in this case, we should pick up the tab for the formula. The HIV clinic should do that even though we haven't got a confirmatory test. What I've got a problem with is not who picks up the tab. If you've got a positive rapid test and the confirmatory test is negative, breastfeeding is shut off as an option [because the mother would have already been advised to replacement feed]. The fact that we've limited this woman's option is a huge concern.

Technical officer, PEPFAR/Vietnam Partner

The same key informant also mentioned a lack of coordination on IYCF counseling.

A: At the district level, different parts of the PMTCT package are delivered by different people. Getting everything coordinated and making sure that everyone gets one standardized message is difficult, and decent quality counseling is difficult because it all happens at different places and is quite fragmented. Districts have different systems and are administered differently. And they all have different bosses. This is all quite chaotic.

Technical officer, PEPFAR/Vietnam Partner

Some of the interviews indicated little connection between antenatal care and postnatal maternal checks and ART services in OPCs. Antenatal and maternal health care systems are physically and administratively distinct from HIV health care systems and might not see PMTCT as a priority. The lack of a clear, consistent,

and continuous mechanism of referrals for mothers to move from one provider to the next can lead to gaps in services.

Q: After delivery, did the health care providers at the health station recommend what kinds of food and drinks to eat at home or how to feed your child?

A: They didn't say or recommend anything.

Q: Did they say anything about how to feed your child when you went to the maternity center as a pregnant woman and after you gave birth to your child?

A: They said nothing there.

HIV-positive mother, Hai Phong

Finding 2. HIV-positive women had no access to IYCF counseling once they left the hospital.

Mothers and key informants reported the lack of information and counseling on IYCF as a concern. Health care providers lacked time, knowledge, and materials to counsel mothers and family members on appropriate IYCF practices, and while PLHIV support groups were willing to advise mothers on IYCF, they lacked training to ensure a continuum of care after mothers left the hospital.

Q: You said someone told you not to breastfeed your baby—who was that?

A: I was told that even before my delivery, by my mother, my husband, my mother's younger brothers, and the antenatal care doctors.

Q: When you went to the health station for examination, did they advise you how to feed your baby?

A: The health station didn't mention this.

HIV-positive mother, HCMC

7 Discussion

The findings of this qualitative study are meant to provide insights into behaviors, knowledge, perceptions, and challenges related to IYCF in the context of HIV in Vietnam and not to describe or characterize any particular reference population or HIV program. Because the data represent the experiences of a small number of HIV-positive people, the findings should be considered with some caution. However, the consistency of findings across the two sites strongly suggests that they reflect key issues regarding infant feeding in the context of HIV in Vietnam.

Breastfeeding is not uncommon in Vietnam, although exclusive breastfeeding is rare, and early introduction of solid foods is widespread. Nearly half of infants have ever been fed infant formula (Hoat et al. 2010). These practices in the general population carry over to the IYCF practices of HIV-positive women. None of the mothers interviewed in this study practiced exclusive replacement feeding for 6 months or met the conditions recommended by WHO for safe replacement feeding. Issues that jeopardized safe replacement feeding are summarized below.

7.1 HIV-related stigma and discrimination

HIV-related stigma affected the infant feeding practices of the study informants by discouraging them from picking up free formula, limiting their access to employment and income, and in a few cases separating mothers from their infants.

7.2 Inadequate counseling on infant feeding for HIV-positive mothers

Across the sample, mothers and caregivers sought advice on infant feeding from multiple sources, but many received the least advice and guidance from health care providers. Health care providers interviewed had limited understanding of infant feeding needs and little time for counseling. Most advised the HIV-positive mothers in the sample to replacement feed exclusively, but did not seem to counsel them on the dangers of mixed feeding. In several instances HIV-positive mothers reported receiving infant feeding instructions from health care providers that were out of step with national guidelines, for example, the timing of the introduction of complementary foods. There was little mention of how to counsel mothers who were confirmed HIV negative or whose HIV status was unknown, who should be advised to breastfeed exclusively. Several key informants mentioned that clinicians often promote infant formula, even when a woman's HIV status is unknown.

This study showed important gaps between policy and practice. Many health care providers advised mothers based on 2003 guidelines that called for exclusive formula feeding for HIV-positive women; these providers were either unaware of or uncomfortable with 2010 guidelines on informed choice between exclusive breastfeeding or avoiding all breastfeeding. This suggests that pre- and in-service training is needed in counseling mothers on safe feeding of infants under 6 months old in general, in the 2010 WHO guidance for IYCF in the context of HIV, and particularly in the risks associated with mixed feeding of HIV-exposed children under 6 months old. Vietnam is currently revising its PMTCT guidelines to reflect this guidance, and it is hoped that there will be a major effort to disseminate and monitor the new policy.

Although all the mothers in the study sample were formula-feeding at the time of the interviews, several reported that they had breastfed their other children before they were HIV positive, and three reported breastfeeding the index infants. None of the mothers were advised to breastfeed exclusively by health care providers. For these mothers, not having the choice to breastfeed was of concern either because they thought their youngest children were most vulnerable and would benefit from their breast milk or because breastfeeding was a way to close the gap when they ran out of formula. Although they understood that their infants could be infected with HIV through breast milk, they felt forced to formula-feed and worried that formula alone would not be adequate for their infants in the early months.

Key informants and mothers alike reported the lack of information and counseling on IYCF as a concern. Mothers and families are especially eager for sound advice on infant feeding from health care providers, who are respected in Vietnam. In some households HIV-positive mothers received conflicting advice from their health care providers and their mothers-in-law, both powerful figures in the Vietnamese context.

Some HIV support group members reported trying to advise mothers on how to care for their infants, but they lack training in IYCF in the HIV context.

Enabling appropriate infant feeding practices among HIV-affected households requires comprehensive child health services that operate seamlessly from one provider to the next, a strengthened referral system, continual pre-service and in-service training of health providers at all levels with a focus on IYCF in the HIV context, and training of HIV support group members and home-based care providers in IYCF.

7.3 Gaps in the supply of free infant formula

The findings of this study show that inadequate and inconsistent supply of formula is a constraint to safe replacement feeding. Because purchasing formula is a significant financial burden for most HIV-affected families, many who cannot afford to buy more formula resort to introducing other foods such as rice flour soup. Many mothers and fathers interviewed understood that early introduction of solids could cause illness and malnutrition but felt helpless to do anything differently because they could not afford to buy additional infant formula. Informants frequently mentioned the high cost of formula (and many mothers, caregivers, and fathers assumed that the free formula provided by the health facilities was of poor quality).

HIV-positive mothers and their families did not consistently get correct information about where and how to obtain free formula once the initial supply is finished. In addition, going to get the formula was challenging, with distribution centers often far away and crowded with long waiting times. These challenges helped determine how much free formula families used to feed their infants, and how soon they introduced other foods. A streamlined approach to supplying free infant formula to ensure a continuous and adequate supply would help HIV-positive mothers avoid the premature introduction of other foods for infants under 6 months old.

Successful distribution of free infant formula requires a secure supply of funding, an intact distribution system, and proactive home-based care teams who can follow up mothers in their homes to help them practice safe and hygienic replacement feeding.

7.4 Poor hygiene and inconsistent formula preparation

Poor hygiene was a major barrier to safe replacement feeding in the sample of HIV-positive mothers and caregivers interviewed. Hand washing and formula preparation varied from household to household and within households, especially when formula was prepared by different family members. The combination of poor hygiene and the early introduction of foods suggest that infection rates among infants might be high in this sample, likely undermining their nutritional status over the long term and increasing their risk of HIV infection.

7.5 Early introduction of complementary foods

Almost all HIV-positive mothers interviewed in this study introduced other foods and liquids in addition to infant formula before their infants were 6 months old. The risks of early introduction of complementary foods include inadequate nutrient density and infections from poor food safety and hygiene.

Although mothers and other caregivers reported feeding infants a wide variety of foods, the quantity and dietary adequacy could not be assessed in this qualitative study. However, responses to questions about feeding over the previous 3 days suggested that children were fed food from three or four food groups a day. Feeding frequency appeared to be appropriate and in some cases leaned toward over-feeding. Very young

infants were fed rice flour soup up to twice a day (or more if the families ran out of formula). Older infants were fed solid food up to four times a day and formula up to five times a day.

7.6 Weak continuum of care

Vietnam's health system has wide population coverage, with many cost-effective disease control interventions and primary health care services delivered through an extensive grassroots health services network. Eighty percent of pregnant women have access to antenatal care, except in remote areas, and the MOH protocol for antenatal counseling includes HIV counseling. However, in the PMTCT system described by informants in this study, there seemed to be no clear, consistent, and continuous mechanism for referring HIV-positive mothers from one provider to the next. Moreover, HIV prevention and control measures are not integrated into the reproductive health care program.

Ideally, pregnant women should be tested for HIV before the 27th week of pregnancy. However, there are numerous barriers to HIV testing for women in some areas in Vietnam. A study of the uptake of antenatal HIV testing among Vietnamese women in Hai Phong Obstetrical Hospital found that 45 percent of the women were tested for HIV before the end of 34 weeks of gestation, 5 percent within 35–40 weeks of gestation, and the rest at labor. . Low education levels, low income, and proximity to the hospital were associated with being tested at labor. The results suggest that many Vietnamese women are not tested for HIV during antenatal care and that a relationship exists between distance to the hospital and lack of HIV testing during pregnancy (Nguyen, Christofferson, and Rasch 2010).

Most women seek antenatal care at commune and district levels. Blood samples taken at the commune level are taken to the district or provincial levels for testing. If the tests are positive, samples are sent to the provincial level for confirmatory tests. Women might be reluctant because of stigma or distance to travel to provincial hospitals for test results. Because infant feeding counseling can only be done once mothers' HIV status is confirmed, opportunities are lost to counsel women in antenatal care, and health care providers might be too busy during labor or after delivery to provide effective counseling.

HIV-positive mothers deliver at hospitals that provide them with a starting supply of formula, and in some cases they are referred to HIV support groups. Many of the mothers interviewed reported that they only learned of their HIV status when they delivered their infants. Several found out in the early months of pregnancy, while others knew before they became pregnant. Of the 30 HIV-positive mothers interviewed in both sites, only 3 (10 percent) initiated breastfeeding at the hospital within hours of delivery, although when they learned of their HIV-positive status, they were advised to stop breastfeeding and begin formula-feeding. Mothers who do not receive confirmation of their HIV status before delivery are not provided with free formula, and when they receive their positive test results, they might not return for the milk.

The way mothers learned (or did not learn) about their HIV status left many confused. Some mothers found out they were HIV positive from health care providers in a way that raised rather than assuaged their fears. Approximately 12 percent–15 percent of HIV-infected pregnant women have CD4 counts < 200, which account for 40 percent–50 percent of mother-to-child transmission of HIV and 50 percent of non-obstetric maternal deaths. Children of these mothers have up to a fourfold increased risk of death. Strengthening the health system to provide comprehensive child health services to HIV-affected households will depend on a viable continuum of care with referrals and follow-up of clients to ensure HIV-affected families get the services they need. The existing PMTCT system would benefit from a quality improvement approach to more carefully examine and address gaps in services, including supply of free infant formula. The data from this study suggest that this is particularly important because mothers and fathers often knew which practices were inappropriate but had few choices to do anything differently. In addition, many expressed opinions about IYCF practices, but these were typically not deeply held beliefs. The opinions were more a result of lack of access to appropriate information and services, suggesting that addressing structural problems to create an enabling environment for HIV-positive mothers to practice optimal infant feeding is as important as—or even more important—than counseling mothers to make better choices.

One program—implemented by FHI/Vietnam and the MOH, with USAID-PEPFAR Vietnam support—provides a family-centered continuum of care that integrates PMTCT into comprehensive adult and pediatric HIV care, treatment, and support at 11 district hospital sites. The PMTCT service includes counseling and testing, health checkups and CD4 count, treatment and prophylaxis for sexually transmitted infections, psychosocial support, nutrition support, and infant feeding counseling. This successful integrated model (there has been no loss to follow-up of mother-infant pairs) demonstrates the importance of strong relationships between antenatal care and delivery sites and HIV clinics, strong district hospital leadership to promote access to PMTCT, and strong community home-based care teams who support safe infant feeding and facilitate timely appointments for mothers and infants at HIV clinics and postnatal and under-5 clinics.

8 Recommendations

WHO (2010) urges national or sub-national health authorities to decide whether health services should mainly counsel and support HIV-infected mothers to avoid all breastfeeding or to breastfeed and receive ARVs, based on estimations of which strategy is likely to give infants the greatest chance of HIV-free survival.

If Vietnam decides in its 2011 revision of the national PMTCT guidelines to recommend exclusive breastfeeding for HIV-positive women and provide highly active antiretroviral therapy (HAART) for women and ARV prophylaxis for infants to reduce postnatal HIV transmission during breastfeeding, the MOH should consider the following actions:

1. Provide HIV-infected mothers with lifelong ARV prophylaxis or treatment to reduce HIV transmission through breastfeeding.
2. Gradually discontinue the provision of free infant formula and ensure that health care providers and families are informed of the change in policy.
3. Accompany the policy change with a vigorous social and behavior change communication (SBCC) campaign to support exclusive breastfeeding.

If Vietnam decides to recommend giving HIV-positive mothers a choice between exclusive breastfeeding or exclusive replacement feeding, the MOH should consider the following actions:

1. Encourage voluntary HIV counseling and testing of pregnant women, especially for women at high risk or whose partners place them at high risk.
2. Require health care providers to counsel HIV-positive women (and their partners and families when possible) on the risks and advantages of both exclusive breastfeeding and exclusive replacement feeding and help them determine whether exclusive replacement feeding is feasible and safe.
3. Reconsider the provision of free infant formula, which could persuade mothers to opt for replacement feeding.

If Vietnam decides to recommend exclusive formula feeding for HIV-positive mothers and to continue to provide free infant formula through public health facilities, the MOH should invest in the following actions, organized according to the WHO criteria for safe replacement feeding, to prioritize HIV-free infant survival:

Condition 1. Safe water and sanitation are assured at the household level and in the community.

1. Identify ways to improve access to safe water sources.
2. Promote improved hygiene and sanitation, including safe formula preparation and feeding, through SBCC initiatives among PLHIV support groups.
3. Demonstrate hygienic formula preparation to mothers before they leave delivery sites.
4. Provide training at all levels of the health system on how to prepare infant formula hygienically (train OB/GYN staff, OPC staff, and home-based care providers as a team to strengthen referral links).

Condition 2. The mother or other caregiver can reliably provide sufficient infant formula to support the normal growth and development of the infant.

1. Counsel and test pregnant women for HIV during antenatal care visits wherever possible to identify HIV-infected pregnant women for counseling, ART, and free infant formula provision.

2. Streamline free formula provision to ensure adequate quantity and consistent supply.
3. Identify ways to reduce opportunity cost for families, for example, by reducing the frequency of formula pickup. HIV-affected families could be given a choice to pay a small fee for formula to enhance its perceived value, or they could be asked to buy formula and supplies if they have the resources in order to try to discourage any incentives from within the health services.

Condition 3. The mother or other caregiver can prepare infant formula safely and frequently enough so that it is safe and carries a low risk of diarrhea and malnutrition.

1. Require health care providers to demonstrate formula preparation under hygienic conditions to mothers and other caregivers and then observe them while they prepare formula.
2. Train health care providers at all levels, including home-based care providers and especially commune-level midwives, to counsel HIV-positive women on the conditions needed for safe formula feeding and the risks of early complementary feeding and mixed feeding.
3. Promote behavior change among mothers-in-law and fathers regarding safe replacement feeding, for example, through television spots (Channel 02 in Hai Phong has a health program that has aired information on bottle feeding and weaning food).

Condition 4. The mother or other caregiver can feed the infant formula exclusively for the first 6 months of life.

1. Disseminate the updated national policy on infant feeding by HIV-positive women to all health care managers and providers.
2. Promote the national policy among through an SBCC approach, for example, through leaflets or video clips for television or hospital waiting rooms.

Condition 5. The family and community are supportive of this practice.

1. Create awareness of how HIV-related stigma and discrimination can influence uptake of HIV testing and consequently infant feeding practices, involving respected opinion leaders.
2. Train commune-level staff, including midwives, in optimal infant feeding for HIV-exposed infants.
3. Train home-based care providers to follow up on HIV-positive mothers' infant feeding practices and counsel on exclusive replacement feeding.
4. Train PLHIV support group members to counsel mothers on optimal infant feeding (an idea not shared by all informants in the study).

Condition 6. The mother or caregiver can access comprehensive child health services.

1. Increase access to VCT for pregnant women, HAART for HIV-positive women, and ARV prophylaxis for HIV-exposed infants.
2. Improve the speed and efficiency of getting confirmatory test results, especially in rural areas.
3. Institute regular follow-up of HIV-exposed infants for 6-week testing and use this opportunity to counsel HIV-positive mothers on optimal infant feeding.
4. Ensure that HIV-exposed infants have access to a full package of basic preventive health care interventions (IYCF counseling, basic immunizations, Cotrimoxazole, growth monitoring, routine vitamin A supplementation, and appropriate referral and treatment of illness) before distributing free infant formula.

5. Build a collaborative approach among health care providers at all contact points to promote and monitor optimal infant feeding by HIV-positive women.
6. Improve tracking systems, including community monitoring, to reduce loss to follow-up of infants born to HIV-positive mothers.

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Annex 1. AFASS Definitions

Acceptable: The mother perceives no barrier to replacement feeding. Barriers might have cultural or social reasons, or be due to fear of stigma or discrimination. According to this concept, the mother is under no social or cultural pressure not to use replacement feeding; she is supported by family and community in opting for replacement feeding or she will be able to cope with pressure from family and friends to breastfeed; and she can deal with possible stigma attached to being seen with replacement food.

Feasible: The mother (or family) has adequate time, knowledge, skills, and other resources to prepare the replacement food and feed the infant up to 12 times in 24 hours. According to this concept, the mother can understand and follow the instructions for preparing infant formula, and with support from the family, can prepare enough replacement feeds correctly every day and at night, despite disruptions to preparation of family food or other work.

Affordable: The mother and family, with community or health-system support if necessary, can pay the costs of purchasing/producing, preparing and using replacement feeding, including all ingredients, fuel, clean water, soap, and equipment, without compromising the health and nutrition of the family. This concept also includes access to medical care if necessary for diarrhea and the cost of such care.

Sustainable: A continuous, uninterrupted supply and a dependable system of distribution for all ingredients and products needed for safe replacement feeding are available for as long as the infant needs them, up to 1 year old or longer. According to this concept, there is little risk that formula will ever be unavailable or inaccessible, and another person will be available to feed the child in the mother's absence and can prepare and give replacement feeds.

Safe: Replacement foods are correctly and hygienically prepared and stored and are fed in nutritionally adequate quantities, with clean hands and using clean utensils, preferably by cup. This concept means that the mother or caregiver:

- Has access to a reliable supply of safe water (from a piped or protected well source)
- Prepares replacement foods that are nutritionally sound and free of pathogens
- Can wash hands and utensils thoroughly with soap and regularly boil the utensils to sterilize them
- Can boil water for preparing each of the baby's feeds
- Can store unprepared foods in clean, covered containers and protect them from rodents, insects, and other animals.

Source: UNICEF, UNAIDS, WHO, and UNFPA. 2003. *HIV and Infant Feeding: A Guide for Health-Care Managers and Supervisors.* Geneva: WHO.

Annex 2. Formula Provision by PMTCT and Pediatric Care and Treatment Programs in Vietnam

1. PEPFAR/Centers for Disease Control and Prevention (CDC)/Vietnam LIFEGAP (Leadership Investment Fighting Epidemic-Global AIDS Program) Pediatric Treatment Programs

All infants 0–18 months old born to HIV-infected mothers or otherwise exposed to HIV regardless of whether the mothers participate in a prevention-of-mother-to-child transmission of HIV (PMTCT) program are fed **exclusively** with infant formula if they can access clean water sources.

- **0–6 weeks**: Infants receive a 6-week supply (8 tins of 450 grams or 9 tins of 400 grams) of formula either at PMTCT facilities (for PMTCT infants) or pediatric outpatient clinics (OPCs) (for non-PMTCT infants). Six weeks after delivery is the latest time to return for Cotrimoxazole prophylaxis and the earliest time for DNA-polymerase chain reaction (PCR) testing.
- **6–8 weeks**: Infants receive a 2-week supply (4 tins of either 400 grams or 450 grams). The second month after delivery is the time to return for the first DNA-PCR test.
- **From the third month:** Infants are given formula every month.

LIFE-GAP formula distribution by age in months

Month	450 g tins/ month	400 g tins/ month
1	5	6
2	7	7
3	8	9
4	8	9
5	8	9
6	9	10
Total for first 6 months	**45**	**50**
7	6	6
8	5	6
9	5	5
10	4	5
11	4	4
12	3	4
Total for next 6 months	**27**	**30**
13	1	1

Month	450 g tins/ month	400 g tins/ month
14	1	1
15	1	1
16	1	1
17	1	1
18	1	1
Total for last 6 months	**6**	**6**
Total for 18 months	**72**	**80**

To make sure children are fed the formula, parents or other caregivers are asked to return all empty tins or their lids with authorized signatures at the next distribution. Mothers who receive infant formula at PMTCT sites are asked to take the tins/lids to PMTCT follow-up sites (usually pediatric clinics) for continued formula provision.

The number of tins that parents or other caregivers can receive for the next distribution equals the rate by age minus the number of tins remaining from the previous distribution (based on the number of tins/lids returned).

The brand of infant formula is matched to the age of the infant.

- **< 6 months**: Lactogen 1, Dielac Alpha Step 1, Dulac
- **6–12 months**: Lactogen 2, Dielac Alpha Step 2, Dupro
- **13–18 months**: NAN 3, Dieclac Alpha Step 3, Dugro 1Plus

2. Family Health International/Vietnam

Family Health International (FHI)-supported family-centered OPCs provide 4 kg of infant formula free for each HIV-exposed infant 0–6 months old enrolled in the PMTCT program for up to 12 months if replacement feeding conditions are determined to be safe. In addition, caregivers of HIV-exposed children 6–18 months old are provided with 2.5 kg of rice, 0.5 L of oil, and 5.5 kg of infant formula if replacement feeding conditions are determined to be safe. Counseling and education on preparation of infant formula are given as part of food support.

3. Global Fund to Fight AIDS, Tuberculosis, and Malaria

The Global Fund to Fight AIDS, Tuberculosis, and Malaria (GF) provides formula to infants of HIV-positive mothers for 6 months in the sites it supports. The budget is allocated to localities, which buy and distribute the formula rather than purchasing it directly from GF.

Annex 3. Questions Asked of Mothers, Fathers, Other Caregivers, Health Care Providers, and PLHIV Support Group Members

HIV-POSITIVE MOTHERS WITH INFANTS 0–11 MONTHS OLD

A. Infant feeding practices among HIV-positive women

1. How old is your infant?
2. What is he/she able to do at this age?
3. We know that you and other HIV-positive women have to make difficult decisions about feeding your infants to keep them safe from HIV. What type of milk do you feed your infant? (Probe for breast milk, exclusive breastfeeding, exclusive formula feeding, mixed feeding.) Tell me about some of the things you considered before you made this choice.
4. Do you feed him/her anything else besides milk? If yes, what?
5. How soon did you feed your infant when he/she was first born?
6. What did you feed your infant when he/she was born? (Probe for what was given first, breast milk, prelacteal feeds, formula, other.)
7. How did you decide what to feed your infant after you delivered?
8. How long do you plan to feed your infant this milk (whether it's breast milk, animal milk, or infant formula)?
9. Did anyone influence your decision about how to feed your infant?
10. Did you receive any advice from health care providers after you delivered your infant? If yes, what advice did they give you? (Probe: Advice to breastfeed? To breastfeed exclusively? To formula-feed? To formula feed exclusively? What to do if you have cracked nipples or other breast problems?)
11. Do you feel that the health care providers gave you the same advice they give all mothers, or did they give you advice that was different in some way? (Probe: For example, did the health care provider talk to you about what to do to avoid transmitting HIV to your infant?)
12. Did you have any difficulties feeding your infant in the beginning? What difficulties? (List all the difficulties the mother reports on separate pieces of paper and ask her to sort and prioritize the challenges from most to least challenging; ask her to prioritize which ones she thinks are the most difficult and why. Describe the most difficult challenges.)
13. Since you delivered your infant, have you met a health provider and received any counseling on infant feeding?
14. Where/to whom do you go for advice if you have any problems feeding your infant?

15. If you were counseled the last time you met with the health care provider, when was that? What advice did the health care provider give you?

16. Was the advice the health care provider gave you different from what they give other mothers? If yes, how was it different?

17. If the advice the health care provider gave you was different from the advice they give other mothers, how does this make you feel?

18. Have you been able to follow the counselor's advice?

19. If yes, what did you do to follow the advice? If no, why not? What difficulties did you face?

20. If you didn't understand something the health care provider told you about how to feed your infant, what do you do?

21. Do you like the counseling you have gotten about how to feed your infant?

22. How do you feel when talking to the counselor? Do you feel the counselor listens to your concerns? Do you feel you are heard? How does the counselor respond to your concerns? Do you feel you are treated differently because of your HIV status? If yes, how?

B. Breastfeeding

23. Did someone show you how to breastfeed your infant? Who taught you?

24. What information were you given?

25. Did you have any problems when you started breastfeeding your infant? What kind of problems?

26. Have you had any problems since you started breastfeeding? What kind of problems?

C. Formula preparation and use

24. Do you get any free formula?

25. Why are you getting free formula?

26. Do you know how long you are eligible to get free formula?

27. Do you get enough free formula to meet your infant's needs?

28. If no, how do you get the food your infant needs?

29. Where do you go to get the free formula? How do you access it?

30. How do you feel about getting free formula?

31. How do people in the community or your family react when they know you get free formula?

32. Do HIV-positive mothers face any difficulties when they go to get free formula?

33. Have you experienced any difficulties? Can you describe what difficulties you faced? (List all the difficulties the mother reports on separate pieces of paper and ask her to sort and prioritize the

difficulties from most to least challenging; ask her to prioritize which ones she thinks are the most difficult and why. Describe the most difficult challenges.)

34. Did someone show you how to prepare formula for your infant? Who taught you?
35. What information were you given?
36. Did you learn about hand washing when preparing formula? What did you learn?
37. Did you learn about how to store formula? What did you learn?
38. Did you learn about how to make water safe to prepare formula? What did you learn?
39. How do you prepare your baby's formula?
40. Where do you get the water you use to prepare formula? Do you have access to safe and clean water to prepare formula? Do you have to boil it?
41. Do you understand the instructions on how to prepare formula safely? (Probe: instructions on the formula package, instructions given by the health care provider.)
42. What do the instructions on the can of infant formula say? Do you have any difficulties with the instructions? If yes, what difficulties?
43. How long before you feed your infant do you prepare the formula?
44. If you prepare formula in advance, how do you store it until you feed it to your infant?
45. After you have fed your infant, if there is any formula left over, what do you do with it? (Probe for whether the leftover formula is thrown away or used again.)
46. Have neighbors, friends, peers, family or others treated you differently because you receive free formula because of your HIV status? How does this make you feel?
47. Has the free formula caused any other difficulties when you feed your infant?
48. Have you changed the way you feed your baby because of this? If yes, can you describe?

D. Transitioning from free formula to purchasing formula and introducing complementary foods

49. What did you do when the free formula was no longer available? (Probe for formula purchase, cost, difficulty purchasing formula, change in type of formula and preparation of formula.)
50. How did you manage this change? Can you describe what changes you made?
51. Did you feed your infant anything else once the free formula was no longer available?
52. When did you introduce solid foods to your infant? How old was he/she?
53. Why did you introduce semi-solid or solid foods at this age? (Probe: If the infant was younger than 6 months old, why? If the infant was 6 months old or older, why?)
54. Did anyone else influence your decision to introduce semi-solid or solid foods at this age? Who?

55. What foods do you feed your infant?

56. Have you had any difficulties feeding your infant solid foods?

57. How often in a day do you feed your infant solid foods?

58. What did you feed your infant yesterday (Probe: Morning, afternoon, evening; main meals as well as snacks between meals or before and after meals)? Was yesterday a normal day?

59. How many times in the past three days did you feed your infant:
Vegetables? Fruit? Cereals/grains? Legumes/lentils? Dairy? Eggs? Fish? Poultry? Pork or beef?

60. In your household, who decides how to feed infants? Who has the most influence in these decisions? Are you involved in making the decisions? Is the infant's father involved?

61. Have there ever been any disagreements in your household about how to feed your infant? If yes, what happened the last time there was such a disagreement? How was it resolved?

E. Morbidity

62. Has your infant been sick in the past two weeks? If yes, what did he/she have?

63. Have you been sick in the past two weeks?

64. Have you had any difficulties caring for your infant because of your illness?

65. How does your infant eat and drink when he/she is sick? Are there any changes in his/her normal eating habits or patterns? Can you describe what happened the last time your infant was sick?

F. Women's work

66. Are you working now?

67. How soon after your infant was born did you return/start to work?

68. What type of work do you do? (Probe for unpaid as well as paid work.)

69. How often do you work outside the home? (Probe: Every day? Less often?)

70. How do your wages compare to what your husband or men in your family earn?

71. Who decides how to use your income?

72. Do you earn enough to feed your infant a variety of foods and buy formula?

73. Have you had any trouble finding work or staying at work as a result of your HIV status?

74. Have there been any changes in the type of employment you can find because of the economic situation? Has this made life more difficult? If so how? What has changed?

75. Are you treated differently because of your HIV status? What is different?

76. Does HIV limit your employment options or opportunities? How does this make you feel?

77. Where do you go for support?

G. Quality of infant care and feeding by caregivers

87. Does anyone else take care of your infant other than you?

88. Who cares for your infant when you are away at work or elsewhere? Is the person related to you? How? How old is the person?

89. **(If the caregiver is present, skip this question)** Are you satisfied with the quality of care the person gives your infant?

90. What difficulties, if any, do you face with the type of care your infant receives when you are away?

91. Does the caregiver follow your instructions? (If yes, probe: Have you tried to do or say anything to your caregiver to help her/him understand the instructions better? What did you do?)

92. Is the caregiver able to follow infant feeding guidelines well? If not, why not? What goes wrong?

93. Does the caregiver have to prepare formula or food for your infant? If yes, does he/she understand the instructions on how to prepare the formula?

94. What does the caregiver do before preparing the formula? (Probe: Wash hands, wash utensils and bottles, boil water?)

H. Demonstration of formula preparation (observation)

Action	Excellent	Above average	Average	Below average
Wash hands well with soap and water and rinse.				
Wash bottles, nipples, caps, rings, and utensils with soap and water and rinse.				
Put the bottles, nipples, caps, and rings in a pan of water and boil for 5 minutes.				
If using water from a tap, let it run for 2 minutes first.				
Bring water to a boil and keep boiling for a minute or two. Cool.				
Measure and pour the correct amount of formula into a clean bottle and add cooled boiled water.				
Attach nipple and ring to the bottle and shake well.				

Comments_____

_____

FATHERS OF INFANTS 0–11 MONTHS OLD WITH HIV-POSITIVE MOTHERS

1. How old is this infant?

2. What do you do to help take care of this infant? (Probe: Feeding, cleaning the house, buying formula, etc.)

3. Is your involvement with your children different from your father's involvement with his children? Is it different from what you expect your son's involvement to be with his children? (Probe for same or different responsibilities.)

4. In your opinion, what role should fathers play in taking care of infants? Why do you think so? (Probe: if the father says he does more than usually expected, are others supportive or do they tease him or make negative remarks? If the father says he does less than usually expected, do others accept this? Do others challenge this? If so, who? (Probe: the mother of the infant, elders, others?)

5. Can you tell us what infants should eat from birth to the first year? Why?

6. Do you ever have to take care of this infant on your own if the mother goes to work or somewhere else? How often does this happen?]

7. If you take care of this infant on your own, can you describe what you do?

8. Do you ever feed this infant? If yes, what you do feed him/her? How often? (Probe: very often, not often.)

9. What challenges, if any, do you face in feeding your infant?

10. What challenges do you face providing for this infant and the infant's mother? (Probe: What are you expected to provide? Are you able to provide for them as you are expected or would like to do? If no, why not?)

11. What do you think about how the infant's mother feeds the infant? Do you think she is doing this the right way or not? Can you explain why?

12. What happened the last time a new food or liquid was introduced to the infant? Was there any discussion about this? What was the discussion about? What decisions were made?

13. Who makes decisions in your family about infant feeding?

14. Who influences decisions about feeding your infant? Can you rank who has the most to least influence in such decisions in your family?

15. Does the mother have a say in how to feed the infant? Why or why not?

16. Have there ever been any disagreements in your household about how to feed your infant? If yes, what happened the last time there was such a disagreement? How was it resolved?

17. Do you take this infant to see the health care provider? If yes, do you take the infant on your own or go with the infant's mother?

18. What happened the last time you took the infant to the health care provider? Did the health care provider talk to you about infant feeding?

19. What do you think of the advice you got from the health care provider?

20. Did you do what the health care provider advised? If yes, what did you do to follow the advice? If no, why didn't you follow the advice? Could you describe what happened?

21. We know that HIV is a problem in this area and that the mother of your infant has HIV. How does being HIV-positive affect her? How does this affect you? Can you explain?

22. Does the mother of your infant feed and take care of your infant any differently because she has HIV?

23. How do you feel about this? How does it affect you? The infant? The family?

24. Does the mother of your infant go anywhere for support? Where? Why does she go there?

25. What kind of help and support does she get there? Can you describe?

26. Do you go anywhere for support? Where do you go? Why?

27. What type of support do you get there?

28. **(If the mother was already interviewed, skip this question.)** Does the mother work?

29. **(If the mother was already interviewed, skip this question.)** How soon did she return to work after the infant was born? Why did she return to work then?

30. **(If the mother was already interviewed, skip this question.)** What type of work does she do?

31. **(If the mother was already interviewed, skip this question.)** When does she work? (Probe: day, night, shifts, full time, part time).

32. Once she started work, what changed about how your infant is fed and taken care of?

33. **(If the caregiver is present, skip this question.)** Are you happy with the care this person provides for your infant? Are there any problems or difficulties? Can you describe?

34. Has the mother's HIV status changed anything about the care your infant gets? How does the caregiver react to the mother's HIV status? Can you explain?

OTHER CAREGIVERS

A. Infant feeding practices among HIV-positive women

1. How old is the infant you are taking care of?

2. How long have you been taking caring of this infant?

3. How often do you take care of this infant? (Probe: Every day or less often? How long per day? A few hours or all day? What time of day?)

4. Where is this infant's mother when you are taking care of him or her?

5. What does she do while she is away from the infant?

6. If she works, what type of work does she do? When did she go back to work after this infant was born?

7. What do you feed the infant?

8. **(If the answer to question 7 is "milk,")** What type of milk?

9. Do you feed the infant anything else? If yes, what?

10. How many times a day do you feed the infant now? (Probe: Meals as well as snacks between meals or before or after meals.)

11. Do you have any problems feeding the infant? If yes, what problems? What is most difficult, what is least difficult and why? (List all the difficulties the caregiver reports on separate pieces of paper and ask him/her to sort and prioritize the difficulties from most to least challenging; ask him/her to prioritize which ones are the most difficult and why. Describe the most difficult challenges.)

12. Where/to whom do you go for advice if you have any problems feeding the infant?

13. Do you see a counselor to get advice on how to take care of and feed the infant?

B. Formula preparation and use

13. Did you learn how to prepare formula for the infant?

14. Where did you learn how to prepare formula? Who taught you? What did you learn?

15. How do you prepare the infant's formula?

16. Did you learn about hand washing when preparing formula? What did you learn?

17. If you store formula or breast milk, how do you store it?

18. Did you learn about how to store formula? What did you learn?

19. Did you learn about the type of water to use for preparing formula? What did you learn?

20. Where do you get the water you use to prepare formula? Do you have access to safe and clean water to prepare formula? Do you have to boil it?

21. Do you wash your hands before preparing formula and feeding the infant?

22. Do you understand the instructions on how to prepare formula safely? Do you have any difficulties with the instructions?

23. How much time in advance do you prepare formula to feed the infant?

24. If you prepare formula in advance, how do you store it?

25. After you have fed the infant formula, if there is any formula left over, what do you do with it? (Probe: discard, use again.)

C. Introducing complementary foods

26. Does this infant eat semi-solid and/or solid foods? If yes, when were semi-solid and/or solid foods introduced? How old was the infant then?

27. What foods do you give the infant?

28. How often in a day do you feed this infant semi-solid or solid foods?

29. Have you had any problems feeding this infant semi-solid or solid foods? If yes, what problems?

30. What foods do you usually offer the infant?

31. Did you take care of this infant yesterday? If yes, what did you feed him/her yesterday (morning, afternoon, evening)? Was yesterday a normal day?

32. How many times in the past three days did you feed this infant:
Vegetables? Fruits? Cereals/grains? Legumes/lentils? Dairy? Eggs? Fish? Poultry? Pork or beef?

D. Morbidity

33. Has the infant been ill in the past two weeks? What did he/she have?

34. Has this infant's mother been sick in the past two weeks?

35. Have you had any difficulties caring for this infant because of the infant's or mother's illness? If yes, what difficulties?

E. Communication between caregiver and mother/family

36. How do you and the mother communicate about feeding and taking care of the infant?

37. Does anyone in the family give you instructions on how to take care of and feed the infant each day? Who? What instructions do they give you?

38. Once you are given instructions, can you follow them? Is it easy or difficult? If difficult, what problems do you have following the instructions?

39. Do you agree with the instructions you get? Do you have a different opinion sometimes? If yes, do you say anything about it? Do you do anything about it?

40. How do you manage this difference? (Probe: Do what the mother says, disregard what the mother says and do what you think is best?)

41. Have you and the mother or family ever disagreed on how to feed or take care of the infant? Can you describe what happened the last time this happened? How was this resolved?

F. Demonstration of formula preparation (observation)

Action	Excellent	Above average	Average	Below average
1. Wash hands well with soap and water and rinse.				
2. Wash bottles, nipples, caps, rings, and utensils with soap and water and rinse.				
3. Put the bottles, nipples, caps, and rings in a pan of water and boil for 5 minutes.				
4. If using water from a tap, let it run for 2 minutes first.				
5. Bring water to a boil and keep boiling for a minute or two. Cool.				
6. Measure and pour the correct amount of formula into a clean bottle and add cooled boiled water.				
7. Attach nipple and ring to the bottle and shake well.				

Comments_____

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HEALTH CARE PROVIDERS

A. Infant feeding practices among HIV-positive women

1. In your experience, how do HIV-positive mothers usually feed their infants? (Probe for breastfeeding, formula feeding, mixed feeding [giving both breast milk and formula].)

2. Is any practice more common than another? What is most common in your experience?

3. What advice do you give HIV-positive mothers about:

   When to start feeding their infants?

   What to feed their infants?

   How often to feed their infants?

   How long to feed their infants milk?

4. Could you describe the infant feeding practices of HIV-positive mothers beginning from when they first deliver their infants? What happens in the first few hours of life? The first few days of life? After that?

5. When do you begin counseling HIV-positive mothers about how and what to feed their infants (Probe: during pregnancy, immediately after birth)? (If the health care provider doesn't counsel, probe to find out who does).

6. Is the advice you give HIV-positive mothers about infant feeding any different from the advice you give mothers without HIV? How is it different? Why is it different?

7. In any given week—let's say last week—how often did you counsel HIV-positive mothers on infant feeding? Is that how much time you normally spend counseling HIV-positive mothers on infant feeding?

8. What infant feeding difficulties do HIV-positive mothers experience or complain about?

9. What challenges, if any, do HIV-positive mothers face in feeding their infants? Have you counseled an HIV-positive mother recently who faced challenges? Can you describe what happened? What did you advise her to do?

10. What do you usually advise HIV-positive mothers on how to feed their infants?

11. Do you ever talk to fathers? If yes, what do you advise them? If no, why not?

12. Do you follow up HIV-positive mothers over time?

13. Can you give an example of how an HIV-positive mother's feeding practices change over time? (Probe: If she returns to work, what do you tell her then? How soon after delivery do most HIV-positive mothers return to work?)

14. Do HIV-positive mothers follow your advice? If yes, what steps do they take to follow your advice? If no, why not?

15. If mothers are unable to follow your advice, what do you do? How do you help them?

16. Do you know the current Ministry of Health policies on infant feeding for HIV-positive mothers? What do you think about these guidelines? Are they easy or difficult to follow? What difficulties do you face when counseling mothers to follow them? How do mothers respond to your advice?

B. Formula preparation and use

17. What advice do you give HIV-positive mothers about formula feeding and preparation? What topics do you cover when you counsel them? (Probe for safety of preparation, storage of prepared formula, wastage and reuse, risks of infection, hygiene and sanitation, water source.)

18. We understand that free formula is provided to some HIV-positive mothers of infants. Can HIV-positive mothers in this area get free formula? Where do they go to get it? How do they get it?

19. Have you seen any mothers picking up free formula? How do they feel about going to get the formula? How do others in the community react?

20. Do HIV-positive mothers have difficulties getting the free formula? If so, what sorts of difficulties?

C. Transitioning from free formula to purchasing formula and introducing complementary foods

21. How long do HIV-positive mothers receive free formula? At what age are infants no longer eligible for free formula?

22. What happens when an infant reaches the age when he/she is no longer eligible for free formula? What happens once the free formula runs out?

23. If HIV-positive mothers continue to feed their infants formula after the free formula runs out, what problems do they face?

24. How do these challenges affect their infant feeding practices? (Probe for use of alternate milks [non-formula]; early introduction of solids, type of solids, and frequency; changes in working patterns and high-risk behavior to earn income; and other strategies to pay for formula.)

25. Can HIV-positive mothers afford to buy formula for their infants? If no, what do they do? (Probe for returning to work early, borrowing money, buying on credit, obtaining formula from others.) How do they manage the cost of paying for formula?

26. How else do HIV-positive women feed their infants once the free formula runs out? What difficulties do they face?

27. We know that some mothers introduce semi-solid and solid foods to their infants early—in some cases, long before the infants are 6 months old, while others introduce solids late. What do you usually advise HIV-positive mothers about when to introduce solid foods and what to introduce? How old should the infant be?

28. Why do some HIV-positive mothers introduce solids foods early? What do they usually feed their infants?

29. Why do some mothers introduce solids late? What foods do they usually start with?

30. Do HIV-positive women have any difficulties with this transition from milk to semi-solids or solids? If so, what difficulties? Can you give some examples?

31. What difficulties do HIV-positive women have preparing semi-solid or solid food for their infants?

32. In your opinion, do HIV-positive mothers offer healthy foods and a variety of foods?

33. Do HIV-positive mothers have any problems preparing food safely for their infants?

34. Do HIV-positive mothers have any problems feeding their infants as frequently as recommended?

35. How are decisions about infant feeding made? Who are the main decision-makers? Are HIV-positive mothers involved in making the decisions?

36. What concerns, if any, do HIV-positive mothers express about the affordability of infant foods?

37. Is food insecurity a problem in this area? How common a problem is it? How does it affect HIV-affected households? From your perspective, how does food insecurity affect infant feeding practices in HIV-affected households?

D. Morbidity

38. Do HIV-positive mothers bring their sick children to your facility?

39. What type of illnesses do these children get? What treatment do you provide for them?

40. Do these children get sick frequently?

41. Do HIV-positive mothers get sick? How often?

42. Does illness affect HIV-positive mothers' ability to care for and feed their children? In what way?

43. Do you see any difference in the health and nutrition of children from HIV-affected and non-HIV-affected households? What are the differences? Why do you think there are these differences?

E. Quality of infant care and feeding by caregivers

44. Many mothers in Vietnam return to work soon after delivery. Do HIV-positive mothers do this?

45. If an HIV-positive mother works, who takes care of her children? Usually, who takes care of children of working mothers?

46. What do you think of the quality of care those caregivers provide?

47. Do you ever meet with caregivers instead of mothers to counsel them on infant feeding? If yes, please describe what you advise. If no, why not?

48. Do caregivers have any trouble following instructions on infant feeding? Can you describe these difficulties?

49. In your opinion, does this affect the health and well-being of the children?

50. Would you mind telling me what support (if any) you've received from infant formula companies? For example, did they help pay for your training? Do representatives of formula companies visit your clinic or advertise nearby?

PLHIV SUPPORT GROUP MEMBERS

1. Tell me about what happens in your support group. What happens first? Then what? (Probe about what goes on in general in the support group; this doesn't need to be a long explanation).

2. Can you describe some of the general challenges and difficulties HIV-positive mothers face?

3. How does this community perceive HIV-positive mothers? Are they accepted or is there some kind of discrimination because of their status?

4. If a mother is HIV positive, is her status known in the community or kept secret?

5. Are HIV-positive mothers excluded from anything in any way? Can you give some examples? (Probe: Discrimination by health care providers, employers, schools, people who provide farming assistance, etc.)

6. What challenges may an HIV-positive mother face if her status is known or suspected? (List all the challenges the informant reports on separate pieces of paper and ask the informant to prioritize the challenges from most to least challenging; ask which are the most difficult challenges and why. Describe the most difficult challenges.)

7. I'd like to talk a little bit about what happens outside the support group. What do you think about the care and support HIV-positive mothers receive in general? How does the community perceive them? Does the community accept HIV-positive mothers? Their children? Do their families accept them, or do HIV-positive women and their children face difficulties? What difficulties?

A. Infant feeding practices among HIV-positive women

8. Sometimes HIV-positive mothers face challenges feeding their infants. Do you know any mothers who have faced such challenges? If so, what sorts of problems do they face? (List all the challenges the informant reports on separate pieces of paper and ask him/her to sort and

prioritize them from most to least difficult. Then ask him/her the reasons for the most difficult challenges. List the most difficult challenges and reasons here.)

B. Formula preparation and use

9. We understand that many HIV-positive mothers can get free formula to feed their infants for a few months. Do you know any HIV-positive mothers who have gotten free formula?

10. How and where did they get it?

11. How many months did they get the free formula?

12. Some HIV-positive mothers face challenges when they try to get free formula. Have you heard about this happening here?

13. If yes, what problems have HIV-positive mothers had?

14. (If no, probe to find out whether mothers have problems getting free formula, for example, distance mothers have to go to get to the free formula, whether they are given enough formula, whether stigma is attached to getting free formula.)

15. What do people say when HIV-positive mothers try to get formula? Do they say anything that might make mothers feel ashamed? Think of times you saw someone get free formula or heard about someone getting free formula. What did the health care provider say to the mother? Anything that might make her feel ashamed?

C. Transitioning from free formula to purchasing formula and introducing complementary foods

16. What happens after the free formula runs out?

17. After the free formula runs out, how do HIV-positive mothers feed their infants? Do mothers and other caregivers have problems as they move from free formula to something else (either formula they buy or other liquids and foods such as animal milk or solid foods)?

18. How do mothers and families overcome these challenges? Can you give a few examples of how HIV-positive mothers manage this change?

19. If mothers continue to use formula, how do they pay for it?

20. Do you know anyone who has had trouble paying for formula for her infant once the free formula ran out? Have you had such difficulties yourself?

21. What sorts of challenges did they have? How did they resolve them?

22. What would you do in a similar situation?

23. What concerns, if any, do HIV-positive mothers express about the affordability of infant foods?

24. Is food insecurity a problem in this area? How common is it?

25. How does food insecurity affect households where at least one person is HIV positive?

26. How do you think food insecurity affects infant feeding practices in HIV-affected households?

D. Source of information and advice on infant feeding

27. Where do HIV-positive mothers go to get advice on feeding their infants?

28. What do you think of the services and counseling HIV-positive mothers get from health care providers? Do they experience any discrimination or stigma in going to receive counseling or from the counselors themselves? Can you give us some examples of what they experience?

29. Are the counselors well trained in giving advice to HIV-positive mothers on infant feeding?

30. What do health care providers say to HIV-positive mothers? Do they say anything that might make HIV-positive mothers feel ashamed? Do they say anything that might make HIV-positive mothers feel accepted? Do they refrain from making a judgment about HIV-positive mothers?

31. If HIV-positive mothers have shared their infant feeding experience with you, what was their experience?

E. Working women and infant care and feeding (to be answered by all informants, working or not)

32. What kind of work outside the home do HIV-positive mothers do—either paid or unpaid?

33. How does being HIV positive affect women's ability to earn income? (Probe for employment discrimination, wage discrimination, illness, and inability to work as a result of HIV, fewer employment options.)

34. Do HIV-positive women in this community engage in any high-risk behaviors to support their families and feed their infants (for example, sex for money to buy food)?

35. Do you think women engage more or less in these high-risk behaviors once they know they are HIV positive? What changes?

36. Do you think women engage more or less in these high-risk behaviors once they have children?

37. Where do HIV-positive mothers go for support, aside from this support group?

Annex 4. Types of Questions Asked of Key Informants

Counseling and Support

- What alternatives are there to ensure mothers receive the individually tailored counseling they need? What might be next steps to ensure that mothers get good counseling?
- There is some indication that clinicians don't have enough time to counsel mothers. Is this true? If so, who should counsel mothers?
- In our research, one of the challenges mothers, fathers, and other caregivers reported was the one-month gap between birth and counseling about HIV and IYCF. Mothers reported receiving little or no counseling on the subject from the obstetrics hospital where they delivered. While the pediatrics hospital does provide counseling, mothers don't receive the counseling until approximately one month postpartum. What explains the gap and what can be done to close it? Who should close it and how?
- How could we improve the development and availability of social and behavior change communication (SBCC) materials? Based on your experience, what two or three key messages on IYCF in the context of HIV should IEC materials promote?
- How can IYCF in the context of HIV be made a higher priority without overburdening health care workers at each level?

Continuum of Care

- Where are the greatest challenges in the needed continuum of support (from the commune level up to national policy makers) to ensure that HIV-positive mothers safely feed formula to their infants?
- What factors contribute to a delay in finding out one's HIV status? How can women be told their HIV status before they deliver?

Ensuring Adequate Access to Infant Formula

- What explains the gap in the availability of infant formula in the first month of life and what can be done to close it? Who should be responsible for closing it and how (for example, working with whom)?
- Do you think HIV-positive women are given enough formula? If so, what contributed to the success of the distribution? If not, how can a continuous, adequate supply be ensured?
- Do you think it is better to provide (heavily) subsidized infant formula or free formula? Why?
- With respect to service delivery, what do you think has been particularly successful? What contributed to the success? What can we learn from it?