

Number 3, January 2003

Integrating Prevention of Mother-to-Child HIV Transmission into Existing Maternal, Child, and Reproductive Health Programs

Ellen Israel, CNM, MPH and Mary Kroeger, CNM, MPH

I. INTRODUCTION

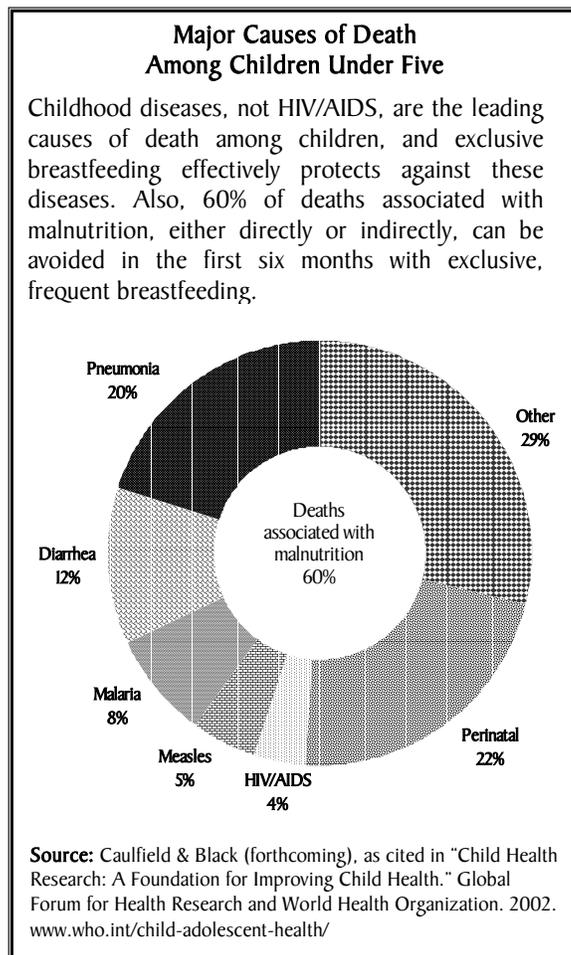
This issue of the *Technical Guidance Series* provides practical guidance in developing prevention of mother-to-child transmission (PMTCT) of HIV/AIDS programs in health facilities and communities. It draws upon best practices that have emerged from the field, mainly Africa, as well as on current research, also largely conducted in Africa. PMTCT programs can and should begin with strengthening existing sustainable strategies, including pregnancy prevention through contraceptive services, quality antenatal care, avoidance of harmful interventions during labor and delivery, strengthened postpartum care, and promotion of safer infant feeding for all mothers and their infants. Where feasible, pre-pregnancy and antenatal voluntary, confidential counseling and testing (VCCT) for HIV should be established. Antiretroviral drugs (ARVs), elective cesarean section, and formula feeding should be considered in settings where these are truly feasible, but should not be the driving interventions around which all funding and programs for PMTCT revolve.

The Ndola Demonstration Project in the Copperbelt of Zambia is providing many on-the-ground lessons for an integrated PMTCT model within a district-level maternal and child health (MCH) program (Ntombela and Kroeger, 2001). Additional lessons come from Pathfinder International's Community-Based HIV/AIDS Prevention, Care and Support (COPHIA) Project in Kenya, which successfully supports community-based organizations (CBOs) and their health workers to provide prevention, as well as care and support activities for people living with HIV/AIDS. A strong two-way referral system in COPHIA project areas links the community care efforts with medical facilities, whose services have been strengthened and supported by the project (Pathfinder International, 1999).

There are key cross cutting issues to consider when developing PMTCT programs. One is that many of the strategies for preventing MTCT will benefit all women who are pregnant or planning a pregnancy, regardless of their HIV status. Improving Safe Motherhood and Child Survival activities are imperative to the establishment of successful PMTCT programs. For instance, better identification and treatment of sexually transmitted infections (STIs), malaria, and nutritional and micronutrient deficiencies during pregnancy can benefit all pregnant women. At the same time, these interventions may reduce the risk of HIV infection in the mother and/or the risk of HIV transmission to the fetus around the time of birth. Interventions that identify risk factors in pregnancy and prevent premature birth will both increase infant survival in the general population, and decrease the risk of MTCT, which is multiplied with pre-term birth.



Another key issue is the widespread association of breastfeeding with HIV, which threatens one of the most effective child survival strategies the world over. When developing MTCT strategies, globally and locally, extreme care must be taken to prevent the “spillover effect” of generally undermining of breastfeeding. The resurrection of formula feeding in the developing world, without ensuring safe water, resources for fuel and replacement feeds, and household food security, is no less dangerous now than it was 20 years ago. An important task for PMTCT planners is to provide perspective on the risks of babies dying from HIV/AIDS contracted through breastmilk versus the greater risks of malnutrition and mortality from unsafe and inadequate replacement feeding in resource poor environments.



All societies hope for healthy babies. This hope gives PMTCT programs not only wide interest, but unique opportunities to impact the epidemic beyond the babies they directly target. Similarly, the hope for healthy babies can rally men, women, communities, governments, and health,

development, and social organizations to better understand the disease itself, to “normalize AIDS” by bringing it out of the shadows, and to take action to prevent further spread in the general population.

An effective PMTCT strategy has three main components:

1. Interventions that minimize risk during each possible period of HIV transmission in the maternity cycle, from before pregnancy, through pregnancy and birth, and during infant feeding.
2. Strong and comprehensive MCH services, within which all possible opportunities to reduce transmission are supported.
3. Linked and integrated community and facility services that complement and reinforce each other for maximum impact on MTCT, on the health of the mother, and on the preventive, mobilizing effect of the program on the community at large.

II. SCOPE OF THE PROBLEM

Sub-Saharan Africa – HIV prevalence rates among 15 to 24 year-olds have reached 36% in Botswana and 25% in Swaziland, Zimbabwe, and Lesotho (Piot, 2002). Sentinel surveillance among pregnant women, which reflects prevalence in the general population, has shown prevalence of greater than 40% in some parts of Botswana, Zimbabwe, and Swaziland (US Census Bureau website, November 2002). UNICEF estimates that close to 1.8 million pregnant women living with HIV/AIDS deliver 600,000 to 700,000 infants with HIV/AIDS annually. Ninety-five percent of children with HIV/AIDS are born in developing countries, and an estimated 14 million children have been orphaned due to AIDS (Coutsoudis, 2002).

Outside of Africa – In Asia, prevalence rates among pregnant women are mainly below 5%, but because of the enormous population of the region (60% of the world’s population), the percentages are of grave concern. Low national prevalence rates do not reflect localized epidemics in many places, such as in China and India (UNAIDS, 2002). HIV prevalence among pregnant women in Latin America is rising as



well. There are at least 1.5 million people living with HIV/AIDS (PLWHAs) in Latin America and an additional 420,000 PLWHAs in the Caribbean, which has, next to Africa, the second highest HIV/AIDS prevalence rates in the world. In twelve countries in this region, prevalence among pregnant women is greater than 1% (UNAIDS, 2002).

Reversal of Child Survival Gains – The rise in child mortality due to AIDS (both through childhood AIDS and the neglect of millions of orphans) has caused a reversal of gains in infant and child survival. These gains, due largely to improved breastfeeding practices, immunization, nutrition promotion, and disease prevention efforts over the last 20 years, are now being compromised. If more women decide not to breastfeed because of the association with HIV/AIDS, child morbidity and mortality will increase even further.

Increased Vulnerability of Women – HIV/AIDS is not a gender-neutral disease. Women are biologically at twice the risk of HIV infection as men. But it is their relative lack of decision-making power, education, and economic independence that amplify their risk of exposure to HIV/AIDS. They are often vulnerable to coercive or transactional sex and burdened with expectations to care for younger siblings or ill relatives rather than go to school or work. Early marriage and harmful traditional practices, such as female genital cutting, add to the risk of transmission, during both sexual intercourse and birth. HIV-positive women are more vulnerable to abuse or abandonment than women who are not, and they are likely to lose their inheritance without legal recourse in many countries. Without addressing the many ways in which these conditions fuel women's increased vulnerability—including supporting women living with HIV/AIDS to live as well and as long as possible—PMTCT and HIV prevention efforts will have only limited success.

ADDRESSING GENDER IN PMTCT

Women's relative lack of decision-making power, education, and economic independence in many parts of the world affects their ability to both protect themselves from HIV infection and seek and receive treatment and support. According to United Nations figures, women represent 58% of all people living with HIV/AIDS in Sub-Saharan Africa; young women in the region are now 6 times more likely than young men to be infected; and women, in general, die faster from the disease than men (Kiragu, 2001).

For PMTCT program planners, addressing these conditions begins by ensuring that program staff, including facility and community-based providers, understand the ways local factors and a woman's relationship with her partner may affect her ability to make choices regarding prevention for herself and her baby (e.g., choices about contraceptive method use, undergoing VCCT, and infant feeding). Counseling should take into account fears of abandonment or abuse that women may face if their HIV status is disclosed or if they go for VCCT, including their need for social and economic support (links to community organizations can help). Where possible, efforts should be made to involve partners in key decisions, such as that of infant feeding. Men need to be encouraged to participate in support groups, parenting programs, and VCCT in particular. When partners are tested and agree to practice safer sex and when they share decisions about their family, the chances of MTCT decrease.

More broadly, gender roles of boys and men that promote having many partners or that encourage older men to seek much younger women as partners can also be addressed through educational interventions that examine the consequences of male sexual behavior on women's and children's health. A key to PMTCT is for men to recognize how HIV/AIDS affects the family, and that redefining gender relations can result in healthy outcomes for both the mother and her baby (UNAIDS, 2001).

III. Build on Existing Services & Integrate PMTCT into Reproductive, Maternal, and Child Health Programs

In middle and high-income countries, the rate of MTCT is less than 3% because of widespread access to antiretroviral medicines (ARVs), planned cesarean sections, the means to formula feed safely, and adequate medical services. In the hardest-hit, low resource countries, PMTCT program priorities have, to date, largely focused on antenatal testing for HIV, providing antiretroviral medicines in a “short course” around the time of labor and delivery, and providing formula.

Recently, the narrow scope of this PMTCT approach has been seriously questioned, as the realities of limited resources, inadequate infrastructure, and barriers to behavior change are being researched. UNICEF has recently drawn attention to shortcomings in the traditional, targeted PMTCT approach, based on experience gained from its PMTCT pilot projects. In July 2002, UNICEF announced that it would cease the procurement and distribution of formula to PMTCT programs (UNICEF, 2002). The provision of free formula was found to have significant “spill-over” effects in the communities where the projects took place, undermining the practice of breastfeeding and its benefits. In 2001 the United Nations, recognizing that the health of mothers was not given adequate attention in traditional PMTCT programs, dedicated funding for pilot “MTCT-Plus” projects in Africa, Latin America, and Asia. The expanded initiative will include care of mothers living with HIV/AIDS, such as provision of ARVs when appropriate and treatment of opportunistic infections, advocacy to speed access to medicines, and increased funding for women’s education (UNAIDS, 2002).

Why integrate PMTCT into sexual, reproductive, and maternal and child health programs? Many women and children who may be at risk for PMTCT can be found through existing services. The majority of women living with HIV/AIDS are asymptomatic, and will therefore either not have been tested or will not be forthcoming about their sero-status. Providing essential labor and delivery care, including infection prevention and universal precautions, knowing that some of the women are HIV-positive, will serve to reduce

MTCT, and improve the quality of maternity care for all women and their babies.

Second, since most PMTCT program elements parallel a safe motherhood program—quality antenatal care, normal labor and delivery, prevention and management of emergency obstetric complications, postpartum care and family planning, and infant feeding support—integration can be done relatively efficiently and effectively. With some additional resources and training, existing personnel can implement the expanded program in existing facilities. Improving services for HIV-infected mothers (whose status will most likely be unknown) can improve services for all pregnant women and their babies, especially when delivered in an integrated setting. If fully funded and implemented, existing national MCH protocols in most countries would reduce risks of MTCT considerably. By strengthening existing services and integrating PMTCT into the following stages of MCH care, all mothers and babies will benefit, including those vulnerable to HIV or living with HIV/AIDS:

- ❑ **Pre-pregnancy Care**
- ❑ **Antenatal Care**
- ❑ **Labor and Delivery Care**
- ❑ **Infant Feeding and Support**

Youth as a special focus – A focus on youth is particularly important in PMTCT, as adolescent fertility and HIV infection rates are high in many countries. While some young people may be reached by integrating PMTCT into MCH and RH programs, program planners should explore additional ways to reach young women and men with HIV and PMTCT information in schools, at the market, at football matches, on the job, on the street, and in youth-friendly clinics. Where VCCT is offered, providers should give extra attention to youth-friendly counseling, which has shown to be valued by youth (Macquarrie, 2001).

Particular Challenges – Challenges to integration occur in both the facility and in the community. For providers, the need to ensure confidentiality in testing, counseling, and care, should be addressed. Also, integration should be designed in a way that does not overburden providers or facilities beyond their capabilities. HIV stigma—the perceived shame or ostracism faced by someone known or thought to have HIV/AIDS—proves to be one of the most difficult barriers to slowing the spread of the

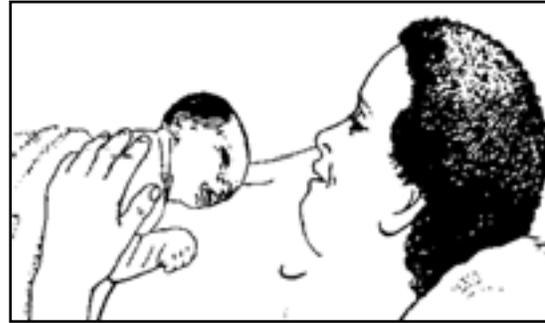


disease. Stigma poses challenges to integration if providers are hesitant to offer services to PLWHAs, or if clients do not want to be affiliated with a facility that also provides HIV/AIDS services or general services to PLWHAs.

Conservative religious beliefs and/or customs may also challenge the ease of integration and should be addressed within individual contexts and with the full participation of local stakeholders, including religious leaders.

MANY TARGETED PMTCT PROGRAMS MAY MISS THE "AVERAGE" MOTHER AND BABY

MTCT crosses over many of the identified risk categories for HIV/AIDS. A woman of unknown HIV status may be: poor, a youth, a widow, a commercial sex worker (CSW), a school dropout, or a partner of a man working away from home. She may have a history of STIs or tuberculosis. She may have attended an antenatal clinic several times, she may have delivered at a rural health center, and she may decide to breastfeed. She may bring her baby for regular well-child care and may seek family planning services. To maximize opportunities to prevent and reduce risk of HIV infection for all mothers and babies, PMTCT should be integrated into all existing sexual, reproductive and maternal, and child health programs.



Are this mother and baby at risk for MTCT?

IV. FACILITY AND COMMUNITY: A TWO-PRONGED APPROACH

Strong linkages between community and facility services are the foundation of an effective PMTCT program, and fully integrating PMTCT services includes developing linkages between the two. Each community may have different types of community-based personnel: traditional healers, traditional birth attendants, community-based distributors of family planning commodities, growth monitoring volunteers, religious leaders, or TB DOTS volunteers, to name a few. In many communities, there are also faith-based groups, grassroots development groups, women's, and work groups, which are potential resources to include a comprehensive program. Formal links between organized groups of community-based personnel with facilities should provide a smooth continuum of care, each enhancing and complementing the other to provide comprehensive services for the mother and her family. Organization, mobilization, and networking with community-based organizations (CBOs) are critical for community prevention and support efforts.

A key element in this relationship is a strong two-way referral system that allows the maximum number of people to be reached with high quality services. A two-way referral system also prevents over-utilization of costly facility services, broadens the array of support and services available, and minimizes the number of mothers and babies who may fall through the cracks of the formal health care system. To be effective, the referral system should be a formal one, whereby the community health worker refers clients to the facility for medical services, and the facility refers that client back to the community worker for follow-up and support. The system is strengthened when facility and community service providers meet with each other regularly to exchange experiences, solve mutual problems, and strategize about how to improve the program. Regular meetings between facility and community-based providers, as well as among community health workers (CHWs), can help in preventing burn out, a common occurrence in HIV/AIDS prevention, care, and support work.

Partnerships between communities and facilities should also carry out the vital role of advocacy; advocacy with the government, the education





system, and local workplaces. Community and facility planners and providers should see themselves as not only providing prevention, care, and support services, but also acting as agents for change to halt the epidemic. Advocacy can occur at all levels and on a range of issues, including work to establish VCCT centers, secure adequate ARV supplies, and support Baby Friendly Hospital Initiatives, IMCI protocols, and the National Code for the Marketing of Breastmilk Substitutes. Another important area is promoting legal changes to protect the rights of women and eliminate harmful traditional practices.

Laying the Groundwork: Facility

Integrated, comprehensive, quality facility-based services, including all aspects of sexual and reproductive health, maternity care, counseling and testing, and child health, form the core of a PMTCT program.

At the facility level, integration involves meeting with local health and facility leaders, sensitizing all staff (“from sweeper to director”) and re-organizing antenatal, labor, delivery, postpartum, family planning and well-child care to link to VCCT services. In addition to identifying gaps in service delivery or shortages in supplies, it is equally important to identify knowledge gaps, prejudice, and stigma within the staff that can impede program success. Program personnel and community leaders should assess facilities jointly with providers so they can follow-up the assessment with a locally appropriate and agreed upon plan to ensure the provision of integrated PMTCT services.

Provider training should include practical guidance on the full scope of HIV counseling and care. In MCH settings, this means training on basic facts about MTCT and how to integrate PMTCT into existing activities. For example, VCCT training should include how to gain client trust, obtain informed consent, administer rapid HIV testing, and keep records. Training on infection prevention and universal precautions for labor and delivery, as well as antenatal care, is necessary for providers to be reassured that they are safe from infection. Training on infant feeding choices and counseling are also key aspects of PMTCT.

Laying the Groundwork: Community

Community input and resources should be tapped into early on to ensure sustained success of a PMTCT program. It is important to determine HIV prevalence rates by gender, age, occupation, and other factors to guide the program. What are the main modes of transmission? What CBOs already exist (e.g. development, self-help, school-based, faith-based, or women’s groups)? What is their capacity to support CHWs? Which organizations can provide services to PLWHAs and their families and what kind of services do they provide? Are there community nurses who can help? What leadership structures exist that can be brought in? What relief/welfare sources exist, as well as work and income generating activities for PLWHAs, their families, and the CHWs, who need to have their volunteer efforts supported? Many of these questions can be answered by talking with community-based personnel mentioned above, and through participatory assessments with local stakeholders, including PLWHAs.

Beyond the community assessment, an understanding of community beliefs, perspectives, and practices related to HIV/AIDS is needed to design an effective program. If research has already been conducted on these subjects, obtain and review the findings. If it has not, the project can team up with a university or research group to investigate issues including: choice of health providers; delivery methods used by homebirth providers; percentage of home births vs. facility births; infant feeding methods and beliefs; knowledge of HIV/AIDS and PMTCT; and local manifestations of discrimination and stigma against PLWHAs (National Food and Nutrition Commission, et al., 1999). In addition, program leaders can hold sensitization meetings with all stakeholders, such as community and religious leaders, health officials, youth groups, political leaders, women’s organizations, advocacy groups, and education leaders, to plan together for a community approach.

Once these steps are completed, CBOs can be selected to mobilize their volunteers, or to choose volunteers, who can work in the community on prevention, care, and support. If there are CHWs that already have skills in community-based health work, such as home based care (HBC) agents, they can be trained to provide PMTCT activities. A cascade training system, whereby master



trainers (often nurses or doctors) teach trainers/supervisors, who then teach community health workers, is particularly effective. The trainers should continue to monitor, supervise, and support the CHWs.

Strong partnerships with CBOs will require support, capacity building, and sustainability planning. This includes providing training curricula, IEC materials, basic supplies, and support for the volunteers so they can be effective in their work. Organizations may want to offer travel stipends, income generating activities (IGA), training and links to micro-credit, education, or health benefits for family members of CHWs, in recognition of their volunteerism.

V. INTEGRATED PMTCT PROGRAM APPROACHES

Prevention Before Pregnancy: Facility

Women's sexual and reproductive health care, not necessarily associated with pregnancy, is an important area to strengthen with PMTCT services. The majority of women are not infected, and they need services and care to help them stay that way. IEC strategies that address delay of sexual debut (first experience with sexual intercourse), STI prevention and safer sex, VCCT, and basic facts of HIV/AIDS, including PMTCT, should be undertaken in all health facilities. With increased knowledge, IEC efforts can contribute to prevention and to the de-stigmatization of HIV/AIDS.

Health provider attitudes – Re-directing the common “curative only” orientation to one of prevention, as well as replacing judgmental, punitive, or neglectful attitudes and practices in health care facilities, enables successful delivery of prevention messages about HIV before and during pregnancy. Health providers should be encouraged to see themselves as partners with clients in preventing MTCT.

Pregnancy planning – Women at risk or already living with HIV/AIDS who do not want to carry a pregnancy need to be supported in this choice. If requested, and where legal, they should be provided with abortion option information. Women living with HIV/AIDS need quality counseling and support no matter what their decision.

Dual protection – Offering condoms to prevent the spread of STIs and HIV should be routine in family planning and STI clinics. The idea of using condoms in addition to another family planning method choice, or using only condoms, may be new to clients. Counseling on the importance of dual protection, as well as on the necessary skills to implement dual protection effectively, is a necessary part of HIV/AIDS prevention.

Voluntary confidential counseling and testing – Access to VCCT is an important addition to PMTCT programs—and would ideally be part of routine sexual and reproductive health care—because it enables informed decision-making throughout the maternity cycle. Knowing her HIV status allows a client to take steps to improve and maintain her health, access existing resources, and reduce risk of transmission to the baby if she is HIV-positive. If her status is negative, she can adopt risk reduction behaviors to stay negative.

Although donors are providing some laboratory reagents and training for VCCT, and rapid testing kits are becoming cheaper and more readily available, providing quality VCCT services is far from simple. For staff, it involves understanding the fear, stigma, and denial that may be felt by clients. It is not just another “lab test,” especially for women, who may have to overcome the fear, and possibly suffer the consequences of partner abuse, for getting tested. Moreover, without confidentiality in counseling, testing, and record keeping, many people will not access VCCT, much less PMTCT services, home-based care, or other HIV-related services. Breach of confidentiality can lead to violence, abandonment, or disinheritance of women, in addition to social stigmatization. If possible, the different elements of VCCT (counseling before testing, rapid testing, post-test counseling) should be conducted by the same person. A record keeping system that maintains the client's privacy while enabling important data collection is essential.

Prevention Before Pregnancy: Community

Community awareness and mobilization – Prevention strategies should be carried out at community, district, regional, and national levels. Political and religious leaders, community-based organizations, educators, and people living with HIV/AIDS (PLWHAs) can all be involved in prevention and mobilization activities. To lessen



the stigma surrounding VCCT, encourage community leaders to be tested themselves. Facilities should solicit feedback from the community on their prevention and care efforts.

Dispel local myths – Ignorance about HIV/AIDS fuels the epidemic. Myths prevail, such as that sex with a virgin will cure the disease, or that condoms contain HIV. Most people do not have an accurate understanding of basic anatomy and physiology regarding sex and pregnancy, STI transmission, or other routes of HIV infection. Reversing existing norms that prohibit open discussions of sex, sexuality and reproductive health are crucial to HIV prevention. Community volunteers can be trained and supported to provide basic information in an understandable and culturally acceptable form.

Link prevention to care and support – Prevention is still the key to stopping the epidemic, but it is more effective when linked to care of and support for those already infected. Experience working with community-based programs, such as Pathfinder International's COPHIA Project in Kenya, shows that care and support must be comprehensive, and include poverty alleviation measures, planning and care for orphans, and food support, in addition to the direct physical and emotional care of the individual.

Pregnancy and Antenatal Care: Facility

Five to ten percent of MTCT is estimated to occur during pregnancy, mostly late in pregnancy (De Cock et al., 2000). Normally, the HIV virus does not cross the mother's placenta to the fetus, but the placental (protective) barrier can be broken down by infections, such as malaria and certain STIs. If a woman is infected or re-infected with HIV during pregnancy, the high viral load of an early infection can make transmission more likely. Poor nutrition, anemia and Vitamin A deficiency leading to pre-term labor, and early separation of the placenta can increase transmission.

Continuity and mother-friendly care – Clients, especially women living with HIV/AIDS, need to be encouraged to participate in their own health care. This concept, where the client is helped (perhaps by a CHW) to prepare and practice what she wants to ask her provider, counselor, or receptionist before she gets to the visit, is

especially helpful. This preparation breaks down the interpersonal gap and hierarchical relationships between provider and client that exists in many places, where mothers may feel shamed or afraid of the provider, especially in the case of PLWHAs. Welcoming, partnering with, and empowering the client should be the goal of all facility staff (JHPIEGO, Maternal and Neonatal Health Program, 2001).

Early, quality contact with a nurse midwife or equivalent, and a continuous relationship between that health provider and the client, is important. Attention should be paid to how patient flow is set-up. Services should be provided in one room, by the same provider, to the extent possible. Interactions between patient and provider need to focus on vital information, with giving and sharing as the key aspects; the client provides expert information about herself and the provider shares expert information on pregnancy, PMTCT, and childbirth.

Targeted visits – Targeted visits are those in which very specific information is shared with the client about her health. Such visits help the client maximize her own health, know when to seek follow-up care, and ultimately contribute to the prevention of MTCT. For example, if quality targeted visits are provided, a woman can recognize the danger signs of pregnancy, or the symptoms of malaria, and can intervene for herself in a much more timely manner than facility personnel, who see her only every few months. When a supportive and empathetic relationship exists between a woman and her provider, she is much more likely to follow health advice and return for follow-up. This is especially important for women living with HIV/AIDS, who may be grappling with additional fears and uncertainty about their own and their child's survival.

VCCT – Where “routine” antenatal counseling and testing have become the norm, efforts must be made to guarantee patients' rights to confidentiality and to decline testing. Carefully crafted protocols and standards, sensitive and skilled counselors, and quality testing kits are vital to the success of VCCT programs and prevention. If VCCT services are not available in the facility, this does not mean counseling, services, and support on PMTCT should be postponed. In low resource areas, mothers can be

treated as if they are all at risk for MTCT and counseled with the same information during ANC visits.

Essential ANC package, that includes PMTCT

By integrating PMTCT into and improving the essential antenatal package, the following strategies can improve care and outcomes for all pregnant women. Reducing maternal morbidity and mortality is a primary goal of all developing countries, and integrating PMTCT care presents the opportunity to move that agenda further along. Integrated ANC services include:

- ❑ **History taking** – Obstetrical, medical and sexual
- ❑ **Physical exam** and vital signs – including a general visual and hands on exam for signs of disease (AIDS, TB, Malaria, other infections)
- ❑ **Abdominal exam** – (and speculum and bimanual exams where acceptable and feasible)
- ❑ **Tetanus toxoid** immunizations
- ❑ **Nutrition assessment** and counseling – including anemia testing with iron and folate supplementation and realistic diet adjustments based on local resources. Where possible, provide referral to food programs and kitchen garden groups. Lack of adequate nutrition may increase risk of transmission, due to low calorie intake and poor micronutrient status (PAHO, 1999).
- ❑ **STI screening** – including risk assessment for STI s (which are markers for HIV risk since they are contracted the same way); early, correct diagnosis with syndromic management or lab testing, including syphilis, and prompt treatment and counseling; and counseling on signs and symptoms of STIs, safer sex, condom use and negotiation skills to avoid transmission or re-infection.
- ❑ **Screening and care for other infections** – such as TB, parasites (especially hookworm in endemic areas), candida and other AIDS related opportunistic infections, such as pneumonia, herpes, and dysentery.
- ❑ **Anti-malarials** – Malaria is a major cause of high maternal and infant mortality and is linked to increased MTCT (via placental infection). Malaria prophylaxis is needed in endemic areas, acute cases identified and treated aggressively and promptly, and bednets impregnated with insecticide provided where possible (Schulman, 1999; Bloland, 1995).
- ❑ **Infant feeding counseling** – In many places mothers will NOT know their HIV status, in which case exclusive breastfeeding should be promoted and supported. If the woman is known to be HIV-positive, counseling is essential to assist in infant feeding decisions.
- ❑ **Danger signs counseling** – both for pregnancy (bleeding, fever, pre-eclampsia, etc.) and for AIDS (wasting, chronic diarrhea, chronic candida, chronic fever, and other and recurring opportunistic infections).
- ❑ **Involvement of partner and family** – Research, mainly from developed countries, has shown that stressful life events and limited social support are associated with more rapid progression of the HIV infection and faster development of an AIDS clinical diagnosis (Leserman, et al., 2002). Lack of familial and partner support can lead to rapid decline in the health of PLWHAs, especially in pregnant women who are under increased physical and psychological stress. With appropriate social support from their partner, family, and community, and with medical care, pregnant women living with HIV/AIDS can often lead useful, productive lives for a long time.
- ❑ **Effective contraceptive plan** – Contraception counseling must include the option of permanent and long term methods; consistent use of condoms during pregnancy to avoid new infection, re-infection, and/or further transmission; and promotion of dual protection throughout the postpartum and breastfeeding periods.
- ❑ **VCCT** – VCCT at the MCH service delivery site or as close as possible for easy access, with confidentiality maintained in patient flow plans, counseling, record keeping and follow-up support.





- ❑ **Antiretroviral drugs** – Counseling about ARV treatment during delivery, if available, and immediately postpartum for the newborn to reduce the risk of MTCT.
- ❑ **Referral to community-based health worker and support system** – Provide referral forms, with a tear off section for report-back to the referrer, aid record keeping, promote an ongoing relationship with community-based services, and provide information from one service tier to the other. When a facility-based provider refers a woman back to the community-based provider, the referral slip will inform the CHW of the client's diagnosis, treatment regimen and scheduled follow-up visits. Proper use of referral forms helps elevate the importance and effectiveness of the community workers within the 2-pronged system.

Pregnancy and Antenatal Care: Community

Case finding – CHWs can keep an updated register of pregnant women in their working areas, and encourage all pregnant women to seek ANC services. They can also be trained in basic risk assessment and how to recognize the clinical signs of AIDS in order to focus special attention on getting these mothers to facilities for ANC.

Pretest counseling and support – The CHW is instrumental in gaining partner and family support, and she can act as an agent for destigmatization, as the community looks to her for information and guidance on health matters. The CHW can provide post-test follow up, identify community resources and support, provide referrals back to the facility, and continue to encourage prevention activities.

Birth preparation – The CHW can help the family with birth planning (determine place of birth and access a trained birth attendant and supplies for the birth and baby) and help organize a community transport system for emergency complications, including those that occur during pregnancy, birth, or postpartum.

Long term care and support – If the mother or a family member is living with HIV/AIDS, the CHW can link them to available resources, such as home based care, food distribution programs, kitchen garden projects, income generating

activities (IGA), training and micro-credit opportunities, and support groups for PLWHAs wherever possible.

Labor and Delivery Care

As mentioned previously, the majority of women living with HIV/AIDS are asymptomatic and will either be untested, or not forthcoming about their sero-status. Providing essential labor and delivery care, including infection prevention and universal precautions, and knowing that some of the women are HIV-positive will serve to reduce MTCT and improve the quality of maternity care for all.

An estimated 10-20% of MTCT occurs intrapartum, when the fetus comes in contact with maternal blood or cervical secretions, when fetal and maternal blood mix after the placenta separates from the uterus, or when there is an acute infection in the uterus (STI or others). Half of the PMTCT infections occurring during labor and delivery could be prevented with ARVs. Adequate emphasis is usually not placed on interventions that reduce fetal contact with maternal blood/secretions. Even where cesarean sections are not an option, much can be done to reduce risk in both facility deliveries and homebirths.

Labor and Delivery Care: Facility

Continuous labor support – Support during labor, especially from a supportive friend or relative, positively impacts birth outcomes and reduces the need for interventions (Madi, 1999; Hofmeyr, 1991). This is especially significant for women living with HIV/AIDS, who already suffer from stigma and anxiety. Empathy from attendants and supporters will help keep labor normal and help the woman's transition to motherhood.

Infection prevention – Providers should minimize fetal contact with maternal blood and vaginal fluids. This means avoiding invasive procedures, promoting normal labor, and avoiding infection, which may enhance the likelihood of transmission and compromise the mother's health further. Health care workers should use universal precautions, wear gloves and dispose of waste safely. There should be a

dedicated supply of ARVs for staff who are directly exposed.¹

Regular monitoring and support for normal progress – This ensures the fetus and mother remain as healthy as possible during birth. Interventions that keep the woman calm and encourage normal labor include ambulation and position changes, plenty of fluids to drink, and light nourishment for the mother. Providers should work in partnership with the mother to inform her of her progress, answer her questions and allay her fears. Provide the mother with all the physical, psychological, and social support that she needs and include a family member or friend to help.

Labor monitoring – Where available, the partograph should be used to reassure attendants that labor is progressing normally, but also to alert them when labor is not progressing within safe parameters. The homebirth attendant has less leeway to delay action than would a provider in a tertiary care facility, with physicians and perhaps capacity for cesarean sections.

Vaginal exams – Vaginal exams should be minimized in all labors, but especially for women living with HIV/AIDS, as it increases the risk of MTCT.

Signs of infection – Providers should monitor and treat for any signs of infection promptly, such as chorioamnionitis, an infection in the uterus, which is a risk factor for MTCT.

Artificial rupture of the bag of waters – This procedure has long been practiced to speed labor and birth, but when done too early can increase chances of infection, increase the difficulty of the labor for mother and baby, and increase risk of MTCT. Transmission rates increase about 2% for every 24 hours of the bag being ruptured and delivery should happen with the bag intact whenever possible (European Collaborative Study, 1994). If the bag of waters ruptures

spontaneously, or has been ruptured, delivery should occur in less than 4 hours. This does not mean automatic aggressive induction. Providers should first try ambulation, nipple stimulation, giving fluids, position changes, and providing emotional support, to help labor progress normally.

Vaginal cleansing (lavage) – It may be helpful to gently cleanse the vagina/birth canal with antiseptic solution before birth to decrease maternal secretions, but study results are mixed on effectiveness. This is most useful if membranes have been ruptured for more than four hours (Biggar et al., 1996).

Minimize episiotomies – Episiotomy, cutting of the birth canal opening, is routine in many settings, although there is no research that shows its benefit in routine birth. In fact, episiotomy increases the mother's risk of excessive bleeding, infection, and painful healing. There is evidence that the exposure to mothers' blood from an episiotomy may increase MTCT (WHO, 1999).

Minimize lacerations – Nutritional support and treatment of anemia during pregnancy will help prevent lacerations during birth. The mother should be off her back and helped into a birthing position to minimize tearing—on her side, on her hands and knees, or semi-sitting (without stirrups, which increase the likelihood of tearing). Providers can coach her to push the baby out slowly to avoid rapid expulsion and more tearing.

Reduce use of forceps and vacuum extractors – Forceps, extractors, and other instruments for delivery should only be used as a last alternative. They are invasive procedures that can be life saving for a newborn, but can increase exposure of the fetus to the mother's secretions and blood. Forceps and vacuum extractors can cause trauma to the baby's skin and the mother's vaginal mucosa, thereby breaking those protective barriers.

Cord care – The cord must be clamped immediately without squeezing the blood content towards the baby. After cutting with a sterile blade, it should be kept dry and clean.

Cesarean section – Planned cesarean section before labor begins, and before rupture of membranes, reduces risk of MTCT during labor

¹ Protecting health care workers from the risk of transmission through exposure to fluids is an important precaution. While prevention of exposure by following universal precautions is the first priority, where possible, a dedicated supply of ARVs for postexposure prophylactic treatment is justified. Health care providers at risk of workplace exposure should be reassured that ARVs are available to them, if needed. Without this reassurance, they may be hesitant or even refuse to treat people that are known or suspected to be HIV-positive.





and delivery by 50 percent. However, cesarean sections are often impractical and out of reach for most women. They are expensive and difficult to sustain, in addition to being unsafe in many areas due to lack of skilled providers, lack of drugs and anesthesia, and poor infection prevention practices. Women living with HIV/AIDS are at a greater risk of infection and poor healing than women without HIV/AIDS. Reducing viral loads with ARVs around birth may be more feasible than cesarean sections for expectant mothers living with HIV/AIDS.

Anti-retroviral drugs – ARVs can be an effective addition to PMTCT when used in combination with the other prevention strategies mentioned above. While most developing countries do not have wide access to ARVs, there are exceptions, such as Brazil, where there is universal access to them for HIV-positive mothers. Although this discussion of ARVs occurs in the labor and delivery section, ARVs should be accessible to all PLWHAs before they reach this stage, if available. Women must be adequately counseled, and not misled or coerced about ARVs, as some mistakenly believe that “if they take this drug, the

SHORT COURSE ANTIRETROVIRAL THERAPY FOR PMTCT

The most common PMTCT drug regimens are AZT (zidovudine) for the mother continuously from 36 weeks through delivery, or Nevirapine for the mother and baby at the time of labor and delivery. AZT regimens suggest that the drug be administered to the newborn within two hours of delivery and continued for the first 6 weeks. There are strong suggestions that AZT offers no benefit to the baby if initiated after 48 hours of delivery (Shaffer, 1999). Nevirapine is usually given once to the mother in labor, and once to the baby within 72 hours after birth (WHO, 2001). Both of these regimens provide about a 50% reduction of MTCT around labor and delivery. Nevirapine and AZT are relatively inexpensive, and prices for most ARVs have been falling with the increased attention of international donors to PMTCT and pressure put on the pharmaceutical companies to provide life-saving drugs at a lower cost, or for free. Logistic supply and management is a major concern, as drug supplies are uneven in many places. Priority should not be given to ARVs over basic MCH drugs, which are also lacking in many places.

There are several studies underway to test combinations of AZT and Nevirapine around birth and during breastfeeding. There is concern about developing resistance to Nevirapine and the entire class of drugs to which Nevirapine belongs. There have been frequent reports of resistance after only one maternal or child dose (Petra Study Team, 2002).

A major ethical concern with the above regimens for PMTCT is that there is no benefit for the health of the mother. Much more attention needs to be paid to maximizing the mother's health, quality of life and longevity and ensuring access to ARVs for BOTH mother and baby. A controversy exists about whether short-course ARVs should be given to all women in the absence of VCCT in high prevalence areas, or if a positive test result and informed consent are necessary to start ARV therapy.

Highly Active Antiretroviral Therapy (HAART) includes one of many combinations of ARVs that are given to PLWHAs who have begun to manifest symptoms of AIDS and/or meet established lab criteria. It is not advisable to give HAART to all PLWHAs because the side effects of the drugs can be intolerable, the drugs may lose their effectiveness the longer they are used, they are expensive, and if they are not taken correctly, or even if they are, drug resistance may develop. However, HAART must be accessible for PLWHAs who meet the criteria, including pregnant women, in developing countries to prolong and improve their lives.



baby will be safe.” It is a woman’s right to receive correct and current information—including information on side effects and possible development of drug resistance—in order to give informed consent for taking these medicines. A woman living with HIV/AIDS should be able to access an ongoing supply of ARVs for her own health, as well as for PMTCT.

Immediate newborn care – The best care for the newborn of a woman living with HIV/AIDS is the same as for all newborns: following Baby Friendly Hospital Initiative principles. Providers should avoid invasive procedures like suctioning the newborn’s mouth, unless the baby is having trouble breathing through mucous, and then do so only gently. Providers should avoid circumcision and care for the cord with caution. Babies should not be bathed for the first 24 hours to avoid hypothermia (losing body heat, which can cause shock). They should be placed against the mother’s skin and covered for warmth. Mothers and babies should not be separated after birth in order to promote bonding, keep the baby warm and initiate breastfeeding, if that is the feeding choice. This is especially crucial for mothers with HIV/AIDS, since their worry about their baby’s and their own health may interfere with bonding. If the mother has decided to breastfeed, the provider should assist her to look for readiness (within 30-60 minutes after birth) and promote the correct initiation of breastfeeding.

Postpartum care – The general needs of all postpartum women include access to emergency care, planned facility visits to monitor healing and normal postpartum recovery (absence of infection, normal bleeding, good nutrition, plenty of fluids, lots of rest) support for infant feeding, and a contraceptive plan. Particular postpartum needs for women living with HIV/AIDS include counseling on dual protection from infection or re-infection with HIV and from unplanned pregnancy, especially during breastfeeding. Also needed are linkages to adequate food supplies and home-based care services—all measures to improve the health of both the mother and the baby. Mothers should be offered follow-up services, including treatment of opportunistic infections and monitoring of HIV status. This can be done by lab test (CD4 count or other) or if lab tests are not available, by AIDS diagnosis criteria

(rapid weight loss, and/or chronic or recurrent diarrhea, and/or chronic cough).

Labor and Delivery Care: Community

Most women in the world have their babies at home either by choice, because there is no alternative, or because the health facility is not a positive option for women or their families due to costs, distant location, poor staff attitudes and practices, and/or facility conditions. Effective PMTCT programs can promote safer homebirth for mothers living with HIV/AIDS, and need to target traditional birth attendants (TBAs) and others who attend births at home. Formative research can reveal who attends births in the community, including TBAs, traditional healers, CHWs, mothers-in-law, husbands, or others. Homebirth attendants can be trained to provide linkages between the program trainers/supervisors, the facilities, and the families at community level.

Training for homebirth providers should include:

- ❑ Normal labor and delivery processes.
- ❑ Basic facts on MTCT—how HIV is prevented and transmitted.
- ❑ Basics facts on infection prevention for themselves and the mothers and babies during labor and birth. Where gloves are not available (through MOH or self-purchase) hand-washing, covering hands with plastic bags, and minimal handling of the placenta should be advised.
- ❑ Avoidance of any vaginal exams and rupture of membranes.
- ❑ Recognition of fever and signs of infection in the mother and timely and appropriate treatment.
- ❑ Keeping perineum intact and minimizing vaginal lacerations.
- ❑ Keeping labor normal by keeping the mother well hydrated and nourished, and noting the progress of labor by outward signs in the mother.
- ❑ Reinforcing culturally acceptable upright positions for birth to expedite a safe delivery.
- ❑ Recognition of danger signs and when emergency transport must occur.

Emergency transport systems are essential to comprehensive labor and delivery care, and usually work best when they include



transportation for all community emergencies—pediatric, work accidents, strokes, heart attacks, as well as complications of unsafe abortion, pregnancy, childbirth and in the postpartum period. Transportation systems that are supported by and benefit the whole community are more likely to be cost-effective and sustainable. In communities with large numbers of PLWHAs, these systems are especially important.

The identified birth attendants should be linked to health facilities for coordination of transfers, feedback, and quality improvement planning. Homebirth attendants can be trained and supervised to administer ARVs to mothers and their babies where available.

Infant Feeding: Background

In most countries, breastfeeding is the cultural norm as well as the safest and most practical way to feed infants. An estimated 10-20% of MTCT occurs at some point during breastfeeding, although this figure likely includes mothers who did not exclusively breastfeed (because it is based on studies that did not define breastfeeding patterns). Risk of MTCT through breastfeeding seems to be highest in the first 6-8 weeks after delivery (Mbori-Ngacha, et al., 2001) and is clearly highest with mixed feeding (Coutsoudis, 1999). The progression of the mother's disease (if she is newly infected during breastfeeding or progressed from HIV to AIDS) increases the risk of MTCT, as does breast inflammation (mastitis, cracked, or bleeding nipples), and oral thrush sores in the baby's mouth. Exclusive breastfeeding (no additional fluids or food, including water, for 6 months) appears to minimize risk of MTCT through breastfeeding. (Coutsoudis, 1999). A recent study conducted in Tanzania (Fawzi, et al., 2002) concluded that Vitamin A supplementation, given alone, increased the risk of PMTCT but that multivitamin supplementation of nutritionally or immunologically compromised mothers reduced child mortality and MTCT through breastfeeding.

There are a number of possible biological explanations for the increased risk of HIV transmission during mixed feeding, compared to exclusive breastfeeding. Exclusive breastfeeding reduces exposure to infections and maintains the infant stomach's mucosal lining. It also promotes healthy immune responses that increase resistance to infection. Frequent, successful breastfeeding may also prevent engorgement and the breast

inflammation that can result, thereby reducing HIV and viral load in breast milk (Smith and Kuhn, 2000).

Since mixed feeding causes the highest rate of transmission, complete cessation of breastfeeding should occur when feasible, ideally before other foods and fluids are added to the baby's diet. There is no good guidance on how to do this yet. Abrupt cessation can cause engorgement, mastitis, and extreme discomfort in the mother, disposing her to return to breastfeeding (thus mixed feeding) for relief. Switching abruptly away from the breast may also cause the infant to refuse other feeds, since s/he is not accustomed to taking in nourishment other than from the breast. This can lead to malnutrition. Gradual weaning, while more mother and baby-friendly, exposes the baby to mixed feeding for a longer period, which poses a higher risk of MTCT. Program planners should monitor the literature for breakthroughs in this area, and in general, minimize the period of mixed feeding, with the knowledge that it is difficult to avoid altogether.

The potential problems of free formula are described below:

"The case against providing free or subsidized formula to HIV-infected mothers is based on the following: it exacerbates disadvantages of formula feeding; compromises free choice; targets beneficiaries erroneously; creates a false perception of endorsement by health workers; compromises breastfeeding; results in disclosure of HIV status; ignores hidden costs of preparation of formula; increases mixed breastfeeding, which is an unsatisfactory method for all women; requires organization and management of programs that are complicated and costly; and finally increases the 'spill-over' effect into the normal breastfeeding population." (Coutsoudis, et al., 2002)

In settings where replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by women living with HIV/AIDS is recommended (WHO, 2000_a). Unfortunately, in much of the world, the majority of women do not know their HIV status. The risks of increased morbidity and mortality from replacement feeding practices are well documented (WHO, 2000_b) and in many circumstances, outweigh the risks of the baby contracting and dying from HIV/AIDS. The conditions for safe replacement feeding—clean water, sterilized utensils, and a steady supply of

breastmilk substitutes for the infant's nutritional needs—are rarely available to most families (WHO, 2000_a).

Apart from formula and exclusive breastfeeding, a woman's replacement feeding options include heat-treating her breastmilk, using powdered whole milk supplemented with micronutrient sachets (which may be difficult to obtain), or using animal milk, such as from cows or goats. Animal milks need to be altered with additional water and sugar. Each of these options requires more effort and expense than breastfeeding, and as a result, may not be realistic or practical for most women. **The conclusion by world AIDS organizations is that the UNAIDS recommendation—for all women to exclusively breastfeed, unless HIV status is known to be positive and there is a safe, reliable means of replacement feeding—should guide infant feeding counseling in the facility and the community.**

Besides women needing support for dealing with consequences of stigma, they need to be advised of the rapid return to fertility postpartum in the absence of breastfeeding and the necessity for dual protection against STIs, re-infection, and pregnancy during this time. Infant feeding counseling, in the facility and in the community, needs to address all of these factors in helping a woman to decide the best feeding options for the health and welfare of her child and herself. All breastfeeding women, and especially those living with HIV/AIDS, need extra nutrition and fluids. Regarding risk to the mother of breastfeeding, a 1999 study in Nairobi suggested that breastfeeding puts women living with HIV/AIDS at three times the risk of dying in the first two years than those who formula feed (Nduati, et al., 2001). However, a study conducted in South Africa found no difference in the risk of maternal death (Coutsoudis, 1999), and the study from Kenya has been criticized as flawed, in part because it was based on a small, and particularly ill, sample.

Counseling and Training on Infant Feeding

To ensure their effectiveness, PMTCT programs at the facility and community levels should conduct formative research that can be used to adapt infant feeding counseling to the local situation, e.g., the significance of breastfeeding,

and identifying locally available and acceptable replacement feeding options. Community health workers can also assist facility staff in monitoring infant feeding trends in the community. Training for health care providers and CHWs on infant feeding should include:

- ❑ Counseling about HIV, including basic facts on PMTCT, VCCT, and infant feeding options. This includes how to weigh the risks of breastfeeding versus replacement feeding and encourage partner involvement in these decisions.
- ❑ Lactation management and behavior change communication skills to promote *exclusive* breastfeeding for all women (except those who know they are HIV-positive and choose not to breastfeed).
- ❑ Infant feeding management for mothers who choose replacement feeding, so that they can safely and *exclusively* replacement feed.
- ❑ Skills to help mothers avoid breast infections and oral thrush infections in the baby and advice on where to receive prompt treatment if they do occur.
- ❑ Skills on nutritional support for women living with HIV/AIDS during pregnancy, postpartum and while breastfeeding/replacement feeding.
- ❑ Counseling for mothers about PMTCT and condom use during breastfeeding, because new infections during this time increase MTCT due to the high viral load characteristic of early infection.
- ❑ The availability of community resources, such as community health workers and mother-to-mother support groups, in order to refer women once they leave the facility.

Facility-based providers should also be trained on how to implement existing MCH protocols for optimal maternity care for all mothers and babies. In addition, facilities can adapt the integrated management of childhood illness (IMCI) and other feeding guidelines to local settings as needed, and also strengthen well child clinic growth monitoring and promotion programs that may serve as a mechanism for early identification of faltering children. Advocacy to promote, expand, and reinforce Baby Friendly Hospital Initiatives and national breastfeeding programs and a thorough review of the status of the



National Code for the Marketing of Breastmilk Substitutes should all be a part of PMTCT and infant feeding at the facility level. Facilities can play an active role in monitoring infant feeding trends in areas of high HIV prevalence as part of their regular facility-based data collection system.

Community health workers can participate with mothers in local support systems, including mother-to-mother support groups. They can

conduct home visits after birth to support exclusive breastfeeding or exclusive replacement feeding, in addition to providing broader aspects of home-based care. When properly trained, community health workers should assist in growth monitoring programs and in implementing community-based IMCI activities, both of which may lead to early identification of faltering children.

**FEEDING RECOMMENDATIONS USED BY HEALTH WORKERS
IN NDOLA DEMONSTRATION PROJECT, ZAMBIA
(Ntombela and Kroeger, 2001)**

All women, regardless of HIV Status

- Educate on optimal infant feeding practices for survival, growth, and development
- Counsel to introduce, at around six months, safe and appropriate local soft foods (such as an enriched maize porridge) at least three times per day and to give fresh fruits and vegetables, when available

Woman who is HIV negative or of unknown status

- Promote exclusive breastfeeding for six months, the introduction of complementary foods at around six months, and the continuation of frequent, on-demand breastfeeding

HIV-positive woman who chooses to breastfeed

- Encourage women to practice *exclusive* breastfeeding for six months and then to introduce appropriate complementary foods
- Although there is no standard guide on complete cessation of breastfeeding, the period of mixed feeding should be as limited as possible
- If the woman experiences breast problems such as mastitis, cracked nipples, or breast abscess, advise to breastfeed with the unaffected breast and to express and discard milk from the affected breast
- Encourage her to seek immediate care for a baby with thrush or oral lesions
- If the woman presents with AIDS-related conditions (prolonged fever, severe cough or diarrhea, or pneumonia), advise her to visit a health center immediately

HIV-positive woman who chooses to replacement feed

- Encourage women to exclusively replacement feed
- Counsel her on safe and appropriate use of infant formula or cow's milk (with additional sugar) for the first six months
- Counsel her to feed the baby using a cup and spoon, instead of a bottle, and teach her how to clean them





VI. CARE OF INFANTS AND CHILDREN WITH HIV/AIDS

In resource poor settings, the HIV status of infants will generally not be known because the tests for ascertaining infant status are prohibitively expensive². All babies of mothers with HIV/AIDS should have comprehensive care and monitoring, including all immunizations on schedule, growth monitoring, and prompt care for any childhood illnesses or feeding difficulties (IMCI). WHO guidelines for syndromic diagnosis of HIV infection in children include observation of any three of the following (WHO, Regional Office for Africa, 2000):

- ❑ Two or more chest infections requiring antibiotics in the past two months
- ❑ One or more episodes of persistent diarrhea or two or more episodes of acute diarrhea in the past two months
- ❑ A parent with TB
- ❑ Oral candidiasis (thrush)
- ❑ Enlarged lymph nodes in two or more sites (cervical, inguinal, axillary)
- ❑ Growth faltering (weight curve flat or falling for two consecutive months)
- ❑ Weight-for-age below the third percentile using international growth reference standards

If an infant or child is suspected of having HIV/AIDS, he/she should be referred to a specialized facility or a pediatric clinic where providers have HIV/AIDS expertise.

VII. HOW TO ADAPT THIS GUIDE TO DIFFERENT SETTINGS

PMTCT program settings will vary in their available resources, cultural practices, and prevalence of HIV. The program elements described in this Technical Guidance are optimal, but they can be tailored to complement local resources and needs. For example, most countries have standard MCH services, but may still not be able to reach mothers and families in remote areas on a regular basis. Where antenatal care is accessed, even if for only one or two contacts, a program can start by improving these services and

adding special considerations for those at risk for HIV infection. Offering clean, supportive, and safe labor and delivery care can also be emphasized. For well child care, support for exclusive and optimal breastfeeding and strengthened immunization programs can be priorities. Nutritional support for mothers during pregnancy and postpartum is also a priority and, along with exclusive breastfeeding, requires close, home-based support to be successful.

Program planners can begin by studying the situation. They can look at prevalence rates, conduct community assessments and formative research if possible, identify opportunities and barriers, identify existing health facility and community resources, and consult national PMTCT guidelines if they exist. Then, prioritize. Once resources have been identified, realistic planning for interventions can happen. In most areas, it is not necessary to wait for introduction of ARVs to set up VCCT, antenatal care, safer labor and delivery, and infant feeding counseling and support. If there is no VCCT capacity, it is still possible to develop other elements of a PMTCT program, even if it is only risk assessment and counseling to reduce risk of MTCT. Although VCCT is an extremely important public health approach to reducing PMTCT and supporting infected mothers and their families, in many settings, it may be a long time before this service will be available or acceptable.

Next, rely on the community. In remote areas, it is essential to involve and train the community based health providers—including traditional healers and traditional birth attendants—to be part of the PMTCT health team. For mothers and families affected by HIV in very resource poor settings, what is needed first and foremost are the basic necessities like adequate food, basic first aid, and even soap, clean water, and secure shelter. A multi-sectoral approach could identify resources available for PLWHAs, home-based care, income-generating activities, micro-credit entities, and food distribution centers.

VIII. RESEARCH, MONITORING AND EVALUATION (M&E)

Monitoring and evaluating PMTCT programs is essential to guide program improvements, show

² Tests to detect HIV status of infants include PCR-DNA testing, CD4/CD8 counts P24 antigen, and/or viral cultures.



effectiveness, and convince donors and policy makers of the programs' importance. Program monitoring occurs continually, and must be set up in a way that provides accurate and relevant data. Evaluations can take many forms (formative evaluation research, process evaluation, outcome/impact evaluation, and cost-effectiveness evaluation), and for their results to be most useful, key stakeholders should participate in deciding both the kind and scope of M&E to be carried out, and the way in which results will be used.

UNICEF, UNAIDS, WHO, and USAID recommend four key indicators to evaluate PMTCT programs (USAID, 2000 & 2002; UNICEF, UNAIDS and WHO, 2000):

- ❑ Number of pregnant women counseled and tested for HIV
- ❑ Proportion of ANC clinics offering or referring for VCT services
- ❑ Percent of post-test counseling sessions (for women at ANC clinics) that meet international standards for quality counseling, including referral to care when necessary
- ❑ Percent of women testing HIV-positive at ANC clinics, that are provided with ARV therapy during pregnancy.

Additional indicators for community-level PMTCT interventions, as well as for access to and quality of service delivery for PMTCT interventions, should be added. These more general indicators, which measure the availability and quality of ANC, family planning, infant feeding counseling, and VCT, reflect the effective integration of PMTCT components that benefit all mothers and children, regardless of HIV status (Preble and Piwoz, 2002).

All PMTCT programs have many common threads that can be monitored and evaluated, but local adaptations should also be included in monitoring and evaluation plans.

IX. CONCLUSION

The integration of PMTCT into sexual, reproductive, maternal, and child health or home-based care programs is the best way to use

existing services and providers, and to reach the maximum number of people living with or affected by HIV/AIDS. While strong, comprehensive, quality facility services are the foundation of a successful PMTCT program, these services must be linked to community-based resources and initiatives for maximum coverage and impact—especially home-based care, faith-based programs, traditional practitioners, PLWHA support groups, and adolescent-friendly services and information. PMTCT is an issue that can serve to increase awareness and understanding of HIV/AIDS and therefore increase behavior change and prevention. It can also inspire and promote volunteerism to promote the community's health.

Community-level entities and organizations can advance healthy practices around PMTCT by promoting breastfeeding and its benefits to the baby. Breastfeeding must not be undermined in general because of an association with HIV/AIDS transmission, particularly since the use of infant formula is often not a feasible alternative. The vast majority of women living with HIV/AIDS do not have the financial means or the social resources (such as clean water) to safely replacement feed their babies. Unless all necessary means of safe replacement feeding are provided, it is unethical for providers to direct these mothers away from breastfeeding and its protective benefits. CBOs and NGOs can also advocate with governments and the private sector for ongoing ARV supplies for both the newborn baby and the mother. In addition to preventing HIV transmission to children, the life long care and support of the mother must be considered an equal priority. Addressing gender issues around HIV transmission in general, particularly focusing on girls' and women's status, including education, job skills, respect for work that women do, and legal rights, will do the most to prevent MTCT.

Finally, research and lessons learned from PMTCT activities are bringing to the fore new and ever-changing information on how to improve care, reduce transmission, and improve the quality of life and productivity of mothers living with HIV/AIDS. As the pandemic continues and lives are lost, those involved have a duty to share lessons learned, coordinate with others doing similar work, and synthesize experiences in order to maximize impact.

SUMMARY OF INTEGRATED PMTCT COMPONENTS:

	FACILITY	COMMUNITY
1. PRE-PREGNANCY CARE	<ul style="list-style-type: none"> <input type="checkbox"/> Encourage prevention <input type="checkbox"/> Help women plan or avoid pregnancies <input type="checkbox"/> Promote dual protection <input type="checkbox"/> Offer VCCT 	<ul style="list-style-type: none"> <input type="checkbox"/> Increase awareness <input type="checkbox"/> Employ prevention strategies <input type="checkbox"/> Mobilize community leaders <input type="checkbox"/> Dispel local myths <input type="checkbox"/> Link prevention to care & support
2. ANTENATAL CARE	<ul style="list-style-type: none"> <input type="checkbox"/> Offer all elements of essential ANC package <input type="checkbox"/> Promote mother-friendly, continuous care <input type="checkbox"/> Offer VCCT <input type="checkbox"/> Provide counseling, services, and support on PMTCT <input type="checkbox"/> Provide STI screening and treatment <input type="checkbox"/> Provide counseling on infant feeding <input type="checkbox"/> Encourage involvement of partner and family <input type="checkbox"/> Make a contraceptive plan <input type="checkbox"/> Counsel on ARV treatment during delivery, if appropriate, and provide <input type="checkbox"/> Refer to community-based health workers and support systems 	<ul style="list-style-type: none"> <input type="checkbox"/> Promote case finding by community health workers <input type="checkbox"/> Provide pre- and post-test counseling and support <input type="checkbox"/> Engage family and community in birth and emergency transport planning <input type="checkbox"/> Provide long term care and support through linkages with home based care programs, food support, income generating activities, support groups, etc.
3. LABOR AND DELIVERY	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure continuous labor support <input type="checkbox"/> Ensure infection prevention <input type="checkbox"/> Provide regular monitoring of vital signs <input type="checkbox"/> Monitor labor with partograph <input type="checkbox"/> Minimize vaginal exams <input type="checkbox"/> Treat signs of infection <input type="checkbox"/> Avoid early rupture of the bag of waters <input type="checkbox"/> Minimize episiotomies, lacerations, and use of equipment such as forceps and vacuum extractors <input type="checkbox"/> Provide proper cord care <input type="checkbox"/> Consider elective cesarean section, only where adequate providers and facilities exist <input type="checkbox"/> Provide ARVs, to both mother and baby, if available <input type="checkbox"/> Provide immediate newborn care <input type="checkbox"/> Provide postpartum care for mother 	<ul style="list-style-type: none"> <input type="checkbox"/> Identify and train community birth attendants on PMTCT <input type="checkbox"/> Plan transport system for all community members <input type="checkbox"/> Link with health facilities <input type="checkbox"/> Supply ARVs to homebirth attendants, if available, and if they have received proper training
4. INFANT FEEDING	<ul style="list-style-type: none"> <input type="checkbox"/> Adapt infant feeding counseling to local situation <input type="checkbox"/> Provide training on infant feeding, cessation/weaning to health workers <input type="checkbox"/> Refer mothers to local support systems <input type="checkbox"/> Promote condoms <input type="checkbox"/> Strengthen growth monitoring and promotion programs <input type="checkbox"/> Promote Baby Friendly Hospital Initiative measures <input type="checkbox"/> Adapt IMCI and feeding guidelines to local situation <input type="checkbox"/> Monitor infant feeding trends in areas of high HIV prevalence 	<ul style="list-style-type: none"> <input type="checkbox"/> Provide training on infant feeding, cessation/weaning and treatment of breast infections to community health workers <input type="checkbox"/> Provide home visits and ongoing support for exclusive breast or replacement feeding <input type="checkbox"/> Promote condoms <input type="checkbox"/> Organize local support systems and support groups for mothers



X. REFERENCES

1. Biggar R.J., P.G. Miotti, T. Taha, et al. 1996. Perineal intervention trial in Africa: effect of birth canal cleansing intervention to prevent HIV transmission. *Lancet*. 347:1647-1650.
2. Boland, P.B., J.J. Wirima, R.W. Steketee, B. Chilima, A. Hightower, J.G. Breman. 1995. Maternal HIV infection and infant mortality in Malawi: Evidence for increased mortality due to placental malaria infection. *AIDS*. 9(July):721-726.
3. Caulfield & Black (forthcoming), as cited in "Child health research: A foundation for improving child health." Global Forum for Health Research and World Health Organization. 2002. www.who.int/child-adolescent-health/
4. Coutoudis, A. et al. 1999. Influence of infant-feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa: A prospective cohort study. *The Lancet*. 354(9177).
5. Coutoudis, A., A.E. Goga, N. Rollin, et al. 2002. Free formula milk for infants of HIV-infected women: Blessing or curse? *Health Policy and Planning*. 17(2):154-160.
6. De Cock, K.M., M.G. Fowler, E. Mercier, et al. 2000. Prevention of mother-to-child HIV transmission in resource poor countries. *JAMA*. 238(9):175-82.
7. European Collaborative Study. 1994. Caesarean section and the risk of vertical transmission of HIV-1 infection. *Lancet*. 343:1464-1467.
8. Hofmeyr, G.J., V.C. Nikodem, W. Wolman, et al. 1991. Companionship to modify the clinical birth environment: Effects on progress and perception of labour and breastfeeding. *British Journal of Obstetrics and Gynecology*. 98:756-764.
9. JHPIEGO, Maternal and Neonatal Health Program. 2001 Focused antenatal care: Planning and providing care during pregnancy. *Best Practices*. September.
10. Kiragu, K. 2001. Youth and HIV/AIDS: Can we avoid catastrophe? *Population Reports*. Series L (12).
11. Leserman, J., J.M. Petitto, H. Gu, B.N. Gaynes, J. Barroso, R.N. Golden, D.O. Perkins, J.D. Folds, and D.L. Evans. 2002. Progression to AIDS, a clinical AIDS condition and mortality: Psychosocial and physiological predictors. *Psychol Med Aug*;32(6): 1059-73.
12. Macquarrie, K. 2001. Making VCT more youth-friendly: Designing services to reach young people. *Horizons report: Operations research on HIV/AIDS*. Spring.
13. Madi, B.C., J. Sandall, R. Bennett, et al. 1999. Effects of female relative support in labor: A randomized controlled trial. *BIRTH*. 26(1):4-8.
14. Mbori-Ngacha, D., R. Nduati, G. John, et al. 2001. Morbidity and mortality in breastfed and formula fed infants of HIV-1-infected women: A randomized clinical trial. *JAMA*. 286 (19):2413-2420.
15. National Food and Nutrition Commission, Ndola Health Management Team, LINKAGES Project, SARA Project. 1999. A summary of the findings and recommendations from the formative research carried out in Lubuto Main Masala, Twapia and Kabushi Heath Centre Areas of Ndola, Zambia. April.
16. Nduati, R., B.A. Richardson, G. John, D. Mbori-Ngacha, A. Mwatha, J. Ndinya-Achola, J. Bwayo, F.E. Onyango, and J. Kreiss. 2001. Effect of breastfeeding on mortality among HIV-1 infected women: A randomised trial. *Lancet*. 357(9269):1651-5.
17. Ntombela, N. and M. Kroeger. 2001. Ndola demonstration project: Midwives take the lead to reduce mother to child transmission of HIV. *Quickening*. May/June, No. 3.
18. PAHO. 1999. *Women and HIV/AIDS: Prevention and care strategies*. Washington, DC: PAHO.
19. Pathfinder International, Africa Regional Office. 22 March 1999. Technical project proposal: Community-based HIV/AIDS prevention and care support services. Pathfinder International, Watertown, MA.
20. Petra Study Team. 2002. Efficacy of three short-course regimens of zidovudine and lamivudine in preventing early and late transmission of HIV-1 from mother to child in Tanzania, South Africa, and Uganda (Petra study): A randomised, double-blind, placebo-controlled trial. *Lancet*. 359:1178-1186.
21. Piot, P. 2002. Testimony to the hearing of the Committee on Foreign Relations of the United States Senate on "Halting the Global Spread of HIV/AIDS: The future of U.S. bilateral and multilateral responses." Washington, D.C. February 13, 2002.
22. Preble, E. and E. Piwoz. (2002). Prevention of mother-to-child transmission of HIV in Asia: Practical guidance for programs. The LINKAGES Project. Washington, DC: Academy for Educational Development. www.linkagesproject.org (November 13, 2002).





23. Shaffer, N., et al. 1999. Short-course zidovudine for perinatal HIV-1 transmission in Gangkok, Thailand: A randomised controlled trial. *Lancet*. 353:773-780.
24. Shulman, C. 1999. Malaria in pregnancy: its relevance to safe motherhood programmes (paper from second European congress on Tropical Medicine in Liverpool, September 1998). *Annals of Tropical Medicine*. 93(Suppl. 1): S59-S66.
25. Smith, M. and L. Kuhn. 2000. Exclusive breastfeeding: Does it have the potential to reduce breastfeeding transmission of HIV-1? *Nutr Rev* 58 (11):333-40.
26. UNAIDS. 2001. Working with men for HIV prevention and care. *Best Practices Collection*. October.
27. UNAIDS. 2002. Report on the global HIV/AIDS epidemic: July 2002. www.unaids.org
28. UNICEF. 2002. Headquarters programme instructions for action. *Infant feeding and mother-to-child transmission of HIV technical guidance note* (July).
29. UNICEF: Mother to Child Transmission of HIV. www.unicef.org/programme/health/focus/hiv/mtct/proj.htm#btw (September, 2002).
30. UNICEF, UNAIDS, WHO. 2000. Local monitoring and evaluation of the integrated prevention of mother to child HIV transmission in low-income countries. www.unaids.org (November 13, 2002).
31. USAID. 2000. Handbook of indicators for HIV/AIDS/STI programs. Washington, DC: TvT Associates; USAID Bureau for Global Programs, Field Support and Research; USAID Center for Population, Health and Nutrition, Office of Health and Nutrition; USAID Bureau for Africa, Office of Sustainable Development. www.usaid.org (November 13, 2002).
32. USAID, UNAIDS, and WHO. (2002). Quick Reference Guide: Indicators and instruments for monitoring and evaluation of USAID/UNAIDS/WHO HIV Prevention .AIDS Care/STI Control programs: April 2002 Update. Washington, DC: The Synergy Project/TvT Associates. www.usaid.org (November 13, 2002).
33. US Census Bureau. "HIV/AIDS country profiles." <http://www.census.gov/ipc/www/hivctry.html>. (November 18, 2002).
34. WHO. 1999. *HIV in Pregnancy: A Review*. WHO/CHS/RHR/99.15.
35. WHO. 2000_a. New data on the prevention of mother-to-child transmission of HIV and their policy implications: Conclusions and recommendations. *WHO Technical Consultation on Behalf of the UNFPA/UNICEF/WHO/UNAIDS Interagency Task Force Team on Mother-to-Child transmission of HIV*. Geneva, October 11-13.
36. WHO. 2000_b. WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality – Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. *Lancet*. 355(9202): 451-455.
37. WHO, Regional Office for Africa. 2000. Consultative meeting on HIV adaptation in IMCI. *Final Report*. 16 to 18 August 2000. Durban, South Africa.
38. WHO. 2001. Prevention of mother-to-child transmission of HIV. Selection and use of Nevirapine. Technical Notes. WHO/HIV_AIDS/2001/03.

RESOURCES:

1. LINKAGES Project. *Breastfeeding and HIV/AIDS Frequently Asked Questions* (FAQ Sheet 1). Updated May 2001. www.linkagesproject.org (November 14, 2002).
2. LINKAGES World Linkages, Zambia. www.linkagesproject.org (November 14, 2002).
3. Ministry of Health, Zambia's National Policy Framework on Infant feeding practices and HIV/AIDS Transmission from Mother-to Child, Final Working Draft, August 1998.
4. Rehle, T, S. Mills, and R. Magnani, eds. 2001. Evaluating programs for HIV/AIDS prevention and care in developing countries: A handbook for program managers and decision makers. Family Health International.
5. WHO. 1999. *HIV in Pregnancy: A Review* WHO/CHS/RHR/99.15.

ABOUT THE AUTHORS:

Ellen Israel, CNM, MPH, is a nurse-midwife, and Senior Reproductive Health Associate with Pathfinder International. She has worked extensively in reproductive health, especially community-based PMTCT and home based care for PLWHAs, safe motherhood, and post abortion care, in Africa, Asia and Latin America. She co-authored the first and second publications of this series, *HIV Transmission Through Breastfeeding* and *Tapping Community Opinion on Postabortion Care Services*. She can be contacted at Eisrael@pathfind.org

Mary Kroeger, CNM, MPH, is a nurse-midwife with expertise in safe motherhood, child survival, lactation management and PMTCT. Early work on this paper was done while Kroeger was employed with the LINKAGES Project, a project supported by USAID Grant No. HRN-A-00-97-00007-00 and managed by the Academy for Educational Development. Kroeger now works as an independent consultant and can be contacted at MaryKroeger@aol.com.

ACKNOWLEDGEMENTS: The authors are grateful to the following for their thoughtful feedback and input: Judy Carlson, CNM, MPH, Independent Consultant; Tom Fenn, MA, Senior Technical Associate, Pathfinder International; Margaret Gatei, Kenya Registered Nurse and Midwifery Diplomas, Project Manager, Kenya, Pathfinder International; Richard Laing, MD, MBChB, MSc, Associate Professor, Boston University School of Public Health; Carlos Laudari, MD, MPH, Country Representative, Brazil, Pathfinder International; and Cathy Solter, CNM, MPH, Director of Technical Services, Pathfinder International. Special thanks to Paul Farmer, MD, Founding Director, Partners in Health/Harvard Medical School and Medical Director, Zanmi Lasante; Serena Koenig, MD, Director of Haiti Programs, Partners In Health/Harvard Medical School; and Fernet R. Leandre, MD, Director of Programs for TB/HIV/SIDA, Zanmi Lasante, for comments on an early draft, and Nomajoni Ntombela, CNM, MBA, LINKAGES Regional Technical Advisor, Africa Regional Infant Feeding and PMTCT Programs, Academy for Educational Development, for her work with the Ndola Demonstration Project, Zambia, and her dedication to PMTCT. The authors also thank Sheila Webb, Tayla Colton, and Yasmeen Khan at Pathfinder International for their work in editing and producing the final manuscript.

