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Family Planning and the Prevention of Mother-to-Child Transmission of HIV

A Review of the Literature

Kim Best

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FHI is a nonprofit organization working to improve lives worldwide through research, education, and services in family health.

Family Planning and the Prevention of Mother-to-Child Transmission of HIV: A Review of the Literature

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Executive Summary

Mother-to-child transmission is the main way children become infected with human immunodeficiency virus (HIV) worldwide. To date, the primary approach to the prevention of mother-to-child transmission (PMTCT) has been to identify HIV-infected pregnant women by voluntary counseling and testing (VCT) for HIV and then provide antiretroviral (ARV) drug prophylaxis to them during delivery and then to their newborn infants. Many HIV-positive births could be prevented, however, by simply preventing unintended pregnancies among infected women. Furthermore, increasing contraceptive use to prevent such pregnancies appears to be at least as cost-effective as providing nevirapine to HIV-infected mothers.

Minimizing HIV-positive births likely will be best achieved through a combination of various approaches, including the prevention of HIV infection among women of reproductive age. The degree to which any one approach should be emphasized will depend on factors unique to particular settings, such as HIV prevalence, client needs, and service-delivery capacity.

The success of PMTCT efforts also depends upon the ability to reach the maximum number of women at risk of an infected pregnancy. Although many women in the developing world never receive any type of reproductive health care, integration of existing services reduces the likelihood that at-risk women will fall through the cracks of the health care system. Thus, numerous ways of integrating reproductive health services to prevent mother-to-child HIV transmission among women accessing family planning, VCT, or antenatal care (ANC) services are being explored.

For example, integrating HIV counseling into **family planning services** can prevent MTCT by simultaneously preventing both pregnancy and infection among nonpregnant women. Integrating family planning services into **VCT services**, or vice versa, can prevent MTCT by helping women who test positive prevent pregnancy and those who test negative (but are sexually active and of reproductive age) avoid infection and possible unintended pregnancy. Finally, integrating HIV counseling, VCT, and family planning into **ANC services** can 1) prevent infection among pregnant HIV-uninfected women and 2) identify pregnant women who are HIV-infected, alerting providers to the need to offer postpartum family planning to prevent another at-risk pregnancy.

In all of these scenarios, family planning services play an essential role in achieving PMTCT goals. Of note, few empirical data on integration of family planning services and PMTCT exist in the literature. Operational issues, although recognized, are rarely discussed in depth. But policy guidelines indicate increasing support for this approach. More than 75% of international guidelines (Centers for Disease Control [CDC], United Nations Programme on AIDS [UNAIDS], United Nations Children's Fund [UNICEF], United States Agency for International Development [USAID], South African Development Community, and World Health Organization [WHO]), national HIV/acquired immune deficiency syndrome (AIDS) policies, and PMTCT and VCT policies reviewed in a recent analysis mention family planning (Strachan et al., 2004).

Furthermore, by itself family planning can provide important benefits to women and their families. The use of contraception improves the health of women and children by reducing the risks associated with advanced age at pregnancy, too many pregnancies, or pregnancies spaced too closely together. Because the use of family planning services helps reduce family size, more time and money might be available for each child. Also, women who space or limit their child-bearing might improve their education, financial status, and social position, as well as increase their participation in their communities and politics. Ultimately, this can contribute to economic growth and equity.

KEY MESSAGES

- Family planning services can greatly contribute to preventing HIV-positive births.
- Increasing contraceptive use to prevent unintended pregnancy among HIV-infected women appears to be at least as cost-effective as providing nevirapine to HIV-infected mothers.
- Contraceptive considerations for HIV-infected women are unique.
- HIV-infected women are no different from uninfected women in that they have the right to decide the number and timing of their children. Anyone counseling HIV-infected women should support their family planning decisions.
- Family planning, in itself, provides important benefits to women and their families.

I. Introduction

Mother-to-child transmission is the predominant way children become infected with human immunodeficiency virus (HIV) worldwide. In 2003, an estimated 700,000 new infections occurred among children younger than 15 years (UNAIDS, 2003). The United Nations General Assembly Special Session (UNGASS) on HIV/acquired immune deficiency syndrome (AIDS) has called for a 20% reduction in the proportion of HIV-infected infants by 2005 and a 50% reduction by 2010 (United Nations General Assembly, 2001). In response, the World Health Organization and its U.N. partners have been promoting four main approaches to the prevention of mother-to-child transmission (PMTCT) of HIV/AIDS (World Health Organization, 2003a).

Approach 1 involves the prevention of HIV infection among women of childbearing age. Approach 2 focuses on preventing unintended pregnancies in HIV-infected women by enhancing their contraceptive use. Approach 3 seeks to prevent transmission from HIV-infected women to their infants by voluntary counseling and testing (VCT) for HIV during pregnancy and, for women who test positive, provision of antiretroviral (ARV) drug prophylaxis during delivery and to their neonates. Finally, Approach 4 calls for providing care and support for HIV-infected mothers, their infants, and their families.

To date, PMTCT efforts have been directed primarily toward identifying HIV-infected pregnant women through VCT and providing them with ARV prophylaxis (i.e., Approach 3). The impact of this approach is currently limited for several reasons, however (see Appendix 1). Meanwhile, many HIV-positive births could be prevented by preventing HIV infection among women of reproductive age (i.e., Approach 1) and preventing unintended pregnancies in HIV-infected women (i.e., Approach 2) (O'Reilly, 2003).

Unintended pregnancies often result from an unmet need for contraception. In sub-Saharan Africa, where HIV prevalence is high, the unmet need for contraception ranges from 18% in Niger to 42% in Togo, with a regional average of 19.4% (Carr and Way, 1994; Robey et al., 1996; Ross and Winfrey, 2002). Such unmet need and potential for unintended pregnancies are of particular concern given the high prevalence of HIV, since about one third of the babies born to HIV-infected mothers not given ARV prophylaxis are infected (UNAIDS, 1999a).

The feasibility, impact, and cost-effectiveness of preventing such infected births by means of family planning remain somewhat unclear. The literature on this topic, however, increasingly recognizes that moving forward with this approach is necessary to balance and maximize the impact of the other three PMTCT approaches (Sweat, 2003).

In particular, three recent analyses suggest that adding family planning services to PMTCT programs can have a marked effect and be cost-effective. First, a recent USAID-funded analysis of the costs and benefits of adding family planning services to programs for PMTCT in 14 high-HIV-prevalence countries suggested that adding these services could double the effect of PMTCT programs in reducing HIV-positive births by 2007 (Stover et al., 2003). The total

number of births in 2007 in these 14 countries (identified as priority countries for the U.S. government’s International Mother and Child HIV Prevention Initiative) is expected to be about 16 million. With no intervention, the number of children born with HIV infection would rise to about 710,000 by 2007. Assuming that 50% of pregnant women receiving ANC had access to PMTCT services, 5% (39,000) of these infections would be prevented. The addition of family planning services to prevent future births to HIV-infected women would prevent another 32,000 infections (Table 1) (Stover et al., 2003).

Table 1. Impact and Cost Estimates of PMTCT, Family Planning Services

	PMTCT alone	FP added to PMTCT
Impact (child HIV infections prevented)	39,000	32,000
Cost per HIV infection prevented	\$1,300	\$660

A Family Health International (FHI) model found that, for the same cost, increasing contraceptive use to prevent unintended pregnancies in the general population prevents more HIV-positive births than does increasing services that promote and provide nevirapine in antenatal care programs (Reynolds et al., 2004). For example, spending \$45,000 to increase contraceptive services would prevent 88 HIV-positive births. Spending the same amount to promote and provide nevirapine for PMTCT would prevent 68 HIV-positive births.

In the model, the strategy of increasing contraceptive use from 0% to 50% among nonpregnant, nonusers who do not want to get pregnant was compared to increasing access to nevirapine for PMTCT from 10% to 50% among women in ANC programs. The model used a hypothetical cohort of 100,000 sexually active women, aged 15 to 49, from a sub-Saharan population with an HIV prevalence of 22% to estimate the number of HIV-positive births prevented in a year. Family planning costs included first-year costs of providing services and methods and costs of outreach to stimulate demand. Program costs of nevirapine for HIV-infected mothers in antenatal care included the costs of program promotion, staff training, HIV counseling and testing, and nevirapine. FHI researchers noted that different assumptions about the costs of either intervention will change the relative cost-effectiveness.

Preventing just 1,000 to 8,000 additional HIV-infected pregnancies (by preventing pregnancy in HIV-infected women) or slightly reducing adult HIV prevalence were both estimated to be as effective in reducing HIV-positive births as treating HIV-infected mothers with nevirapine (Sweat, 2003). This analysis was based on the estimated cost-effectiveness of providing ARV intervention in eight countries in Africa with severe HIV epidemics, plus calculations of changes in the other main approaches of the WHO PMTCT strategy required for them to be as effective as the nevirapine approach. The analysis took into account demographic and epidemiological factors, costs, and use of antenatal care, counseling, testing, and ARV drug therapy.

“Providing ARV treatment to pregnant women is only cost-effective if a woman completes the entire process,” the researchers noted. “The cost of the ARVs may be inexpensive, but the costs

of the services required for distribution are not. Uptake of services can be difficult for many reasons, including those related to the patient, the provider, and the infrastructure” (Sweat, 2003).

The role that family planning should have in the balance of PMTCT approaches will necessarily depend on a variety of factors unique to each setting (Preble and Piwoz, 2001). From an epidemiological point of view, the stage of the HIV/AIDS epidemic must be assessed (how far the epidemic has moved from the initial, high-risk groups to the general population of women of reproductive age). The extent of the problem (the age and sex-specific infection rates, overall number and proportion of HIV infections in infants, and the effect of MTCT on infant and child mortality) also should be evaluated. Political will and commitment are important. Government and health-system policies related to HIV/AIDS and MTCT must be appropriate, policies monitored and enforced, and MTCT interventions adequately funded.

Finally, issues related to health and related systems also must be addressed. These include the status of existing HIV and MTCT prevention activities; quality of health services and health system’s readiness to deliver MTCT interventions; existing health worker training through pre-service and in-service channels; availability, possible entry points, and existing or potential demand for VCT; drug licensing and policies, supply, and logistics systems; availability of ARV for PMTCT and pilot experience with PMTCT programs; HIV test kit availability and quality control for VCT; infant feeding policies and laws; availability of safe water, hygiene, sanitation, and replacement feeding options; and availability, quality, and reach of family planning services (Preble and Piwoz, 2001).

Apart from the potential for substantial and cost-effective prevention of HIV-positive births, adding family planning services to PMTCT can provide important benefits to women and their families. The use of contraception improves the health of women and children by reducing the risks associated with age at pregnancy, too many pregnancies, or pregnancies spaced too closely together. Addressing the unmet need for contraceptive services in developing countries would prevent an estimated 52 million unplanned pregnancies each year and save more than 1.5 million lives (Singh et al., 2003).

Family planning services also allow families to plan their lives better. Parents of smaller families can spend more time and money on each child. Women who delay childbearing might obtain more education, improve their financial and social positions, and increase their participation in their communities and politics. Ultimately, this can contribute to economic growth and equity (Singh et al., 2003).

Of note, few empirical data on the integration of family planning services and PMTCT exist in the literature. Operational issues, although recognized, are rarely discussed in depth. But policy guidelines indicate increasing support for this approach. More than 75% of international guidelines (CDC, UNAIDS, UNICEF, USAID, South African Development Community, and WHO), national HIV/AIDS policies, and PMTCT and VCT policies reviewed in a recent analysis (Strachan et al., 2004) mention family planning (see Appendix 2 for synopsis).

Furthermore, numerous ways of integrating reproductive health services to prevent mother-to-child HIV transmission among women accessing family planning, VCT, or antenatal care (ANC) services are being explored. Although many women in the developing world never receive any type of reproductive health care, integration of existing services reduces the likelihood that women at risk of a pregnancy that may be HIV-infected will fall through the cracks of the health care system.

II. Scope of Report

This review summarizes the literature on integrating family planning services with other services to prevent HIV-positive births. In particular, it addresses efforts to prevent initial or later pregnancy among HIV-infected women, focusing on: 1) HIV-infected nonpregnant women likely accessing either family planning or VCT services and 2) HIV-infected pregnant women accessing ANC services, the usual site for PMTCT interventions. The review also addresses opportunities and efforts to prevent HIV-positive births by preventing infection among: 1) uninfected nonpregnant women who likely access family planning or VCT services and 2) uninfected pregnant women accessing ANC services.

The organizational structure and scope of this review involves the intersection of two key variables: a woman's HIV status and her pregnancy status (Table 2). The discussion that follows will describe opportunities for PMTCT interventions involving family planning services in these contexts.

Table 2. Opportunities for PMTCT Interventions Involving Family Planning Services

Woman's HIV Status	Pregnancy Status	
HIV-infected Goal: prevent unintended pregnancy	Not pregnant	Pregnant
HIV-uninfected Goal: prevent HIV infection	Not pregnant	Pregnant

For this review, FHI library staff searched PubMed, Popline, DEC (USAID database), and the Internet for materials related to PMTCT integrated with family planning or maternal health services. Depending on the database, the terms used were *PMTCT*, *MTCT*, or *mother-to-child* or *vertical transmission* combined with *family planning*, *maternal health*, *prenatal care*, *safe motherhood* or *counseling*. Library staff also searched for materials with the terms *HIV*, *integration*, and *family planning*, *pregnancy*, or *maternal health*. Finally, the review includes abstracts and presentations from the XIV International Conference on AIDS, informal reports, unpublished papers, PowerPoint presentations, and personal communications. Approximately 145 documents were reviewed.

III. Preventing Unintended Pregnancy in HIV-Infected Women

Providing family planning counseling and services to this group of women—to prevent initial or later pregnancy—is critical to PMTCT. Not all HIV-infected women will want to limit or space childbearing, but they still must be carefully counseled so they can make informed choices while considering the risk of vertical transmission. Those who do wish to either limit or space childbearing also should have access to highly effective contraception (Cates, 2001; Strachan et al., 2004).

The most obvious services to target for PMTCT efforts among HIV-infected nonpregnant women are family planning services (which may or may not offer VCT services that identify infected individuals) and VCT services (which may either provide family planning onsite or make referrals). The most obvious services to target for PMTCT efforts focusing on HIV-infected pregnant women are ANC services. Various PMTCT interventions for HIV-infected women (nonpregnant and pregnant), with consideration of spouse/partner HIV status, are described in Appendix 3.

One advantage of integrating PMTCT messages and materials into family planning services, as well as maternal and child care and antenatal care services, is that the messages tend to be more acceptable and less stigmatizing when integrated into existing reproductive health information (PAHO/WHO, 2002).

International guidelines strongly encourage this approach. For example, the USAID *FP/HIV Integration Technical Guidance* (2003) states that: “USAID-supported PMTCT interventions should follow the WHO definition of MTCT, which includes the prevention of unintended pregnancies among HIV-infected women.”

III.A. Preventing Unintended Pregnancy in HIV-Infected Nonpregnant Women

A number of issues arise when considering interventions to prevent unintended pregnancy among HIV-infected women.

First and foremost, all women—including HIV-infected women—have the right to decide the number and timing of their children, and counselors of women known to be HIV-infected should support the client’s family planning decisions, even if they disagree with the client (Chervenak and McCullough, 1996). In Africa, a woman’s right not to conceive often is compromised by a lack of opportunity to limit fertility (King et al., 1995). Studies in Zimbabwe and Thailand show that HIV-infected women may not be able to terminate pregnancies because they lack information and access to safe, legal, and affordable abortion services (de Bruyn, 2003). On the other hand, HIV-infected women often are counseled to terminate a pregnancy or to avoid having children, a practice that compromises their reproductive rights (de Bruyn, 2002).

In addition, a woman who decides she wants to conceive “should be offered advice about how to do so while minimizing the risk of infecting her partner or of becoming re-infected by him,

by learning to recognize when she is most likely to conceive and avoiding intercourse or using barrier contraception at other times” (Bury, 1989).

Family planning clients who are HIV-infected and have not ruled out childbearing need to know that pregnancy does not appear to accelerate HIV progression (Minkoff et al., 2003; McIntyre, 1999; Bessinger et al., 1998; Vimercati et al., 2000). HIV-infected women also may want to know how HIV might affect infant health. HIV-infected women are more likely than uninfected women to develop malaria during pregnancy, and this dual infection has been associated with increased risks of maternal, perinatal, and early infant deaths (Ticconi et al., 2003). A recent study found rates of miscarriage, abortion, ectopic pregnancy, and stillbirth among HIV-infected women (some of whom received ARV drug therapy) to be no higher than those of their HIV-uninfected counterparts (Massad et al., 2004). In other studies, however, maternal HIV infection has been associated with adverse obstetrical and neonatal outcomes, including premature births, low birth weights, and postpartum hemorrhage (Leroy et al., 1998; Brocklehurst and French, 1998).

HIV-infected women using ARVs may want to use family planning until the effects of these drugs on maternal and child health are better understood. Clinical trials in human pregnancy of the effects of zidovudine have shown no increase in birth defects, but certain ARVs have shown evidence of toxicity for pregnant women and fetuses (Public Health Service Task Force, 2003; Newell, 2001; Sperling et al., 1998). The drug efavirenz (EFZ), for example, is believed to be a potent early teratogen, and a recent WHO draft guidance states that “EFZ should not be given to women of childbearing potential unless effective contraception can be assured” (World Health Organization, 2003b). Concerns also have been raised about whether a woman’s use of nucleoside reverse transcriptase inhibitors (such as zidovudine and lamivudine) can affect the mitochondrial or nuclear DNA of her child, potentially causing such side effects as lactic acidosis and anemia and increasing susceptibility to cancer (Cossarizza and Moyle, 2004; Blanche et al., 1999; Poirier et al., 2003; Olivero et al., 2002).

III.A.1. Contraceptive Method Options

Unless abstinent, HIV-infected women should be counseled to use male or female condoms every time sexual intercourse occurs, so as to prevent HIV transmission to partners. Condom use also will protect the woman herself from other sexually transmitted infections (STIs), including other strains of HIV (Preble et al., 2003). If she does not wish to become pregnant, the HIV-infected woman should consider dual-method protection—using a condom for disease prevention and another, more effective method for contraception. Some women erroneously believe that a method effective in preventing pregnancy also will protect against sexual transmission of disease (Galavotti and Schnell, 1994), so providers must inform HIV-infected women that only condoms reduce the risk of both unplanned pregnancy and transmission of STIs/HIV.

Providers also need to emphasize that, to have maximum effectiveness, condoms must be used consistently and correctly. Most pregnancy or HIV/STI transmission risks likely occur because condoms are not used consistently or at all (Steiner et al., 1999). Condoms are estimated to be

97% effective for protection against unintended pregnancy when use is ideal (consistent and correct), but only 86% effective as typically used (Trussell and Kowal, 1998). Similarly, condom use reduces HIV incidence by at least 80% and perhaps by as much as 97%—but only if use is consistent and correct (Weller and Davis, 2002; Mann et al., 2002).

The World Health Organization provides guidance as to the suitability of each major contraceptive method (and sterilization) for family planning clients in three HIV/AIDS categories: clients with high risk of HIV, clients who are HIV-infected, and clients with AIDS. Women in all categories are eligible for most major methods. Of note, based on the latest clinical and epidemiological data, revisions to the guidelines have recently been made, removing some barriers to the use of intrauterine devices (IUDs) (WHO, 2000; publication pending). Initiating use of the IUD is not usually recommended for women with AIDS who are not receiving ARV therapy or who have not clinically improved during treatment. Otherwise, all other HIV-infected women, including those with AIDS, now are eligible for IUD use (Table 3). The revisions were based in part on USAID-supported research by the University of Nairobi and FHI suggesting that appropriately selected HIV-infected women with regular access to medical services can use IUDs safely (Morrison et al., 2001).

Table 3. IUD Medical Eligibility Criteria: 2003 Changes for IUD Use

Category of Woman	2000 Criteria	2003 Criteria	
	Initiation/Continuation	Initiation	Continuation
High risk of HIV or HIV-infected	3	2	2
AIDS	3		
Clinically well on ARV therapy	N/A	2	2
No ARV, or not doing well on ARV	N/A	3	2

Note: In the WHO's four-category classification scheme for contraceptive use, these definitions apply: "2" – with clinical judgment, generally use the method; "3" – even with clinical judgment, use of method not usually recommended unless other more appropriate methods are not available or not acceptable.

Hormonal contraceptives tend to be more effective in preventing pregnancy than are barrier methods. There is some concern, however, that ARV drugs can change the metabolism of oral contraceptives, thus requiring an adjustment in dosage or change to another contraceptive (Leitz et al., 2000; Piscitelli et al., 1996). More research in this regard is needed. Some drugs used to treat AIDS-related opportunistic infections also can interact with hormonal contraceptives. The use of oral contraceptives, hormonal patches or rings, and implants usually is not recommended by WHO for women taking rifampicin, an antibiotic used to treat tuberculosis. The use of hormonal methods may be associated with increased risks of cervical HIV shedding and thus transmission (Stephenson, 1998; Mostad et al., 1997; Wang et al., 2004). Hormonal contraceptives may affect HIV disease progression (Sagar et al., 2003; Sagar et al., 2004; Lavreys et al., 2004). More data will be forthcoming this year on the associations between hormonal contraception and the risks of HIV acquisition, transmission, and disease progression.

For long-lasting, hormonal contraception, the Norplant implant has been found to be safe, efficacious, and well-tolerated in the immediate postpartum period among asymptomatic HIV-infected women (Taneepanichskul and Tanprasertkul, 2001).

For HIV-infected women who have decided against childbearing, female sterilization is a good option. The procedure should be delayed, however, if a woman who has developed AIDS has an AIDS-related illness (WHO, 2000). The use of diaphragms (with spermicide) or cervical caps usually is not recommended for HIV-infected women and those with AIDS, according to WHO's 2003 recommendations (WHO, publication pending).

Little attention is given in the literature to the use of emergency contraception by HIV-infected women. In an Ipas study of reproductive choice among women living with HIV/AIDS (de Bruyn, 2002), however, 36 key informants said that emergency contraception was a little-known option to prevent pregnancy for most women. These informants were from Australia, India, Kenya, South Africa, and Thailand.

HIV-infected women, like any women, are most likely to use a contraceptive method successfully if they have chosen it for themselves. The goals of this choice are that the method be highly effective, carry a low risk of woman-to-partner HIV transmission, and carry a low risk of partner-to-woman infection with other STIs (Cates, 2001). This requires consideration of the benefits and drawbacks for each method (Table 4).

Table 4. Contraceptive Choices for HIV-Infected Women

Method	Possible Benefits	Possible Drawbacks
Male/female condom	Good STI protection if used consistently and correctly; HIV protection for partner	Requires partner cooperation and correct technique; effectiveness depends on consistency and correctness of use
Oral contraceptives	Good contraceptive effectiveness if used consistently	Unclear interaction of steroids and immune function; interaction with certain antibiotics and other drugs; possible increased shedding of virus from cervix; no STI protection; no HIV protection for partner
Norplant Depomedroxyprogesterone acetate (DMPA)	Good, low-maintenance contraceptive effectiveness	Unclear interaction of steroids and immune function; possible increased shedding of virus from cervix; no STI protection; no HIV protection for partner
IUD	Good, low-maintenance contraceptive effectiveness	Risk of uterine infection secondary to insertion; no STI protection; no HIV protection for partner; increased days of bleeding; possible anemia
Surgical sterilization	Good, low-maintenance efficacy for women who want no (more) children	No STI protection; no HIV protection for partner
Source: Cates, 2001; adapted from Hatcher, 1998.		

Family planning providers are well-informed about and trained to provide a wide range of contraceptive methods, and they may have a good idea of the contraceptive behavior of their regular clientele. The contraceptive behavior of HIV-infected women, however, remains poorly understood, which could compromise the uptake of various contraceptive methods. For example, family planning providers should know that sexual partners of HIV-infected women using very effective contraception may not use condoms as consistently as partners of women using less effective contraception (Diaz et al., 1995).

The literature reports numerous studies of reproductive choice and behavior among HIV-infected women. Some of these studies suggest that their contraceptive uptake may be surprisingly low, and many become pregnant (Table 5).

Table 5. Studies of Reproductive Choice and Behavior Among HIV-infected Women

Country	Study Subjects	Reproductive Choice/Outcomes
Rwanda (Allen et al., 1993)	460 HIV-infected women; 998 HIV-uninfected women who received VCT	In baseline survey, 98% of women knew HIV could be transmitted from mother to newborn (Lindan et al., 1991); later surveys found that over 80% of Rwandan men and women thought that all children born to HIV infected mothers would die of AIDS (Allen, unpublished data, 1992). At enrollment, HIV-infected women were more likely to be using hormonal contraceptives and less likely to be pregnant than HIV-uninfected women. But 2 years later, 43% of HIV-infected women had conceived. After VCT, the proportion of HIV-infected women using hormonal contraceptives was slightly lower than that of HIV-uninfected women. (Of note, hormonal contraception had not been provided at the project clinic.)
Rwanda (King et al., 1995)	330 HIV-infected women; 172 HIV-uninfected women who received VCT	On-site access to hormonal contraception, viewing a video on contraception, and facilitated discussion resulted in a 50% increase (from 16% to 24%) in use of hormonal contraception, a shift towards use of longer-lasting hormonal methods, and a significant decrease (from >50% to <15%) in attrition in use among both HIV-infected and -uninfected women. Nine percent of HIV-infected women became pregnant in the year after the intervention versus 22% of HIV-infected women in a prior 12-month period when contraceptives were not provided at the site. There was a considerable gap, however, between the intention to use contraceptive methods and actual use.
France (de Vincenzi et al., 1997)	412 HIV-infected women	Discovery of HIV infection led to a significant decrease in the proportion of women who were sexually active, a decrease in the incidence of pregnancy and live births, and an increase in the proportion of pregnancies voluntarily aborted. But 24% of women became pregnant during a median follow-up of 3 years.
Rakai district, Uganda (Lutalo et al., 2000)	10,000 men and women who received VCT	HIV-infected women were no more likely than HIV-uninfected women to use female-controlled family planning methods. Condom use was moderately (but not significantly) higher among HIV-infected than HIV-uninfected men.
Puerto Rico, 1998-2002 (Esquilín, 2003)	8 perinatally HIV-infected adolescents	In all, there were 10 pregnancies, 5 of which were unintended, 2 were aborted electively, and 3 were aborted spontaneously. The number of perinatally HIV-infected adolescents becoming both sexually active and pregnant increased over the study period.

The literature suggests at least three reasons for the low use of contraceptives by HIV-infected women. Despite the obvious risks, HIV-infected women may very much want to have children, particularly in cultures that are pronatalist (Rutenberg et al., 2003a). A strong desire for children may have reduced HIV-infected individuals' acceptance of family planning methods in the Rakai district, Uganda (Lutalo et al., 2000), and, in Yaoundé, Cameroon, a third of 40 HIV-infected men and women responding to a questionnaire said that they had unprotected sex primarily because they wished to have a child or their partner objected to the use of a barrier method (Atangana, 2000). Fears of the health effects of contraceptive use also may play a role. In Rwanda, King et al. (1995) noted that HIV-infected women in particular were reluctant to use anything that might endanger their health. This suggests the importance of providing ample information and reliable follow-up (to reduce side-effect-related attrition) and counseling about contraceptive options.

Little is known about how initiatives to offer ARV drugs to HIV-infected women may affect a woman's desire for pregnancy. But HIV-infected women may be less interested in limiting childbearing in response to their HIV-infected status if ARV treatment promises better health, quality of life, and survival (Preble et al., 2003). Of note, abortion rates among HIV-infected women fell after ARV drug therapy was introduced in a study of pregnancy outcomes among HIV-infected and HIV-uninfected U.S. women (Massad et al., 2004).

III.A.2. Meeting Contraceptive Needs via Family Planning Services

In general, the reviewed literature recognizes that family planning staff will need considerable additional training to serve HIV-infected women effectively. This includes "basics of HIV/AIDS and HIV counseling; contraceptive methods appropriate for HIV-infected women; how to counsel HIV-infected women who do wish to become pregnant; how to counsel HIV-discordant couples on fertility planning; basics of MTCT and PMTCT; avoidance of stigma; needs of special groups of HIV-infected women (unmarried, adolescents, IVDU, sex workers, etc.); universal infection control precautions; and postexposure prophylaxis" (Preble et al., 2003).

Anecdotal evidence indicates that family planning staff members do not always want to take on HIV/AIDS work, in general. Their reluctance stems from fear of being infected by HIV-infected people who are served, fear that HIV could discredit the family nature and legitimacy of family planning, stigmatization of people often associated with the spread of HIV (homosexual men, intravenous drug users, commercial sex workers), hesitation to deal with single women or adolescents, heavy existing workloads, and fear that scarce family planning funds will be diverted to HIV efforts (IPPF/South Asia Regional Office/United Nations Population Fund [UNFPA] 2004; Preble et al., 2003). In Tanzania, financial uncertainty due to competition for reproductive health funding, uncoordinated donor efforts, and tensions in the decentralization of service provision have stalled such integration efforts (Richey, 2003; Oliff et al., 2003).

USAID program guidance (2001), however, recommends that family planning counseling and services include such activities as training family planning workers in HIV/AIDS, MTCT, and contraceptive issues related to HIV infection; promoting the use of barrier methods for preven-

tion of STIs/HIV; and diagnosing and treating STIs. Furthermore, this guidance considers the establishment of referral links between VCT and family planning counseling services to be a core PMTCT intervention.

Unless they receive by referral women who have already been identified as HIV-infected, family planning services face the challenge of integrating VCT services to identify clients who are infected. Some maternal-child health/family planning programs have sought to integrate VCT as well as basic STI prevention and STI treatment, but these efforts have been limited and proper training and resources are lacking (Berer, 2003). Recognizing that evidence on providing VCT in family planning settings remains limited, USAID has called for further research on the matter (USAID, 2003).

The literature reflects concerns not only about how to introduce VCT into family planning services but also about how to handle a broad range of needs of women who test positive. The capacity to identify women as HIV-infected likely will generate additional responsibilities for family planning providers, such as the need to ensure access to functioning and accessible referral clinics, regular supplies of drugs and other materials, strong supervision, and community-level education (Askew and Berer, 2003).

In the Caribbean, for example, “family planning programs that discuss VCT worry about venturing into this area. Without a system of ARV treatment in place, the programs are concerned about what happens when someone tests positive. Those testing HIV-positive would have nowhere to turn, no treatment available, and non-continuity of care” (Centers for Disease Control and Prevention and Puerto Rico Department of Health, 2003).

Although some family planning programs can promote or offer VCT (USAID, 2003), the degree to which VCT and other HIV services can or should be integrated into family planning services will depend on HIV prevalence, clients’ needs, and existing service capacity. Where clients are not at high risk, family planning services that would be greatly burdened by delivering STI/HIV services on-site should establish ways to make referrals when needed. Integrating VCT services may be too costly, for example, if the number of HIV-positive tests is low (IPPF/South Asia Regional Office/UNFPA, 2004). Where clients are at high risk for STI/HIV infection, family planning programs might consider integrating STI and HIV services easily delivered with existing capacity (Foreit et al., 2002).

UNAIDS (1999b) has produced a comprehensive guide for program managers and service providers seeking to establish high-quality VCT services. Although specifically about VCT for pregnant women, this guidance includes curricula for counseling and discusses operational considerations such as staffing, costs, and types of lab tests. In addition, IPPF (with support from UNFPA) has produced two documents to guide those considering the addition of VCT to existing family planning, maternal and child health, or STI services (IPPF, 2002; IPPF/South Asia Regional Office/UNFPA, 2004). The latter guide is a helpful contribution in that it broadly addresses how to determine an appropriate level of VCT service integration and how to plan and

implement services based on that assessment. In terms of planning and implementation, it covers issues related to client targeting; orientation of staff, other service providers, and stakeholders; community education and mobilization; counseling and testing; care and support of infected individuals; monitoring and evaluation of VCT integration; and resource requirements.

Literature specifically describing the integration of VCT services into family planning services is scant. But the experiences of four project sites—two in the Ivory Coast and two in India—that piloted the integration of VCT into existing reproductive health services (particularly family planning services) are presented in the recent IPPF/UNFPA guide (IPPF/South Asia Regional Office/UNFPA, 2004). Also included are the VCT integration experiences of three IPPF member associations in Kenya, Rwanda, and Ethiopia.

III.A.3. Meeting Contraceptive Needs via VCT Services

Another way to meet the contraceptive needs of HIV-infected women is to integrate family planning services into VCT services. Among the advantages of such integration are that men and youth (as well as women) can be reached with family planning, couples who are tested together can receive family planning counseling together, and fewer HIV-infected individuals will be lost to follow-up for family planning services (Preble et al., 2003). Also, women who test negative will have an opportunity to access family planning information services that they might not otherwise receive.

International guidelines increasingly recognize the opportunity to provide family planning services via VCT centers. UNAIDS policy (1997) states that women getting VCT should be offered information about reproductive options, and USAID guidance (2003) recommends the inclusion of family planning services or referrals with VCT services. The USAID *Prevention of Mother-to-Child Transmission of HIV in Africa: Practical Guidance for Programs* (2001), prepared by the Support for Analysis and Research in Africa (SARA) project, views family planning counseling and services linked to VCT as core interventions.

Family planning is among the six key components of a comprehensive VCT program described in model guidelines for VCT developed in June 2002 by the South African Development Community (SADC). These guidelines include a recommendation for “structured systems for referral” to family planning services and state that “service plans should include relevant prevention, treatment, and support services through development and support of linkages to other sectors and referral,” with affiliated services including family planning. Couple counseling also is recommended, “since it has been shown to effectively help couples make informed decisions about sexual relationships, marriage, and family planning/pregnancy and to promoted behavior change.” The guidelines also note the need to establish procedures to ensure confidential records when making referrals within a network that includes family planning services (Strachan et al., 2004; SADC, 2002).

III.A.3.a. Options for Family Planning Provision via VCT

Two standard approaches exist for making family planning services more available to VCT clients. The first is to make referrals to family planning facilities that likely offer a range of contraceptive services. The second is to provide the services on-site.

Offering family planning services by referrals presents several operational challenges: many women will not follow-up on the referral and will not obtain family planning services, family planning providers who receive referrals may require training to address HIV-related family planning needs, family planning counselors may resist taking on complex HIV-related counseling issues and/or clients, and the confidentiality of HIV status must be respected at family planning sites (Preble et al., 2003).

On the other hand, challenges posed by offering family planning services on-site at VCT centers include shortages of space, staff, supplies (such as a lack of contraceptives, needles, syringes, alcohol swabs, and clinical/surgical instruments), equipment, and time. Client-flow issues and weaknesses in infrastructure may exist. VCT counselors would need training to provide clients with comprehensive family planning information and to dispense contraceptives (Stachan et al., 2004). Such challenges may require marked changes and investments in VCT facilities. In Africa, for example, “the family planning components of VCT services continue to be weak, or non-existent . . . most VCT sites will require significant upgrading to be able to offer technically sound, detailed counseling on specific contraceptive methods, and/or to offer a range of contraceptive services at the VCT site itself” (Preble et al., 2003). Few operational procedures, training curricula, and guiding principles for VCT in African VCT sites include family planning, these authors note.

If family planning counseling is offered on-site at VCT centers, the question arises of *when* it should be offered. Specifications in this regard are inconsistent. Although Kenya VCT and Jamaica PMTCT guidelines stress family planning in all HIV counseling sessions, they differ in whether family planning information should be given before or after testing (Strachan et al., 2004).

In Kenya, Ministry of Health guidelines for the provision of VCT services state that “information on family planning, its role for both HIV-positive and HIV-negative clients, and how to have access to services should be included in VCT counseling sessions. If possible, family planning should be provided at VCT sites” (Kenya Ministry of Health National AIDS and STI Control Programme, 2001). Little has been known, however, about the preparedness of staff and facilities to add family planning to VCT services.

With this in mind, the Kenya Ministry of Health and National AIDS and STI Control Program (with technical assistance from FHI, AMKENI, and other collaborators) implemented a study in June 2002 to help formulate programmatic options for the integration of family planning into VCT services (Reynolds et al., 2003). Conducted in 20 VCT centers in Kenya, the study among VCT supervisors, counselors, and clients examined potential demand for family planning services among VCT clients, acceptability of such services among clients and VCT staff

(supervisors and counselors), readiness of VCT services to provide such additional services, and feasibility of integrating family planning services into the VCT service environment.

Provider training needs, referral mechanisms, supervision needs, and contraceptive supply channels differed greatly by VCT center. Thus the researchers recommended that the question of whether and how much to integrate ultimately be decided at the facility level. The level of integration may vary by type of facility, counselors' training background, and financial and logistical factors. At a minimum, however, providers should assess clients' risks for HIV, sexually transmitted infections (STIs), *and* pregnancy and refer those who do not want children but are not using an effective contraceptive. Because it is unrealistic to expect VCT centers to provide all contraceptive methods, the researchers recommended a first level of integration that includes providing information, education, and counseling (IEC) about methods and method choice; condoms and pills; and referrals for other methods.

Of note, the researchers found that:

- Although most (89%) of the 84 VCT clients participating in exit interviews approved of providing family planning services along with VCT, more than 40% of sexually active VCT clients reported that they either did not use contraceptive methods or used traditional methods, which are less effective than modern contraception. Condoms were the modern contraceptive method used most often; 42% of modern method use was condoms. Dual-method use was virtually nonexistent, however. In 69 observed client-provider interactions at the VCT centers, 85% of counselors informed clients that condoms prevent HIV transmission, 73% mentioned that condoms protect against other STIs, and only 58% mentioned that condoms prevent pregnancy.
- Referrals for family planning services were rare, occurring in only 10% of observed client-provider interactions. Service statistics suggest that referral is even lower for women who test HIV-positive. Almost all counselors reported that they had, at some time, referred clients to family planning services. But 30 of the 41 counselors in the study (73%) were dissatisfied with existing mechanisms for making family planning referrals, which they often felt were ineffective or lacked confidentiality. They were also concerned that clients did not go to their referrals, that they had no way of knowing whether clients went, and whether clients faced problems on referral.
- Based on VCT counselors' background and training, a substantial number likely could provide family planning services themselves. Assessment of VCT counselors' contraceptive knowledge, however, showed that some were not adequately prepared to provide family planning method. Of particular concern, some counselors said that a woman should not use a contraceptive method if she is a teenager, has never been pregnant, has an STI, has multiple sexual partners, or has tested HIV-positive.

- Increasing VCT session time or workload was the greatest concern associated with adding family planning services to VCT services. In this study, counselors spent 22% to 51% of their day with clients. The researchers noted that family planning services could be accommodated if counselors came to work on time, did not leave early, and used time spent on non-work-related activities to serve clients.

Despite these findings, much remains unknown about the extent or nature of operational issues involved in integrating family planning services into VCT sites in Africa. It has been recommended that Advance Africa conduct a rapid situation analysis in three or four sites in Africa to determine ideal sites for family planning services for HIV-infected women (on-site at VCT centers or referral to existing family planning services elsewhere), the desire for contraceptive use among HIV-infected women, and reproductive choices related to known HIV-infection status. Also recommended was an assessment of training needs, space requirements for enhanced family planning services, supervisory and reporting systems that must be established, adequacy of contraceptive supply if more HIV-infected women adopt family planning, and what approaches work to improve access to and use of family planning by HIV-infected women in various settings. Finally, the analysis would focus on the development of program guidelines for the integration of family planning into PMTCT, MTCT-plus, VCT, and other relevant training curricula and program guidelines (Preble et al., 2003).

Meanwhile, national VCT/family planning integration guidelines are being developed in Kenya, with different levels of integration being proposed depending upon the facility. EngenderHealth and JHPIEGO are developing VCT/family planning integration training materials.

III.A.3.b. Examples of Family Planning Provision via VCT

Precedents for integrating family planning into VCT are rare. Uganda is perhaps the only country to have done so. There, with Ministry of Health support, the AIDS Information Centre (AIC), a donor-funded, nongovernmental organization, makes family planning services and STI education and testing available at all AIC branches (Alwano-Edyegu and Marum, 1999). Posttest club volunteers who have received 2 weeks of training offer family planning education to all clients (Berigija, 2002), and all AIC counselors can distribute pills and condoms. VCT counselors who are medical officers can provide other contraceptive methods as well. Supervisors provide support to providers by visiting the sites at least every 2 months. Integrated IEC messages (through brochures and video) and a referral system (consisting of an assessment form, referral slips, and a referral directory) exist. AIC also has implemented an “integration assessment card” to help providers guide clients to family planning services.

Since 1993, 31% of AIC clients have received contraceptive methods through AIC (Alwano-Edyegu and Marum, 1999). Of the VCT clients choosing to practice family planning, 28% practice dual-method use. Condoms are the most popular method, and injectables and condoms are the most common dual-protection combination.

Interventions to strengthen the integration of services at AIC and other primary health care facilities in Uganda have increased the proportion of family planning clients discussing HIV prevention with providers (from 12.7% to 51.9%, n=54) and family planning sessions where HIV needs were assessed (from 12.7% to 28.4%, n=67) (Kalibala et al., 2002).

In Haiti, another effort to integrate family planning services on-site at a VCT center also appears successful. Sequential integration of on-site primary care service—including family planning—into HIV/VCT at the Groupe Haitien de/Etude du Sarcome de Kaposi et des Infections Opportunistes (GHESKIO) in Port-au-Prince, Haiti, between 1985 and 2000 was both feasible and effective (Peck et al., 2003). Of the 6,709 adults who sought HIV testing in 1999, 1,274 (19%) became new users of a contraceptive method. Seventy percent of clients who received family planning counseling chose to use condoms alone. A total of 372 women (30% of family planning users overall) adopted a highly effective birth control method, and 50% of these women also used condoms regularly.

At the same site, the use of family planning significantly increased among HIV-infected women who were offered VCT and family planning. Of 3,121 infected women seen at the clinic from March 1999 to November 2001, 514 (16%) became family planning users. (Condoms, with or without other contraceptive measures, were used most often.) This model program was to be introduced throughout Haiti (Deschamps et al., 2002).

Premarital VCT services are being widely promoted in sub-Saharan Africa, especially by churches and religious groups (FHI, 2001). If family planning information was introduced in these premarital VCT services, unplanned pregnancies in HIV-infected women might be reduced (Preble et al., 2003).

Of note, although diagnosis of HIV infection may influence reproduction planning for women, it does not necessarily do so for men. In a randomized, controlled study of the effect of VCT on reproduction planning among 808 adult women and 826 adult men in Kenya and Tanzania, partner pregnancy rates 6 months after VCT did not differ by HIV status among men. Regardless of their HIV status, men who were planning a partner pregnancy at baseline were 2.5 times more likely than those who were not to report a pregnant partner at follow-up. The investigators suggested that future VCT intervention research tailor protocols to increase the participation of men (Forsyth et al., 2002).

III.B. Preventing Later Pregnancy Among HIV-Infected Women Who Are Already Pregnant

Interventions to prevent additional pregnancies among HIV-infected women by offering post-partum family planning services can reasonably take place at antenatal clinics, the usual site for PMTCT services. Among the advantages of offering family planning services for HIV-infected women on-site at antenatal clinics are that fewer HIV-infected women will be lost to follow-up for family planning services and that family planning, HIV/AIDS, and PMTCT counseling and referrals for social and health services can be integrated (Preble et al., 2003).

Meanwhile, some HIV-infected pregnant women may opt to abort their current pregnancy. Where abortion is legal, providers need to support such decisions. According to the literature, women may have strong feelings about abortion if they learn that they are HIV-infected. For example, interviews with 363 pregnant women attending a U.S. obstetrics clinic revealed that a quarter of the women would never have an abortion, even if the mother-to-child HIV transmission rate were 100% (Faden et al., 1993). But a survey of 400 women attending a high-risk antenatal clinic at Kenyatta National Hospital in Nairobi, Kenya, revealed that 64% would terminate the pregnancy if they tested HIV-positive while pregnant, and all would want to avoid [further] pregnancy (Marjan and Ruminjo, 1996).

III.B.1. Policy Support

Although much remains unknown about the extent of their implementation, various international guidelines support efforts to address the contraceptive needs of HIV-infected pregnant women in ANC settings. The guidelines generally recommend that:

- HIV-infected mothers be well-informed of the risks inherent in any future pregnancies (UNAIDS, 2001).
- Nonbreastfeeding HIV-infected mothers have access to appropriate family planning early after delivery, since they miss the benefits of lactational amenorrhea and thus are at increased risk of early pregnancy (UNAIDS/UNICEF/WHO, 1998; UNAIDS, 1998; WHO, 1999a; WHO, 2001).
- HIV-infected women choosing to bear more children be encouraged to delay pregnancy for at least 2 years (UNAIDS, 2001).
- Family planning be offered in ANC settings in both pre- and posttest counseling (UNAIDS, 2001).
- Women and couples be free to make their own decisions about childbearing, and family planning offered in ANC settings include counseling on continuation of current pregnancy and access to safe abortion where this is legal (UNAIDS, 2001; WHO, 1999a).
- Family planning be part of detailed explanations, monitoring, and follow-up if ARV treatment is given to prevent MTCT (WHO, 1999a).

Although these and other guidelines (CDC *Revised Recommendations for HIV Screening in Pregnant Women*, 2001; USAID, 2003) uniformly support the idea that the family planning needs of HIV-infected pregnancy women be assessed and addressed, this position may not be reflected in clinical guidelines for PMTCT. For example, in most African countries, “irrespective of official guidance on family planning, family planning is not systematically offered in PMTCT settings, nor do PMTCT staff receive detailed training in family planning counseling or contraceptive services” (Preble et al., 2003).

III.B.2. Contraceptive Considerations

Other than nonbreastfeeding women missing the contraceptive benefits of lactational amenorrhea, HIV-infected women's contraceptive needs after delivery are the same as those of HIV-infected nonpregnant women. HIV-infected pregnant women must understand, however, that the risk of infecting their infants may grow with future pregnancies, because the risk of vertical transmission increases as the mother's own infection progresses (UNAIDS, 1999b).

Like nonpregnant HIV-infected women, HIV-infected women's use of contraception after delivery may be surprisingly low, as reflected in several studies (Table 6). This suggests the need for more research to better understand attitudes and reproductive desires among these women.

Table 6. Reproductive Choice and Behavior in HIV-infected Women After Delivery

Country	Study Subjects	Reproductive Choice/Outcomes
United States (Wilson et al., 2003)	258 HIV-infected and 228 HIV-uninfected women at HIV risk postpartum	Few differences in reproductive behaviors after delivery by HIV status. Investigators recommended that counseling to reduce sexually risky behaviors should begin before or early after delivery and include discussion of both reproductive and disease transmission issues.
Burkina Faso (Nebie et al., 2001)	306 HIV-infected postpartum women	Poor use of contraceptive methods despite regular advice and counseling to choose an effective contraceptive, use condoms, and disclose their HIV status to their male partners. In all, 39% of the women started using hormonal contraception, only 8% used condoms at each sexual act, and only 18% informed their partners of their HIV status. Pregnancy incidence was 4 per 100 person-years in the first year of monitoring, and this rose significantly to 18 per 100 person-years in the third year.
Abidjan (Desgrées-du-Loû et al., 2002)	149 HIV-infected postpartum women	Despite counseling on protection of sexual intercourse and contraceptive use and access to free condoms and contraceptives, the women hardly followed the counseling. Average duration of breastfeeding was 7.9 months, average duration of postpartum abstinence was 12 months, and 39% of women used modern contraceptives at the time of the survey. Incidence of pregnancies was 16.5 per 100 women-years at risk for the first 24 months postpartum. Half of the pregnancies were not desired, and two thirds of unwanted pregnancies were aborted. The main strategy to avoid unexpected pregnancy and sexual transmission of HIV seemed to be an increased duration of postpartum abstinence. Contraceptives were still perceived as a health hazard. Abortion, though illegal, was thus regularly preferred to contraception as a means of birth control.
United States (Lindsay et al., 1995)	83 HIV-infected and 218 HIV-uninfected postpartum women	The risk of repeat pregnancy was slightly lower among HIV-infected women than among HIV-uninfected women, but most repeat pregnancies among both groups of women were unplanned.
Bangkok (Taneepanichskul et al., 1995)	22 HIV-infected pregnant adolescents	Ninety-one percent of the 22 adolescents chose to abort the pregnancy. Postpregnancy, 36% of the HIV-infected adolescents adopted injectable contraception and 5% used condoms, but 27% did not accept any contraception.

Involving men in family planning counseling may be essential to preventing future pregnancies, but women may not want to share their HIV status with their partners. In Zaire, a study of fertility rates in 238 HIV-infected women followed for 3 years postpartum found that the women's nearly uniform unwillingness to inform husbands or sexual partners of their serostatus largely accounted for the "disappointingly high fertility rates in women who had been provided with a comprehensive program of HIV counseling and birth control" (Ryder et al., 1991).

In northern Thailand, nearly a quarter of 50 HIV-infected mothers who participated in the government's MTCT program did not inform their husbands of their HIV status, and two-thirds did not inform their husbands of their participation in the program (Likhitwonnawut, 2002). Pregnant HIV-infected women in Uganda's PMTCT program who did not inform their partners about their HIV status could not have protected sex. As a result, researchers recommended strengthening the involvement of male partners to encourage practice of safer sex and/or family planning (Angulo, 2002).

III.B.3. Meeting Contraceptive Needs via ANC Services

Like family planning services, ANC services face the challenge of determining a woman's HIV status. Attempts to introduce VCT and ARV provision into the antenatal setting have been generally successful in Africa (Cartoux et al., 1998). Such provision also can be quite effective. VCT was shown to be both feasible and effective in ANC clinics in Zambia. In this pilot study of same-day VCT in six urban ANC clinics in Lusaka, 84% of pregnant women requested testing, with a quarter of those women testing HIV-positive. Women with primary school or less education, those seeking antenatal care in local clinics, and those seen before the third trimester of pregnancy were more likely to request HIV testing. The effectiveness of this intervention led researchers to recommend that VCT in antenatal clinics be expanded to include couples (Bakari et al., 2000).

Many pregnant women are reluctant to accept VCT, however. "Most antenatal care/PMTCT sites throughout Africa have faced disappointing uptake of VCT from clients, at least in the early phases. Reasons may include logistics (test results not available the same day, high cost of services) and fears that test results will not remain confidential" (Preble et al., 2003). In a 4-year intervention study conducted at three sites in Kenya and Zambia to examine the introduction of PMTCT services within existing maternal and child health programs (Rutenberg et al., 2003b), some 61% of more than 22,000 women who sought antenatal care as new clients at the sites received individual pretest HIV counseling. Fewer than one-third, however, went on to have an HIV test. Generally, women who accepted HIV testing did so to benefit their babies. They did not see the test as an HIV risk-reduction tool or as a way to prevent the spread of HIV (USAID/Synergy, 2004). Further, 39% of some 600 pregnant women seen at the obstetrics department of the University of Nigeria Teaching Hospital in Enugu failed to have routine HIV screening even when they had consented to it (Ibekwe and Ikeme, 2001). A substantial number of women who are tested also do not return for their results (Rutenberg et al., 2003c).

There are various other operational issues related to integrating family planning services into antenatal care. First, adding family planning services may be difficult if they are not already located in the same physical facility as PMTCT services. But locating family planning services on-site is challenging because ANC settings are usually overcrowded, understaffed, and have limited physical space for group or individual counseling. Adding family planning services requires additional skills, space, and staff capable of dispensing contraceptives. In the African context, “many ANC staff have already expressed resentment at having to take on additional PMTCT responsibilities, let alone family planning demands as well. More staff could be hired specifically for family planning in ANC settings; however, that has budgetary, sustainability, space and other implications” (Preble et al., 2003). Also, counseling couples about family planning would be difficult at PMTCT sites because men rarely access services there.

In particular, training issues require considerable attention. At a minimum, PMTCT providers would be expected to provide information about the importance of family planning as a PMTCT intervention, basics of contraception, sterilization and postabortion care, and available family planning referral sites. In Africa, however, PMTCT and VCT curricula do not always cover family planning issues in detail (Preble et al., 2003). (Of note, Population Services International [PSI] has incorporated family planning into its new draft training manual and counseling job aids that will be used for private midwives providing PMTCT [Andrews 2004]).

Providing family planning referrals for HIV-infected women postpartum also is problematic. “While many PMTCT programs now pledge to follow up women, test their babies and refer them for family planning, ARV and other AIDS-related care, this is not yet happening on a wide scale in African PMTCT settings” (Preble et al., 2003). An evaluation of a PMTCT pilot program in South Africa showed that clients referred to family planning services had poor access to health facilities. Distances were long and women lacked affordable transportation. Furthermore, poor patient records made continuity of care difficult, and clients experienced long waiting times and queues (Health Systems Trust and Department of Health, Republic of South Africa, 2002).

Ensuring that PMTCT programs are meeting the family planning needs of their adolescent populations also is a continuing challenge. Adolescents seen at antenatal clinics are more likely than older women to be pregnant for the first time. They may face strong social pressure to bear a child to prove their fertility and may continue childbearing—regardless of HIV status—if appropriate postpartum fertility counseling and family planning services are unavailable to them. For this reason, FHI researchers plan to conduct a study in Kenya to identify and evaluate strategies for meeting adolescents’ HIV and reproductive health needs within PMTCT programs. The study will assess the content of PMTCT services that youth receive and the extent to which adolescents’ broader reproductive health needs, particularly for contraception, are addressed within PMTCT services. It will also explore youth’s perceptions of fertility in the context of HIV and factors that would influence their use of PMTCT services, and evaluate adolescents’ pattern of use of PMTCT services relative to older women’s pattern of use (Reynolds, 2004).

III.B.4. Examples

In a recent evaluation of U.N.-supported pilot PMTCT projects in 11 countries (Botswana, Burundi, Côte d'Ivoire, Honduras, India, Kenya, Rwanda, Tanzania, Uganda, Zambia, and Zimbabwe) that began PMTCT in 1999–2000, national-level program managers in all the countries reported that their PMTCT programs (centered within antenatal care and maternal and child health) included family planning services. Most sites offered family planning counseling and contraceptive methods, either in the same building or next to it. PMTCT clients—both HIV-infected and -uninfected—thus received family planning counseling and services as part of their routine care (Rutenberg et al., 2003a, 2003c; Kalibala, 2003). These evaluators noted, however, that PMTCT programs still had made relatively little progress in addressing primary prevention of HIV in women and prevention of unintended pregnancy in HIV-infected women (Rutenberg et al., 2003c).

To assess the acceptability, operational barriers, costs, and impact of pilot PMTCT services, a 4-year intervention study was conducted at two sites in Kenya and one in Zambia by Horizons, the Network of AIDS Researchers in East and Southern Africa (NARESA) in Kenya, the MTCT Working Group in Zambia, and UNICEF (Rutenberg et al., 2003a). The study evaluated the extent to which VCT and PMTCT programs address family planning (and vice versa). Some key findings are presented below.

Although providers in Lusaka, Zambia, mentioned family planning in some antenatal and postpartum sessions, they missed many opportunities to counsel clients about family planning. Where a cohort of 1,002 PMTCT clients were initially interviewed, a little more than a third of the pregnant clients received family planning counseling during their antenatal visit. Among those reinterviewed 3 months postpartum, more than half of HIV-infected and -uninfected women discussed family planning that day. At the 6-month postpartum visit, 38% of HIV-infected women discussed family planning, while half of HIV-uninfected women did so.

At the two Kenyan sites, more than a fifth of women reported that they discussed family planning during their antenatal visit, but few women in the cohort study later reported receiving postpartum family planning counseling. In all three of the intervention sites, a similar proportion of HIV-infected and -uninfected women received family planning counseling, suggesting that providers are not specifically targeting HIV-infected women with family planning messages.

At the Zambian and Kenyan sites, postpartum family planning prevalence among women who received antenatal care at a PMTCT site was comparable to contraceptive prevalence reported for the respective districts in recent Demographic and Health Survey (DHS) studies. This suggests that the use of family planning methods by women at these sites was little influenced by the addition of PMTCT services. Further, the rates of contraceptive use—regardless of HIV status—were similar.

At two sites (Homa Bay, Kenya, and Lusaka, Zambia), two thirds of HIV-infected and more than one third of HIV-uninfected women reported that they had a regular sexual partner but were not using any family planning method.

Availability of family planning services at PMTCT sites does not ensure integration of HIV and family planning messages. At the six pilot sites in Zambia, there was little integration of HIV issues into family planning counseling. Among 48 sessions observed, providers mentioned HIV transmission in only 12 sessions, HIV testing in 9 sessions, and PMTCT in 8 sessions. Similar observations were made at the two sites in Kenya.

In Homa Bay and Karatina, Kenya, observations of client-provider interactions during family planning sessions before and after introduction of the PMTCT program showed that almost all components of quality within family planning sessions were unchanged or improved markedly, possibly because family planning was often clearly articulated as an important PMTCT strategy.

In Haiti, PSI with funding from USAID has launched a pilot PMTCT project that uses a franchised referral network involving partners from public, private, and nongovernmental organizational sectors. PMTCT services—which are integrated into existing antenatal care facilities to enhance project sustainability—include antenatal care, VCT, short-course antiretroviral therapy, safe labor and delivery practices, infant feeding counseling and services, family planning, and psychosocial support for HIV-infected women (Beachy, 2003; PSI, 2003).

In Zimbabwe, Advance Africa is working closely with USAID/Zimbabwe to integrate family planning services into Mission hospitals' PMTCT clinics. In Zambia and Mozambique, Advance Africa has been working with Columbia's MTCT-Plus program on ways to deliver family planning as part of MTCT-plus activities. The initiative will include family planning counseling, contraceptive provision, birth spacing, and reinforcement of family planning counseling in the postpartum period (Advance Africa).

Planned activities include rapid assessment of family planning within the selected sites; training PMTCT providers in family planning counseling, birth spacing, and contraceptive provision or referral in coordination with PRIME and EngenderHealth; supervision of PMTCT providers; monitoring and evaluation of family planning components; and capacity building in family planning for national PMTCT teams. Also planned is technical assistance in advocacy on importance of family planning for HIV programs among leaders and decision-makers and coordination with other agencies providing family planning logistics and commodities. Finally, the initiative seeks to disseminate IEC materials to providers and HIV-infected clients and identify unmet needs for family planning among MTCT-Plus clients, integration experience, and collection of best practices.

In Uganda, Advance Africa also is working with the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) to provide technical assistance in monitoring and evaluation of integrated family planning and PMTCT activities within four public hospitals and clinics.

IV. Preventing HIV Infection Among Uninfected Women

Helping both nonpregnant and pregnant women avoid HIV infection also is critical to PMTCT.

The most obvious services to target for PMTCT efforts focusing on HIV-uninfected *nonpregnant* women are family planning services and VCT services. The most obvious services to target for PMTCT efforts focusing on HIV-uninfected *pregnant* women are ANC services. Various PMTCT interventions for HIV-uninfected women (both nonpregnant and pregnant), with consideration of spouse/partner HIV status, are described in Appendix 3.

IV.A. Preventing HIV Infection in Uninfected Women Who Are Not Pregnant

Interventions to prevent HIV infection among women who are not yet pregnant reasonably can take place via family planning services and VCT services. (Most women who access VCT services will not be pregnant, and most will test negative. But VCT providers can take advantage of the occasion to inform women and their partners about MTCT risks if pregnancy or infection occurs.) Interventions to prevent HIV infection also occur outside the health care system (e.g., through outreach programs, community health workers, etc.), but these efforts are beyond the scope of this review.

IV.A.1. Condom Promotion

Promoting condom use can be one of the greatest contributions that providers can make to preventing HIV infection (Feldblum et al., 2003). The literature reflects the general opinion that providers should promote condoms either alone or combined with a more effective contraceptive method for dual protection from STIs/HIV and unplanned pregnancy. Because condoms are not the most effective contraceptive for preventing pregnancy, family planning providers may be reluctant to promote their use. Dual-protection messages are gradually being integrated into family planning counseling services, however.

For example, between 1999 and 2001, the nongovernmental Association for Reproductive and Family Health (ARFH) in Ibadan, Nigeria, and U.S. collaborators completed the first phase of a project to integrate HIV and STI prevention into family planning services, by promoting dual-protection counseling among new clients in six family planning clinics (Adeokun et al., 2002). Structured observations of provider-client interactions, conducted among 325 female clients before provider training about dual protection and 289 female clients after training, showed that the percentage of new clients counseled on various components of dual protection increased significantly after training. Client exit interviews showed that the percentage of clients aware of the concept of dual protection also increased, from 8% before provider training to 50% after training.

Other ongoing interventions to provide training that emphasizes dual-protection messages include the following:

- New York-based EngenderHealth and FHI are collaborating to implement and evaluate comprehensive dual-protection training in Ethiopia. EngenderHealth has developed and field-tested a training protocol—covering sexuality and gender, HIV and STI prevention, dual protection, and integrated counseling skills—and is using it to train staff at primary health care facilities in three regions of Ethiopia. FHI will soon assess the training’s impact on provider and client knowledge and attitudes, provider counseling practices, and client use of dual-protection strategies (Wright, 2003).
- With technical assistance from FHI, the Reproductive Health Research Unit (RHRU) in South Africa is implementing the National Dual Protection Strategies Program, which includes a South Africa Department of Health program to introduce the female condom into the country (FHI, 2002). Training materials on dual protection, barrier methods, and how to integrate these topics into family planning counseling have been developed and used to train service delivery providers in nine provinces.

Little is known about the success as a dual protection strategy of promoting condoms plus another contraceptive method. But studies from South Africa (Myer et al., 2002) and Kenya (Kuyoh, 1999) show that 13% to 16% of condom users also use another method (Askew and Berer, 2003).

Ninety-five dual protection projects (about a third implemented by Population Services International [PSI]) were reported in a 2001 survey of 25 USAID’s Population, Health and Nutrition Center (PHNC) cooperating agencies. The majority of these projects are being implemented in Africa, and most (85%) work with maternal and child health and family planning clients. All promote the use of condoms for both infection prevention and pregnancy prevention, although only two-thirds actually distribute condoms. Markedly fewer promote other dual protection strategies such as condoms plus another contraceptive, mutual monogamy, or abstinence (Pruyn and Cuca, 2002).

In general, guidelines are inconsistent in emphasizing dual protection or dual-method use. In a comprehensive review of national guidelines, only Kenya’s VCT guidelines and Ethiopia’s PMTCT guidelines do so. This creates uncertainty for counselors. Not only do they have to weigh the differing needs of clients—preventing pregnancy versus preventing HIV/STIs—but they also must take into account cost and user compliance in promoting dual protection and dual method use (Strachan et al., 2004).

IV.A.2. Other HIV Prevention Measures

Accurate messages about condoms must build on (and not substitute for) a wide range of HIV risk-avoidance and -reduction approaches. These approaches include delayed initiation of sexu-

al intercourse, mutual faithfulness, and selection of low-risk partners. This has been labeled the “ABC strategy”: abstinence, be faithful to one partner (or reduce the number of partners), or—if “A” or “B” cannot be achieved—use condoms.

Unlike VCT providers, many family planning providers will need various new skills to help prevent HIV infection among their clients. They will likely need training to counsel clients and their partners about sexuality issues, such as risky sexual behaviors (Askew and Berer, 2003). They may need to be trained about HIV/AIDS (and PMTCT) issues, behavior change communication, life-skills and other programs targeted to youth, prevention and perhaps treatment of STIs that contribute to HIV transmission, and VCT (Preble and Piwoz, 2001).

Family planning programs that do not have VCT on-site may try to integrate HIV risk assessment tools during counseling. This will help clients assess whether they may be infected or at high risk of infection and will inform their reproductive and contraceptive choices (Rutenberg et al., 2003d).

IV.A.3. Examples

In the 2001 survey of 25 cooperating agencies of USAID’s Population, Health and Nutrition Center, about half of 441 identified integration activities involved integrating HIV into existing family planning programs. (When PSI data were excluded, 84% did so.) Most activities, however, focused on communication, training family planning staff to provide HIV services, and education; much less attention was paid to strategies such as VCT, PMTCT, and generating policy. Notably, most identified integration activities were implemented in Africa, and most were carried out in the community (Pruyn and Cuca, 2002). An example of such implementation in the community is the integration of HIV/AIDS prevention, care, and referral into a long-established Family Planning CBD Program in Zimbabwe via Advance Africa’s Expanded CBD Programme (Pruyn N, personal communication, 2004).

Another example of integrating HIV services into family planning services comes from Uganda. In a Horizons intervention study there, family planning providers were trained to discuss HIV so that the specific needs of HIV-infected women, HIV-uninfected women, and those of unknown status could be addressed. Providers then could refer clients to such HIV services as VCT. From the baseline observations in 2000 to the follow-up observations in 2001, researchers noted in more than 60 family planning sessions “a dramatic increase in the percentage of family planning sessions where HIV needs were assessed, HIV risk was discussed, and dual protection was proposed. The percentage of sessions in which HIV needs were assessed more than doubled, as did the percentage of sessions in which the provider proposed dual protection” (Rutenberg et al., 2003a).

Providing STI/HIV prevention services through family planning programs is problematic, however, because these programs usually do not reach those at greatest risk of HIV infection, which includes men, youth, and single women (Lush et al., 1999). Even when married women are

among those at highest risk of HIV, they often do not have the power to protect themselves by either abstaining from sex or insisting on fidelity or condom use by their husbands.

A comprehensive review commissioned by WHO found that efforts to integrate STI/HIV prevention activities with MCH/FP services had improved providers' attitudes and counseling skills, increased user satisfaction and, in some cases, resulted in higher levels of condom distribution and the use of other contraceptive methods (Dehne and Snow, 1999; O'Reilly et al., 1999). There is little evidence, however, that STI prevention among traditional family planning clients has reduced risky sexual behavior or increased condom use (O'Reilly et al., 1999; Askew and Maggwa, 2002).

IV.B. Preventing HIV Infection in Uninfected Women or Women of Unknown HIV Status Who Are Pregnant

The ANC clinic presents excellent opportunities to provide HIV-uninfected pregnant women with options and skills for avoiding infection during pregnancy and later vertical HIV transmission. In general, the risk that a woman will transmit HIV to her fetus during pregnancy is 5% to 10% (DeCock et al., 2000), but a pregnant woman who becomes HIV-infected during pregnancy may have a very high level of the HIV virus for a short time postinfection, increasing the risk of HIV crossing the placenta from mother to fetus (WHO, 1999b). ANC also presents opportunities to inform women about the need to prevent infection postpartum and transmission during breastfeeding. Infection rates after delivery are high in many countries. In southern Africa, 5% to 10% of HIV-uninfected women become infected in the year after they give birth (Rutenberg et al., 2002).

Interventions to prevent HIV infection in pregnant women, as for nonpregnant women, focus on counseling about potentially risky behaviors of the woman or her partner and strategies to reduce HIV risk. Because they also focus on condom use, interventions for HIV-uninfected pregnant women in antenatal care should attempt to involve women's partners. This approach is supported by international guidelines. Regardless of a woman's HIV status, "safer sex counseling must be provided to women in the antenatal setting," states the WHO (1999a). "If they are unaware of their partner's HIV status or feel that they may be at risk from HIV infection, they should encourage their partner to use condoms." In fact, to reflect the men's role in this chain of transmission, "some organizations have replaced the biologically precise terminology of 'mother-to-child transmission' with the behaviorally sensitive term 'parent-to-child transmission'" (Preble and Piwoz, 2001).

Ideally, pregnant women whose HIV status is unknown will be offered—and will accept—VCT. Pregnant women identified as HIV-infected may be offered ARV therapy and appropriate contraceptive counseling (see Section III.B), whereas pregnant women testing HIV-negative can learn how to prevent infection.

The UNAIDS Best Practice Collection recommends consideration of the following during pre-VCT counseling: implications of a negative test result, including information on how to remain HIV-uninfected, and promotion of breastfeeding and family planning. In posttest information and counseling for HIV-uninfected women, it states: “When a partner is infected, or when his serological status is not known, the importance of prevention information and counseling is greater still. Information on where to get condoms and other contraceptive means should be given” (UNAIDS, 2001).

Two projects with components addressing the needs of pregnant women who are HIV-uninfected or whose HIV status is unknown are under way in Rwanda and India, although the literature does not provide evidence of the effectiveness of these efforts. In Rwanda, the PRIME II project has assisted the Ministry of Health to help prevent MTCT by integrating HIV counseling, testing, and treatment into antenatal care and obstetric services at the Byumba and Kibuye district hospitals (Nelson, 2003). In Guwahati, Assam state of North East India, where the HIV prevalence in antenatal clinics remains very low, the AIDS Prevention Society’s 5-year Integrated Health Services Project for PMCT of HIV includes integrating VCT services with MCH services during antenatal visits. This is being done to ensure that women “make informed decision about safer sex, having children and a healthy lifestyle, which will be linked to family planning services and prenatal and obstetric services” (AIDS Prevention Society, 2003).

V. CONCLUSION

Of the four main approaches to the prevention of mother-to-child transmission (PMTCT) of HIV promoted by the WHO and its U.N. partners, the approach of identifying HIV-infected pregnant women and providing these women and their newborns with antiretroviral drug therapy has received the most attention and support to date.

Many HIV-positive births could be prevented, however, by preventing unintended pregnancies in infected women, giving family planning a key role in PMTCT efforts. Family planning services also can be important venues for the integration of services that prevent HIV infection among women of childbearing age.

The feasibility, impact, and cost-effectiveness of preventing HIV-positive births through family planning are somewhat unclear. Although the unique issues involved in providing contraception to HIV-infected women are being explored, there are few empirical data on the integration of family planning services and PMTCT in the literature. Operational issues of service integration, although recognized, also are rarely discussed in depth.

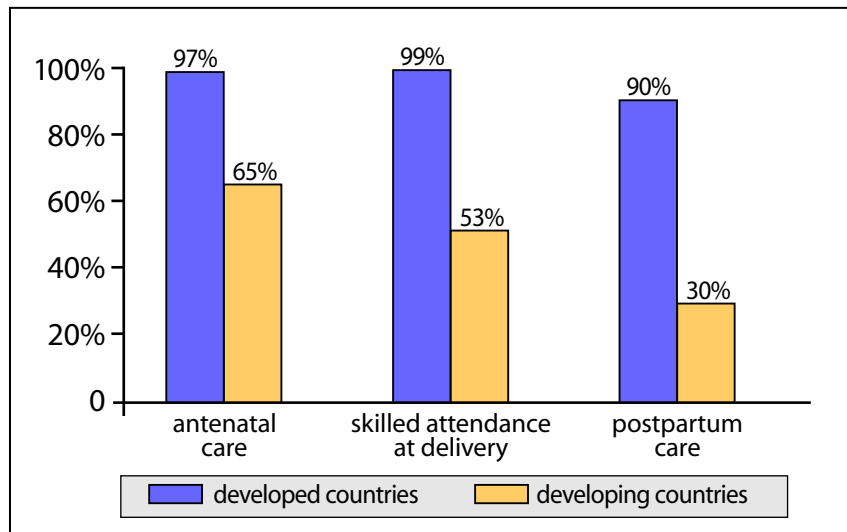
Nonetheless, international and national policy guidelines indicate increasing support for the use of family planning to achieve PMTCT goals. Literature on the topic also reflects a growing recognition of the desire to move forward with family planning and PMTCT service integration, to balance and maximize the impact of other PMTCT approaches.

VI. Appendix 1: Rationale for Balanced PMTCT Approach

Funding for the prevention of mother-to-child transmission (PMTCT) of HIV has primarily been directed at preventing transmission from HIV-infected women to their infants by providing voluntary counseling and testing (VCT) during pregnancy and providing antiretroviral (ARV) drug therapy to infected women and newborns. The impact of this approach is limited, however, for several reasons.

First, many pregnant women in developing countries receive no antenatal care, the usual site of PMTCT interventions. Demographic and Health Surveys indicate that, during a 5-year period in the late 1990s, the live birth rates for women who received no antenatal care (ANC) ranged from 73% in Ethiopia to only 25% in Kenya (ORC MACRO, 2004). Maternal health services—including antenatal care—differ markedly between developing and developed countries (Figure 1) (WHO, 1997).

Figure 1. Global Data: Coverage of Maternal Health Services



Of note, in some countries where the HIV epidemic has become generalized, substantial numbers of women receive no antenatal services (Table 1), further suggesting that a combination of approaches is needed to complement ARV drug interventions.

Table 1. HIV Prevalence and Births to Women Not Receiving Antenatal Care

Country	Estimated Adults (15-49) with HIV/AIDS, end 2001 (%)	Births to Women Not Receiving Antenatal Care (%)
Burkina Faso	6.4	38.6
Cambodia	2.7	55.2
Cote d'Ivoire	9.7	14.3
Ethiopia	6.4	72.6
Mali	2.0	42.4

Sources: ORC Macro, 2004; UNAIDS, 2002.

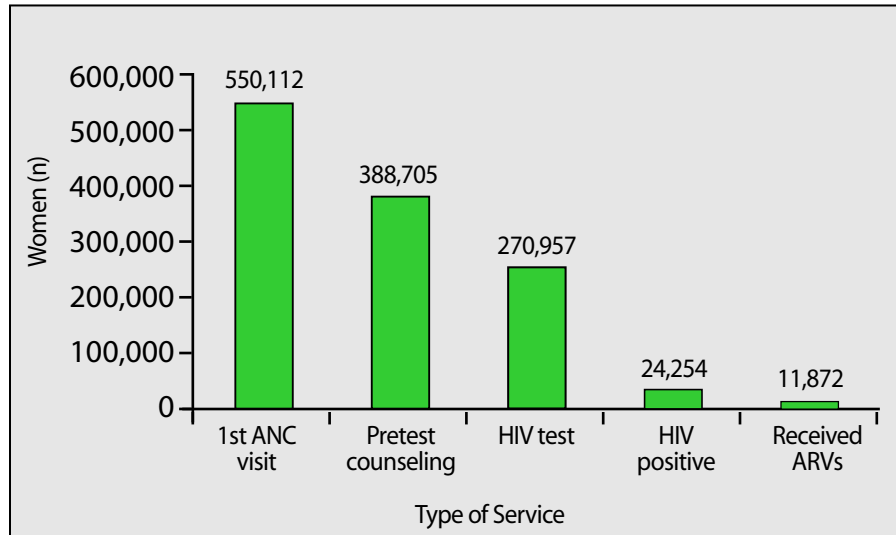
Even if pregnant women receive antenatal care, ARV drug interventions are often unavailable in developing world settings. In developed countries, the introduction of VCT, ARV drug prophylaxis, elective Cesarean delivery, and the safe use of infant formula instead of breastfeeding has reduced MTCT rates to as low as 2% of births among HIV-infected mothers. But, in less-developed countries, antenatal care is limited, testing programs are few, effective interventions are seldom implemented, and prevention of postnatal transmission through breast milk while maintaining adequate infant nutrition is a major challenge (Mofenson and McIntyre, 2000). In sub-Saharan Africa, most HIV-infected women do not know and have little chance of testing their serostatus. Even when their serostatus can be tested, many countries lack the financial resources to provide drug therapy and breast milk substitutes or to manage the interventions (Piot and Coll-Seck, 1999). In Africa, where these interventions generally have not been available and where most mothers breastfeed for a prolonged period, more than a quarter of HIV-infected mothers transmit HIV to their infants (Dabis et al., 2000). According to the update provided by UNAIDS (2003), only 1% of pregnant women in countries heavily affected by HIV/AIDS have access to PMTCT services.

Even when ARV interventions are available, they are often underused. Client drop-off or lack of use of services can occur at several points on the road to successful ARV drug therapy. Clients may receive information and pretest counseling for HIV tests, but their acceptance of VCT remains low in many settings, and some of the tested women do not return for their results. Those who do learn that they are infected may not accept ARV drug therapy (Wilfert, 2003; Bulterys et al., 2002; Buyse et al., 2002; Malonza et al., 2003). For example, a study in the provincial hospital in Mombasa indicated that less than one third of HIV-infected ANC clients took nevirapine during labor. In all, 71% of first-visit pregnant women received pretest counseling, 97% accepted testing, and 14% (n = 348) tested positive, but only 106 actually took nevirapine (Temmerman et al., 2003).

Similar dynamics of client drop-off along the cascade of PMTCT services were reported in an evaluation of U.N.-supported pilot PMTCT projects in 11 countries. Between January 2000 and June 2002, pilot sites counseled some 388,000 women, gave HIV tests to about 270,000 women, and prescribed ARV prophylaxis to almost 12,000 women (Figure 2). On average, however, only 70% of women who visited the PMTCT sites for ANC were counseled on PMTCT. Of the

women who did receive counseling, only about 70% were tested for HIV. Of the women who tested positive for HIV, fewer than half received ARV drug therapy (Rutenberg et al., 2003c).

Figure 2. PMTCT Services at 11 Pilot Sites



Another concern is emerging about the impact of ARV drug interventions for PMTCT. A recent South African study suggests that HIV-infected pregnant women who receive a single dose of the ARV drug nevirapine at delivery—and their infants—could develop drug-resistant HIV later (Martinson et al., 2004).

These and other factors that currently limit the potential impact of PMTCT via drug therapy suggest the wisdom of a balanced combination of PMTCT approaches, which includes preventing HIV infection among uninfected women and preventing unintended pregnancy among those who are infected.

VII. Appendix 2: Overview of Guidelines

An Analysis of Family Planning Content in HIV/AIDS, VCT and PMTCT Policies in 16 countries (Strachan et al., 2004) reviews how family planning has been addressed in international guidelines and in national HIV/AIDS, VCT, and PMTCT policies in 16 high-HIV-prevalence countries (Thailand, Jamaica, and 14 in sub-Saharan Africa). A synopsis follows (Table 1).

Table 1. Analysis of Family Planning Content in HIV/AIDS, VCT, and PMTCT Policies

Documents Reviewed	Number Reviewed	Observations
International VCT and PMTCT guidelines (CDC, UNAIDS, UNICEF, USAID, South African Development Community, and WHO, 1997-2003)	12	All but one explicitly addresses family planning, with focus on provision of information about contraceptives and/or referral to family planning services. Most of the guidance is heavily biased toward preventing pregnancy among HIV-infected women rather than promoting improved reproductive health of all women through contraceptive and condom use for pregnancy and STI/HIV prevention.
National HIV/AIDS policies	16	Nine of the 16 mention family planning. Four refer to it only in terms of equipping family planning clinics with HIV facilities or in PMTCT of HIV/AIDS. The reviewers anticipated that—as has occurred with international guidelines—over time, these policies would reflect increasing recognition of the importance of family planning in HIV/AIDS prevention. They also noted that, “as HIV/AIDS-related policies are revised or developed a good opportunity exists to bring the importance of family planning to the policy development table. National policies are an important first step to ensuring that operational policies (such as VCT and PMTCT guidelines) sufficiently address central issues.”
PMTCT policies (country level and regional)	7	PMTCT guidelines were identified for only 4 of the 16 reviewed countries (Mozambique, Ethiopia, Jamaica, and South Africa [with two guidelines]). All four countries refer to family planning in those guidelines, either indirectly, by referring to safer sex, or directly by mentioning contraceptive options for pregnant HIV-infected women. Two regional PMTCT guidelines also refer to family planning directly.
VCT policies (country level)	9	Six of the nine mention family planning, mostly in terms of counseling and making appropriate referrals. The reviewers note that “of the VCT guidelines reviewed, the comprehensive guidelines prepared by the governments of Ghana, Kenya, and Uganda all do an excellent job of highlighting family planning through the lens of integration, dual protection/dual method use, or information for serodiscordant couples . . . It is also positive that the counseling guidelines for Mozambique and Jamaica refer to the family planning needs of clients.”

Although more than three-quarters of the reviewed documents mention family planning, the analysis highlights a need for greater emphasis in most national HIV/AIDS policies and VCT and PMTCT guidelines on the provision of family planning information and referral to services.

Key gaps to including family planning as a key component in VCT and PMTCT services included:

- Stronger linkages between HIV/AIDS and MCH/FP departments. Most policies do not recognize that these two types of departments must collaborate. In many countries, MCH/FP and national AIDS departments operate as two vertical programs, often with little overlap at both national and local levels.
- Greater emphasis on human and reproductive rights and gender. Most policies lack gender- and reproductive rights-based perspectives.
- Greater emphasis on fertility choices for HIV-infected women. Providing family planning counseling to HIV-positive women often is not a priority. Women who are HIV-infected have special needs that should be taken into consideration.
- Greater emphasis on the timing of family planning counseling. Policies are inconsistent in specifying when family planning counseling should be offered during HIV/AIDS counseling.
- Greater emphasis on dual protection and dual-method use. Only Kenya's VCT guidelines and Ethiopia's PMTCT guidelines emphasize dual protection or dual-method use.
- Further investment and strong linkages to care and stronger programs.
- Broader participation in policy development and review process. This will help ensure that policies and guidelines adequately address the needs of clients.
- Operational challenges. There are significant operational challenges to integrating family planning into VCT and PMTCT. Research on operational policy barriers is needed to identify setting-specific issues and provide options to remove the barriers.
- Adolescents as a specific target group. VCT services need to specifically target adolescents.

The full review of "Family Planning Content in Country PMTCT Policies" from the Strachan et al. (2004) analysis follows:

Mozambique's *Guia para a Prevencao da Transmissao Vertical do HIV* (Guidance On the Prevention of Vertical Transmission) is comprehensive in its attention to family planning. The guidelines note that women, in general, should have access to condoms at all service levels. Women have the right to choose the type of contraceptives they prefer, and the health provider should always counsel on dual protection. Postpartum women practicing abstinence should be

provided information about where to obtain contraception when they want it, and breastfeeding mothers are encouraged to use barrier methods during intercourse to protect them from infection. The guide does suggest that HIV-positive women should be encouraged to avoid future pregnancies. If women want more children, they should limit the number and consider the risk of transmission to the fetus. The guide notes that being HIV-positive is not a contraindication to any contraceptive method, but IUDs should be used with caution. Group counseling sessions should emphasize condom use to prevent reinfection within HIV-positive couples. Finally, the guide suggests that postabortion counseling should be used as an opportunity to begin contraceptive use in addition to distributing condoms.

South Africa has two national guidelines relating to PMTCT. The first, *Prevention of Mother-to-Child HIV Transmission and Management of HIV Positive Pregnant Women (2000)*, frames HIV as a reproductive right, recognizes the importance of primary prevention, and recommends a discussion of family planning in the posttest setting.

Interventions: Preventing new HIV infections: New HIV infection during pregnancy (and breastfeeding) may increase HIV viraemia, which will increase the risk of MTCT. Pregnant women should be advised on safer sexual practices, including the importance of correct and consistent condom use. (page 8)

Management: Voluntary Counseling and Testing: VCT must be available to all pregnant women. The benefits to a woman of knowing her status include the ability to make informed choices about infant feeding options, earlier access to care for both mother and child, the opportunity to terminate pregnancy where desired and legal, and the ability to make informed decision about sexual practices and future fertility. VCT can also promote openness and acceptance of HIV as an important social issue. (page 12)

Issues to consider when counseling HIV positive women:

- Future Fertility Management (page 13)
- Post Delivery–Prevention of STIs and family planning: It is recommended to provide barrier methods for the prevention of genital infections and future pregnancies, after comprehensive counseling. Discuss other forms of contraception, including permanent sterilization, both male (vasectomy) and female (tubal ligation). (page 18)
- Other considerations: Human rights, including reproductive rights and the rights to informed choices and confidentiality, should be respected. This means that the social environment must enable women and families to make informed choices and cope with the choices they make. (page 19)

The *Feeding of Infants of HIV Positive Mothers* (2000) notes the importance of access to family planning:

Since the primary purpose of counseling and testing is to encourage informed decision-making and behavior, it is very important that individuals have access to the necessary services they need. These may include family planning (to avoid pregnancy), condoms to practice safer sex during pregnancy and breastfeeding, primary care services for HIV care for adults and children and ongoing counseling services for individuals needing further support. (page 14)

The Provincial Administration of the Western Cape, South Africa, produced *Prevention of Mother to Child Transmission of HIV: Full Protocol* (2002) to guide health workers implementing PMTCT in the Western Cape Province. This protocol mentions “safer sex” twice in the context of posttest counseling, and family planning is explicitly mentioned once on a referral form.

For HIV post-test counseling:

- If a woman tests HIV-negative, she receives post-test counseling focused on how to maintain her HIV-negative status, with a focus on her health, safer sexual practices, and the high risk of transmission to her baby should she become infected during pregnancy or breast-feeding. The window period should be explained once more and she should receive routine antenatal care. (page 5)
- If a woman tests HIV-positive...the newly diagnosed HIV-positive woman is also provided with: information about safer sex during pregnancy and the long term. (page 5)

The Provincial Administration of the Western Cape, South Africa, also produced *Breastfeeding and HIV: an Information Booklet for Health Workers in South Africa* (2002). Family planning is mentioned in terms of preventing pregnancy in HIV-positive women and preventing infection during pregnancy:

The best way to avoid MTCT is to prevent women of reproductive age from becoming HIV-infected by targeting and discouraging high-risk behaviour or to provide good family planning so that HIV-infected women can avoid pregnancy. HIV-uninfected women who are breastfeeding their infants should avoid HIV high-risk behaviour and take precautionary steps (e.g., using condoms) to avoid becoming HIV infected. (page 8)

Unprotected sex during pregnancy and lactation not only places a woman at risk of HIV but also increases the risk to her infant. It is important for all breastfeeding women to avoid high-risk behaviour and take steps (e.g., use condoms during sexual intercourse) to prevent becoming infected or re-infected with HIV while they are breastfeeding. (page 11)

Jamaica's *Prevention of Mother to Child Transmission of HIV (PMTCT): Implementation Guidelines for Health Care Workers* (2003) not only mentions the importance of family planning but also names specific contraceptive methods and emphasizes making informed reproductive health choices.

- Primary Prevention: Promoting use of an effective family planning method (e.g., tubal ligation, Depo-Provera, oral contraceptives, or Norplant). (page 2)
- Secondary Prevention: Ensuring that HIV-infected females and their partners make informed reproductive choices. (page 2)
- Guidelines on pre- and posttest counseling include an emphasis on family planning: Pre- and posttest counseling goals: Make informed choices about contraception and condom use. (page 4)
- Pregnant women who test HIV-negative: Understand and maintain safer sex behaviour (including abstinence, partner reduction, and condom use) to prevent HIV infection in the future. (page 5)
- Pregnant women who test HIV-positive: Make informed choices about sexual behaviour (condom use) and future fertility, including tubal ligation or other long-term method such as Depo-Provera, Norplant, etc. (page 5)
- Positive result: Discuss obtaining needed medical care, family planning options, and testing for sexually transmitted diseases and TB. Discuss how to reduce her risks and protect others in the future. (page 7)
- Postdelivery follow-up in HIV-positive mother: Counseled at postnatal clinic about family planning methods and choices, including tubal ligation and Norplant. (page 14)
- Other pregnancy outcomes: Long-term contraceptive and counseling should be offered to the mother.

Ethiopia's *National Guidelines on the Prevention of Mother-to-Child Transmission of HIV in Ethiopia* (2001) are comprehensive and include two main sections, one on technical strategies for PMTCT and one on program management of PMTCT. Technical strategies for PMTCT include care for the mother, care for the infant, infection prevention measures, communication strategies, home-based care and social support, and program components by level of care. The second section on program management includes information on planning PMTCT programs, drugs and formula supply management, quality care assurance, human capacity building and training needs, monitoring and evaluation, and management information systems. The guidelines are presented in a framework of protecting reproductive rights, and family planning services are cited as one of the seven main components of a PMTCT package.

Under Section I: Technical Guidelines for PMTCT, when planning a PMTCT program the guidelines state: Consider respecting women's rights, and particularly:

On deciding on child bearing: the number, the timing, etc. by providing access to family planning information and methods. (page 5)

Furthermore, the guidelines state:

Program planners should keep in mind that any strategy to implement PMTCT should be an integral part of promotion of existing maternal and child services in any locality. (page 6)

Family planning services are cited here as one of the seven program components to be included in the planning process.

In the summary of PMTCT program components by level of care, an expected task at the health-post level is to "counsel and provide FP to all women in reproductive age." Family planning is not mentioned at the community, health center, rural hospital, regional hospital, and referral hospital levels.

Under maternal and fetal care, the introductory paragraph states:

According to UNAIDS and WHO, prevention of MTCT can be commenced by reducing transmission of the virus to women in the reproductive age group; prevention of pregnancy through use of FP services, and termination of pregnancy in HIV positive women where the law of the land permits. (page 9)

Under preconception care, the guidance notes:

Prevention of pregnancy by use of family planning methods for those who do not want more children shall be given due emphasis particularly in countries like ours, where safe abortion services are restricted by law. (page 11)

A benefit of VCT is cited as "Knowledge of her HIV status enables the woman to take decision on continuation of the pregnancy and on future fertility." (page 12) Family planning is not listed as a component of pre- or posttesting counseling, however, only in the context of an issue to be discussed when counseling HIV-positive pregnant women. The section on postpartum care does contain a paragraph on contraception and condom use:

Because of the medical complications and the extra cost discussed above, women with HIV shall be given contraceptive counseling and helped to make an informed decision. In addition, those mothers who elected not to breastfeed shall be informed to resume their chosen method as soon as possible since the contraceptive benefit of breastfeeding is absent. Condom use shall be encouraged postpartum as well. (page 19)

In the infant feeding options section, family planning is an issue to be considered for replacement feeding.

Women who do not breast feed lose the child spacing benefit of breastfeeding. It is essential that HIV positive women have access to appropriate family planning methods. (page 22)

In the communication strategy section, family planning is one of the seven issues that should be addressed through a PMTCT communication strategy.

Mothers should be taught not to get pregnant once they are HIV infected and various FP methods should be used. Particularly use of condoms should be advocated for its dual purpose of FP and prevention of STIs. (page 29)

In the section on home-based care and social support to mothers and children living with HIV/AIDS, one of the services that should be offered is:

...information and education on STIs/HIV/AIDS and provision of condoms in order to promote responsible/safe sexual behavior—for family planning and prevent the spread of HIV/AIDS and other STIs. (page 30)

It also sets the stage for in-depth research that POLICY was to conduct in Jamaica, South Africa, and Uganda in 2003–2004 to investigate barriers to the provision of family planning in conjunction with VCT and PMTCT services, the extent to which family planning services has and can be integrated into VCT and PMTCT programs and services, and specific needs of service providers and clients in providing and accessing these services.

VIII. Appendix 3: Pregnancy Status, HIV Status, and Service Delivery Needs

HIV Status of Woman	Pregnancy Status of Woman				
	Not Pregnant		Pregnant	Postpartum	
	Wants Future Pregnancy	Does Not Want Future Pregnancy		Wants Future Pregnancy	Does Not Want Future Pregnancy
Confirmed HIV+					
Spouse/partner is confirmed HIV +	C,D,H	E,H	F,I,H	D,H	E,H
Spouse/partner is confirmed HIV-	C,D,G,H	C,E,G,H	C,F,G,I,H	C,D,G,H	C,E,G,H
Spouse/partner's HIV status unknown	B,C,D,H	B,E,H	B,F,I,H	B,D,H	B,E,H
Confirmed HIV-					
Spouse/partner is confirmed HIV+	C,D,G,H	C,E,G,H	C,G,H,I	C,D,G,H	C,E,G,H
Spouse/partner is confirmed HIV-	D	E	G,I	D	E
Spouse/partner's HIV status unknown	B,D	B,E	B,I	B,D	B,E
Unknown HIV status					
Spouse/partner is confirmed HIV+	A,D,G,H	A,E,G,H	A,G,H,I	A,D,G,H	A,E,G,H
Spouse/partner is confirmed HIV-	A,D	A,E	A,G,I	A,D	A,E
Spouse/partner's HIV status unknown	A,B,D	A,B,E	A,B,I	A,B,D	A,B,E
Possible Interventions:					
A. Suggest VCT for woman					
B. Suggest VCT for spouse/partner					
C. Suggest couple counseling					
D. Offer FP counseling & services for spacing					
E. Suggest FP counseling & services for limitation					
F. Offer PMTCT services					
G. Offer HIV/AIDS education to prevent spouse/partner from HIV infection					
H. Refer for HIV/AIDS-related social and/or health services, if needed					
I. Refer for ANC care					
Source: Preble EA, Huber D, Piwoz EG. Family Planning and the Prevention of Mother-to-Child Transmission of HIV: Technical and Programmatic Issues. Arlington, VA: Advance Africa, 2003.					

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