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**ARE COST SAVINGS INCURRED BY
OFFERING FAMILY PLANNING
SERVICES AT EMERGENCY PLAN
HIV/AIDS CARE AND TREATMENT
FACILITIES?**

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Abbreviations

AIDS	acquired immune deficiency syndrome
ART	antiretroviral therapy
ARV	antiretroviral
FP	family planning
HIV	human immunodeficiency virus
OVC	orphans and vulnerable children
PMTCT	prevention of mother-to-child transmission
VCT	voluntary counseling and testing

Introduction

“Prevention is a critical component of the [President’s] Emergency Plan [for AIDS Relief]. With 14,000 new HIV infections every day, the tide cannot be turned without effective evidence-based prevention efforts” (Office of the United States Global AIDS Coordinator, 2005, p. 12). Family planning (FP) services offer the Emergency Plan an important opportunity to reduce new HIV infections. By preventing unplanned pregnancies among HIV-positive women, the Emergency Plan can reduce the need for and costs related to providing prevention of mother-to-child transmission (PMTCT) services, care for HIV-positive children, and care and support for orphans. Although the Emergency Plan encourages PMTCT programs to include FP counseling or referrals in their minimum package of services and government policies also encourage the wider provision of family planning in HIV/AIDS services, few resources are currently committed to FP service provision as part of HIV/AIDS care and treatment services.

The purpose of this paper is to examine the costs and savings associated with making FP services available at HIV/AIDS treatment centers. The paper will summarize study findings that discuss how providing contraception to HIV-negative and HIV-positive women can help to prevent new infections among women and reduce the risk of a child becoming HIV positive due to an unintended pregnancy or of subsequently becoming an orphan because the child’s mother or father dies of AIDS-related causes. The paper will also present estimates of the costs and savings of including family planning in existing HIV-related care and treatment services in the original 14 Emergency Plan focus countries.

Background

Although family planning is recognized as a key component of the Emergency Plan's minimum package of PMTCT services and is supported by the World Health Organization as one of the four cornerstones for a comprehensive PMTCT program, overall rates of contraceptive use among HIV-positive women continue to be quite low and high rates of unmet need for family planning persist.¹ A study among urban Rwandan women after HIV testing and counseling found that only 23 percent of HIV-positive women were using contraception (Allen et al., 1993). Research conducted in the initial 14 focus countries included in the United States International Mother and Child HIV Prevention Initiative² also found a high unmet need for family planning. Among married women of reproductive age, only 18 percent were currently using a modern contraceptive method, while 24 percent who wished to limit or space their births were not using contraception. A study that followed 47 HIV-positive women in Kigali, Rwanda, between 1988 and 1991 found that 21 women gave birth to 23 children and only seven of these children were wanted by both the mother and father (Keogh et al., 1994). A study of 148 HIV-positive women in Sao Paulo, Brazil, found that many women lacked information about available contraceptive methods or the best way to get pregnant while trying to minimize the dangers of infection and re-infection (Santos et al., 1998). In Abidjan, Côte d'Ivoire, a study of 149 HIV-positive women, who were followed postpartum, found that only 39 percent were using contraceptives. Half of their subsequent pregnancies were unintended and one-third of these were terminated through induced abortions (Desgrees du Lou et al., 2002).

This research highlights the need to increase positive women's access to FP services in order to limit unplanned pregnancies, increase the practice of birth spacing for those who desire children, and reduce the incidence of mother-to-child transmission of HIV. Previous research has found that integrating FP and HIV/AIDS services helps to achieve this goal and ultimately improve health outcomes. Evidence supporting these themes is provided in the sections that follow.

Increased Access to Care

The integration of FP and HIV/AIDS services may help HIV-positive women to overcome barriers to improving their reproductive health. For example, the additional training provided to healthcare providers at integrated service centers has the potential to decrease stigma and discrimination and increase the ability of HIV-positive women to make their own informed choices about their reproductive health. One Ugandan woman interviewed as part of a study on FP integration with HIV/AIDS services commented, "Obtaining family planning services from here [voluntary counseling and testing (VCT) clinic] would save us from the embarrassment we face when we go to FP clinics outside The AIDS Support Organization. You know service providers in such places ask us very funny questions like 'you are young, why do you go for this family planning?' And since you fear to disclose your status, you don't answer" (Asiimwe et al., 2005). Reports from a pilot FP/antiretroviral (ARV) integration project in Ghana indicate that HIV-positive women would like providers to discuss FP options in addition to ARV treatment during their visit (Malarcher, 2005). Integrating services also increases access because of the cost and time savings for individuals in receiving multiple services in one location. Furthermore, offering these services

¹ Unmet need is defined as the proportion of women of reproductive age that wish to space or limit their births but are not currently using a contraceptive method.

² Countries involved in the U.S. International Mother and Child HIV Prevention Initiative are Botswana, Côte d'Ivoire, Ethiopia, Guyana, Haiti, Kenya, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia.

in one location can help to address all unintended outcomes of unprotected sex, such as pregnancy, sexually transmitted infections, and HIV.

FP and HIV programs have traditionally operated vertically, with FP services being offered to married women and HIV programming targeting 15–49 year-olds who are at high risk for HIV/AIDS. However, the target audience for HIV services (VCT, PMTCT, ARV) would also substantially benefit from family planning, as these people are most likely sexually active and fertile. Similarly, FP clients would also benefit from HIV information and services. Furthermore, the clientele at HIV service centers is broader than that traditionally found at FP centers and is more likely to include men and youth—two groups that often do not have access to FP information and services. Introducing FP (condoms) to male partners as both a means of planning pregnancies and as part of the dual method approach to preventing HIV infection or re-infection can increase women’s control over her own health and that of her child. A study of 2,600 men and women in Haiti found, through focus groups, that women felt it was easier to convince partners to accept condoms under the guise of family planning than to confront the more threatening issue of AIDS prevention. The woman’s partner can interpret her request for condoms as evidence of infidelity and may respond with physical abuse, withdrawal of economic support, or abandonment (Ulin et al., 1995).

Improved Health Outcomes

A recent study conducted in Rakai, Uganda, reported that the risk of acquiring HIV doubled during pregnancy. In the study, sexually active women who were not pregnant or lactating had a 1.1 per 100 person-years incidence rate, while women who were pregnant had a 2.3 incidence rate and women who were lactating had a 1.3 incidence rate (Gray et al., 2005). These results clearly illustrate the importance of ensuring access to FP information and services for HIV-positive and HIV-negative women, thereby enabling them to make informed reproductive choices and avoid unintended pregnancies and HIV infection before and during pregnancy.

Child mortality and infection rates and the number of orphans are greatly decreased when PMTCT and family planning are provided simultaneously. An analysis of the effect of adding family planning to PMTCT sites in the 14 focus countries suggests that this integration could quadruple the number of child deaths averted by PMTCT alone and, in addition, avert 105,000 orphans and save 12,000 mothers’ lives (USAID, 2003).

Although the expansion of antiretroviral therapy (ART) as a means of preventing mother-to-child transmission has significantly decreased the number of HIV-positive children born to HIV-positive mothers, the risks of ART-related negative effects on the fetus and newborn remain unknown. Clinical trials in human pregnancy have been conducted for several drugs, including zidovudine and nevirapine. In these trials, there was no increase in the number of birth defects in infants between the drug and placebo groups. However, there was evidence of toxicity for pregnant women and fetuses with certain ARVs³ (Public Health Service Task Force, 2003; Newell, 2001). Until more is understood about the short- and long-term benefits and risks of ARVs, the correct and consistent use of family planning methods can safeguard the health of HIV-positive women and reduce the chances of any potentially harmful side effects.

³ Cases of both fatal and nonfatal lactic acidosis were reported in women using combination therapy that included ddI (didanosine) and d4T (stavudine). Increases in premature delivery were seen in association with combination therapy including protease inhibitors. See cited articles for more information.

Based on the evidence, it is clear that integrating FP and HIV/AIDS services will help reduce unmet need for family planning among HIV-positive women and help to achieve the Emergency Plan's goals, including a reduction in the number of new HIV infections resulting from mother-to-child transmission. However, because resources are limited, policymakers are concerned about the financial impact of integrating FP services into HIV/AIDS services. Does including family planning in HIV-related care and treatment services result in increased cost savings due to infections averted? We have addressed this question by estimating the costs and savings of including family planning in existing HIV-related care and treatment services in the original 14 Emergency Plan focus countries.

Methods

The provision of FP services at HIV/AIDS treatment sites will encourage some individuals to access these services for the first time. The costs of providing family planning are the costs of providing services to these new users, plus the additional costs incurred when couples that are using family planning from another source switch to the integrated treatment site because of convenience. We assume that approximately 50 percent of the current modern contraceptive users accessing HIV treatment would switch to the integrated treatment site; we use a range of 25–75 percent for the purpose of sensitivity testing. To determine the number of new FP users, we use the proportion of couples with an unmet need for family planning as an upper limit. As a lower limit, we use the proportion of women who have an unmet need for family planning and report that they do not intend to use family planning in the near future because of a lack of knowledge or access. The total costs of providing FP services to users who begin accessing family planning at the HIV treatment centers supported by the Emergency Plan is then calculated based on the total number of clients that have switched, plus the new FP users multiplied by the estimated cost per user of about \$18 (Conly et al., 1995).⁴

The cost savings associated with averted births derive from expenditures that are not required for PMTCT treatment, treatment for HIV-positive children, and orphan support. Each pregnancy of an HIV-positive woman would require PMTCT counseling, testing, and treatment. If the pregnancy is avoided as a result of family planning, the PMTCT expenditure is saved.

With an increase in users of FP services, future births can be avoided. Based on typical contraceptive use patterns in sub-Saharan Africa, we assume that one birth is averted for every 2.4 person-years of FP use.

The total cost savings for PMTCT are based on the total number of births averted by HIV-positive women due to the uptake of family planning multiplied by an estimated cost per PMTCT user of about \$50 (Republic of Kenya, Ministry of Health, 2003). The total cost savings for PMTCT is adjusted based on actual PMTCT coverage rates. We assume a range of 8–80 percent for PMTCT coverage in each country. The low range of 8 percent is based on the estimated level of PMTCT coverage cited in the 2003 Coverage Survey (USAID et al., 2003). The high range is based on the United Nations General Assembly Special Session's goal for PMTCT coverage.

Depending on the coverage and efficacy of PMTCT services, some percentage of children born to HIV-positive women will be infected and require treatment. We use the present value⁵ of future treatment costs to measure the savings from not having to treat a child. This is estimated to be \$3,500 (Stover et al., forthcoming in *Science*). This estimate is multiplied by the total number of infected births avoided to determine the total treatment cost savings.

Children born to HIV-positive mothers under treatment have a high probability of becoming orphans at some time in the future. Thus, there are potential future savings of averting these support costs. The United Nations Children's Fund has estimated the annual costs of comprehensive support at \$224–652 per child, per year (Stover et al., unpublished). We assume that each orphan would need 11 years of

⁴ This is a comprehensive cost estimate that includes healthcare worker salaries, FP commodities, facilities, training, and research costs.

⁵ Assumes a 5 percent discount rate.

support and that it would be provided only to orphans living in families below the poverty line. The total savings are discounted by 3–7 percent⁶ annually to determine the present value of this expenditure.

The assumptions above are applied to the population receiving ART or other HIV-related treatment, as reported in the 2004 Emergency Plan Annual Report. As the number of people on treatment grows in future years, the costs and benefits of family planning will grow accordingly, but the ratio of costs to savings would likely remain approximately constant.

To increase the sensitivity of the analysis, a Monte Carlo analysis was used to determine the range in outcomes. Ranges were included for the percent of patients that are female (40–60%), the percent of current family planning users that would switch to receiving services at the treatment centers (25–75%), the percent of new users due to availability of family planning at the treatment centers (1–41%), coverage of PMTCT (8–80%), annual OVC support costs (\$224–652), and the annual discount rate (3–7%).

⁶ A 3–7 percent discount rate was used to accommodate a workable range around the 5 percent average that is most often used in studies on the topic.

Results

The annual costs and savings of including FP services in HIV/AIDS care and treatment programs supported by the Emergency Plan are shown in Table 1. The costs range from almost \$2 million in South Africa to as low as \$3,000 in Guyana, with a median cost of \$115,000 per year. The savings generated by the use of family planning range from \$51,000 in Guyana to \$19 million in Uganda, with a median of \$3.6 million. The ratio of savings to costs varied from 7.6 in South Africa to 39.1 in Ethiopia, with a median of 25. The cost difference was largely influenced by the range in contraceptive prevalence across these countries. For example, in Ethiopia, the contraceptive prevalence rate was 5 percent among women of reproductive age in 2000, whereas the contraceptive rate in South Africa was 49 percent in 1998 among women of reproductive age. Since we assume 25–75 percent of current HIV-positive contraceptive users will switch to HIV/AIDS treatment sites as their source for family planning, the overall costs of providing family planning becomes higher and the average ratio of savings to cost becomes lower with increases in contraceptive prevalence.

Table 1. Annual Costs and Savings of Including FP Services in HIV/AIDS Care and Treatment Programs

Country	Average annual cost of providing family planning services to HIV patients (\$)	Average savings in PMTCT treatment and OVC support costs avoided (\$)	Average net savings (\$)	Average ratio of savings to cost
Botswana	340,000	7,600,000	7,300,000	21.2
Côte d'Ivoire	110,000	3,500,000	3,400,000	31.1
Ethiopia	93,000	3,700,000	3,600,000	39.1
Guyana	3,300	51,000	48,000	14.5
Haiti	150,000	5,100,000	4,900,000	32.3
Kenya	230,000	4,700,000	4,400,000	19.4
Mozambique	92,000	2,500,000	2,400,000	26.3
Namibia	88,000	1,200,000	1,100,000	12.4
Nigeria	120,000	3,900,000	3,700,000	31.1
Rwanda	38,000	1,500,000	1,500,000	38.4
South Africa	1,900,000	16,000,000	14,000,000	7.6
Tanzania	43,000	1,100,000	1,000,000	23.8
Uganda	660,000	19,000,000	18,000,000	27.7
Zambia	120,000	3,100,000	2,900,000	24.0

Figure 1 compares the median total costs of providing family planning to HIV patients to the savings in PMTCT treatment and OVC support costs. As shown, the median cost for providing FP services to all 14 Emergency Plan countries implementing HIV/AIDS care and treatment is about \$4 million, ranging between a lower and upper quartile of \$3.6–4.4 million. The median savings is approximately \$72 million, with a range of \$62–82 million. Thus, the savings are larger than the costs under almost any combination of input assumptions.

Figure 1. Costs and Savings of Providing FP to HIV Clients

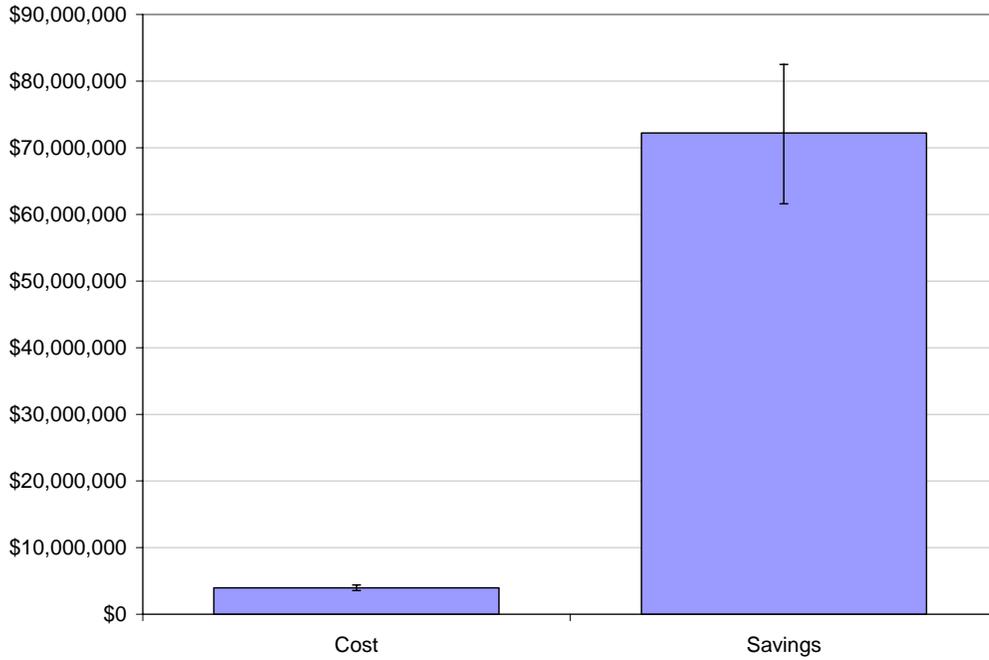
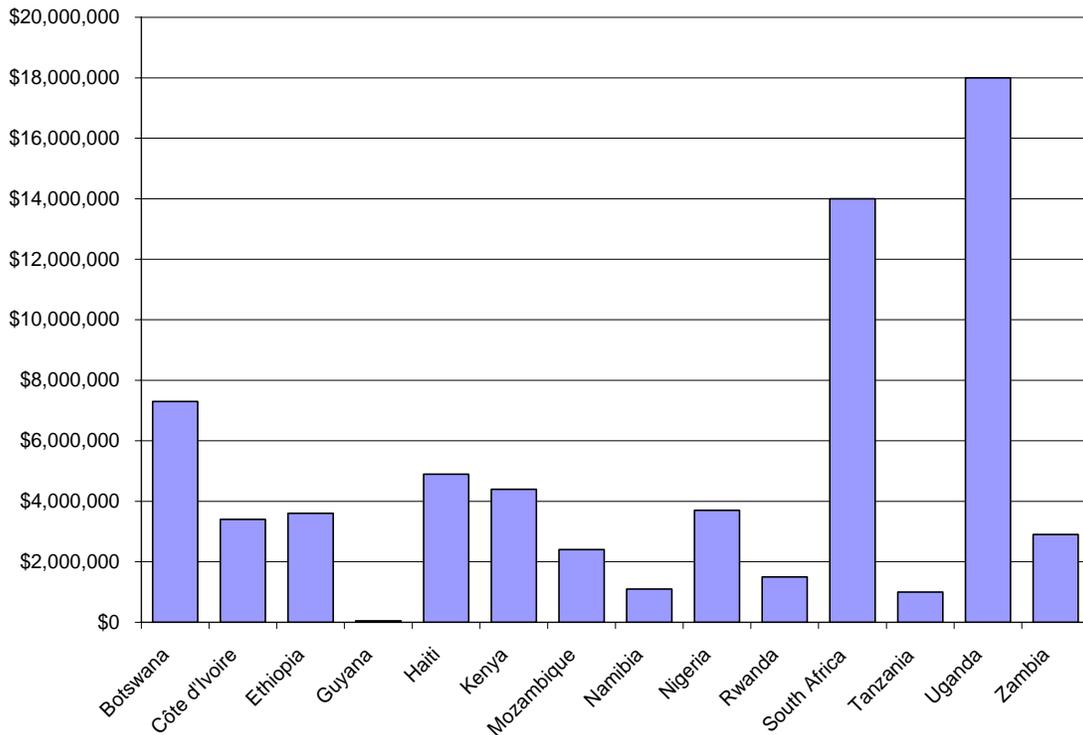


Figure 2 shows the net savings by country of providing FP services in lieu of PMTCT services and treatment and support for OVC. South Africa and Uganda had the most significant savings of approximately \$14 and \$18 million, respectively.

Figure 2. Net Savings of Providing FP Services in Lieu of PMTCT Services and Treatment and Support for OVC



Conclusion

High-level support for integrated services is evident by a recent review of 12 international VCT and PMTCT policy guidelines produced between 1997 and 2003; all but one of the guidelines explicitly addresses family planning, with a focus on providing information about contraceptives or referring clients to FP services (Strachan et al., 2004). The findings reported in this paper provide further evidence to support the inclusion of family planning in HIV/AIDS treatment and care programs—integration will both increase access to healthcare and save costs as a result of eliminating the need to provide PMTCT services, treatment to HIV-infected children, and care and support to orphans. We found that providing family planning at treatment centers resulted in savings of almost \$25 for every dollar spent. Of course, the additional expenditures and savings may not accrue in the same budget; the additional family planning expenditures might come from a Ministry of Health budget for maternal and child health or from a particular donor, while the future savings might accrue in a Ministry of Health AIDS budget or be credited to donors supporting treatment or orphans and vulnerable children. Nonetheless, the total savings to society are substantial; therefore, policymakers should consider increasing the resources allocated to FP services as a means to avert infections and generate cost savings that can then be applied to new programs aimed at achieving the Emergency Plan goals.

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