

CALL TO ACTION

End of Project Report, 2002–2010



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ELIZABETH GLASER
PEDIATRIC AIDS
FOUNDATION

Call to Action Project (GPH-A-00-02-00011-00)

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Implemented by:

Elizabeth Glaser Pediatric AIDS Foundation

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We would also like to acknowledge the tireless efforts of our partners and staff around the world who have been on the front lines of our fight against pediatric AIDS. And of course, the women, children and families in the countries where we work for facing HIV with courage and being the champions of our mission.

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Abbreviations and Acronyms

AIDS	acquired immune deficiency syndrome	MOHSW	Ministry of Health and Social Welfare
ANC	antenatal care	MTCT	mother-to-child transmission (of HIV)
ART	antiretroviral therapy	NASCOP	National AIDS and STD Control Program (Kenya)
ARV	antiretroviral	NVP	nevirapine
AZT	zidovudine	PATH	Program for Appropriate Technology in Health
BASICS	Basics Support for Institutionalizing Child Survival	PEARL	PMTCT Effectiveness in Africa: Research and Linkages to Care and Treatment (study)
CDC	United States Centers for Disease Control and Prevention	PEPFAR	President's Emergency Plan for AIDS Relief
CTA	Call to Action (project)	PMTCT	prevention of mother-to-child transmission (of HIV)
CTX	cotrimoxazole	sd-NVP	single-dose nevirapine
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation	TBA	traditional birth attendant
FHI	Family Health International	TRAC	Treatment and Research AIDS Center (Rwanda)
FP	family planning	UNAIDS	Joint United Nations Programme on HIV/AIDS
GLASER	Global AIDS System for Evaluation and Reporting	UNICEF	United Nations Children's Fund
HIV	human immunodeficiency virus	USAID	United States Agency for International Development
IAS	International AIDS Society	USG	United States government
IATT	Inter-Agency Task Team	VCT	voluntary counseling and testing
ISPED	l'Institut de Santé Publique, d'Epidémiologie et de Développement	WHO	World Health Organization
IYCF	infant and young child feeding		
M&E	monitoring and evaluation		
MCH	maternal and child health		

Executive Summary

This is the final programmatic report submitted to the United States Agency for International Development (USAID) for the Call to Action project, with distribution to the broader HIV/AIDS community as a secondary audience.

It is estimated that in 2008 alone, mother-to-child transmission (MTCT) of HIV was responsible for nearly 430,000 new HIV infections in children and 280,000 infant and child deaths from AIDS-related causes. While global progress in the prevention of mother-to-child transmission (PMTCT) has been steady, access and utilization are still insufficient to eradicate pediatric AIDS. The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF or the Foundation) believes that elimination of pediatric AIDS is indeed possible.

USAID support through the global USAID-funded Call to Action project (CTA) during 2002–2010 has enabled the Foundation and its partners to move closer to achieving this goal and to understanding how to move forward to ensure a generation of children free from HIV. Since the project's inception in 2002, the Foundation has supported more than 2,600 PMTCT sites in 14 countries. Through the support of USAID (and critical private funding from the Bill & Melinda Gates Foundation, Johnson & Johnson, Abbott Fund, Ronald McDonald House Charities, Jewelers for Children, Glaxo Smith Kline, Boehringer Ingelheim, UNICEF and others), EGPAF has provided high-quality PMTCT services to nearly 4 million pregnant women and provided PMTCT prophylaxis to 332,000 HIV-positive pregnant women and to more than 213,500 infants. This end-of-project report documents the history, results, impact, and lessons learned during the eight-year CTA project.

The impact of PMTCT programs on reducing pediatric AIDS is dependent upon ensuring access to and uptake of all

PMTCT interventions throughout the period of pregnancy, labor and delivery, and postpartum care. The Foundation has excelled in ensuring uptake, and by the end of 2009, CTA program data showed that 97% of pregnant women in EGPAF-supported sites received HIV counseling, 88% of those counseled accepted and received HIV testing, 90% of HIV-positive women received antiretroviral (ARV) prophylaxis, and 61% of their HIV-exposed infants received ARV prophylaxis. The Foundation's accomplishments are the result of a wide range of partnerships with many implementing organizations and donors.

These successes were achieved by continual attention to improving all aspects of the Foundation's PMTCT efforts including overcoming barriers to PMTCT access, improving counseling and testing services, providing efficacious ARV prophylaxis and treatment, offering PMTCT in labor and delivery settings, addressing infant feeding issues and challenges, and developing optimal monitoring and evaluation systems. In addition, programs were further improved by working toward a comprehensive PMTCT approach as outlined by the World Health Organization (WHO), strengthening health delivery systems, providing technical leadership at the country and global levels, and widely sharing key lessons learned. Examples of the evolution of these efforts and data demonstrating their successes are reviewed in this report.

Future challenges for the Foundation and the global community of PMTCT providers include further broadening coverage and quality of PMTCT services and implementing the 2009 WHO recommendations related to ARV prophylaxis and treatment.



I. BACKGROUND

A. Children, HIV, and PMTCT

In 2008, UNAIDS estimated that 2.1 million children under 15 years of age were living with HIV.¹ Of these, 280,000 died from AIDS-related causes. In just one year, 430,000 children were newly infected with HIV, and nearly all of these infections were caused by mother-to-child transmission (MTCT), also referred to as vertical or perinatal transmission. MTCT accounts for a substantial portion of all new HIV infections in many African countries, where the epidemic is most severe. Transmission can occur from an HIV-infected woman to her infant in utero, during labor and delivery, or postpartum through breastfeeding.

Research on the prevention of mother-to-child transmission (PMTCT) has demonstrated that PMTCT programs could significantly reduce MTCT through various interventions. In particular, they have shown that under optimal conditions (such as those currently found in the United States), the provision of antiretroviral (ARV) prophylaxis, safe infant feeding practices, and safe delivery can reduce transmission to about 1%–2%, compared with an estimated 30%–35% with no interventions.

Without antiretroviral treatment (ART), half of all HIV-infected infants will die before they reach their second birthday.² Recognizing the potential for reducing global child deaths from HIV/AIDS, the United Nations General Assembly adopted the following ambitious goals:

“By 2005, reduce the proportion of infants with HIV by 20 percent and by 50 percent by 2010, by ensuring that 80 percent of pregnant women accessing antenatal care have information, counseling and other HIV-prevention services available to them, increasing the availability of and providing access for HIV-infected women and babies to effective treatment to reduce mother-to-child transmission of HIV, as well as through effective interventions for HIV-infected women, including voluntary and confidential counseling and testing, access to treatment, especially antiretroviral therapy and, where appropriate, breast milk substitutes and the provision of a continuum of care.”³

Despite this, a number of challenges have prevented PMTCT programs in resource-constrained countries from achieving the same results seen in the United States and other resource-rich countries. It has been difficult to establish PMTCT policy and program recommendations for resource-constrained settings that have similar success but are realistic and feasible. Even greater challenges have been faced in implementation of PMTCT programs: how to scale up services; how to overcome stigma and discrimination that form barriers to pregnant women’s uptake of services; how to meet the demands for trained staff, laboratory capacity, and pharmaceuticals; how to find physical space in crowded facilities; and how to agree upon common indicators to measure progress.

While global progress in addressing MTCT has been steady, access to and utilization of PMTCT services remain insufficient at all stages of the PMTCT continuum (during pregnancy, labor and delivery, and the critical postpartum period) for multiple reasons. United Nations agencies report annually on the progress of PMTCT in low- and middle-income countries according to several indicators⁴ and found that in 2008 only—

- 21% of pregnant women were tested for HIV (up from 7% in 2004);
- 45% of HIV-positive pregnant women received ARV prophylaxis regimens for PMTCT or ART (compared with 10% in 2004); and
- 32% of infants born to HIV-infected mothers were given ARV prophylaxis for PMTCT at birth (up from 6% in 2004).

B. The Foundation as a Global Leader in PMTCT

The Call to Action Initiative

Early in the epidemic, the international community responded to the HIV/AIDS-related problems of children with an impressive level of support and funding. The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF or the Foundation), cofounded in 1988 by Elizabeth Glaser, Susan DeLaurentis, and Susie Zeegen, emerged

ELIZABETH GLASER PEDIATRIC AIDS FOUNDATION MISSION:

To prevent pediatric HIV infection and eradicate pediatric AIDS through research, advocacy, and prevention and treatment programs.

CALL TO ACTION OBJECTIVES

Improve access to quality PMTCT services

Expand care and support services

Enhance technical leadership

Document successful program models

Figure 1: Objectives of the Call to Action project

at the earliest stage and remains a global leader at the forefront of technical, policy, advocacy, and funding efforts to confront the issue of HIV/AIDS in children.

EGPAF's multinational PMTCT approach, named Call to Action (CTA), was launched in 1999 with the help of a Foundation commitment of \$1 million, which initially funded eight sites in several African nations and Thailand through private funds. The recent HIVNET 012 clinical trial conducted in Uganda that demonstrated the efficacy of ARV medication (nevirapine, NVP) to reduce the risk of MTCT gave special impetus to the effort by showing that relatively simple and inexpensive interventions can significantly impact MTCT.

To initiate operations in individual countries, the Foundation solicited applications from interested countries and began its first international projects in Africa (Cameroon, Kenya, Rwanda, South Africa, and Uganda) and Thailand in 2000. The program expanded to other countries in subsequent years, with partnerships adapted to the particular needs of each setting.

The Foundation's model has been to partner with host governments to support national maternal and child health (MCH) programs to develop comprehensive and sustainable packages of PMTCT services. These services include HIV counseling and testing, provision of ARV prophylaxis to women and infants, education on infant feeding, family planning, psychosocial support, early infant diagnosis, cotrimoxazole (CTX) prophylaxis for opportunistic infections, and links to HIV/AIDS care and treatment. The Foundation has supported these services through provision of technical support and assistance, logistical support (distribution of ARVs and other essential commodities), community mobilization, training of health-care workers, evaluation and monitoring systems, and capacity building of health systems. In recent years, PMTCT service support has extended to the postnatal period, with the Foundation providing CTX prophylaxis for HIV-exposed infants, early infant diagnosis, and links to care and treatment, effectively extending the continuum of care. In several countries, the Foundation also funds programs providing antiretroviral therapy (ART) for mothers and families living with HIV/AIDS.

Support from USAID

In September 2002, USAID/Washington awarded a global Cooperative Agreement to the Foundation at a ceiling of \$100 million for a service-based program to scale up PMTCT services in multiple countries. The objectives of the Call to Action project (see Figure 1) supported the ultimate mission of EGPAF, which is to prevent pediatric HIV infection and eradicate pediatric AIDS through research, advocacy, and prevention and treatment programs. The new USAID-funded CTA project dramatically expanded and accelerated the Foundation's efforts to eliminate pediatric AIDS through increasing access to PMTCT services worldwide.

Since 2002, the USAID-funded CTA project has implemented PMTCT programs in 14 countries and supported operations research on key topics such as integrating PMTCT into MCH services, improving the use of combination prophylaxis regimens, and improving postnatal care. USAID funds also facilitated the identification of, advocacy for, and enactment of key policies related to PMTCT (such as opt-out testing, take-home ARV prophylaxis doses, and HIV counseling and testing in labor and delivery).

Since the beginning of the USAID-funded CTA project, the interventions available to PMTCT programs have increased and improved dramatically. The Foundation's staff and partners have continually refined the ways in which PMTCT services are delivered, through program experience and targeted operations research, and have seen impressive improvements in performance as a result. The services have also been regularly adapted to include the latest global and national PMTCT guidelines. The Foundation routinely sought ways to advocate for appropriate program and policy changes based on new science and program experience.

- Build individual competencies and organizational capacities essential for the sustainable provision of high-quality services
- Reach an increased number of HIV-positive pregnant women and their infants with ARV prophylaxis
- Disseminate findings and results; develop recommendations for the future of PMTCT programs and policies
- Ensure smooth transitions as some countries shift to other funding mechanisms

Figure 2: Guiding principles of the Call to Action project

In December 2006, USAID extended the Cooperative Agreement to March 31, 2009; then, in August 2007, it extended the agreement a second time to September 30, 2010. The latest extension was intended to accommodate the President’s Emergency Plan for AIDS Relief (PEPFAR) funding for programs in Swaziland, Lesotho, and Malawi.

By January 2010, the Foundation’s efforts had grown exponentially, supporting a total of 14 countries over the duration of the USAID CTA project (see Figure 3). With CTA activities implemented in seven out of the ten countries that account for the largest number of pregnant women with HIV in the world^a, EGPAF’s PMTCT activities were targeted at addressing this global crisis head-on.⁵

^a South Africa, Kenya, Zambia, Tanzania, Malawi, Uganda, and Mozambique.

As of September 2009, 10 countries had graduated from the USAID global CTA agreement; and in 2010, the final year of the project, only four countries (Lesotho, Swaziland, Uganda, and Malawi) received funding. Several graduated countries now receive support from USAID missions through bilateral agreements or funding through Centers for Disease Control and Prevention (CDC) projects.

The fact that the CTA project was designed as a global project that operated across countries enabled the experiences learned during the evolution of individual country programs to be more readily shared both inside and outside the USAID portfolio. The end of the CTA project presents an opportunity for the Foundation, together with USAID, to share these eight years of cumulative programmatic, policy, and evaluation results more broadly.

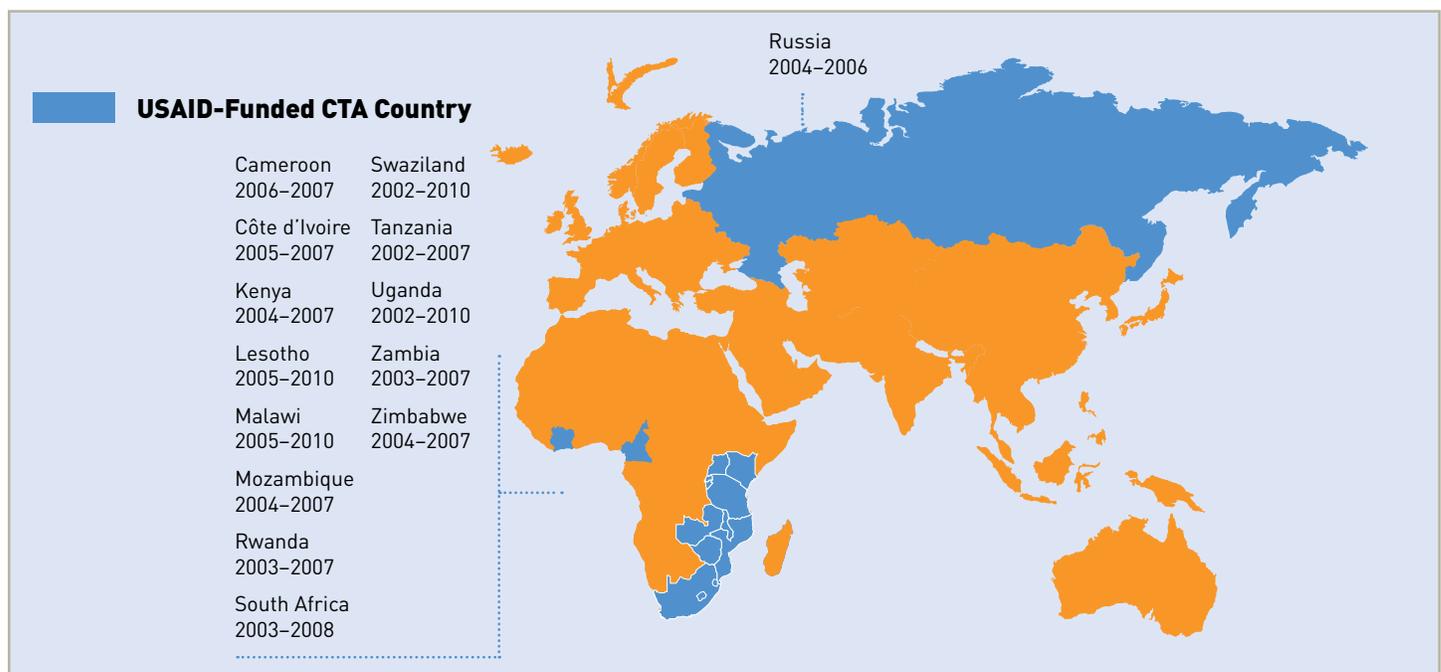


Figure 3: Countries supported with USAID CTA funding, 2002–2010

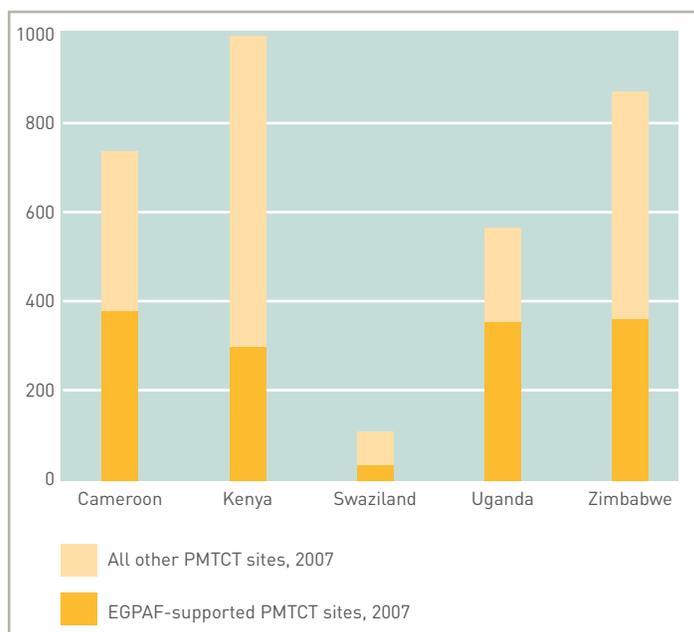


II. EXPANDING COVERAGE AND UPTAKE IN MULTIPLE COUNTRIES

A. Services Delivered and Women Reached

The number of sites assisted by the Foundation has grown tremendously since 2002, with a cumulative total of more than 2,600 individual sites having received Foundation support under the USAID global agreement. In 2007, CTA-supported sites comprised a significant portion of several African countries' national PMTCT programs (as indicated in Graph 1). For example, of the total 568 PMTCT sites in Uganda in 2007, 356 (63%) were supported by EGPAF.

As of December 31, 2009, the Foundation's USAID-funded CTA project had provided nearly 4 million women with access to PMTCT services in antenatal care (ANC), labor and delivery, and/or postpartum. Graph 2 shows the cumulative number of women and infants accessing PMTCT services under CTA between 2003 and 2009.^b



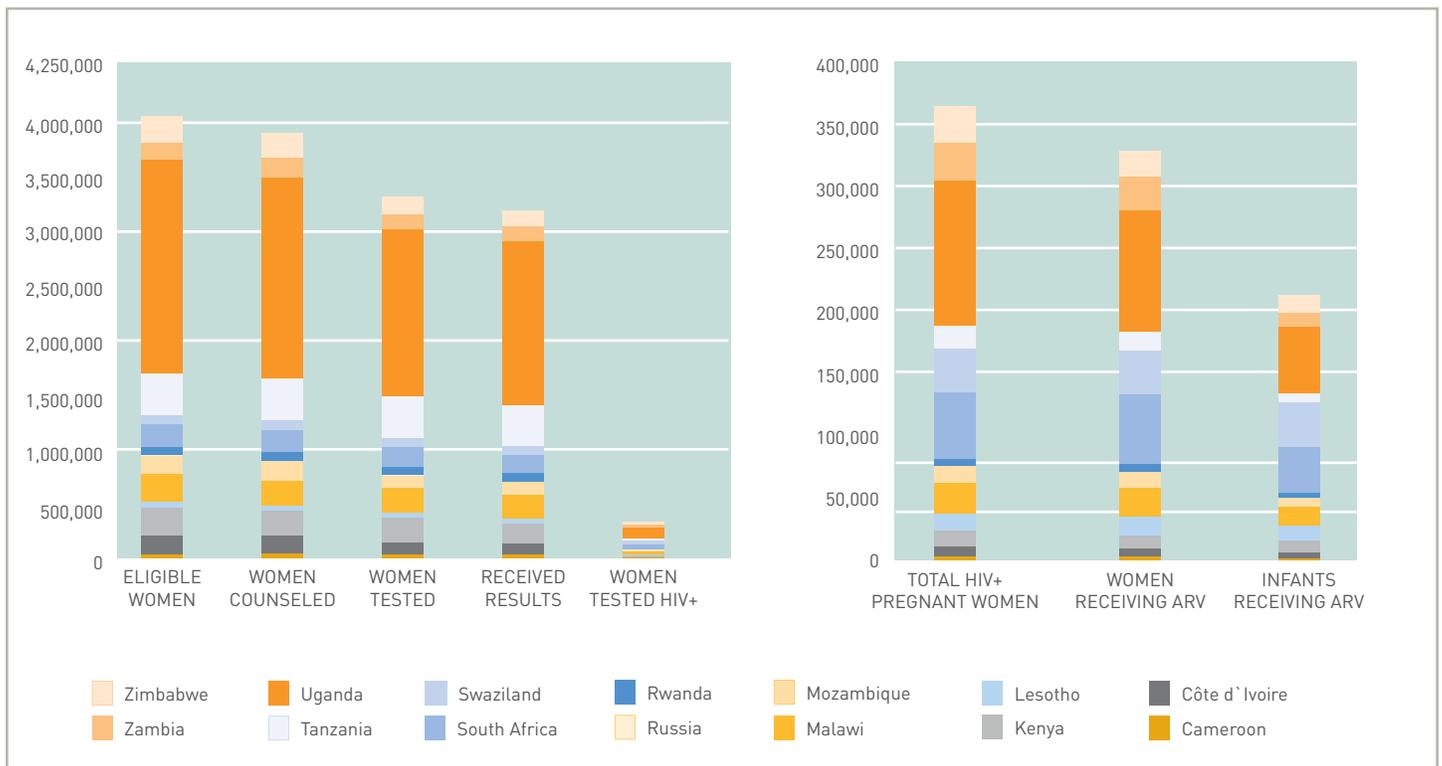
Graph 1: Number of PMTCT sites in selected CTA countries and the number supported by EGPAF, 2007

As shown in Graph 3, CTA's contribution to national coverage of HIV testing for pregnant women was substantial, ranging from 30% of all pregnant women tested in Lesotho in 2008 to 64% in Uganda. An even greater contribution was made to the national coverage of PMTCT prophylaxis. In 2008, almost 100% of pregnant women who received ARVs for PMTCT prophylaxis in Swaziland did so at an EGPAF-supported site, as did 75% of those in Lesotho and 71% in Uganda. Similarly, CTA contributed 81% of the entire Lesotho national coverage of infant doses for PMTCT in 2008, and 71% of the national total in Uganda. These percentages demonstrate the impact of the CTA project on these countries' ability to implement national PMTCT programs.

B. Service Uptake along the PMTCT Cascade

As described above, continual refinements in PMTCT service delivery over time based on program experience and operations research resulted in improvements along the cascade of services in Foundation-supported sites. The ability to significantly reduce MTCT rates, and eventually eliminate pediatric AIDS, is dependent upon following mother-baby pairs across the entire cascade. Graph 4 illustrates the improvement in the proportion of eligible women who received an HIV test and, among those testing

^b Since countries supported by USAID CTA funds changed over the eight-year period, the data for this final report are compiled from the following reporting periods, broken down by country: Cameroon: January 1, 2007, through June 30, 2007. Côte d'Ivoire: July 1, 2005, through March 31, 2007. Kenya: July 1, 2004, through December 31, 2007. Lesotho: January 1, 2006, through December 31, 2009. Malawi: July 1, 2003, through December 31, 2009. Mozambique: October 1, 2004, through December 31, 2007. Russia: July 1, 2004, through June 30, 2006. Rwanda: October 1, 2004, through December 31, 2007. South Africa: January 1, 2002, through March 31, 2008. Swaziland: July 1, 2004, through December 31, 2009. Tanzania: July 1, 2003, through September 30, 2007. Uganda: January 1, 2003, through December 31, 2009. Zambia: July 1, 2003, through June 30, 2005. Zimbabwe: October 1, 2004, through September 30, 2007. Note that not all countries were able to report data for all quarters for which they received funding, though these exceptions were few.



Graph 2: Cumulative numbers of women and children reached across the PMTCT cascade for the CTA Project, 2003–2009

positive, the proportion of women (and their infants) who received ARV prophylaxis between 2003 and 2009. By the end of 2009, program data showed that 97% of pregnant women in Foundation-supported sites were counseled on HIV/AIDS testing, 92% accepted and received HIV testing, 88% of HIV-positive women received ARV prophylaxis for PMTCT (including those on ART), and 61% of HIV-exposed infants received ARV prophylaxis.

The availability of USAID funding, coupled with the program’s high-quality technical assistance, well-organized PMTCT efforts, and continual refinements in the way services were delivered, enabled Foundation-supported CTA efforts to achieve excellent results in retaining HIV-positive women through the PMTCT cascade of services. Graph 5 compares the percentage of eligible women in 2008 receiving key PMTCT services in all Africa PMTCT programs (using population-based coverage data)⁶ with those receiving services in Foundation-supported CTA programs (using facility-based data). Although there are limitations to comparing population-based data with facility-based data in this example, the differences in uptake rates are considerable.

C. Developing Optimal Monitoring and Evaluation Systems

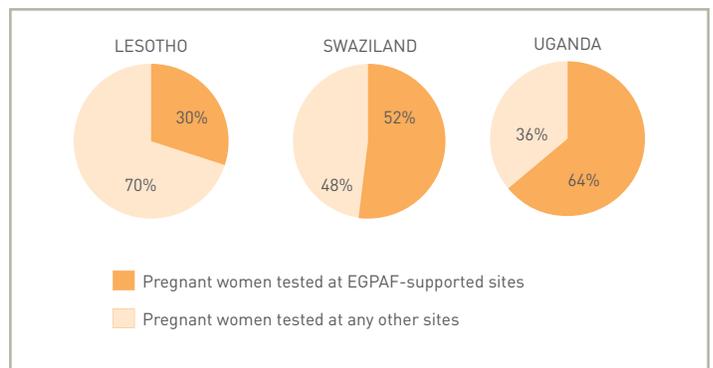
In order to monitor and account for the Foundation’s rapidly expanding international programs, EGPAF sought to develop a monitoring and evaluation (M&E) system that could

- collect, process, and share PMTCT program data in a way that is manageable and practical at the country level;
- produce analyses of program results at the subnational, national, and global levels;
- incorporate new indicators over time;

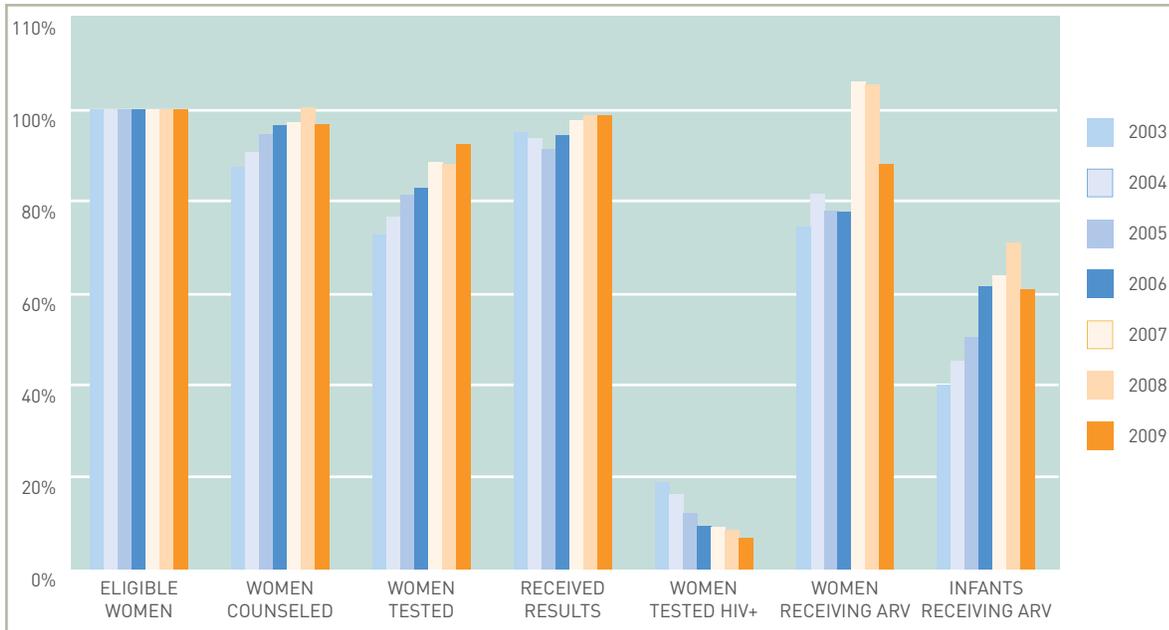
- be adapted to meet government data reporting requirements as well as Foundation requirements; and
- illustrate critical program trends.

In 2007, through a subcontract to an information technology firm and with significant input from Foundation program and M&E staff, Global AIDS System for Evaluation and Reporting (GLASER) was developed and put into place. GLASER is an online data warehouse to store and efficiently utilize Foundation data on PMTCT and HIV care and treatment programs across all supported countries. The GLASER system has largely met the abovementioned objectives and, in addition, has developed automated data quality checks that reveal data entry errors, is Internet based, easily produces standard reports, and minimizes information duplication.

GLASER has enabled the Foundation to track (and respond to) emerging trends in PMTCT service delivery and to respond quickly to a variety of demands for data, both internally and externally, from USAID and other sources.

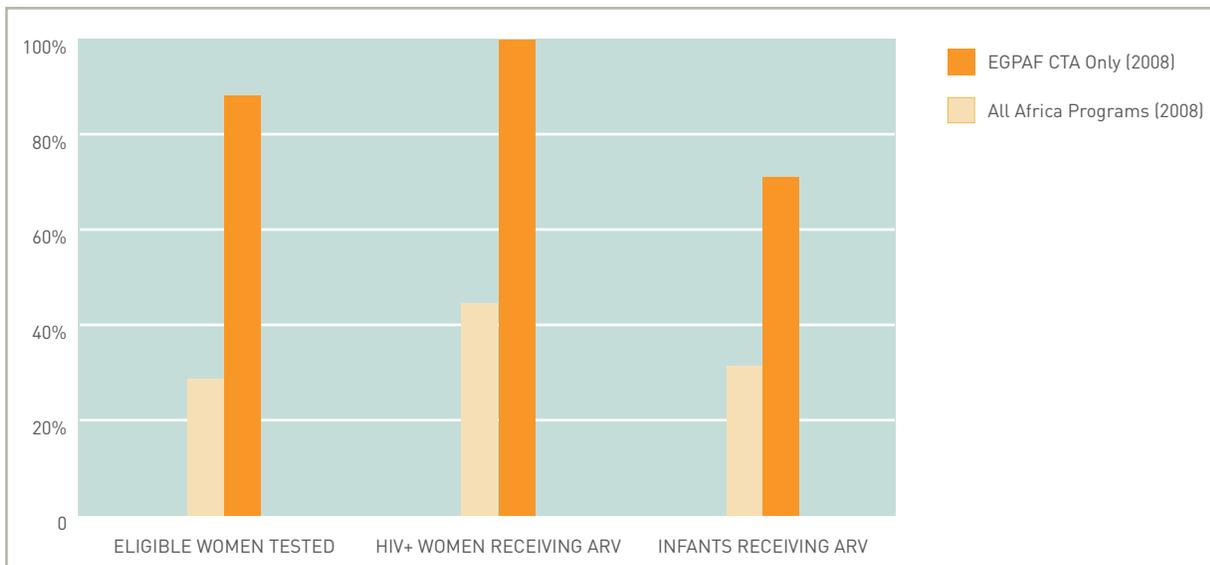


Graph 3: Pregnant women tested for HIV in selected CTA countries and those tested in EGPAF-supported sites, 2008



Graph 4: Percentage uptake of PMTCT services at each stage of the PMTCT cascade in CTA-supported sites, 2003 through 2009*

*The apparent decrease in the uptake percentages of counseling, maternal ARV, and infant ARV uptake in 2009 is due to improved methods of calculation that eliminated sources of double-counting (as seen in the 2007 and 2008 rates over 100% for maternal ARV).



Graph 5: Comparison of PMTCT cascade performance: All Africa programs and EGPAF CTA programs, 2008



III. IMPROVING QUALITY AND ACCESS

The CTA project tailored its PMTCT approach to each country's specific needs, epidemiologic situation, level of infrastructure, unique culture, and so forth; and approaches have been reevaluated periodically to identify opportunities to improve service quality and access as described below. In all its efforts, the Foundation has endorsed a holistic approach to the problems of HIV/AIDS and strived to create synergy between clinical and public health approaches to best meet the program goals.

A. Overcoming Barriers to PMTCT Access and Uptake

It is critical to understand barriers that impede the delivery of ARV prophylaxis because on a population level, shifting to combination ARV prophylaxis will only substantially reduce MTCT if higher levels of population coverage are achieved.^{7,8}

Innovations in the delivery of ARV prophylaxis drugs

Maternal uptake of ARV prophylaxis was found to improve when providers gave the HIV-positive pregnant women the maternal prophylaxis take-home dose at the time of diagnosis (for women tested at ANC) or at their first ANC visit (if they were already known to be HIV-positive) rather than waiting until a later ANC visit or until delivery. PMTCT providers in Uganda, Zimbabwe, and other countries recognized that many women deliver at home or arrive at a delivery facility too late to take their prophylaxis. Policies to provide the prophylaxis dose earlier have increased uptake, especially among the large percentage of women who deliver outside a health facility without a skilled birth attendant. Similarly, in Malawi, the uptake rate for maternal ARV prophylaxis increased from 49% before 2005 to 100% in 2005 due to a shift from a policy that only provided mothers with the NVP tablet at 32 weeks' gestation to one that provides the tablet immediately upon HIV diagnosis.⁹

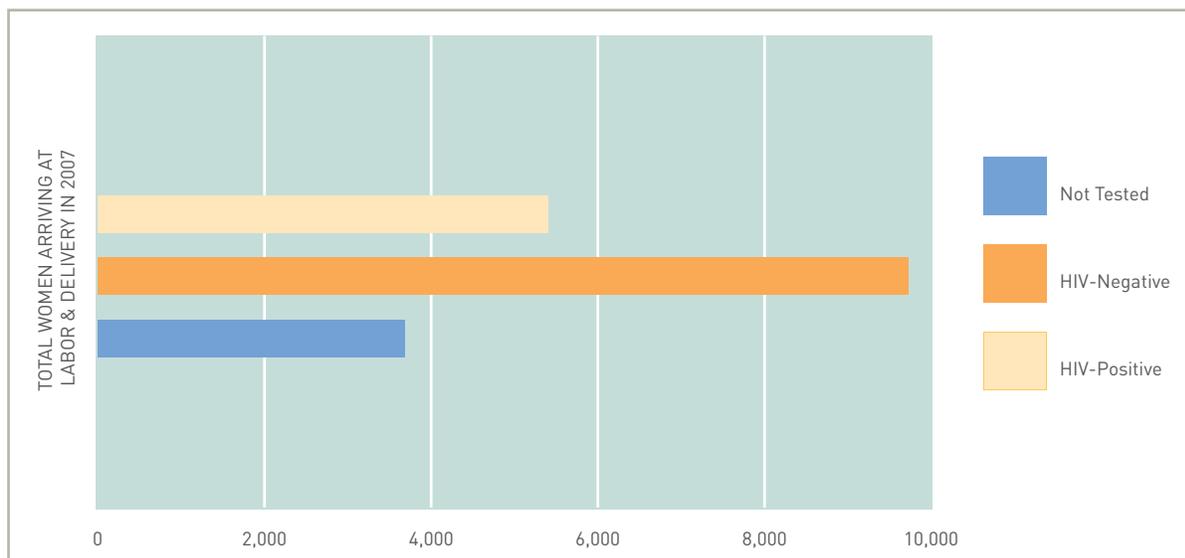
By 2009, many countries such as Swaziland, Lesotho, and Malawi reported high uptake of maternal ARVs among HIV-positive pregnant women, with Lesotho at 98% uptake, Malawi at 95%, and Swaziland at 93%.

Regarding the infant dose of ARV prophylaxis, the Foundation learned that sending the infant NVP dose home with the mother during the antenatal period, along with simple instructions on how to administer the drug, can increase uptake as many women will not deliver in a health facility. As one example, in 2006, evaluations of the infant dose were conducted in Kenya by the Foundation, the Program for Appropriate Technology in Health (PATH), and Family Health International (FHI) and were reviewed by the National AIDS and STD Control Program (NASCOP) and the Department of Reproductive Health. Results showed that sending the infant dose home with HIV-positive pregnant women in advance of giving birth, as part of ANC, could significantly improve uptake, with 98% of HIV-positive mothers reporting that they liked the infant-dose pouch and 100% reporting that the dose was administered to their infant (either at home or in a facility). The implementing partners also tested and promoted the use of the NVP infant-dose pouch developed by PATH to facilitate and encourage broader implementation of the take-home approach.¹⁰

Addressing social and cultural barriers

Cultural, social, economic, and other barriers can impede women's access to PMTCT services at key health-care entry points, such as ANC, facility-based delivery or delivery with a skilled attendant, postpartum care, and care and treatment for HIV/AIDS. Barriers include the low status of women in many countries, poverty, social and cultural norms, the high cost or unavailability of transport to health services, stigma and discrimination, nondisclosure of HIV status to women's sexual partners, health services that are not user friendly, and lack of community support.

In all of the CTA countries the Foundation has introduced a number of modifications to the way PMTCT services are organized and delivered that have proven successful in increasing access for women. For example, "male-friendly" interventions, aimed at increasing male involvement in PMTCT, have included allowing pregnant mothers with male partners to be fast tracked at ANC appointments; sending official invitations home for men to attend ANC with their partners; coordinating with local companies to provide paid leave for male partners to accompany their wives to



Graph 6: HIV status of pregnant women, as indicated in their medical history, arriving in labor & delivery in Swaziland, 2007

ANC appointments; and providing joint HIV couples testing and counseling at clinics.¹¹ In Malawi, some of these abovementioned efforts improved rates of male partner testing by almost 10 times from 2008 (1,284 men) to 2009 (11,106 men).

To increase community involvement and support for PMTCT, the Zimbabwe CTA program prepared mothers for counseling and testing in ANC by holding community-level information meetings and developing education materials for multiple community target populations. In Lesotho, the Foundation has invested in community activities under the national Gateway Approach, which trains and utilizes community health workers for some PMTCT services, facilitates activities through community coordinators, and selects and trains lay counselors and expert patients to serve as site-level community and counseling focal persons.

The Foundation has integrated psychosocial support to increase the uptake of PMTCT services and adherence to treatment into almost all programs, beginning with PMTCT services and carrying through to care and treatment programs, where available. In Uganda, for example, psychological support and follow-up have been enhanced by utilizing peer mothers and fathers. This has helped link mothers to additional counseling and patient education and has strengthened linkages between the community and the health facility.

B. Improving Counseling and Testing Services

Identifying HIV-infected pregnant women through counseling and testing services is a prerequisite for offering ARV drugs and other interventions to prevent MTCT. Early ANC-based testing programs had inadequate uptake because many women declined testing due to a lack of accurate information about the benefits of testing, long delays in receiving test results, logistical shortcomings related to testing supplies, and so forth. Through operations research and program experience, EGPAF was able to identify a number of strategies to improve testing uptake.

Improving ANC-based testing

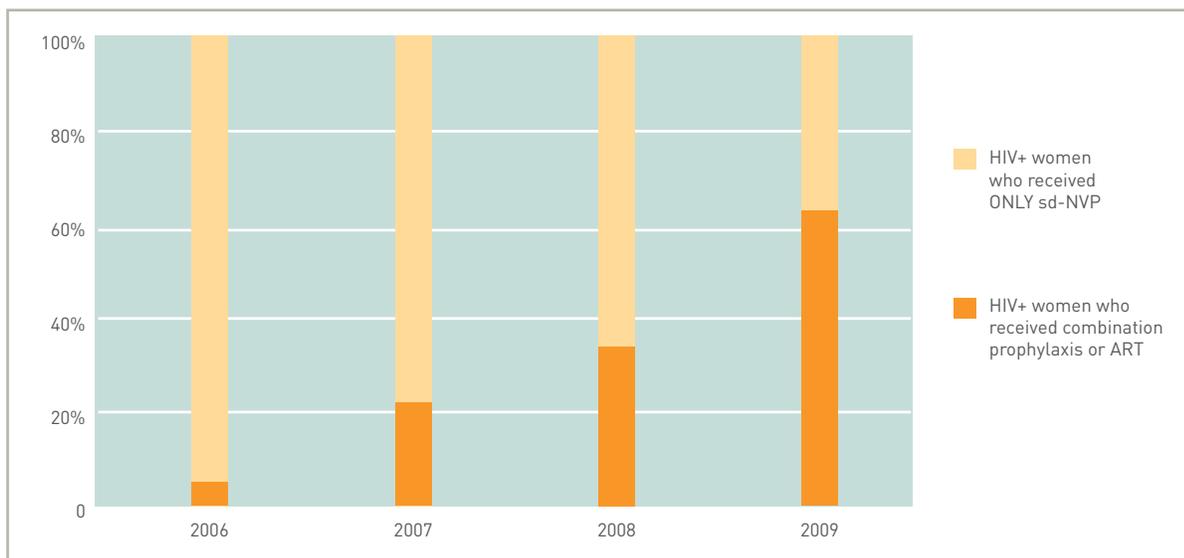
All of the Foundation's PMTCT programs adhere to national HIV testing policies, and EGPAF's experience with HIV testing has led to important changes and improvements in many national-level policies. Adopting universal group counseling, opt-out testing, rapid tests, and same-day results have all contributed to a dramatic improvement in women's acceptance of testing. Among women seen in ANC and labor and delivery in all EGPAF programs through June 2009, 98% were counseled and 88% of these women were tested for HIV. Among the women counseled and tested, 96% received their test results.

In Malawi, offering universal counseling and opt-out testing (where women are informed of the benefits of HIV testing and then receive testing unless they decline) to all women during ANC resulted in an increase in the proportion of identified HIV-positive pregnant women from 63% (2002–2004) to 90% (2005–2006). Similarly impressive test results were achieved in the Cameroon program, which offered opt-out testing and demonstrated 100% of women being counseled and 92% of those counseled accepting testing in more than 200 facilities by 2005. In Hlabisa, South Africa, 14 rural MCH clinics dramatically increased uptake of HIV testing (from 66% to 93%) once they were able to provide rapid HIV tests with same-day results.

More frequent testing promoted

Recent studies in South Africa¹² and Botswana,¹³ as well as Foundation-supported operations research in Swaziland,¹⁴ confirm that many women actually become infected with HIV during pregnancy and MTCT rates appear to be extremely high when this occurs. To identify these women, periodic retesting for HIV during pregnancy and breastfeeding is required. However, few PMTCT national policies or programs have included retesting due to financial, logistical, and other constraints.

The importance of retesting during pregnancy was demonstrated by Foundation-sponsored research in Swaziland (funded by the Bill & Melinda Gates Foundation). In EGPAF-supported sites from January to December 2007, 18,810 pregnant women presented



Graph 7: Type of PMTCT regimen provided to women in CTA-supported sites, 2006–2009

for delivery at maternity wards (see Graph 6). In this sample, only 25% of women who had tested negative earlier in pregnancy were retested prior to delivery, in line with the national retesting policies. The cumulative incidence of seroconversion during pregnancy in a study of EGPAF-supported sites in Swaziland was found to be 4.4%, using DNA polymerase chain reaction testing on cord blood draws at delivery to confirm HIV status. With the low rate of retesting (25%) observed in this study, hundreds of HIV-infected pregnant women were not being identified as in need of PMTCT interventions before delivery. The Foundation (in line with many government policies) advocates that counseling and testing become a routine service at all MCH contact points including ANC, maternity, well child, family planning, and postnatal clinics.

C. Providing Efficacious ARV Prophylaxis and Treatment

Single-dose NVP for ARV prophylaxis

NVP, given as a single dose to the mother in labor and to her infant after birth, was the first PMTCT prophylaxis regimen to be widely adopted in resource-constrained settings after trials in Uganda proved it to be safe, effective, and feasible to deliver. It was also affordable, since the manufacturer, Boehringer Ingelheim, donated it free to needy programs. Single-dose nevirapine (sd-NVP) formed the mainstay of the Foundation's initial PMTCT programs and jump-started PMTCT programs in a number of countries. However, in 2006, the World Health Organization (WHO) recommended using combination regimens that were more efficacious and posed less risk of HIV drug resistance than sd-NVP alone. At that point, WHO recommended that sd-NVP be offered only in settings that could not deliver combination regimens and urged all programs to position themselves to transition to combination regimens as soon as possible.

This transition has been a slow process globally. In 2008, United Nations data reported that at least 31% of women receiving any ARV prophylaxis were still receiving sd-NVP.¹⁵ In terms of adherence, a Foundation-supported study of NVP use showed

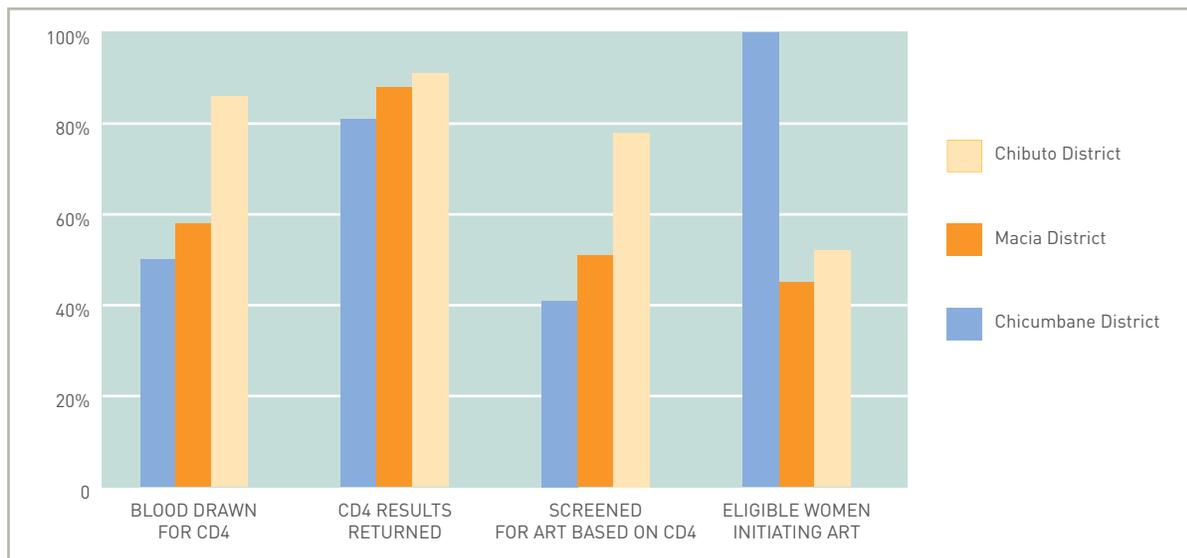
lower-than-expected adherence rates (meaning the actual ingestion of the drug by women during delivery)¹⁶ and provided a wake-up call to programs that simply dispensing ARVs does not necessarily ensure that they will be used.

Transitioning to more efficacious combination regimens

Transitioning to combination ARV regimens has been a high priority for the Foundation during the past few years of the program. The Foundation remains in the forefront of promoting and facilitating this transition, by working with Ministries of Health and other partners to move to combination regimens as expeditiously as possible without sacrificing PMTCT service coverage, uptake, or adherence. At the country level, the Foundation has promoted appropriate policy changes, helped develop and issue new national guidelines and manuals, supported updated trainings, and advised on supply chain management for new drugs.

EGPAF's directly supported sites in Kenya began using an Zidovudine (AZT)-based combination regimen in 2006, after the change in WHO recommendations. Kendu Bay Hospital, located in a high-HIV-and malaria-prevalence area (with the majority of ANC clients accessed via outreach services), was able to provide AZT to pregnant women during outreach visits, aided by a portable hemoglobin meter to check for anemia. Orientation on the use of AZT was eventually incorporated into the national PMTCT training, hence increasing the number of sites able to offer combination regimens for PMTCT.

In Zimbabwe, the government had adopted the 2006 WHO revised PMTCT regimen recommendations but needed assistance in actual implementation of these changes. The Foundation, together with the Ministry of Health and Child Welfare and l'Institut de Santé Publique, d'Epidémiologie et de Développement (ISPED), undertook a pilot project (with supplemental funding provided by the Bill & Melinda Gates Foundation) to explore the practicalities on the ground of implementing the new guidelines in Harare City at Mabvuku clinic and five sites in Makoni District of Manicaland Province.



Graph 8: HIV-positive women receiving CD4 screening and ART by district in Mozambique

This pilot project proved to be very important for moving toward wider implementation of combination prophylaxis regimens within the Zimbabwean national PMTCT program.¹⁷ The pilot investigated the overall feasibility of upgrading the standard prophylaxis regimen and identified (a) site-level needs that would be required in order to change the regimen and (b) critical policy issues, protocols, and additional M&E necessary to support the transition. Based on the results of the pilot project, a draft manual on implementing the more effective regimen was designed. It detailed specific procedures necessary to implement the recommended ARV regimen and gave appropriate guidance to health workers involved in the delivery of PMTCT services. The manual was tested in the field. The pilot study and the manual then formed the basis for informing, training, and refreshing other health workers and their managers on the delivery of combination regimens nationwide.

At the global level, to simplify the delivery of combination ARV drugs to pregnant women with HIV and their infants, the Foundation joined a UNICEF-convened group of experts to explore the feasibility of a “Mother-Baby Pack,” which would contain the necessary take-home doses of ARV prophylaxis for both mother and infant that could be given to pregnant women at their ANC appointments. The pack was field tested and further refined in EGPAF-supported sites in Lesotho.

Efforts to introduce more efficacious PMTCT regimens have already shown results in Foundation-supported sites, as shown in Graph 7. Of all the women who received ARVs, the proportion of those who received combination regimens for prophylaxis or for their own health increased from 5% in 2006 to 63% in 2009 compared with those who received sd-NVP alone. Increasingly, sd-NVP is reserved for women who are diagnosed too late to receive the optimal combination regimen or for those in the mostly rural sites that are still unprepared or unable (often due to infrastructure and/or policy constraints in country) to offer combination regimens.

Providing HIV care and treatment

Improving countries’ ability to provide ART to eligible pregnant women for their own health takes on even greater importance with the issuance of the November 2009 WHO recommendations that (a) lower the threshold for treatment-eligibility for pregnant women, (b) emphasize the importance of early identification and treatment for pregnant women, and (c) offer treatment drugs as an option for MTCT prophylaxis. In addition to the importance of treatment for the health and survival of HIV-positive women, studies now suggest that provision of ART for all treatment-eligible HIV-infected women during pregnancy could prevent 75% of MTCT.¹⁸ This is because women who have low CD4 counts or high viral loads are at greatest risk of transmitting HIV to their infant.

Many of the PMTCT sites supported by the Foundation either have ART services available on site or have close links to ART sites for referrals. Nevertheless, globally, there have been ongoing challenges to getting pregnant women into treatment because ANC sites lack necessary tools (CD4 testing, viral load testing, and/or clinical staging), appropriate training, policy mandate, ARV treatment drugs, and/or the staff capacity to prescribe ART. ART programs have experienced significant loss to follow-up of HIV-positive pregnant women between diagnosis and screening for treatment eligibility, and between screening and initiating treatment.¹⁹

To work toward resolving these problems, the Foundation has tested alternative models in several countries. In Mozambique, staff from the Foundation and the Provincial Health Directorate in Gaza Province moved from linking PMTCT and ART services to actually offering HIV care and treatment in PMTCT service sites. In Chicumbane and Macia Districts, ANC services were linked to external HIV services (HIV-positive women were sent to an outside laboratory or HIV clinic for CD4 testing and referred for ART services). In Chibuto District, the ANC clinic actually provided screening, staging, and ART on site. As a result, Chibuto District had a higher percentage of women screened, but achieving universal initiation of ART remained problematic due to other



Photo: Olivier Asselin

factors such as the poor quality of counseling, unavailability of qualified human resources, and other sociocultural inhibiting factors²⁰ (see Graph 8).

In Rwanda, an analysis of referrals of HIV-positive, treatment-eligible pregnant women from PMTCT sites to ART sites for screening and other services necessary before actual initiation of ART drugs revealed that long distances, poor transportation, and poor communication limited the effectiveness of these referrals. To counter those obstacles, the Foundation piloted the provision of “pre-ART” services (semiannual clinical/CD4 staging, CTX prophylaxis, treatment of opportunistic and sexually transmitted infections, and TB screening) in voluntary counseling and testing (VCT)/PMTCT sites. This resulted in a higher percentage of eligible patients effectively referred for ART.²¹

Similarly, in Swaziland, with approximately 42% of pregnant women being HIV-positive and 40% of those women estimated to be eligible for treatment, only 5% of treatment-eligible women initially began ART prior to implementation of measures to increase ART uptake. After the Foundation introduced ART services into the MCH clinic of the busiest primary care center in the country, King Sobhuza II Public Health Unit, the percent of eligible women initiating ART rose to 28% (up from 5%) after only 10 months.²²

D. PMTCT in Labor and Delivery Settings

Offering HIV testing in labor and delivery can identify (a) women who were in the window period^c at the time of their ANC test, and (b) women who were not tested during ANC. Identifying these women during labor can help ensure that they at least receive the intrapartum ARV dose as well as follow-up services. As a demonstration of this, the Foundation’s study of enhanced PMTCT services in maternity wards in Swaziland confirmed (a) the feasibility of offering HIV retesting in maternity, and (b) the ability to identify a number of HIV-infected women missed in ANC for various reasons.

Offering HIV-related services in maternity settings actually formed the basis of the Foundation’s unique program in Russia, which was targeted at women who received no (or insufficient) antenatal care. In Russia, HIV testing and referral for HIV-related services is routine in state-subsidized ANC settings. However, pregnant women at high risk of HIV infection, including women who inject drugs, noninjecting sex partners of drug users, and migrant women who lack the necessary government documentation, often fail to receive ANC services. Until the Foundation-assisted program was initiated, women who missed ANC often failed to get an HIV test in labor, did not receive test results in a timely fashion, or had no access to ARV prophylaxis in maternity wards. The program established and tested a credible model for offering services to these high-risk women, and the government later replicated the model in other parts of Russia.²³

The Foundation has been steadily increasing the proportion of sites supported that offer PMTCT services in labor and delivery across all countries that offer counseling and testing. Between 2005 and 2008, among Foundation programs able to report on HIV status in maternity settings, 365,962 women (8.6%) were reported as having unknown HIV status in labor and delivery, out of 4,267,248 total deliveries across countries. Of those, 310,819 (88.7%) women were tested for HIV in labor and delivery, and 16,876 (5.4%) tested HIV-positive. These additional infected pregnant women identified through testing and counseling at labor and delivery represent approximately 5%–7% of all HIV-positive women identified in EGPAF programs over the years.

E. Infant Feeding Issues and Challenges

Although HIV can be transmitted from an infected mother through breastfeeding to her child, avoidance of breastfeeding by HIV-positive mothers in resource-constrained settings often results in other serious risks of morbidity and mortality among

^c The window period refers to the time between HIV infection and the production of antibodies, during which an antibody test may return a false negative result although the individual is newly infected with the virus.



Photo: Bill McCarthy

In Tanzania, research on the effect of a PMTCT program on reproductive and child health services in Tanzania was done in 2007. The study was a comparison of MCH services in rural Tanzania, specifically the Arumer and Monduli Districts, prior to and after the introduction of PMTCT services. Health and Development International Consultants conducted the end-line survey and produced the final report. Key findings indicated that following the establishment of PMTCT services, health facilities demonstrated increased ANC attendance, increased syphilis testing during ANC, and increased family planning service provision. Recommendations from the study included the need to expand PMTCT services in rural areas.

infants. Exclusive breastfeeding for the first six months of life can significantly reduce the risk of MTCT compared with nonexclusive breastfeeding or mixed feeding. The Foundation has continued to improve the ability of HIV-positive mothers to choose and practice the safest feeding method available through a number of PMTCT program interventions, often undertaken in concert with the USAID-supported Infant and Young Child Feeding (IYCF) program. All of the CTA countries implemented components of IYCF support activities throughout the years of USAID funding under this award. Activities included training health providers on IYCF counseling, nutrition education programs implemented through family support groups, and collaborating with partners such as the World Food Program in the distribution of therapeutic and/or supplemental food to designees.

To offer more intensive technical assistance to selected country programs in IYCF, the Foundation collaborated with PATH at the early stages of the CTA project, which was called upon to provide nutrition and infant feeding expertise to (a) improve the nutrition component of training curricula, (b) improve infant feeding/HIV knowledge and skills of doctors and nurses, and (c) promote routine follow-up of HIV-exposed infants and children. This intensive support was provided in Côte d'Ivoire, Rwanda, and South Africa.

The November 2009 WHO recommendations on infant feeding and HIV have changed the landscape dramatically by recommending that ARV drugs be given to breastfeeding mothers and/or infants postpartum to significantly reduce the risk of HIV transmission through breastfeeding. If well implemented, these new recommendations hold the promise that HIV-infected mothers can now provide the benefits of breastfeeding to their infants while substantially reducing the risk of HIV transmission and resulting disease—achieving the overall goal of “HIV-free survival” for infants. The Foundation is actively supporting these new recommendations.



Photo: Jon Hrusa

F. Achieving a Comprehensive Approach

The Foundation recognizes that a comprehensive approach is critical to PMTCT success. To this end, EGPAF has both directly and indirectly (through other technical partners) supported the other two PMTCT components that are recognized by the United Nations: primary prevention of HIV among women of childbearing age and prevention of unintended pregnancies among women living with HIV.

Primary prevention involves a range of interventions delivered at the health facility and in the community, primarily targeting pregnant women and their male partners. Under the CTA project, interventions included health information and education on HIV and sexually transmitted infections, HIV testing and counseling, and the promotion of dual protection. For women who tested HIV-negative through PMTCT services in EGPAF-supported sites, primary prevention also involved offering counseling (often through trained expert peers or mentor mothers), access to condoms, and other services to keep HIV-negative women infection-free.

To address the family planning (FP) needs of HIV-positive women, the CTA project focused on increasing the integration of reproductive health and PMTCT programs in all 14 countries. This integration was accomplished in two ways: (1) by expanding family planning services to settings such as MCH and ART clinics and (2) by bringing HIV interventions into family planning services. At the national level in many CTA countries (such as Lesotho, Malawi, Tanzania, and Zimbabwe), EGPAF supported the revision of national PMTCT training curricula to specifically include family planning services.

In 2008 in Rwanda, the Foundation led an HIV/FP integration working group which defined a model of HIV/FP integration involving the training of all facility nurses (including those in PMTCT, ART, VCT and infant follow-up services) to refill oral and injectable contraceptives during other visits. Working closely with other USG partners, the Foundation helped to define family

In Mozambique, EGPAF worked to create sustainable HIV/AIDS care programs in each setting that could train and supervise their own local health personnel. This approach—to build an integrated model of care and treatment services using existing functions and structures, and to build capacity at the site to provide care and treatment services as well as build capacity within the district and provincial health directorates to manage and provide oversight—ensures that services can be continued successfully after partner support to these sites. Specific activities to achieve this goal included—

- establishment of adequate infrastructure for the provision of quality services;
 - basic and continuous training of health staff ensuring adequate capacity at the sites;
 - establishment of quality assurance mechanisms and tools that can be used by health staff at the sites and district supervisory staff to ensure monitoring of quality of services;
 - joint supervision by EGPAF staff and district and provincial staff;
 - establishment and support to coordination mechanisms run by district and provincial staff; and,
 - technical assistance to the ministry of health at all levels (national, provincial, and district).
-



Photo: Bill McCarthy

In Uganda, the CTA project introduced a peer educator program initially at 41 sites in 2008 to strengthen follow-up patient care by allowing peer educators to take over certain tasks for health-care workers and provide patients with social support. One hundred and fifty-two peer educators were trained and successfully integrated into existing patient-care services at health centers. The duties of this new cadre of support workers were streamlined into ANC clinics, well child clinics, and ART clinics. At the ANCs, newly diagnosed pregnant women were attached to peer educators with an aim of establishing bonds that will enhance follow-up of these pregnant mothers from this point onward through delivery providing the program with direct access to the newborn infants. Important to both PMTCT and ART programs, the peer educators help identify HIV-exposed infants presenting to the well child clinics and guide the mothers/parents of these children to additional counseling and patient education for mother and baby.

planning interventions at the site level and to develop tools for a baseline assessment. The assessment took place in 2008, with EGPAF evaluating the family planning service provision in all EGPAF-supported sites in Rwanda. The results of this assessment informed a workshop that EGPAF held for USG partners: Gaps and Weaknesses of FP Services at Health Facilities.

Family planning activities were also integrated into community-level interventions, such as through family support groups. In Cameroon, for example, the CTA project funded the Cameroon Baptist Convention Health Board (CBCHB) to support more than 90 HIV/AIDS support groups who were educated on family planning methods, and those who wanted to prevent pregnancies were provided free family planning commodities through a linkage with the USAID-funded AWARE Program. Condoms were provided at no charge to those who were sexually active and family planning lectures were given to women attending ANC and the infant welfare clinics.

G. Strengthening Health Service Delivery Systems

It is now clear that weak health systems compromise the effectiveness and scale-up of PMTCT efforts, and that introducing comprehensive PMTCT into MCH can significantly strengthen MCH services.²⁴ The Foundation has successfully worked with Ministries of Health and other partners to improve ANC and MCH services for HIV-infected and uninfected women and to ensure that PMTCT is a standard, integral part of those services.

The CTA project played a significant role in building the capacity of health service delivery in ANC and maternity wards, primarily in government-run facilities. In Lesotho, in order to strengthen the ability of the districts to provide care and treatment at the health center-level, EGPAF worked to build capacity within the District Health Management Teams through mentoring and targeted technical assistance in preparing HIV strategies and helping them to monitor their interventions. In Swaziland, EGPAF started to transition some of the direct support roles to the Ministry of

	2003	2004	2005	2006	2007	TOTAL
Total # health facilities	18	74	152	250	428	
New ANC clients	6,612	21,624	74,259	128,301	223,565	454,361
Counseled	6,644	23,104	80,388	128,993	225,820	464,949
Tested	5,743	21,973	77,355	124,049	216,774	445,894
Received results	5,497	21,436	76,732	123,374	216,384	443,421
HIV-positive	378	1,347	4,149	5,943	9,165	20,982
Mothers given sd-NVP	228	942	2,614	4,585	9,150	17,519

Table 1: Increase in facilities and women served in Tanzania under district approach to PMTCT

Health and Social Welfare (MOHSW), such as managing training courses and handling supplies management. The transition of activities took place in a phased manner in order to ensure sustainability. CTA in Swaziland also focused on strengthening the capacity of MOHSW, providing technical assistance to the MOHSW on infant and maternal nutrition, and strengthening community–health facility linkages.

Another aspect of system strengthening was building the sustainability of sites to run and manage their own programs. In Kenya, the program developed a tool to track supplies and reorders to maintain buffer stock, also strengthening district stores, capacity to forecast and order kits and supplies to distribute them to the facilities. The Tanzania program (see text box) had a similar detailed approach to ensure sustainability.

A district approach to scale-up

Increasingly, the Foundation’s programs use a district approach to offering PMTCT services that engages district health management leadership in the planning, implementing, and evaluating of PMTCT services through providing capacity-building support and technical assistance. The benefits of a district approach include the decentralization of services to the rural areas to increase access to PMTCT services. Several CTA countries began with this approach (such as Zimbabwe and Uganda), while others moved toward a district approach, based on specific geographic areas at the request of national programs (Côte d’Ivoire, Lesotho, Rwanda, Kenya, and South Africa).

To address the need for increased access to PMTCT in Tanzania, between 2003 and 2007 the CTA project, with the Tanzania MOHSW, used a district approach to support the rapid scale-up of PMTCT services in five regions of the country. This district approach was consistent with the government’s national decentralization policy to enhance the speed and quality of the scale-up process as well as to promote the long-term sustainability of services through the integration of PMTCT activities into existing structures and systems. With this approach, the government was able to dramatically scale up the number of sites offering PMTCT services and the number of pregnant women

being served (see Table 1).

Key elements of this approach included building technical capacity to ensure rapid service expansion and continuity at the district level, ensuring financial sustainability of program activities, and creating mechanisms for ongoing supportive supervision and monitoring. The district approach was documented in a publication that was shared with other countries seeking to learn from this model’s experience.²⁵

In 2008, the government health authorities in Côte d’Ivoire opted for decentralization of PMTCT service delivery with a district-based approach, including the establishment of district operational plans in some regions with support from the Foundation and others. As a result, the proportion of facilities providing ANC services that offer both HIV testing and ARVs for PMTCT increased from 21% in 2006 to 44% in 2008.

Improving postnatal care services

Postnatal care has always been a critical element for improving child survival. It has also become an important part of PMTCT as new interventions for the postpartum period have been introduced such as CTX prophylaxis, nutrition monitoring, HIV testing for HIV-exposed infants, ARV prophylaxis during breastfeeding, and greater availability of pediatric HIV/AIDS treatment. In 2005, the Foundation outlined a postnatal strategy that builds on activities and approaches that begin in the prenatal period and are continued through antenatal care and labor and delivery. The comprehensive postnatal strategy was a preliminary step in helping country programs define interventions and services that would be most beneficial to offer in their unique setting.

To better address weaknesses in postnatal care in Swaziland, the Foundation joined forces with the Swaziland MOHSW, the Horizons Program of Population Council, the Basics Support for Institutionalizing Child Survival (BASICS) project, and the Central Statistics Office. From July 2006 to May 2007, the group carried out operations research to test an improved postnatal package of services and to reposition postnatal care within the context of a high-prevalence HIV setting.²⁶ The project was designed to test



Photo: Olivier Asselin

whether a package of care that was upgraded in terms of timing and content could improve the timely and quality provision of key postnatal services, increase utilization of postnatal care services, and improve the care and follow-up of HIV-positive postpartum women and their infants. The improved package introduced additional consultations and strengthened existing consultations that should be carried out for the mother and her baby during the postnatal period. It ensured that the mother and baby would be seen by the same health provider during each consultation. All of the objectives were achieved, with the following specific outcomes: (a) a three-fold increase in the proportion of postpartum women who attended postnatal care within one week of delivery, and (b) a four-fold increase in the quality and comprehensiveness of care.

Improving follow-up of mother-baby pairs

Follow-up of HIV-positive pregnant women and their babies throughout the entire cascade of services is essential to reduce the risk of MTCT. Despite this recognition, the tools that facilitate follow-up, including clinic registers, child health cards, and community support, have often been inadequate. The Foundation has been on the forefront of piloting revised tools and practices to improve follow-up.

At the 2009 International AIDS Society (IAS) conference, Foundation staff reported on the successful experience of the CTA project in Zimbabwe in redesigning the child health card to serve as an effective tool for the delivery of integrated health services.²⁷ The former card was unable to identify and track HIV-exposed infants, and no documentation of services offered to HIV-exposed infants, such as CTX and early infant diagnosis, was included. The new card rectified that and added additional messages such as updated infant-feeding information. The participatory process through which the card was designed ensured that the new card received wide acceptance and use.

In Mozambique, the Foundation helped redesign the child health card and launch it nationally. New features that were added include HIV exposure status of the child, administration of ARV prophylaxis to mother and infant, CTX administration to the infant, infant HIV testing, administration of ARVs for infected

Identifying and testing HIV-exposed infants during the first few months of life is critical to ensuring their timely access to HIV care and treatment. In Swaziland, the Foundation continues to support the implementation and expansion of EID for HIV-exposed infants through trainings and onsite mentorship. In 2009, 34 out of the 35 EGPAF-supported care and treatment sites in Swaziland provided infant diagnosis services. DBS samples were collected from 4,050 out of 4,300 HIV-exposed infants (94%) identified at child welfare and postnatal care clinics for DNA/PCR testing (up from just 66% in 2008), of which 8% of the infants were found to be HIV-infected. Intensive efforts are made to initiate these children on ART in a timely manner to improve their chances for long-term health.



children, immunizations, infant-feeding practices, and growth monitoring. Extensive pretesting of the card ensured that health staff and communities would accept the inclusion of HIV-specific information on child health cards.²⁸

Addressing human resource and space constraints

Human resource constraints impede the ability of PMTCT programs to achieve coverage and impact targets, especially when programs are dependent upon highly skilled health professionals. Specific strategies that the Foundation has used to address these constraints include task shifting; employing community volunteers, lay counselors, and peer mothers; and training and utilizing traditional birth attendants (TBAs).

In all areas of the Foundation's work, training health workers at all levels, from physicians and policymakers to voluntary health workers and TBAs, has been a major focus of activity. Over the course of the project, thousands of health workers were trained in PMTCT and HIV/AIDS services in the CTA countries. In Tanzania (as in most of the CTA countries), a focus on capacity building of local institutions meant that CTA pursued a training-of-trainers strategy, developing national trainers in PMTCT.

The need for additional physical space in which to confidentially counsel pregnant women has strained existing ANC services. In Kenya, Foundation-supported sites have introduced partitions (within existing facilities) and trucking containers to create additional counseling rooms. In Zambia, tents provided space when new construction was not immediately feasible. In Uganda, ANC service schedules were expanded to offer services five days a week to avoid crowding in ANC facilities.

A focus on women

The Foundation recognizes that in order to create a generation free from HIV, it must focus its expertise on care and support for women as well as children. Achieving Foundation goals to eliminate pediatric HIV can only be recognized in the context of full integration of PMTCT programs within strengthened MCH services. Accordingly, the Foundation has established a Maternal

Health and HIV Integration Initiative to strengthen and scale up essential care for women who participate in Foundation-supported services. The work of this initiative is in keeping with the new USG priorities that advocate linking HIV/AIDS to women's and children's health.

The initiative will focus on specific improvements in the MCH setting including ANC, labor and delivery, and postpartum services across the continuum of care. Some of the activities planned by the initiative include establishing an Elizabeth Lecture Series to exchange lessons learned on maternal health and HIV integration, forming an active Technical Advisory Group within the Foundation, surveying the situation at the country level, and developing a plan for strategic partnerships to facilitate scale-up of these essential services for women.



IV. TECHNICAL LEADERSHIP

The Foundation is committed to providing and using the latest scientific and medical information, generating policy recommendations, and facilitating practical program responses in the field to encourage the provision of effective, high-quality services. The CTA project actively encouraged the documentation and exchange of best practices among its programs and the broader HIV/AIDS community. Technical leadership activities and operations research provide the basis for programs to improve existing services and expand national programs.

A. Country-level Technical Leadership

By having field offices on the ground staffed with technically qualified and experienced individuals (over 90% of whom are national staff), the Foundation has been able to strengthen the technical, management, and evaluation capacity of national governments and implementing partners and institutions. This has contributed to stronger programs and ensured the sustainability of programs after CTA funding ends. The Foundation has also been able to provide proven, successful service-delivery models for governments and other providers. The transition of CTA programs to local ownership has always been the goal, and the Foundation designed its technical assistance to develop local capacity.

Each of the Foundation's country offices has provided ongoing technical assistance at the national, district, and site levels in a range of ways, for example:

- Development and implementation of appropriate policies by working through national technical working groups
- Facilitating development of national guidelines and strategic frameworks and work plans
- Development of training curricula and implementation of training
- Strengthening M&E systems
- Documenting processes, challenges, and successes, and sharing those within and outside the country

B. Program Evaluation: Refining the State of the Art

Systematic, practical, and credible evaluation of PMTCT programs is critical not only for improving the quality of these programs, but also because demonstrating tangible results of PMTCT efforts on MCH and survival will be important to ensure continued USG commitment and donor interest in these economically difficult times. Despite this need, there has been a lack of clarity and consensus about how to best monitor the effectiveness of PMTCT programs. With USAID support, the Foundation has been on the forefront of identifying optimal indicators, designing timely and relevant evaluation studies, and analyzing a broad range of evaluation data.

The PEARL study

The Foundation has been a contributing partner in the groundbreaking PMTCT Effectiveness in Africa: Research and Linkages to Care and Treatment (PEARL) study (with funding support from the Bill & Melinda Gates Foundation). This CDC-funded study, led by the University of Alabama at Birmingham and the Centre for Infectious Disease Research in Zambia, measures PMTCT program effectiveness in nonclinical trial program settings in Cameroon, Côte d'Ivoire, South Africa, and Zambia. Between April 2007 and October 2008, to assess PMTCT coverage at a population level, researchers collected cord blood samples from 43 delivery centers affiliated with PMTCT sites that used sd-NVP, either alone or in combination with other prophylaxis drugs. The analysis revealed that only about half of the mother-baby pairs that were delivered in a health-care facility had completed the entire PMTCT cascade as measured by completion of each cascade step from counseling to ingestion of both the mother and infant doses. Service-related failures occurred at every step of the PMTCT cascade of services and included HIV testing not being offered, mothers refusing testing, HIV-positive results not being given, NVP not being dispensed, mothers not ingesting the NVP, and infants not being dosed. This study provided another wake-up call concerning the importance of coverage, uptake, and adherence at every stage of the PMTCT cascade.²⁹



Photo: Olivier Asselin

Modeling service coverage

The Foundation worked with external evaluation experts to develop a model of PMTCT program impact on averted HIV infections. The model was applied to actual Foundation PMTCT program data across the PMTCT cascade. Based on the actual proportions of women utilizing ANC services—receiving counseling, testing, and ARV prophylaxis in Foundation-supported programs—the model estimated vertical transmission rates that would result from three different scenarios. The model validated the theory that access to and successful delivery of services are more influential in averting infant infections than the specific ARV regimen used. The model indicates that even providing combination prophylaxis regimens to every HIV-positive pregnant woman cannot achieve overall transmission rates below 9.8% as long as current service delivery gaps persist.³⁰

Participation in other evaluation fora

Recent evaluation-related meetings and groups that the Foundation has participated in include the following:

- The USAID Bureau of Global Health Monitoring and Evaluation Working Group
- The Office of Global AIDS Coordinator’s indicator revision working groups
- The Africa Regional Office consultation on PMTCT M&E
- The CDC Track 1 partners’ consultation to incorporate PMTCT and infant diagnosis indicators into Track 1 care and treatment reporting
- The United Nations Children’s Fund (UNICEF), WHO, Joint United Nations Programme on HIV/AIDS (UNAIDS), Vanderbilt School of Medicine Consultative meeting Evaluating the Impact of Prevention of Mother-to-Child Transmission of HIV (PMTCT Services) in Low- and Middle-Income Countries in Averting New HIV Infections in Children and Improving Child Survival, held February 12–13, 2009, in Nashville, Tennessee

“The value of PMTCT programs extends beyond prevention of infant HIV infection. These programs establish a foundation for more-widespread ART by training health care providers, including those in MCH, enabling laboratory diagnosis of HIV, educating and counseling women about HIV, identifying infected individuals, and educating community members about preventing, transmitting, and treating HIV. These services have empowered women to make decisions about their health care and the care of their infants. They also enhance systems for procurement and distribution and create opportunities to integrate HIV prevention and care services into the health care infrastructure.”³¹



Photo: Bill McCarthy

C. Developing and Implementing Technical Guidelines

Participation on WHO technical committees

The Foundation's Vice President for Research, Dr. Laura Guay, has been instrumental not only in pioneering the first major ARV prophylaxis regimen clinical trial in Uganda, but also by serving as a key member of various WHO committees to establish and revise PMTCT guidelines. She was an active participant in the following:

- November 2008 WHO Expert Consultation that reviewed new and emerging evidence on ARVs
- October 2009 WHO review of principles and recommendations on infant feeding in the context of HIV
- WHO Recommendations Committee for review of ARV drugs in October 2009 that resulted in the November 2009 PMTCT recommendations

Leadership in other technical fora

Various Foundation staff have been active contributors to the Expert Panel on Prevention of Mother-to-Child Transmission of HIV, which was established by the U.S. Congress as part of the 2008 legislation reauthorizing the PEPFAR program, and the United Nations Inter-Agency Task Team (IATT), which has shown leadership in a number of pediatric-AIDS-related activities. More recently, the Foundation has joined the Inter-Agency Technical Working Group on Mother-Baby Packs for PMTCT.

The Foundation's Global Technical Policy and Best Practices unit will continue to lead, develop, and disseminate technical policies and standards, including the adaptation of the new WHO PMTCT recommendations. The Foundation intends to undertake these activities across all our supported country programs.

D. Sharing Lessons Learned

The Foundation has a vast network of implementers and partners including host country Ministries of Health and other key service-provider groups. Together with these partners, the Foundation has gained extensive expertise in supporting the implementation of HIV services for women and children on a national scale. Over the course of the CTA project, the Foundation has put a priority on sharing this expertise globally, providing the latest scientific information, generating policy recommendations, and facilitating practical program responses in the field. Best practices were documented and shared with USAID staff, partners, and the broader HIV community through peer-reviewed journal publications and other publications such as EGPAF program briefs.

Foundation staff and counterparts also have presented their PMTCT experience at all major international and many regional HIV/AIDS conferences and meetings and have taken the lead in organizing special technical sessions and satellite meetings on a variety of timely topics. Meetings of all CTA partners were held occasionally from 2003 to 2006 to share program experiences at meetings such as the EGPAF Implementers Meeting held in Arusha, Tanzania (through private donor support), in October 2006. After 2006, as the size of CTA programs and the number of partners increased, this type of large gathering became cost-prohibitive and other means of sharing information became increasingly important. EGPAF developed a Global Technical Policy team, which has played a key role in developing and disseminating relevant technical documents, lessons learned, program standards, and guidelines across all Foundation programs.

In 2010, the Foundation will host an end-of-project meeting in Washington, D.C., to share with USAID and the broader HIV community the final, key programmatic, evaluation, and policy results from EGPAF programs and to recommend next steps in PMTCT programming for USAID and the broader HIV community.



V. FUTURE DIRECTIONS AND CHALLENGES

The lack of substantial success to date of HIV vaccine candidates and the recognition that we cannot “treat our way out of the epidemic” continue to make prevention programs, including PMTCT, even more critical for child survival. Globally, approximately 16% of all new HIV infections each year occur in children, predominantly through MTCT.³² PMTCT is among the greatest prevention successes of the AIDS pandemic, and studies now confirm that new pediatric HIV infections can be virtually eliminated with appropriate interventions. To ensure this goal is attained, a number of specific PMTCT priorities emerge, as discussed below.

Securing adequate funding is essential for any of the activities described below. For its part, the Foundation has systematically sought and attracted other donors to continue CTA’s work following the end of this USAID global agreement. These funders include USG agencies (especially CDC’s Project HEART and USAID bilateral programs), private donors the United Kingdom’s Department for International Development, and United Nations agencies.

A. Achieving Adequate Coverage and Quality of PMTCT Services

As mentioned above, program population coverage and quality across the entire PMTCT cascade remain inadequate to achieve PMTCT goals. Achieving scale-up in the future will require the following³³:

- Prioritizing PMTCT within HIV/AIDS programs in low- and middle-income countries
- Adopting a public health approach to PMTCT that ensures broad access to high-quality PMTCT services at a population level
- Mandating the provision of PMTCT in all health services that offer HIV/AIDS care and treatment, and mandating access to treatment for all eligible HIV-infected pregnant women

- Decentralizing PMTCT to district and subdistrict levels by building capacities for leadership, management, and coordination; planning and budgeting; implementation support; social mobilization/communication; and monitoring, reporting, and evaluation at these levels
- Strengthening MCH capacity (staff, infrastructure, etc.) and systems and ensuring integration of HIV services within MCH systems
- Strengthening monitoring systems and ability to utilize data to evaluate and enhance PMTCT programs
- Increasing operations research efforts to optimize implementation, efficiency, and impact of PMTCT programs
- Expanding numbers of trained health-care personnel and influencing national policies concerning the level of health facilities and health workers that are allowed to provide PMTCT services
- Fostering greater coordination and collaboration among implementing agencies, international organizations, donors, and government entities

B. Implementing the New WHO PMTCT Recommendations

The WHO recommendations on PMTCT published in November 2009 resulted from new scientific research especially related to reducing transmission during the postpartum period, and they take into account considerations of safety, affordability, and feasibility. WHO now recommends ARV drugs for the HIV-positive mother and HIV-exposed infant through the breastfeeding period to decrease transmission in the postpartum period. WHO also emphasizes the importance of putting medically eligible HIV-positive women on treatment as early as possible during pregnancy and expanding treatment-eligibility for pregnant women. Successful implementation of these new recommendations will dramatically advance efforts to eliminate pediatric HIV infections, improve the health of infected mothers and exposed infants, and integrate PMTCT and MCH services.



Photo: Bill McCarthy

VI. CONCLUSION

Thus, implementation of these recommendations should be a major global HIV/AIDS priority during the coming year.

Implementing the new recommendations will be challenging, as many national programs have still not even achieved full implementation of the 2006 WHO recommendations. The new recommendations, in one sense, are simplified since they harmonize recommendations for HIV-positive pregnant and non pregnant women. However, to be successfully implemented, many components of existing services will need to be significantly strengthened, including the following:

- Expansion of CD4 testing and clinical staging services for HIV-positive pregnant women
- Stronger PMTCT and ART programs to serve the higher number of eligible pregnant women that will result from broader treatment eligibility criteria and the recommendation to offer ART earlier in pregnancy and throughout the breastfeeding period
- Stronger integration of PMTCT and ART services within MCH and reproductive health programs
- National-level policy decisions about which prophylaxis regimens to adopt for mothers and infants
- Revision of national policies, guidelines, training curricula, monitoring indicators, and so forth to conform to the new WHO recommendations
- Improved systems of follow-up that can track mother-baby pairs through the breastfeeding period
- Improved ARV drug logistics systems

ARV prophylaxis and ART services will need to become increasingly seamless, and new models of delivering integrated care across PMTCT and MCH services will be necessary.

The Foundation is actively developing a toolkit to support country teams and assist national authorities to revise and plan the implementation of these new WHO recommendations.

In conclusion, with the generous support of USAID between 2002 and 2010, the Foundation's CTA project was able to dramatically expand a nascent public health program into one of the most successful HIV prevention campaigns in resource-limited countries. This project supported life-saving PMTCT services to nearly 4 million pregnant women in over 2,600 PMTCT sites in 14 countries and dramatically improved the evolving state of the art of PMTCT in response to international, evidence-based best practices and the Foundation's own vast program experience. The CTA program's successes were also shared widely across the international health community, facilitating the rapid expansion of PMTCT service access in low- and middle-income countries and favorably positioning these countries to implement the new 2009 WHO recommendations on PMTCT and infant feeding. Through continued expansion of PMTCT access and improvement in PMTCT service quality, coupled with implementation of the new WHO PMTCT guidelines, the prospect of virtual elimination of pediatric HIV and a generation free of HIV is very real.



Photo: Olivier Asselin

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