



TANZANIA

EIGHT YEARS OF SCALING UP HIV PREVENTION,  
CARE, AND TREATMENT SERVICES  
AND SAVING LIVES

# PROJECT HEART END-OF-PROJECT REPORT: TANZANIA

KILIMANJARO, SHINYANGA, TABORA, ARUSHA, AND LINDI REGIONS, 2004–2012

**CDC FUNDING PERIOD:** February 2004–February 2012

**CDC COOPERATIVE AGREEMENT U62/CCU123541**

## FUNDED BY

President's Emergency Plan for AIDS Research (PEPFAR)  
U.S. Centers for Disease Control and Prevention (CDC)

## IMPLEMENTED BY

Elizabeth Glaser Pediatric AIDS Foundation (EGPAF)

## ACKNOWLEDGMENTS

The Elizabeth Glaser Pediatric AIDS Foundation/Tanzania (EGPAF/Tanzania) takes this opportunity to offer its sincere thanks to the numerous people who made significant contributions to this document and project.

Specifically, EGPAF would like to acknowledge the contributions made by the Tanzanian Ministry of Health and Social Welfare and the CDC. Within EGPAF, we give special thanks to the monitoring and evaluation department—especially Gaspar Mbita, Joseph Yuda Msofe, and Marta Moroni—as well as EGPAF Tanzania country officer Sean Maher, and EGPAF consultant Joseph Komwihangiro, for their support and guidance throughout the process of preparing this document.

EGPAF is especially thankful to PEPFAR for providing funding to this project through CDC. Without this funding and the technical assistance from CDC, Project HEART would not have been successful.

EGPAF would like to thank the government of Tanzania, the regional and local government authorities, the regional health management teams, the council health management teams, and all the government employees working at EGPAF-supported care and treatment sites for their dedication and for being committed partners.

Last but not least, EGPAF takes this opportunity to thank all of the clients and beneficiaries of the services delivered through Project HEART. This includes all pregnant women and their partners, children, and people living with HIV. It is our hope that the services introduced by Project HEART will be continued for more sustainable results.

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**DISCLAIMER:** This publication was supported by Grant/Cooperative Agreement Number U62/CCU123541 from the CDC under PEPFAR. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC, PEPFAR, or the U.S. government.

**NOTE TO THE READER:** Project HEART was implemented February 23, 2004–February 22, 2012, and was divided into eight project years. Each project year began on February 23 and ended on February 22 of the following year. The following report describes activities and data based on the project years. For this reason, activities and data in this document are reported on a February-to-February calendar rather than a January-to-December calendar.

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## LIST OF ABBREVIATIONS AND ACRONYMS

AFRO	Regional Office for Africa	HIV	Human Immunodeficiency Virus
AGPAHI	Ariel Glaser Pediatric AIDS Healthcare Initiative	HSP	Health Service Provider
AIM	AIDS Impact Model	KCMC	Kilimanjaro Christian Medical Centre
AIDS	Acquired Immunodeficiency Syndrome	M&E	Monitoring and Evaluation
ART	Antiretroviral Therapy	MOHSW	Ministry of Health and Social Welfare
ARV	Antiretroviral	NACP	National AIDS Control Program
C&T	Care and Treatment	NGO	Nongovernmental Organization
CDC	U.S. Centers for Disease Control and Prevention	PCR	Polymerase Chain Reaction
CHMT	Council Health Management Team	PEPFAR	U.S. President's Emergency Plan for AIDS Relief
CTC	Care and Treatment Center	PMTCT	Prevention of Mother-to-Child Transmission of HIV
DALY	Disability-Adjusted Life Year	QI	Quality Improvement
DBS	Dried Blood Spot	RCH4	Reproductive and Child Health card number 4
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation	RHMT	Regional Health Management Team
EID	Early Infant Diagnosis	SCM	Supply Chain Management
GLASER	Global AIDS System for Evaluation and Reporting	TB	Tuberculosis
GNI	Gross National Income	UNAIDS	Joint United Nations Programme on HIV/AIDS
GoT	Government of Tanzania	USAID	U.S. Agency for International Development
HEART	Help Expand Anti-Retroviral Therapy for children and families	USG	U.S. Government
		WHO	World Health Organization





### EXECUTIVE SUMMARY

This is the end-of-project report for Project HEART/Tanzania, which will be submitted to the U.S. Centers for Disease Control and Prevention (CDC) and broadly distributed to HIV/AIDS stakeholders.

The first HIV/AIDS patients in Tanzania were reported in 1983. Since then, the disease has become a national epidemic that is generalized within the entire population. Tanzania's HIV prevalence has declined slightly in recent years; the current HIV prevalence rate is 5.7 percent, with a higher prevalence for women (6.6 percent) than for men (4.6 percent), a decline from the previous HIV prevalence of 7.0 percent six years earlier, when prevalence among women was 7.7 percent.<sup>1</sup> These results show a statistically significant decline in HIV prevalence among men but not among women.

The government of Tanzania (GoT) officially launched a national HIV/AIDS care and treatment (C&T) program in 2004. Rapid scale-up of C&T services is a national public health priority; however, due to technical and resource constraints, access to such services had been disappointingly low, especially in remote rural areas. It is under those circumstances that Project HEART was launched in 2004, as the Elizabeth Glaser Pediatric AIDS Foundation's (EGPAF's) response to the national call for a scaling up of C&T services to reach more people living with HIV, especially children and their families living in remote rural areas.

EGPAF was awarded a CDC global cooperative agreement for HIV/AIDS C&T, under Track 1.0, on February 23, 2004, to implement Project HEART (Help Expand Anti-Retroviral Therapy for children and families), initially in four and now in five countries: Côte d'Ivoire, South Africa, Mozambique, Zambia, and Tanzania. The overall goal for Project HEART/Tanzania was to support the Ministry of Health and Social Welfare in rolling out the national HIV/AIDS C&T program as well as contribute to the achievements of the President's Emergency Plan for AIDS Relief/Tanzania's broader goals and targets of

- providing antiretroviral therapy (ART) to at least 2 million HIV-positive people in resource-limited settings;
- preventing 7 million new infections; and
- supporting care for 10 million people affected by HIV/AIDS.

Project HEART supported and operated within Tanzania's national C&T plan and the national health system; all Project HEART/Tanzania-supported sites were nationally designated ART sites within the five regions of Tanzania where the project was implemented: Tabora, Kilimanjaro, Arusha, Shinyanga, and Lindi. Implementation of all activities was in accordance with national guidelines and policies. Project HEART/Tanzania also built the capacity of the districts to fully take on the responsibility of providing services and managing the program to achieve rapid roll-out and long-term sustainability, including the integration of C&T activities into comprehensive council (district) health plans.

While supporting implementation, Project HEART worked with other international partners that complemented EGPAF's technical assistance to the project. Those partners included John Snow, Inc., for quality assessments and improvement; the University of California San Francisco, to provide adult ART refresher training and district mentorship training; and the Baylor University College of Medicine, to support pediatric physicians at the Kilimanjaro Christian Medical Centre and provide continuous pediatric education.

In all supported districts, EGPAF adopted the *district approach*, in which district councils worked as EGPAF's major sub-grantees. Funding from EGPAF was administered directly to the districts and managed according to government financial management regulations. This approach resulted in significant achievements in terms of rapid scale-up of services, district capacity development, and health systems strengthening. The approach also increased the potential for sustainability of services beyond the EGPAF-supported period. In the eight years of implementation, Project HEART/Tanzania made significant progress in both geographic and population coverage, in improving the quality of service delivery, and in health systems strengthening in the supported regions.

Under the *regionalization* arrangement led by U.S. government (USG) donors, EGPAF focused its interventions in five regions on mainland Tanzania: Arusha, Kilimanjaro, Tabora, Shinyanga, and Lindi. In those regions, EGPAF supported the establishment and functioning of 165 C&T sites. Other Track 1.0 implementing partners, AIDSRelief (a Catholic Relief Service-led consortium), Columbia University's International Center for AIDS Care and Treatment Programs, and Harvard University focused their



implementation efforts on other regions of Tanzania, per the USG guidance strategy.

Through the C&T sites, by December 2011, EGPAF supported districts to enroll 169,024 people living with HIV into C&T programs and 96,131 into ART services (cumulatively). That is equivalent to approximately 23 percent and 25 percent of the national coverage, respectively. Children under the age of 15 years reached by EGPAF through Project HEART made up 9.4 percent of those enrolled on ART. With this coverage, EGPAF-supported sites contributed up to 30 percent of the national ART coverage for children of this age group.

To ensure sustainability, Project HEART supported local partners and the government to provide high-quality, continuous HIV prevention, care, and treatment services for affected children and adults in EGPAF-supported regions. Support included capacity building at the national, regional, and district levels to implement selected activities to deliver quality HIV services.

A transition of program activities to local organizations was required by the CDC global cooperative agreement, and encouraged by CDC in Tanzania (CDC/Tanzania). In response, EGPAF created the Ariel Glaser Pediatric AIDS Healthcare Initiative (AGPAHI), a local independent organization registered as a not-for-profit organization in Tanzania, in accordance with local registration requirements.

AGPAHI has an affiliation agreement with EGPAF that ensures strong collaboration and coordination of efforts through the transition process and allows EGPAF to continue building capacity for quality program support. Starting in 2012, AGPAHI will provide full support for C&T in Shinyanga Region, one of the Project HEART-supported regions, under direct funding from USG through CDC/Tanzania.

The analysis in the report includes cohort data indicating that Project HEART had a significant positive impact on the lives of people who have HIV in terms of median CD4 count and functional status, as well as deaths averted and new infections prevented. A data modeling analysis showed that from 2004 to 2011, an average of 24 percent of AIDS-related deaths were averted (21.3 percent among adults, 36.7 percent among children), saving the lives of an estimated 42,206 people who may have died in the absence of Project HEART.

Cost-effectiveness analysis shows that Project HEART was highly cost-effective. The results from the cost-effectiveness analysis showed that the project spent US\$82.60 to save a life year, which is less than Tanzania's gross national income per capita and therefore considered very cost-effective according to the Macroeconomic Commission on Health. Although Project HEART did not provide financial support for antiretroviral (ARV) drugs, the cost analysis also calculated effectiveness by including the cost of ARV drugs (as provided by sources Global Fund, World Bank, and GoT) with the purpose of having a comprehensive picture of cost-effectiveness of the ART program. With the ARV drug expenses included, the cost of saving a life year is \$192.60.

Challenges and recommendations are found at the end of this report. Some of the greatest challenges the project faced included shortages of adequately trained staff and general weaknesses in national, regional, and district health systems.

This document presents a detailed analysis of the processes, achievements, and challenges experienced in the course of implementing the project. Further, the document analyzes the context in which Project HEART was implemented and the extent to which Project HEART has contributed to the national response to the HIV/AIDS epidemic.



## BACKGROUND

### INTRODUCTION

The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) has compiled this end-of-project report for Project HEART (Help Expand Anti-Retroviral Therapy for children and families)—a project that EGPAF implemented for eight years (2004–2011) to support the national scale-up of care and treatment (C&T) services in five regions of Tanzania: Arusha, Kilimanjaro, Lindi, Shinyanga, and Tabora. The project officially closed February 22, 2012. This end-of-project report seeks to document the processes, achievements realized, challenges faced, and lessons learned throughout the implementation period.

The report is made up of five chapters, organized as follows:

- The first chapter presents background information for the assessment. It gives an overview of EGPAF, describes the context of HIV/AIDS in Tanzania and the methodology used in compiling this report, and analyzes the relevance and linkages between Project HEART and the national C&T program.
- Next is an overview of Project HEART, which summarizes the objectives and key areas of focus for the project.
- “Achievements” presents an analysis of the achievements realized against targets for key project indicators.
- The next chapter describes the key challenges encountered during project implementation, lessons learned, and recommendations for EGPAF’s consideration in future programming.
- Last is a conclusion of the report and the project.

### EGPAF: AN OVERVIEW

EGPAF seeks to prevent pediatric HIV infection and eliminate pediatric AIDS through HIV prevention, care, and treatment programs, as well as through research and advocacy. EGPAF currently works in 16 countries worldwide, including Tanzania.

Through funding from the U.S. government (USG) under the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR), EGPAF has been implementing activities to combat HIV/AIDS in Tanzania since 2003 and established its country office in Tanzania in 2004. EGPAF’s work focuses on two implementation areas in

supporting HIV/AIDS services: (1) prevention of mother-to-child transmission of HIV (PMTCT), supported through bilateral cooperative agreements (2003–2011 and 2012–2016) with the U.S. Agency for International Development (USAID), and (2) C&T services, supported by Project HEART (2004–2012) and the U.S. Centers for Disease Control and Prevention (CDC), also through a bilateral cooperative agreement (2011–2016).

Currently, EGPAF supports six regions (five under Project HEART) on mainland Tanzania, based on a regionalization effort led by the USG donor agencies, in collaboration with the Ministry of Health and Social Welfare (MOHSW), in 2006. In Kilimanjaro, Arusha, Shinyanga, and Tabora, EGPAF supports the provision of both C&T and PMTCT services, whereas in Lindi and Mtwara EGPAF supports the provision of only C&T and PMTCT services, respectively.

As the primary recipient of funds, EGPAF was responsible for the overall operations and management of Project HEART. Those responsibilities included, but were not limited to, operational and financial oversight of the program and communication with USG agencies, in-country stakeholders, and partner organizations. Project HEART staff provided continuous technical assistance to the implementing sub-partners.

To increase the effectiveness and efficiency of the support that EGPAF provided to the implementing partners, EGPAF created a decentralized implementation model to complement the decentralization process of the MOHSW, called the *district approach*. This model of support maximizes local ownership and increases the potential for program sustainability by building the capacity of the districts to strategically design and manage HIV/AIDS prevention, C&T, and PMTCT interventions within the districts’ health systems. More information about the district approach is provided in the “Overview” chapter of this report.

### CONTEXT: THE HIV/AIDS SITUATION IN TANZANIA

The first three cases of HIV/AIDS in Tanzania were reported in 1983. Since then, HIV infection has spread rapidly through the country, affecting families and children. Today, HIV/AIDS is recognized not only as a major public health concern but also as a social, economic, and development problem in Tanzania, as in most sub-Saharan African countries.

## PROJECT HEART: TANZANIA

Between 2004 and 2009, HIV prevalence on mainland Tanzania decreased from 7 percent to 5.8 percent. Differences in prevalence rates, however, between regions and across genders exist. For example, while HIV prevalence is estimated at 0.9 percent of the population in Kigoma Region, in Iringa Region it is estimated at 14.7 percent (see Map 1). Infection prevalence among women is higher than among men. Although overall HIV prevalence on mainland Tanzania is estimated at 5.8 percent, the prevalence among women and men is 6.8 percent and 4.8 percent, respectively.<sup>2</sup>

Mainland Tanzania's primary mechanism for HIV transmission remains unprotected heterosexual intercourse, which is responsible for about 80 percent of all new infections. Mother-to-child transmission of HIV is another major means of HIV transmission in Tanzania, estimated to account for about 18 percent of all new infections.<sup>3</sup>

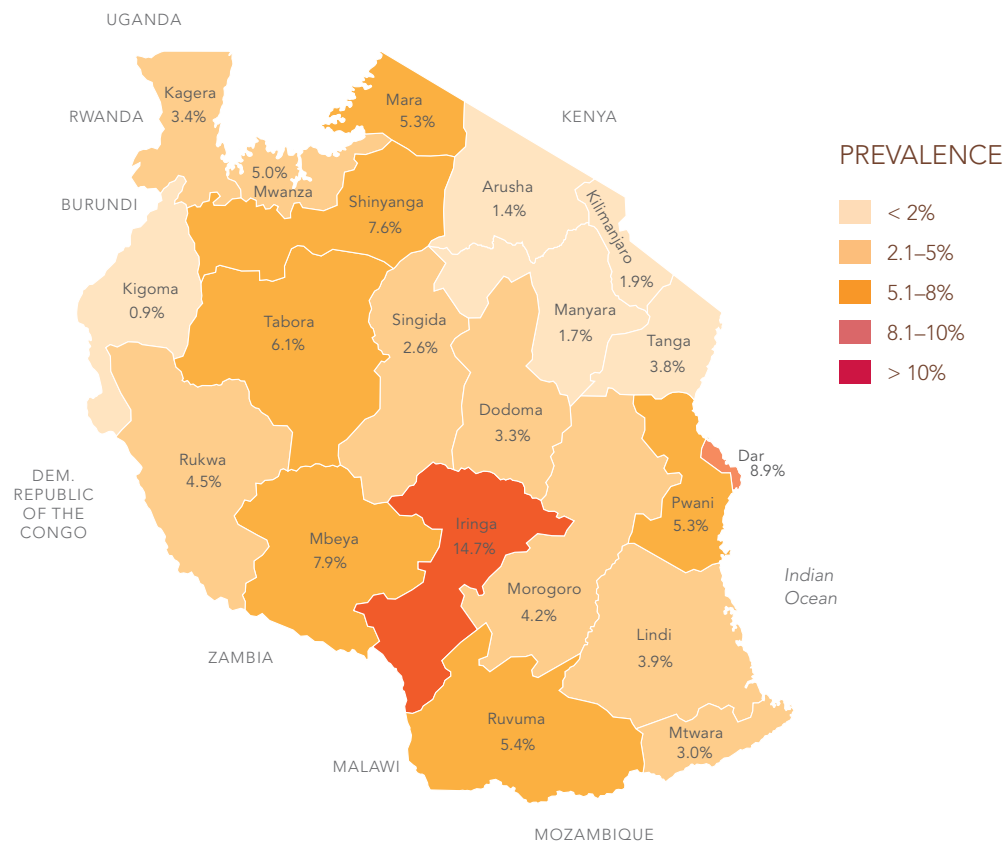
There are other means of HIV transmission in Tanzania, as documented in the *Tanzania HIV/AIDS and Malaria Indicators*

**“PROJECT HEART HAS CONTRIBUTED TO THE RAPID SCALE-UP of antiretroviral treatment and enabled many Tanzanians living with HIV to live healthier, longer, and more dignified lives in the face of HIV and AIDS.”**

Jeroen Van't Pad Bosch, Country Director, EGPAF Tanzania

*Survey, 2008/09 data; for example, 1.8 percent of young persons aged 15 to 24 who reported that they never had sex were found to be HIV positive. This suggests that they were infected through mother-to-child transmission, blood transfusion, unsafe injections, or other traditional practices such as ear piercing, male circumcision, or female genital cutting.<sup>3</sup>*

**MAP 1. HIV PREVALENCE BY REGION**



Source: National Bureau of Statistics, Tanzania HIV/AIDS and Malaria Indicators Survey, 2007/08 (Dar es Salaam, Tanzania: NBS, 2008).

**TABLE 1. EGPAF'S CONTRIBUTION TO NATIONAL HIV CARE AND TREATMENT AND PMTCT SERVICES**

INDICATOR	NATIONAL TOTAL	EGPAF-SUPPORTED	EGPAF CONTRIBUTION AS % OF NATIONAL TOTAL
Number of health facilities providing C&T services	1,100	165	15%
Number of people enrolled in C&T services	749,302	169,024	23%
Number of people receiving ART	390,320	96,131	25%
Number of children receiving ART	29,918	9,026	30%

Source: EGPAF reports and Ministry of Health and Social Welfare updates on care and treatment, November 2011.

#### CONTEXT: STATUS OF C&T AND PMTCT SERVICES IN TANZANIA

The national scale-up of C&T and PMTCT services started in 2004 and involved the collaboration of, and financial and technical support from, the government of Tanzania (GoT), nongovernmental organizations (NGOs), and donors. By July 2011, about 93 percent of reproductive and child health clinics on mainland Tanzania were already providing PMTCT services. It is estimated that nearly 92 percent of pregnant women attending antenatal care clinics receive PMTCT services and about 85 percent of them agreed to test for HIV. The coverage of antiretroviral (ARV) prophylaxis among HIV-positive pregnant women is currently estimated at 70 percent.<sup>4</sup>

Coverage of pediatric AIDS services is still low—as of July 2011, only 25 percent of children born to HIV-positive mothers were receiving early infant diagnosis (EID) services and 57 percent of HIV-exposed babies were receiving ARV prophylaxis.<sup>4</sup> In terms of C&T, coverage of services in the country is still very low, as only about 1,100 (out of about 5,600) health facilities (approximately 19.7 percent) were providing such services by December 2010, and there are significant differences in coverage across regions and districts. By March 2011, a total of 749,302 people living with HIV were enrolled in C&T services and 390,320 (approximately 52.1 percent of the 749,302 enrolled in C&T) were already receiving antiretroviral therapy (ART). About 7.7 percent of those currently receiving ART (approximately 29,918 people) were children under the age of 15 years.<sup>4</sup> This falls far below the national target that suggests that at least 20 percent of people receiving ART should come from that age group.

Attrition of those enrolled from care and treatment centers (CTCs), known as “lost to follow-up,” is a major challenge for the national C&T program. Based on the same data from March 2011, the attrition rate nationally is estimated at 47 percent of those enrolled.<sup>4</sup> Developing sound retention and tracking mechanisms remains a key opportunity and challenge for the national response.

#### RELEVANCE OF PROJECT HEART TO THE NATIONAL RESPONSE

With funding from PEPFAR through CDC, in February 2004, EGPAF launched Project HEART in response to the epidemic and to the government’s call to scale up C&T services. Initially Project HEART was piloted at two referral hospitals (Muhimbili National Hospital and Kilimanjaro Christian Medical Centre [KCMC]) with a particular focus on pediatrics. In October 2004, at the request of GoT, EGPAF expanded its services to also include general C&T services for people living with HIV. In 2005, GoT approved EGPAF’s roll-out plan; the project expanded significantly (and was the sole provider of C&T services in the five regions) to support 165 sites (47 hospitals and 118 health centers) providing C&T services—representing about 15 percent of the national coverage.

Through EGPAF’s support, more than 169,024 people living with HIV (approximately 23 percent of the national coverage) were enrolled into C&T programs, among which a cumulative total of 96,131 (about 25 percent of the national coverage) were started on ART. Among those started on ART, 9,026 were children under the age of 15 years (9.4 percent of those on ART); this represents 30 percent of children receiving ART in Tanzania. Table 1 shows the coverage of EGPAF’s support in Tanzania.

## PROJECT HEART: TANZANIA

### OBJECTIVES

The aim of this end-of-project report is to document the processes, achievements, challenges faced, and lessons learned during implementation of Project HEART, and specifically to document

- Project HEART's effect on ART service delivery on people living with HIV, including impact on their quality of life;
- the project's impact on health systems strengthening and sustainability;
- the extent to which EGPAF has contributed to PEPFAR's C&T objectives and targets;
- the effectiveness, relevance, and cost-effectiveness of EGPAF's C&T program under Project HEART; and
- recommendations for future work.

### METHODOLOGY

The end-of-project report was prepared primarily through a desk review and analysis of existing project data that were collected throughout the project life in GLASER (Global AIDS System for Evaluation and Reporting), a web-based data warehouse developed by EGPAF. Data analysis is largely but not exclusively focused on addressing Project HEART's core indicators.

Interviews were conducted with staff from EGPAF's programmatic units, CDC/Tanzania, and the National AIDS Control Program (NACP) to collect further qualitative data that can provide clarity on and more understanding of the available data and put results into a broader context.

Modeling techniques using Spectrum were employed to analyze the impact of Project HEART on people living with HIV.<sup>4</sup> A cost analysis was conducted to assess the cost-efficiency of the program. Appendix 1 shows the key areas of focus and indicators assessed during the preparation of this end-of-project report. Appendix 2 provides details of the impact and cost analysis methodology.



## PROJECT HEART OVERVIEW

### INTRODUCTION

In this chapter we describe Project HEART, providing details about its main areas of focus and the key activities and approaches employed in the course of its implementation. The project lasted eight years, with continuation applications submitted to CDC each year. Each such application had specific goals and objectives; however, the project's overall focus remained the same. Those goals and objectives are summarized in the following subsection so as to reflect the main focus of the project over eight years.

### PROJECT HEART GOALS AND OBJECTIVES

The main aim of Project HEART over eight years was to contribute to the achievement of PEPFAR broader goals and targets of (1) providing ART to at least 2 million HIV-positive people in resource-limited settings; (2) preventing 7 million new infections; and (3) supporting care for 10 million people affected by HIV/AIDS. The main areas of focus for this project were divided into three major components:

#### **1. Improve and scale up HIV/AIDS C&T services in Tanzania.**

Under this component, EGPAF and its implementing partners worked to ensure that HIV/AIDS C&T services were available and accessible to adults and children in the targeted communities. This involved supporting the provision of HIV counseling and testing services, enrollment of HIV-positive people in C&T programs, and follow-up to retain the enrolled patients.

#### **2. Improve the quality of HIV/AIDS C&T services by strengthening the continuum of care, the integration of programs, and linkages.**

The focus under this component was to improve the quality of care offered at the sites supported through Project HEART. This was implemented through training, mentorship, supportive supervision, and the implementation of quality improvement and quality assurance activities.

#### **3. Strengthen health systems to enable the sustainability of HIV programs in the supported districts.**

The focus here was to strengthen the district technical and managerial capacity to sustainably implement the program and ensure rapid expansion of services. This involved an emphasis on the use of strategic information for decision making, as well as ensuring financial sustainability so that service delivery would continue beyond the donor-funded period. It also included the transition of program management to a local organization.

### PROJECT DESIGN AND DELIVERY MODE: THE DISTRICT APPROACH

Since its inception, Project HEART was implemented using the sub-granting method, whereby EGPAF administered funds to its implementing partners. Initially (when EGPAF supported only hospitals and just a few sites), funds were given directly to the institutions and EGPAF dealt with the institutions directly. However, as the number of supported sites increased in 2006, EGPAF introduced the district approach, whereby district councils acted as EGPAF's major sub-recipients. Funding from EGPAF was channeled to the districts and was executed according to government financial management and accountability procedures.

Through the district approach, emphasis was placed on building local technical capacity to ensure rapid service expansion and sustainability, financial sustainability, supportive supervision to ensure that services are of high quality, and monitoring and evaluation (M&E). This approach also sought to establish mechanisms that would enable a quick response to challenges as they arose.<sup>5</sup>

The district approach was evaluated in 2008 by an EGPAF-led team funded by USAID, and it was found to be an important strategy in enabling and supporting the rapid expansion of services in the supported districts and increasing the potential for sustainability.

### PROJECT HEART IMPLEMENTATION TEAM AND INSTITUTIONAL ARRANGEMENT

EGPAF led the Project HEART/Tanzania implementation team, supported by smaller scopes of work from three technical assistance providers. All partners brought extensive technical expertise and experience, maximizing each other's strengths. The three international organizations complemented EGPAF's technical assistance package as follows: Baylor College of Medicine added capacity building for pediatric HIV; John Snow, Inc., contributed quality improvement and M&E expertise; and the University of California San Francisco brought a capacity-building mentorship program to EGPAF and sub-grantees.

As the primary recipient of funds, EGPAF was responsible for overall operations and management of Project HEART. This included operational and financial oversight for the entire program; technical assistance; and communication with the donor, in-country partners, and other stakeholders. In addition to oversight functions, EGPAF also provided direct support to

## PROJECT HEART: TANZANIA

sub-grantees through training, supportive supervision, mentorship, data collection, and site assessments.

### TRANSITIONING TO A LOCAL PARTNER: AGPAHI

Project HEART's transition goal is to support local partners, especially the government, to provide high-quality, continuous HIV prevention, care, and treatment services for affected children and their families. As PEPFAR was reauthorized in 2008 under new legislation, the second phase of PEPFAR focused on transitioning from an emergency response to promoting sustainable, country-owned programs. At this time, the Department of Health and Human Services issued a three-year continuation of the four Track 1.0 ART awards through February 2012. As part of the continuation, the Track 1.0 ART partners were required to do the following:

- Ensure uninterrupted provision, and in some cases expansion, of quality HIV care and treatment programs and services
- Transition management of the programs to local partners by February 28, 2012

Specific to Tanzania, CDC/Tanzania produced a white paper on transition in 2010, providing guidance on its vision. In response, EGPAF developed a global transition strategy, including the transition of activities to local government; local NGOs; and, in the case of Tanzania, a new, locally registered NGO.

Through organic development from the EGPAF/Tanzania office, the Ariel Glaser Pediatric AIDS Healthcare Initiative (AGPAHI) was created as an independent organization affiliated with and able to receive support from EGPAF. As affiliated organizations, AGPAHI and EGPAF work collaboratively to reach target populations with services essential to HIV prevention, care, and treatment. EGPAF/Tanzania created the following transition objectives:

**Objective 1:** Improve the capacity of the government at the national, regional, and district levels to implement selected activities for Project HEART to deliver quality HIV services.

**Objective 2:** Improve the capacity of select NGOs to implement/carry out specialized functions for Project HEART and to provide technical assistance in the delivery of quality services and engagement with the community.

AGPAHI was registered as a not-for-profit organization in Tanzania in 2011, in accordance with local registration requirements. The governance structure developed for AGPAHI

**“NOW WE ARE MOVING toward shared responsibility, where we are building the capacity of the local government and a new affiliate. It is also part of the transition for district health departments to understand that we do this as part of broader mission to eliminate pediatric HIV, and to understand the challenges and how to overcome them versus telling them what to do.”**

Roland Van de Ven, Technical Director, EGPAF Tanzania

in Tanzania was specifically designed to be consistent with the Office of the U.S. Global AIDS Coordinator's definition of a local partner. Specifically, control of the organization is vested with AGPAHI's governance body. While the affiliation model permits EGPAF to appoint members to that body, it provides a right of appointment of only up to a minority of the members.

Until AGPAHI had received direct funding from USG and other donors, EGPAF staff who were implementing Project HEART activities at the country and field offices were seconded to AGPAHI. That arrangement, which ended February 22, 2012, allowed EGPAF to ensure that the new organization would have strong human resource capital to function effectively. In addition, it allowed AGPAHI to take on a leadership role in the oversight and direction of program activities under the sub-award.

### KEY AREAS OF FOCUS FOR PROJECT HEART

#### HIV Care and Treatment

Project HEART started in 2004—one year after the start of PMTCT services—with the aim to speed up the scale-up of C&T services. It started with two sites (Muhimbili National Hospital and KCMC). Early in 2005, two more regional hospitals (Mawezi Hospital and Morogoro Regional Hospital) began providing ART services under Project HEART. Using additional CDC in-country funding—the Rapid Expansion Funds—Project HEART expanded to the additional high-burden sites of Kibong'oto National Tuberculosis Hospital, Tumbi Regional Hospital, Tabora Regional Hospital, and Village of Hope (an orphanage center taking care of children who are HIV positive) in Dodoma. A total of eight sites were supported by the end of 2005.



In 2006, under the regionalization process, Project HEART was assigned to provide services in four regions (Arusha, Kilimanjaro, Shinyanga, and Tabora); a fifth region (Lindi) was added in 2007. By the end of 2010, Project HEART was supporting a total of 165 health facilities.

### Capacity building

In the process of implementing Project HEART, a capacity-building unit within EGPAF was responsible for ensuring that health service providers (HSPs) had the required knowledge, skills, and aptitude to serve clients, most of whom were people living with HIV, including children, women, and men. The unit was also responsible for building the capacity of the sub-grantees in program and financial management.

EGPAF organized, conducted, and financed various training programs. The training sessions aimed at building EGPAF's and sub-grantees' capacity to deliver and achieve targets set for the project. The capacity-building program included the training of trainers to enable quick scale-up of C&T and PMTCT services offered, training on supportive supervision, and building the capacity of HSPs to deliver these services. Under Project HEART, EGPAF worked with MOHSW to develop different training curricula aimed at strengthening the delivery of pediatric HIV and AIDS services.

### Collaborative tuberculosis and HIV program

Collaborative tuberculosis (TB) and HIV activities are an integral part of C&T services aimed at improving the quality of life of people living with HIV by preventing morbidity and mortality from TB infection. This is achieved through (1) establishing mechanisms for collaboration by forming multilevel collaborative bodies, (2) decreasing the burden of TB among people living with HIV through intensified TB case finding, (3) preventive therapy with isoniazid, and (4) TB infection control in health-care and congregate settings.

Under this component, the program also worked to ensure that TB patients had access to counseling and testing services and that people living with HIV had access to cotrimoxazole preventive therapy.

EGPAF/Tanzania's Project HEART supported implementation of TB infection prevention and control practices at the C&T clinics to prevent transmission of TB among people living with HIV as well as among health providers since the beginning of project year five (March 2008).

EGPAF worked closely with MOHSW, regional health management teams (RHMTs), and council health management teams (CHMTs) to strengthen TB/HIV collaborative activities by ensuring that patients at C&T and TB clinics are screened for both diseases; that they are educated on preventive measures; that sustainable referral mechanisms for treatment at site level are in place; and that services provided are recorded, monitored, and evaluated for further improvement. Under Project HEART, EGPAF supported trainings of service providers and reviewed, printed, and distributed information, education, and communication materials; standard operating procedures; and guidelines. EGPAF also provided supportive supervision and onsite mentorship at facility, district, and regional levels aiming at improving quality of service at C&T and TB clinics.

### Health systems strengthening (planning, implementation, and reporting)

EGPAF implements its programs within Tanzania's national health system under the framework of the national C&T plan. For that reason, all C&T sites receiving support from EGPAF are nationally designated CTCs. Under Project HEART, EGPAF implemented various activities and training programs aimed at strengthening the health system on critical issues, including human resources for health; M&E; procurement of drugs; supply chain management; and using data for planning, reporting, decision making, and quality improvement.

### Infrastructure improvement

Project HEART supported improvement, repair, and renovation of existing health facilities, laboratories, and pharmacies. This involved the expansion of facilities to optimize patient flow and accommodate more services and major renovations to improve the working environment.

### Quality improvement

EGPAF initiated a quality improvement (QI) initiative focused on improving the delivery of site-level activities and services. The QI unit was established in 2007 within EGPAF to implement QI activities with and through government with the aim of national support and capacity building. The QI unit's aims are to strengthen the implementation, support, and coordination of QI activities at all sites supported by Project HEART and to support national QI initiatives using national QI guidelines. Initial activities took place in collaboration with John Snow, Inc. Those involved capacity building through training and mentoring on QI for EGPAF and site staff and conducting quality assessments and

## PROJECT HEART: TANZANIA

initial improvement activities at the sites. A national QI framework and QI tool was developed at the national level with support from EGPAF in the system and process. QI is implemented through district-level QI teams trained at the national level with an MOHSW curriculum and the above-mentioned tool.

### *Improving laboratory services*

EGPAF has been providing various laboratory support services to the government's PMTCT and C&T programs since 2004. EGPAF initiated a laboratory support unit in 2008, the aim being to strengthen and fast-track the national provision of highly needed lab services and cope with the rapid expansion of services. The long-term aim is sustainability, seen in national support of laboratories and capacity building.

The mandate of EGPAF's laboratory support unit includes (1) capacity building and supportive supervision of laboratory services in the supported regions and local government; (2) procurement, distribution, and maintenance of laboratory equipment; (3) maintenance and renovation of laboratory buildings; (4) monitoring the accuracy of laboratory machines; and (5) reporting.

EGPAF supports the national accreditation of laboratories. Some of the EGPAF-supported laboratories are participating in the Quality Control Scheme and Equipment Validation in order to ensure that laboratory test results are correct and accurate.

### *Strengthening supply chain management*

EGPAF established the supply chain management (SCM) unit in 2010; prior to 2010, Project HEART collaborated with Management Sciences for Health for technical assistance to support capacity building and strengthening the pharmaceutical and other commodity management systems in all EGPAF-supported districts.

Under Project HEART, EGPAF implemented various activities aimed at strengthening the management of the supply chain to ensure (1) uninterrupted availability of commodities at all EGPAF-supported C&T and PMTCT sites; (2) provision of technical assistance to the sites to ensure proper forecasting, budgeting, ordering, and timely procurement; (3) capacity building on basic logistics and pharmaceutical management; and (4) M&E. EGPAF, in collaboration with MOHSW, provided mentorship to CHMTs using a logistics mentoring tool kit. Another area given much emphasis was training the CHMTs on SCM and pharmaceutical management. That involved organizing and conducting training

sessions to build the capacity of the facilities and sub-grantees in managing ARVs and other related commodities.

EGPAF's SCM unit works in close collaboration with the Medical Stores Department, the Supply Chain Management System, regional and district pharmacists, and other partners to strengthen the in-country supply chain.

### *Monitoring and evaluation*

**EGPAF global M&E** EGPAF's global M&E unit coordinates closely with its counterparts in implementing countries to ensure the implementation of quality monitoring and reporting systems for Project HEART globally. The global M&E unit provides technical leadership in tracking specific program indicators from implementing countries; such indicators are used for reporting on overall project performance to CDC/Atlanta. EGPAF's global M&E unit also coordinated with implementing countries to develop and implement a strategic M&E agenda on priority programmatic areas in C&T and PMTCT.

In addition to activities related to strengthening M&E systems, in 2007 EGPAF introduced GLASER—a web-based data warehouse that enables data entry and management for C&T under Project HEART. Specifically, GLASER was used to enter and store program data, generate standard and ad hoc reports, troubleshoot and raise queries on district or center data, and help with decision making for the improvement of the program. As EGPAF and Project HEART/Tanzania worked within and supported the national C&T and PMTCT M&E system, the GLASER system was adopted and aligned with the national M&E system.

**EGPAF/Tanzania M&E** The overall mandate of this unit is to improve the quality of data for Project HEART and other interventions within EGPAF. Specifically, the department is responsible for (1) building capacity on data management at the district and facility levels; (2) providing IT support to EGPAF and its sub-grantees (including districts, faith-based organizations, and other private facilities); (3) training data clerks; (4) cleaning and reporting data and setting up backup systems; and (5) establishing standard operating procedures for data management at the facility level. The unit also has the responsibility of ensuring that data collection tools (e.g., CTC2 tools and other templates) are up-to-date.

EGPAF/Tanzania programs, including Project HEART, are aligned with MOHSW's M&E system. Data are managed by health facility staff working at CTCs; this includes filling in various patient record forms such as CTC1 and CTC2 forms and pre-



ART, ART, and cohort forms, among others.\* The unit compiles monthly and quarterly reports. Three summary reports for C&T services are submitted to the district level: the monthly cross-sectional report, quarterly report, and cohort analysis report.

### Strengthening community linkages

EGPAF community support started in 2008 during the project's fifth year. Its mandate includes (1) awareness creation and promotion of C&T and PMTCT services; (2) conducting outreach activities to ensure the retention of clients in C&T services; (3) creating linkages between C&T and PMTCT programs; (4) providing psychosocial support to people living with HIV to enhance the continuum of care; and (5) linking C&T clients with other organizations (e.g., community-based organizations, NGOs) providing other services, such as income-generating activities, home-based care, nutrition support, and other services EGPAF does not provide. The community linkages program also focuses on pediatric AIDS to increase the enrollment and retention of children in C&T services. Each C&T site supported by EGPAF has a community liaison who creates linkages with village leaders, community health workers, and influential community people to conduct advocacy and community mobilization activities.

The aim of such activities is to increase access to support needed by PLHIV, reduce stigma, and gain assistance in finding patients lost to follow-up. These activities also serve as an opportunity to publicize HIV/AIDS-related information, including the state of the epidemic in the community, services available in the area, and the problems faced by the C&T program, especially low registration of HIV-exposed children and clients who are lost to follow-up.

\* CTC1 is a card held by the client and is used to access C&T services anywhere in the country. The CTC2 card is the patient's file that is kept at the facility. The CTC2 card is used for primary input into the pre-ART and ART registers as well as into the CTC2 database. It records longitudinal information about the patient for as long as the patient is accessing services.

### Communications and advocacy

The communications and advocacy unit was established at EGPAF in 2007, with an organization-wide mandate, rather than being focused only on Project HEART. It includes policy and advocacy work focused on C&T and PMTCT.

### Early infant diagnosis

As part of the service package of pediatric HIV/AIDS care and treatment services, in collaboration with USG partners and MOHSW, EGPAF has supported efforts to implement EID of HIV infection in health facilities since July 2008 in the four supported regions of Tabora, Shinyanga, Kilimanjaro, and Arusha.

EID services are currently implemented at 222 health facilities, including 38 hospitals, 43 health centers, and 141 dispensaries.

The program has conducted basic EID and backup training for service providers on how to collect a dried blood spot (DBS) from an HIV-exposed infant and pack and send the specimen to a testing lab. EGPAF helped health facilities transport DBS specimens to and from testing labs by signing an agreement with a local courier company, Expedited Mail Service, which is a postal office company with wide coverage in the country, to reach most urban and rural districts with facilities providing EID services. Short message service (SMS) printers have been installed at 18 health facilities in collaboration with the Clinton Health Access Initiative and MOHSW. They have helped improve turnaround time of DBS results to less than two weeks. EGPAF has given technical and financial support to the DNA-PCR (polymerase chain reaction) lab at KCMC, which processes DBS specimens for the northern zone. The installed database at the DNA-PCR lab has been adopted by MOHSW to be used country-wide.

## ACHIEVEMENTS

This chapter presents the achievements of Project HEART’s eight-year implementation. The structure we used to present the results follows the results chain, starting from lower-level results (i.e., processes and outputs) and proceeding to higher-level ones (i.e., outcomes and impacts). Whenever possible, the available data were analyzed to show the trend over time and were compared with targets when provided.

### ACHIEVEMENTS REALIZED AT THE OUTPUT LEVEL

#### Health systems strengthening

Through Project HEART, EGPAF implemented various activities aimed at strengthening the health systems in the supported districts. We summarize those activities according to the building blocks of a functioning health system.

#### Capacity building

EGPAF delivered training and capacity-building programs that contributed significantly to the performance of Project HEART. Capacity-building programs also facilitated the rapid expansion of services and the implementation of activities. Some of the key outputs achieved under human capacity development include—

- **Comprehensive Pediatric HIV Care Curriculum.** In collaboration with MOHSW, EGPAF developed the Comprehensive Pediatric HIV Care Curriculum. EGPAF initiated, funded, and facilitated the development of the curriculum, which MOHSW has adopted as a national training guide for pediatric HIV/AIDS. Using this curriculum, EGPAF, through Project HEART, trained a total of 171 clinicians and nurses on pediatric HIV/AIDS care in the supported regions.
- **Lay counselor training.** EGPAF trained 163 people living with HIV to become lay counselors. After training, lay counselors are mandated to mobilize and provide HIV-related information to clients at CTCs as well as at the community level.
- **District mentorship program.** EGPAF trained 237 district mentors. The mentors are responsible for transferring the needed knowledge and skills to their colleagues. EGPAF’s mentorship program served as a model and guided MOHSW in the development of the National District Mentoring Program with its training curriculum package.
- **Basic ART skills training.** EGPAF facilitated the training of 302 HSPs in basic ART skills. This contributed to improved access and use of quality C&T services, especially at the lower-level health facilities.

**TABLE 2. NUMBER OF HEALTH SERVICES PROVIDERS WHO RECEIVED TRAINING FROM EGPAF SINCE 2004**

Year	Clinicians	Nurses	Other Cadres	Total
2004	7	9	2	18
2005	73	68	25	166
2006	96	109	34	239
2007	199	160	168	527
2008	319	526	1,513	2,358
2009	314	455	270	1,039
2010	350	428	483	1,261
2011	477	213	690	1,380
Total*	1,835	1,968	3,185	6,988

\*May include new and refresher trainings.

**TABLE 3. NUMBER OF SITES DECLARED “BACKLOG FREE” PER REGION, BY DECEMBER 2011**

Region	Number of Sites Declared Backlog Free
Arusha	30
Kilimanjaro	17
Lindi	9
Shinyanga	18
Tabora	8
Total	82 (100% of all sites with database)

- **Laboratory staff training.** Each of the sites with a laboratory receiving support from Project HEART had at least two staff trained on different laboratory functions. All the trained staff came from the supported district councils.

Table 2 summarizes the overall number of HSPs who have benefited from above-mentioned training programs EGPAF has offered or supported since 2004.

*Program leadership and stewardship*

- EGPAF strengthened the districts’ capacity to prepare their own evidence-based C&T plans, roll-out of services, and sustainability.
- In the supported districts, all C&T activities under Project HEART were integrated into Comprehensive Council Health Plans, at both the council and site levels.

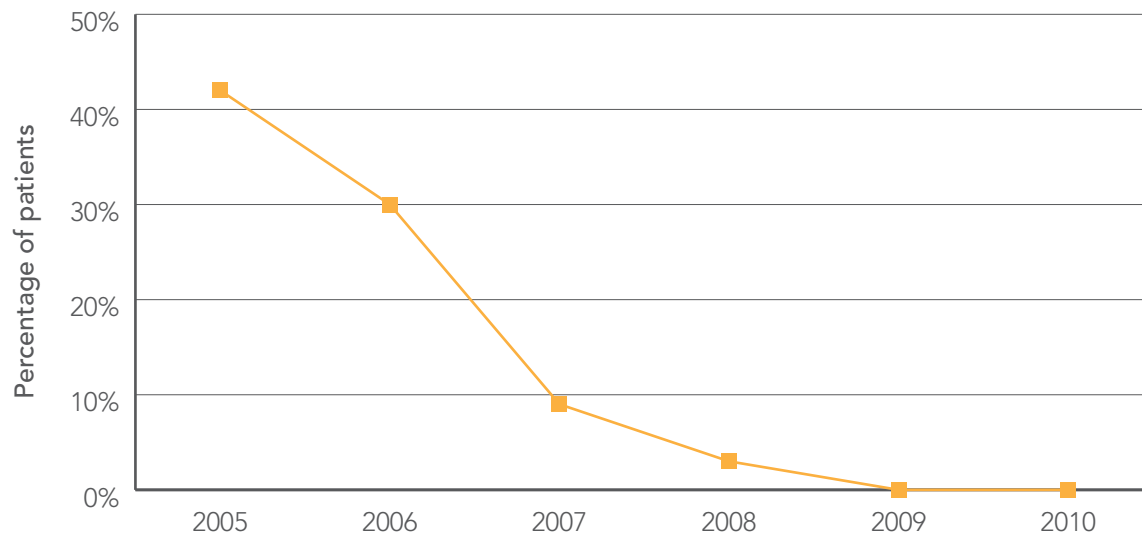
*Strengthening health management information systems*

- EGPAF conducted training courses for 66 data entry clerks and 165 C&T coordinators. The courses supported the collection and management of better-quality data. As a result, more than 60 percent of the sites EGPAF supported under the project are now able to compile and submit quality reports to NACP and EGPAF without need of direct EGPAF support.
- EGPAF provided support aimed at harmonizing the HIV/AIDS M&E systems used by different stakeholders. EGPAF also supported strengthening the national capacity through training, mentoring, and mainstreaming tools to manage and use data for reporting. Specifically, EGPAF supported capacity-building

and skills development activities for more than 100 sub-grantees’ staff on how to correctly use the CTC database—Tanzania’s national electronic HIV patient database. The quality and timeliness of submission of the CTC2 forms has since improved.

- EGPAF helped develop the national supportive supervision tools and trained RHMTs and CHMTs on their effective use. In the process, the CHMTs’ and RHMTs’ capacity and confidence in using the tools was strengthened and joint supportive supervision was conducted.
- All Project HEART data are computerized at 82 C&T sites (49.7 percent of all supported sites). As of December 2011, of the 82 sites that were operating on electronic databases, 100 percent were classified as being “backlog free,” meaning that all patients’ information are entered into the database. Table 3 shows the regional distribution of backlog-free sites.
- Based on data quality assessment results, M&E systems at C&T sites and at the sub-grantee level have improved dramatically. More than 80 percent of tools (i.e., registers, databases, data collection forms) have been updated and are being used correctly.
- Based on data quality assessment results of comparing different reports on identified indicators, overall data discrepancies have decreased, from the previous level of discrepancies of 44 percent to less than 5 percent in assessed sites. Data errors have been minimized to less than 10 percent and accuracy increased to more than 80 percent.

**FIGURE 1. AVERAGE PERCENTAGE OF PATIENTS WITH UNRECORDED WORLD HEALTH ORGANIZATION FUNCTIONAL STATUS, 2005–2010**



- The recording of client information in patient files has shown significant improvement. For example, Figure 1 shows the decreasing trend in unrecorded information on World Health Organization (WHO) functional status in CTCs, from 39 percent to below 1 percent in five years.
- More than half of the supported districts have an institutionalized dispatch book system to track reports from the centers; this led to more than 80 percent complete report submission from sites to the district level by the end of 2010. In previous years, less than 30 percent of the reports were reaching the district level.
- Several standard operating procedures and guidelines were developed and translated into Kiswahili. This helped clarify indicators and issues regarding data management and led to a significant improvement in data quality and use.
- A two-way feedback system was introduced, enabling information sharing between districts and sites and improving the use of data for planning and decision making.

*Infrastructure improvement*

- EGPAF supported 58 laboratories with lab equipment, including supplying 33 CD4 count machines, 27 hematology machines, 25 biochemistry machines, 140 hemoglobinometer (Hb) machines and four Class II biosafety cabinets, among other things. EGPAF also supported the provision of materials needed

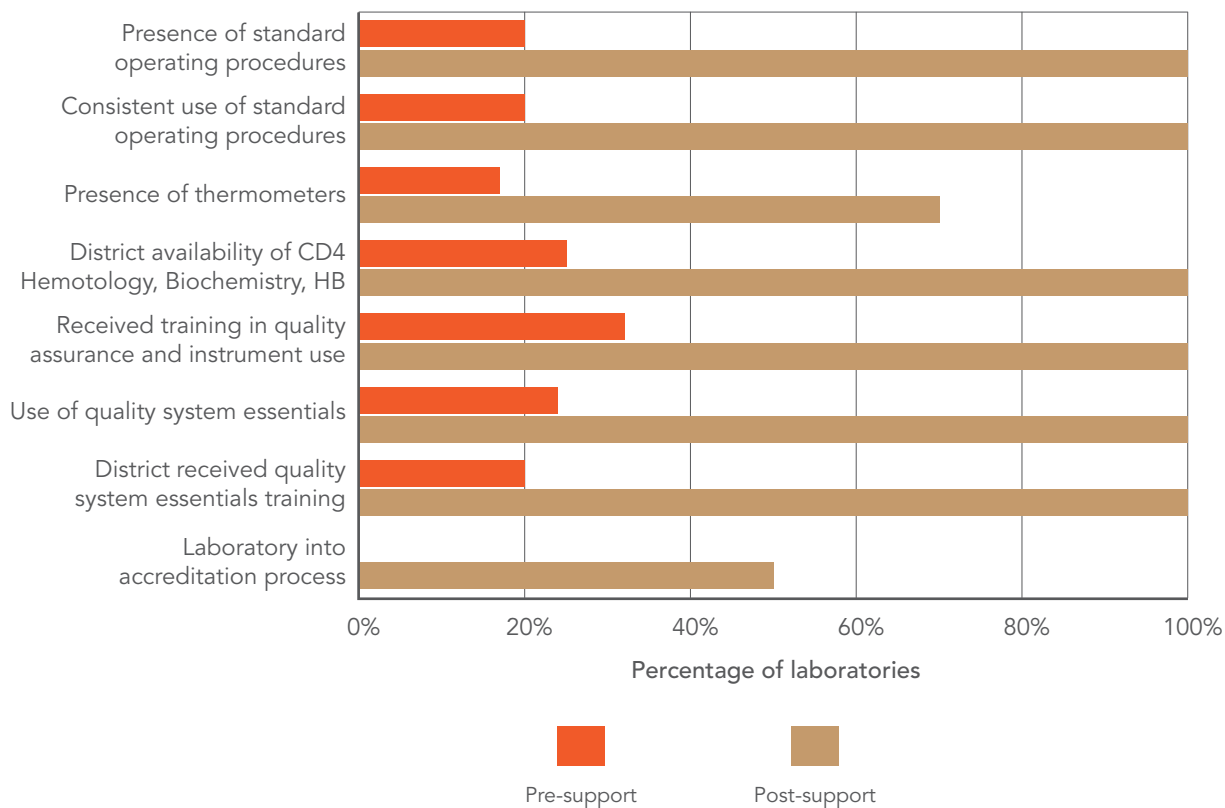
for other routine laboratory activities, including HIV, TB, and syphilis testing.

- Project HEART supported ongoing laboratory Internet connections for facilities with available Internet connectivity. Currently 7 of 25 laboratories have been connected to Internet services.
- Project HEART–supported laboratories at KCMC, Kahama District Hospital, and Mt. Meru Hospital have begun the process of seeking accreditation. EGPAF is also supporting one laboratory seeking ISO-15189 accreditation and two others seeking to obtain WHO Regional Office for Africa (WHO/AFRO) accreditation. The plan is to enroll two more laboratories into the WHO/AFRO accreditation process.
- Project HEART supported repairs and renovations at 27 pharmacies and pharmaceutical storage areas in the supported regions.
- Project HEART supported repairs and renovations at 51 CTCs in the supported regions.

*Strengthening supply chain management*

- EGPAF trained 308 HSPs on the use of logistics management information systems; this was followed up with regular supportive supervision and mentoring.

**FIGURE 2. PERCENTAGE OF LABORATORIES WITH SELECTED SERVICES BEFORE (2009) AND AFTER LABORATORY SUPPORT INITIATIVE (2011) (BASED ON 44 LABORATORIES SURVEYED)**



- Between 2010 and 2011, a total of 110 HSPs from the five supported regions were trained on the management of HIV commodities and use of logistics management tools.
- Through EGPAF’s central procurement system, districts were given funds and responsibility to forecast and procure reagents and medicines needed for the treatment of opportunistic infections to ensure that sites do not have stock-outs for medicines and other supplies, including HIV test kits.
- Facilities can now order and forecast products based on their consumption. Communication between health facilities and the Medical Stores Department has also improved.
- The link between the central level and service-delivery-point supply chain and the Medical Stores Department zonal stores has been strengthened. This enables an easier flow of information.

*Strengthening service delivery*

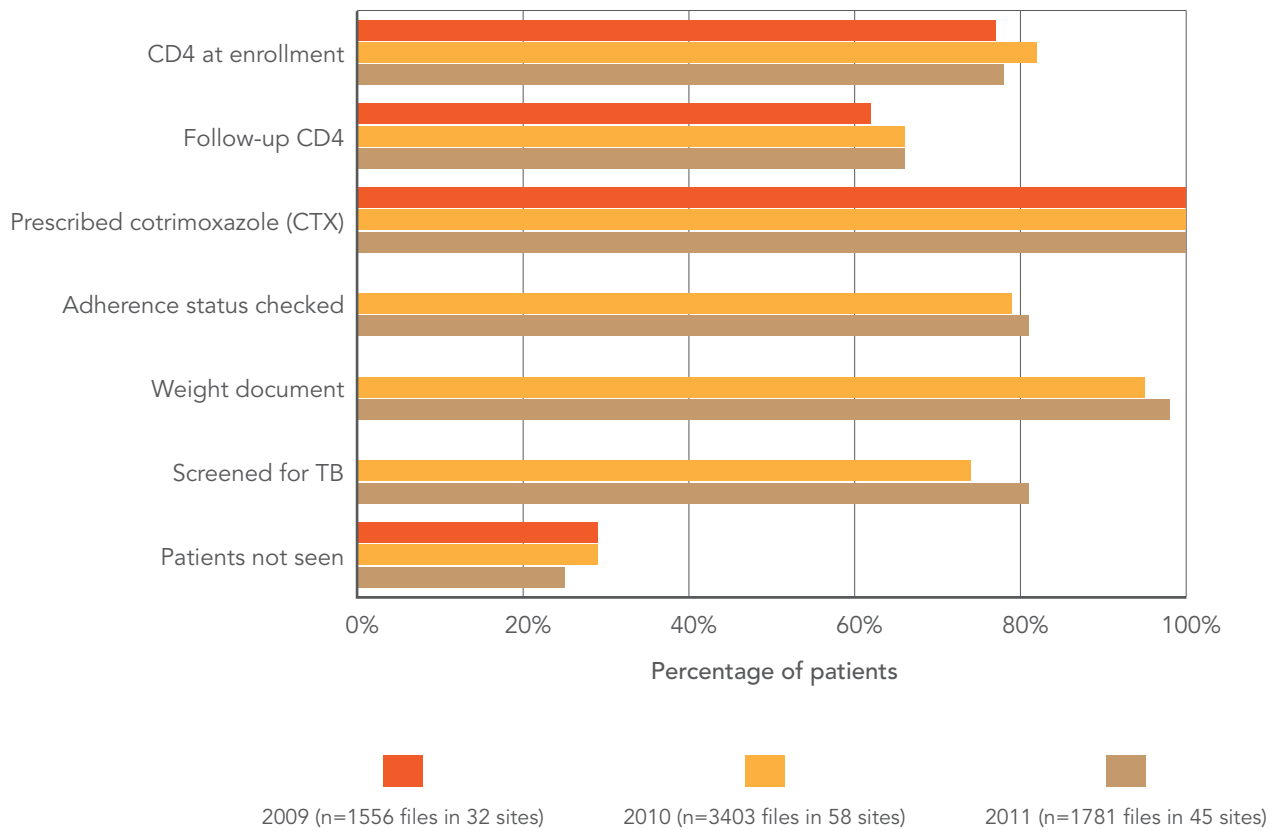
- EGPAF ensured that, except for one district (Longido District), each of the supported districts has at least one well-functioning

CD4 count machine, hematology machine, and biochemistry machine. Longido District has a very low HIV prevalence; hence, specimens are tested at Mt. Meru Regional Hospital.

- EGPAF worked to strengthen laboratories that implement the 12 quality system essentials, which are part of the Clinical and Laboratory Standards Institute’s Quality Management System model.\*
- EGPAF conducted needs assessments for individual laboratories to identify critical priority areas that need improvement, using the MOHSW guidelines. EGPAF, in collaboration with MOHSW, developed customized plans for the improvement of laboratory services. Figure 2 presents results before and after laboratory support.
- Staff from 46 hospitals were trained and are implementing QI activities.

\* For more information on the Quality Management System model, see [www.who.int/ihr/training/laboratory\\_quality/en/index.html](http://www.who.int/ihr/training/laboratory_quality/en/index.html).

**FIGURE 3. PERFORMANCE ON SELECTED PATIENT-LEVEL QUALITY IMPROVEMENT INDICATORS, 2009–2011**



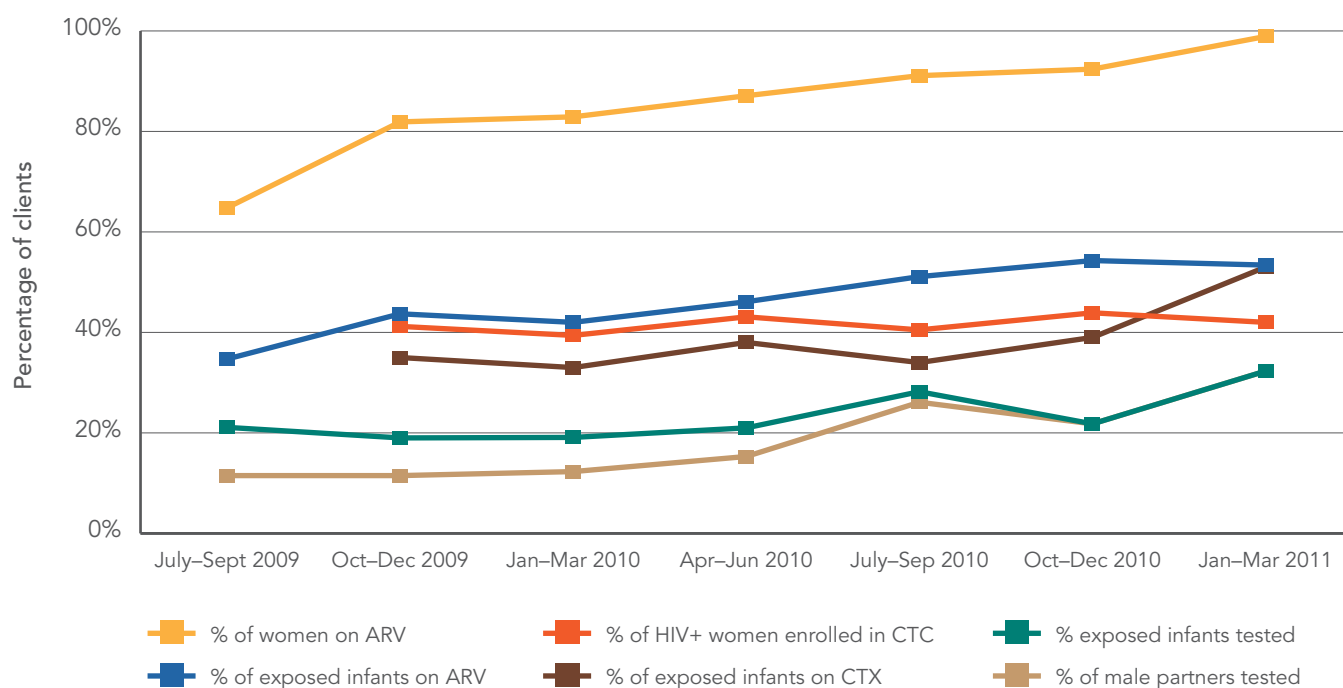
- Forty trainers of trainers have taken on the responsibility to train other staff (both from EGPAF and from the MOHSW) in order to scale up QI activities and services.
- About 100 sites have participated in at least one QI activity, either attending training or, conducting an assessment, or both. Performance in various quality-of-care indicators has been observed for three years, as shown in Figure 3.
- EGPAF supported national QI initiatives to train RHMTs and selected members of CHMTs in all EGPAF-supported regions on QI, and formed QI teams.
- In collaboration with the M&E unit, EGPAF conducted a data analysis exercise in all field offices in 2010. The aim was to strengthen the use of data to assess and improve quality of services and to identify challenges and bottlenecks. This contributed to high improvement on various QI indicators and provided an opportunity for EGPAF to devote more effort in areas that needed further improvement. Figure 4 shows some of the indicators that improved after the exercise.

### Community linkages

- EGPAF facilitated task shifting so that HSPs are supported by other people (i.e., volunteers) for nonmedical activities, helping reduce the workload for HSPs.
- The community linkages unit has supported the establishment of psychosocial support groups and activities for children (see Table 4). The psychosocial support component addresses the basic psychosocial needs of children in the clinics and in the community, including disclosing their HIV status at the proper age.
- Training was given to 5,444 HSPs on adult and pediatric HIV, and they are able to provide psychosocial support to children and support caregivers in caring for children living with HIV/AIDS.
- Sixty-nine clinics have prepared child-friendly areas, also known as Children’s Corners, where children can play and relax as they wait for services.
- EGPAF has established 88 Children’s Clubs (this does not include Ariel Camps). Such clubs are made up of children



**FIGURE 4. TRENDS IN VARIOUS QI INDICATORS FOLLOWING THE IMPLEMENTATION OF A DATA ANALYSIS EXERCISE, JULY 2009–MARCH 2011**



**TABLE 4. NUMBER OF PSYCHOSOCIAL SUPPORT GROUPS FOR CHILDREN**

PSYCHOSOCIAL SUPPORT GROUPS FOR CHILDREN				
REGION	CHILDREN'S CORNERS IN CARE AND TREATMENT CENTERS (CTCS)	NUMBER OF CHILDREN IN CTCS	NUMBER OF CLUBS IN CTCS	NUMBER OF CLUB MEMBERS
Kilimanjaro	17	1,237	22	1,053
Shinyanga	13	2,700	20	647
Tabora	21	2,616	22	1,212
Lindi	9	849	9	351
Arusha	9	1,296	15	390
Total	69	8,698	88	3,653

living with HIV/AIDS who have been told of their status. Club members meet once a month to play and socialize; they are also given more information on HIV, including on the importance of adherence to drugs.

Through various psychosocial support groups, the number of people living with HIV involved in income-generating activities has increased over time. Some of the groups are supported by Tanzania Social Action Fund, while others receive support from

Axios International. For example, in Arusha people living with HIV have established several village community banks.

#### Communications and advocacy

EGPAF has documented numerous success stories related to the C&T program. Such stories help reduce stigma and raise awareness about the effectiveness of the C&T program.

**TABLE 5. EGPAF COVERAGE OF C&T SITES IN THE SUPPORTED REGIONS BY DECEMBER 2011**

REGION	TOTAL NUMBER OF CARE AND TREATMENT (C&T) SITES	NUMBER OF C&T SITES SUPPORTED BY EGPAF	EGPAF-SUPPORTED FACILITIES AS A PROPORTION OF ALL FACILITIES
Arusha	51	30	59%
Kilimanjaro	41	38	93%
Lindi	53	25	47%
Shinyanga	46	41	89%
Tabora	33	31	94%
Total	224	165	74%

EGPAF has implemented various activities aimed at influencing policies related to strengthening and expanding C&T and PMTCT services in Tanzania. Such activities include giving presentations to parliamentarians, training journalists on how to advocate for C&T and PMTCT issues, and airing radio programs aimed at promoting policies related to comprehensive HIV and AIDS services.

#### Coverage of HIV/AIDS services against targets

EGPAF defines *coverage of services* as the proportion of health facilities providing C&T services out of all health facilities in the specific geographic location, and *uptake of services* as the number of people living with HIV reached with C&T services in a given population of all estimated people living with HIV in a specified geographic location.

Rapid scale-up of services started in 2008 and continued until July 2009; the scale-up then slowed in July 2009 following discussions with CDC/Tanzania. To date, at the national level, a total of 1,100 health facilities are providing C&T services in the country.<sup>6</sup> EGPAF's support contributes about 15 percent of the national coverage in terms of sites.

#### Sites providing C&T services in the supported districts

The PEPFAR target for this indicator was to initiate C&T services at four primary health facilities in each district, in addition to 47 secondary and tertiary facilities that were already supported and were providing such services in the supported regions. By the end of 2011, EGPAF had initiated C&T services at 165 sites in the five regions—equivalent to 100 percent of the target set by PEPFAR. Regional distribution of those sites is presented in Table 5.

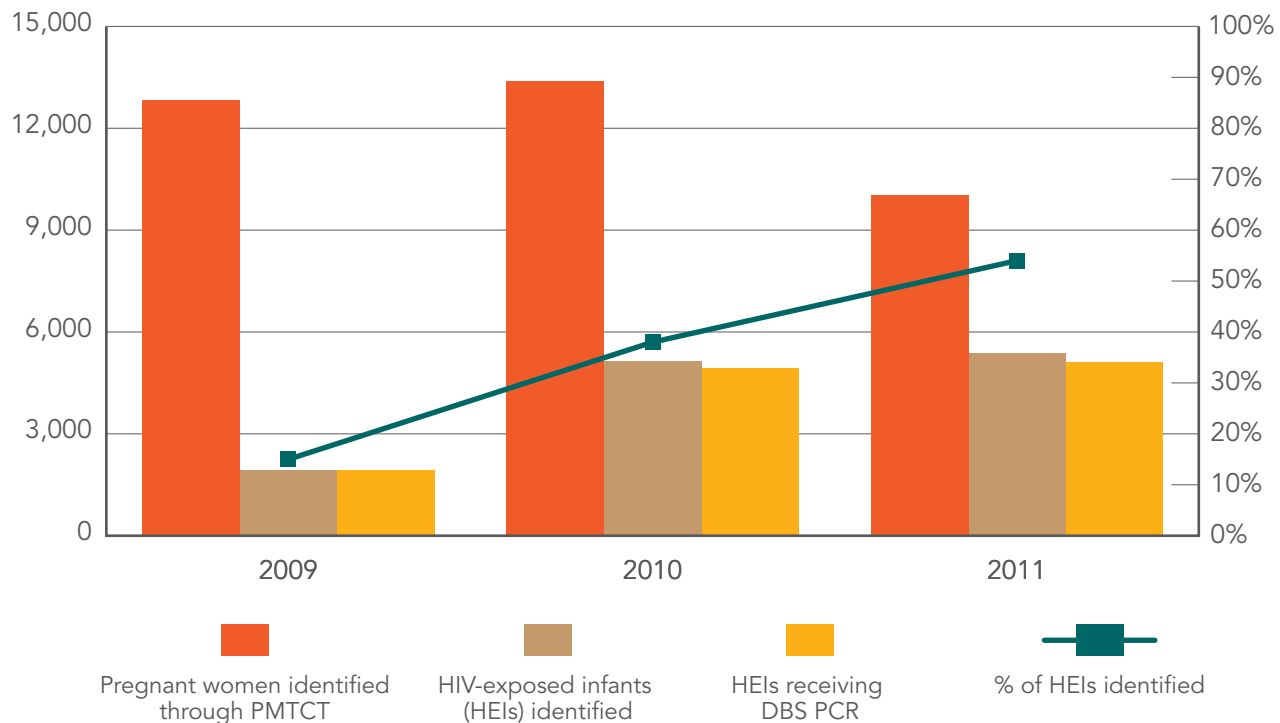
In the supported regions, a total of 224 functional facilities provide C&T services as of December 2011. This includes those receiving support directly from the government, a clear result of EGPAF's district approach and support to the capacity of the district to implement and expand C&T services. Seventy-four percent of facilities providing C&T services in the supported regions are supported by EGPAF, while others are supported by the government itself and/or other implementing partners. Because of guidance on limiting expansion from donors, EGPAF's C&T support could not expand beyond 165 sites (per donor guidance), but EGPAF's work through the district approach enhanced CHMTs' capacity to open more C&T facilities. Table 5 shows the number of health facilities providing C&T services per region and those receiving support from EGPAF.

The data above show a snapshot of the regions in terms of the proportion of facilities providing C&T services that receive EGPAF support. For example, whereas EGPAF supports almost 94 percent of the CTCs in Tabora, it lends support to only 47 percent of the CTCs in Lindi Region; the rest are supported by the district councils themselves and other partners.

#### TB/HIV integration

All EGPAF-supported C&T sites have established TB/HIV collaborative activities, and service providers have received on-the-job training on implementing and monitoring TB/HIV collaborative activities, for a total of 562 service providers trained in five regions. Moreover, 62 service providers have been trained on chest X-ray reading for TB diagnosis and can diagnose pulmonary TB and increase case notification. All 165 supported

**FIGURE 5. HIV-EXPOSED INFANT IDENTIFICATION TREND, 2009–2011**



sites’ service providers were trained on the three I’s,\* and that has increased awareness and motivation to screen for TB. All supported sites have received TB screening tools, and a site-level focal person (clinician or counselor) has been appointed to ensure that the tool is attached to each patient file and completed on each visit. All 165 EGPAF-supported C&T sites screen patients for TB and HIV infection and report quarterly on TB/HIV indicators.

As a result of these interventions, improvement has been observed in the proper completion of screening tools and an increased proportion of patients have been screened: whereas 46 percent of patients were screened in 2008, 90 percent were screened by the end of 2011. Supported facilities performing collaborative TB/HIV activities increased from 48 out of 138 (30 percent) to all 165 supported today (100 percent). There has been increased identification of co-infected patients—the number of co-infected patients identified increased from 2 percent (n = 1,270) to 5 percent (n = 2,830)—and all were treated for TB.

*Sites providing early infant diagnosis services in the supported districts*

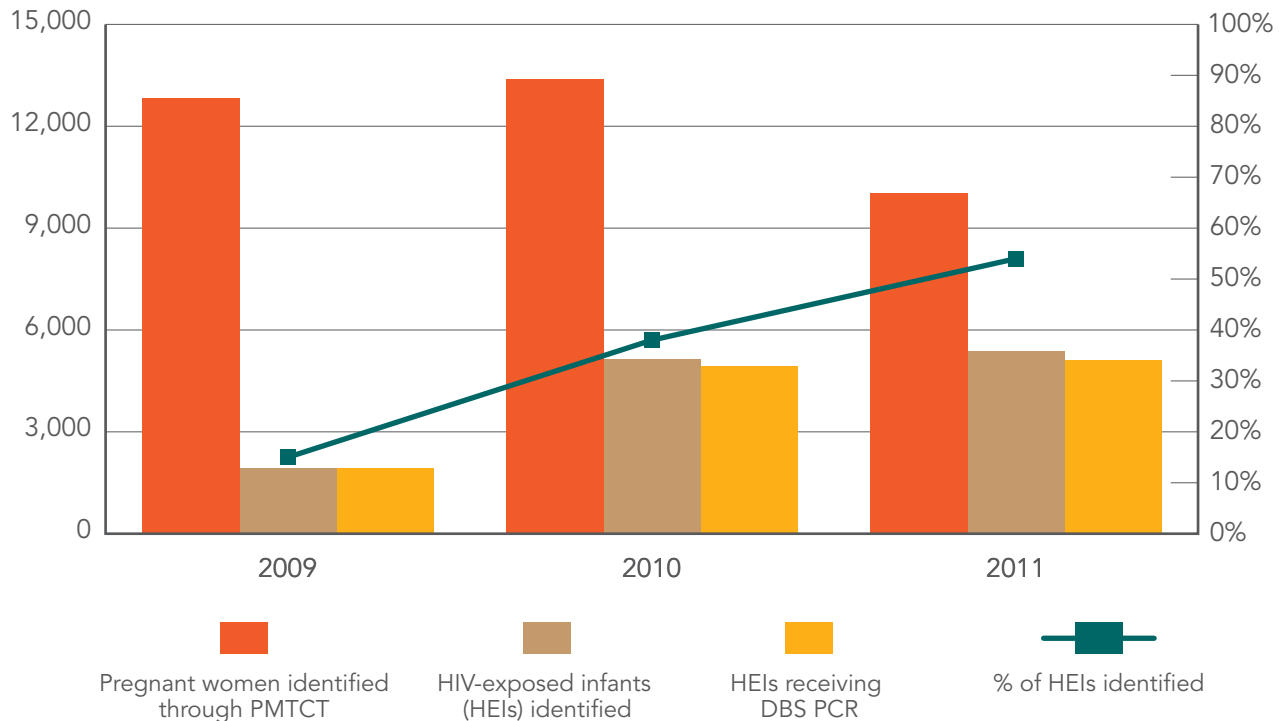
EID services started in Tanzania in 2008. EGPAF’s target was to reach all facilities providing C&T services in the supported regions except Lindi Region, where a different partner supports EID services. By the end of December 2011, EGPAF had helped establish EID services at 222 sites (the target was all 140 EGPAF-supported C&T sites).

*Coverage of EID services*

EID services are integrated within both C&T and PMTCT programs. Coverage and quality of EID services improved gradually over time during the implementation of Project HEART, but from 2009 through December 2011, the number of sites providing EID services increased dramatically. The rapid scale-up contributed to a significant improvement in the identification of HIV-exposed infants, from 15 percent in 2009 to 54 percent by the end of 2011 in the supported districts (Figure 5).

\* The three I’s is a WHO training package on intensified case finding, infection control, and isoniazid preventive therapy.

FIGURE 6. TRENDS IN THE EID CASCADE, 2009–2011



As Figure 6 shows, from January 2009 through December 2011, the cascade of EID improved, as progress was made in reducing the gap between the number of positive results received from laboratories and those given to caregivers (from 45 percent in 2009 to 70 percent in 2010) and the gap between the number of children referred to and started on ART and those started on ART (from 62 percent in 2009 to 94 percent in 2011).

These achievements are largely due to ongoing EID scale-up programs, training, supportive supervision, and mentorship by EGPAF staff through RHMTs and CHMTs.

The national PMTCT program recently integrated the training curriculum for EID with that for PMTCT. This will enable more PMTCT sites to also provide EID services. Furthermore, M&E tools like the Reproductive and Child Health card number 4 (RCH4) have been updated to also capture information on HIV-exposed children and EID. It is anticipated that these initiatives will enable the identification of more HIV-exposed infants.

*Sites with capacity to perform CD4 count tests*

Taking 2004 as the baseline, only four zonal laboratories and very few private and regional hospitals had the capacity to perform CD4 count tests. With Project HEART’s support, by the end of 2010 EGPAF had procured and distributed 28 CD4 count machines in the supported regions. In addition, the government itself bought a number of CD4 count machines, so a total of 46 facilities in the supported regions can now perform CD4 count tests.

The distribution of the CD4 count machines varies significantly across the supported regions: Kilimanjaro and Arusha regions have more of the machines compared with other regions—14 and 10 CD4 count machines in Kilimanjaro and Arusha regions, respectively, versus only 7 and 7 in Tabora and Lindi regions, respectively (see Table 6).

*Number of people living with HIV accessing CD4 count tests*

The average number of patients who received CD4 count tests increased from 2,353 in 2005 to 7,431 in December 2010.

**TABLE 6. REGIONAL DISTRIBUTION OF CD4 COUNT AND OTHER MACHINES IN EGPAF-SUPPORTED REGIONS**

REGION	TOTAL NUMBER OF CARE AND TREATMENT (C&T) SITES	NUMBER OF C&T SITES SUPPORTED BY EGPAF	CD4 COUNT MACHINES	HEMATOLOGY MACHINES	BIO-CHEMISTRY MACHINES	DNA/PCR MACHINES
Tabora	51	30	7	7	8	0
Shinyanga	41	38	8	8	8	0
Kilimanjaro	53	25	14	15	14	1
Arusha	46	41	10	14	14	0
Lindi	33	31	7	7	7	0

**TABLE 7. COVERAGE OF C&T SERVICES IN FIVE EGPAF-SUPPORTED REGIONS**

REGION	NUMBER OF PEOPLE LIVING WITH HIV*	NUMBER IN NEED OF TREATMENT (40% OF ALL HIV+ PER WHO GUIDELINES)	NUMBER OF HIV+ RECEIVING ART (BY SEP 2011)	COVERAGE OF CARE AND TREATMENT AMONG HIV+
Arusha	16,409	6,563	9,056	138%**
Kilimanjaro	21,716	8,686	10,988	126%**
Lindi	25,154	10,061	3,447	34%
Shinyanga	208,096	83,238	16,805	20%
Tabora	102,046	40,818	10,891	27%
Total	373,421	149,366	51,187	34%

\*Calculated by adding 10% of HIV-positive children to the 15–49 years group of people living with HIV from UNAIDS World AIDS Day Report, 2011 (Geneva, 2011).

\*\*Coverage data shown over 100% is due to national data for population and the prevalence used as the denominator.

## ACHIEVEMENTS REALIZED AT THE OUTCOME LEVEL

### HIV reached with C&T services

In Tanzania, the Joint United Nations Programme on HIV/AIDS (UNAIDS) estimates that about 1.4 million people are living with HIV/AIDS, and about 20 percent of those (i.e., 280,000 people) are children under 15 years of age.<sup>7</sup> However, a recent surveillance report by NACP suggests that only 32 percent of eligible people living with HIV actually receive ART services.<sup>6</sup>

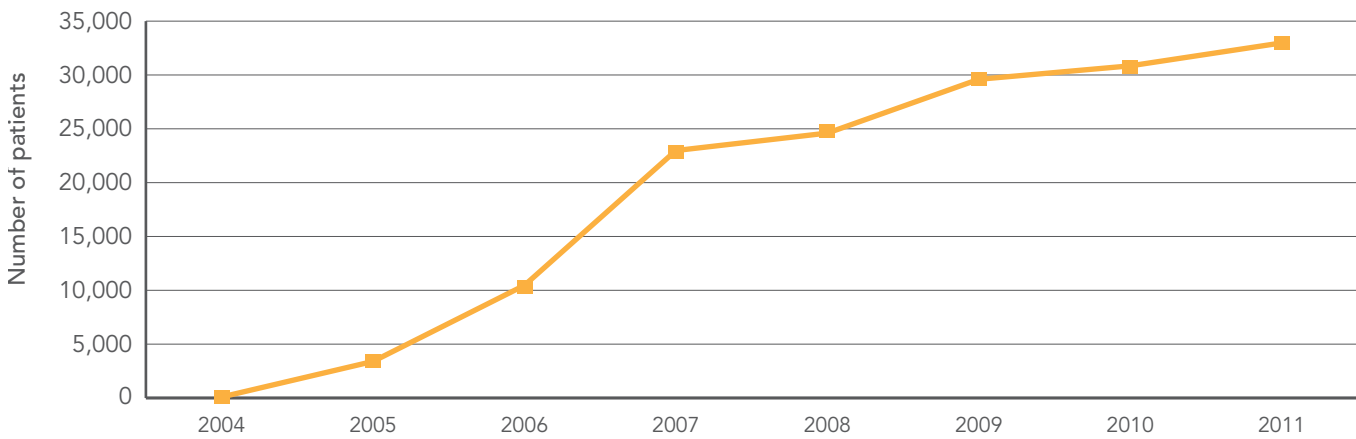
In EGPAF-supported regions, it is estimated that about 339,474 people are living with HIV/AIDS (see Table 7).<sup>8</sup> By December 2010, a cumulative total of 143,023 people living with HIV had been enrolled in C&T services in EGPAF-supported sites and 42,684 of them were using ART. That is equivalent to 38 percent of the estimated number of people who need ART in the supported regions. Table 7 presents the coverage of C&T services in the five supported regions at the end of Project HEART.

### Client enrollment in C&T programs at EGPAF-supported sites

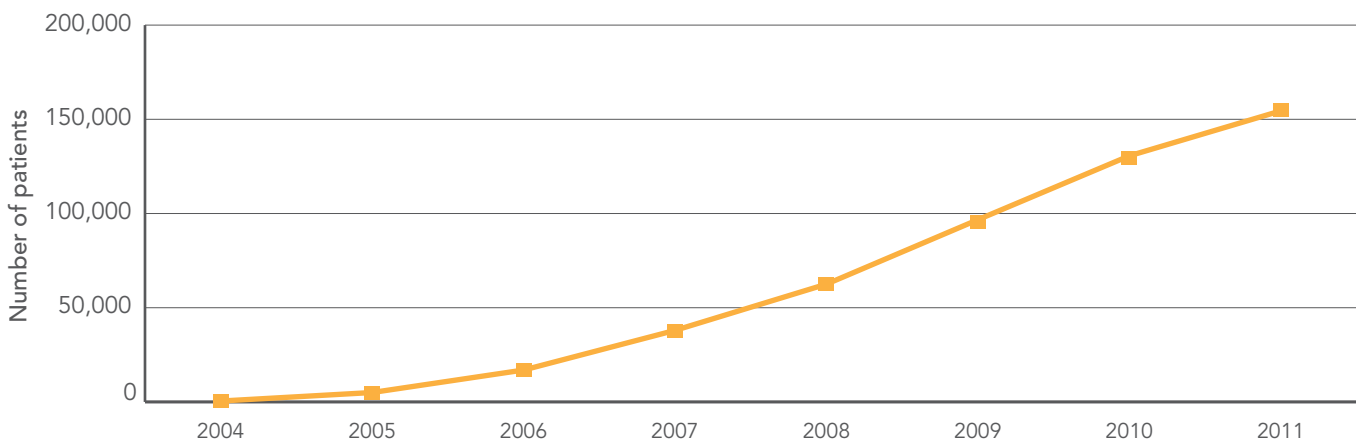
The number of patients who were newly enrolled in C&T steadily increased year after year, as shown in Figure 7, reaching 32,977 in 2011.

The program also showed a positive trend for the cumulative number of patients enrolled in CTCs. By December 2011, EGPAF had enrolled a total of 169,024 HIV-positive patients in C&T services at its 165 sites (of those, 67,809 were actively receiving HIV C&T services). Out of the 169,024 cumulatively enrolled in C&T, 154,481 (91 percent) were adults over 15 years of age, while 14,543 (9 percent) were children aged 15 years or under. Figure 8 presents the trend in cumulative adult enrollment in C&T services between 2004 and 2011.

**FIGURE 7. NUMBER OF NEW CLIENTS ENROLLED INTO CARE AND TREATMENT AT EGPAF-SUPPORTED SITES, 2004–2011**



**FIGURE 8. CUMULATIVE NUMBER OF ADULT CLIENTS ENROLLED IN CARE AND TREATMENT SERVICES AT EGPAF-SUPPORTED SITES, 2004–2011**

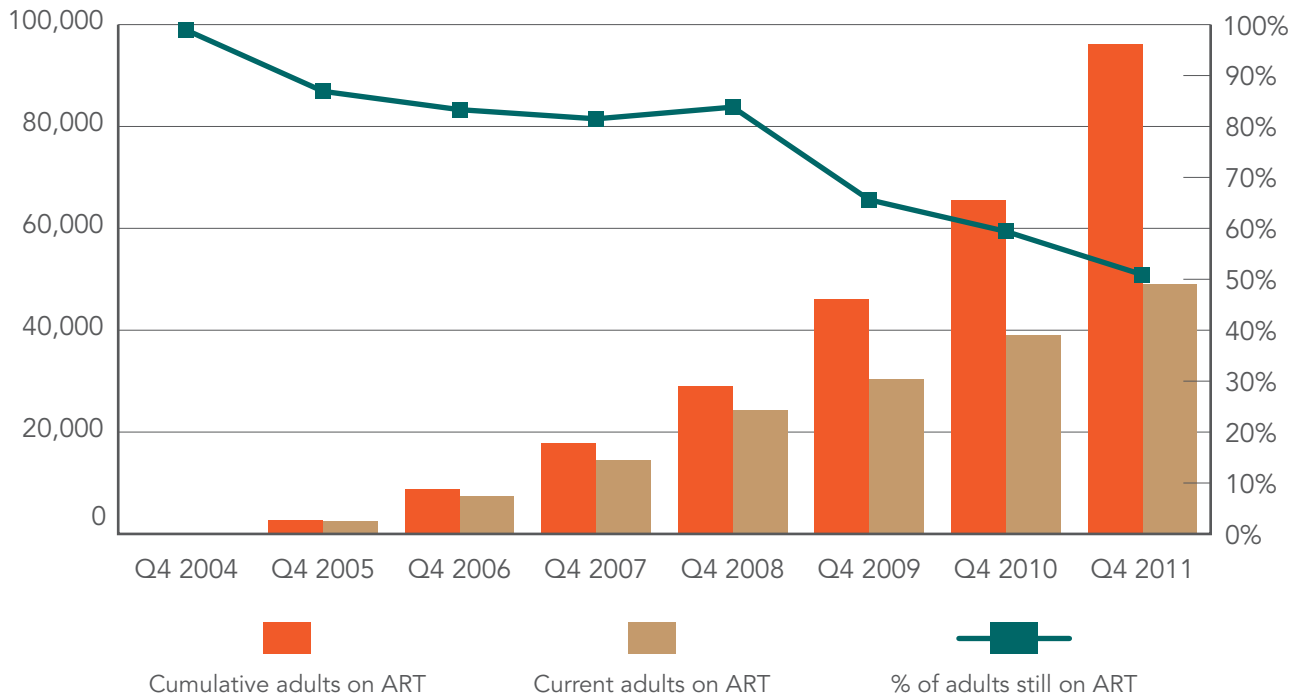


**Enrollment and retention of clients in ART programs**

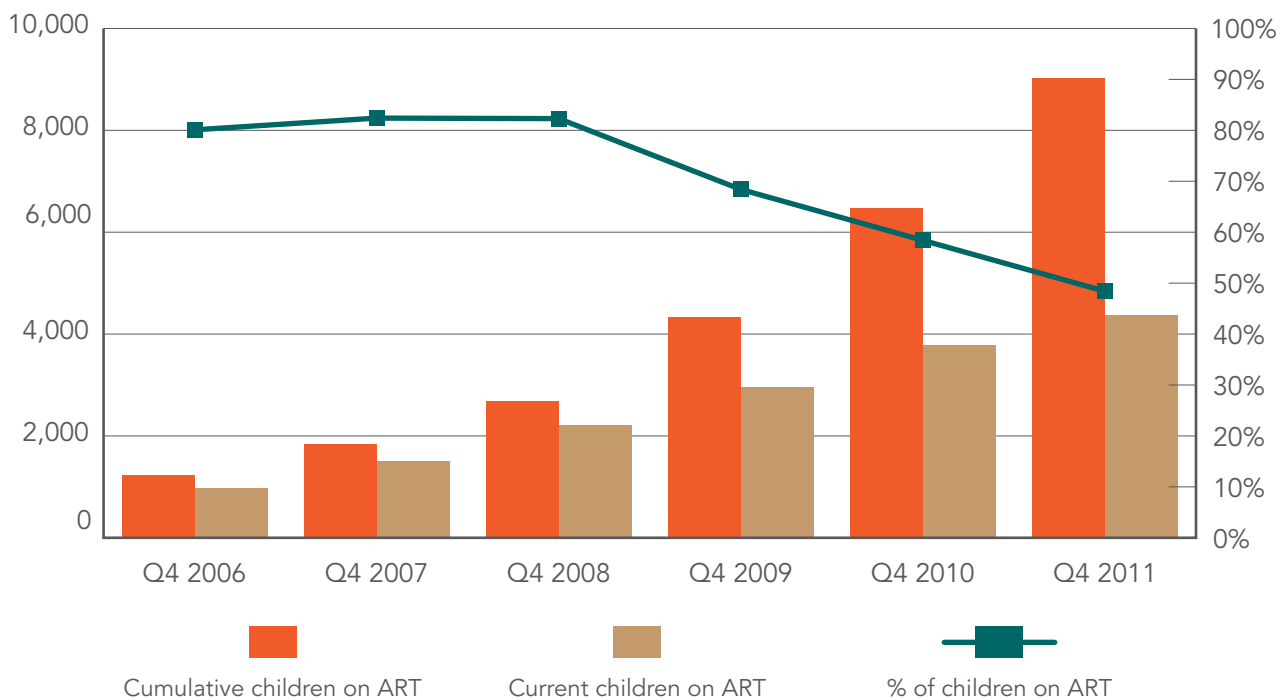
By December 2011, 67,809 people living with HIV were actively receiving HIV C&T services (i.e., clients currently enrolled in HIV care). As of the same date, the cumulative number of clients who had started ART at EGPAF-supported sites was 96,131. However, only 48,964 were actively receiving these services. This presents an overall 51 percent retention rate for clients receiving ART. As presented in Figures 9 and 10, the retention rate demonstrates a declining trend over time. This calls for innovative measures for increasing retention, such as implementing community-based monitoring systems to correctly track attrition.

The sharp drop in the percentage of patients currently receiving ART as of 2009 is due to a data quality assessment, which resulted in accurately reporting the patients currently on ART. Thus, before 2009 the percentage of patients currently on ART was over-reported because of challenges in the quality of the data management system—a situation that was unknown at the time of collection and later rectified retroactively from the last quarter of 2009 onward.

**FIGURE 9. ENROLLMENT AND RETENTION OF ADULTS IN ANTIRETROVIRAL THERAPY AT EGPAF-SUPPORTED SITES, 2004–2011**



**FIGURE 10. ENROLLMENT AND RETENTION OF PEDIATRIC CLIENTS IN ANTIRETROVIRAL THERAPY AT EGPAF-SUPPORTED SITES**

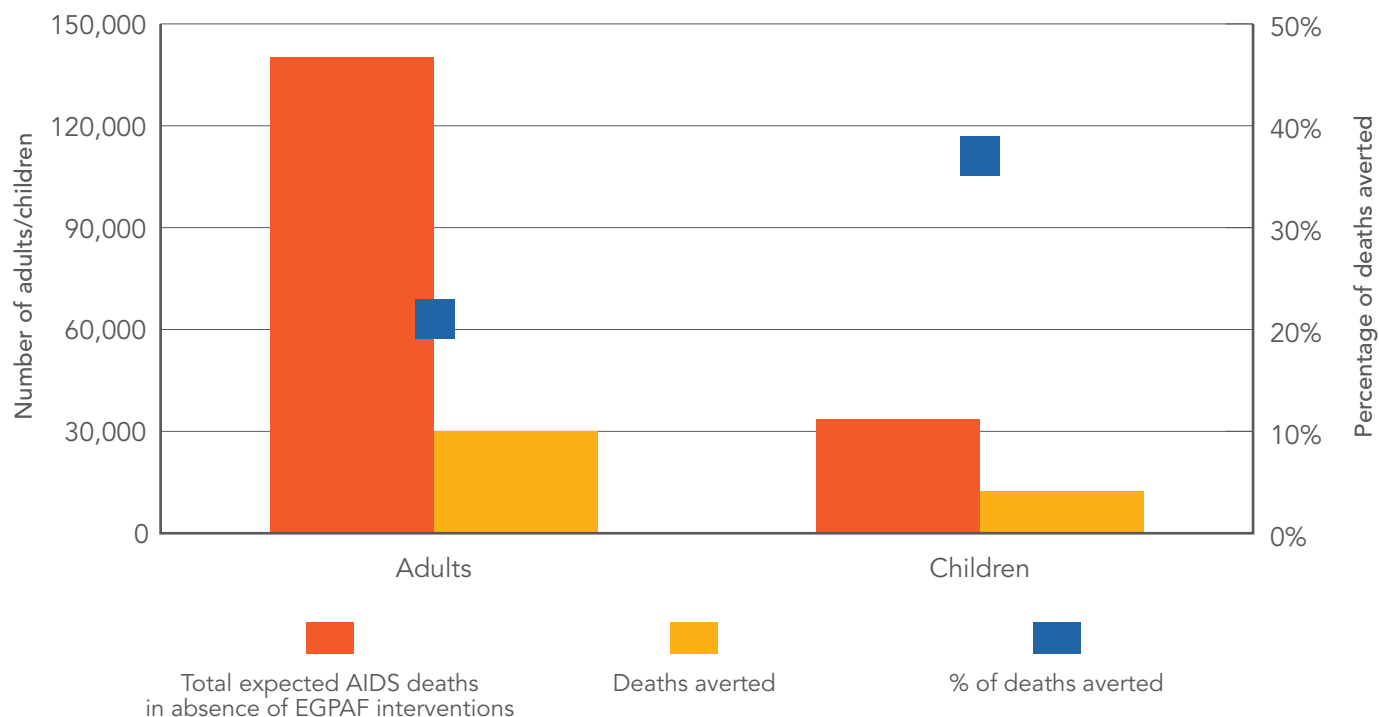


**TABLE 8. DEATHS AVERTED DUE TO PROJECT HEART**

YEAR	2004	2005	2006	2007	2008	2009	2010	2011	TOTAL
Annual AIDS deaths with EGPAF interventions	21,265	20,696	19,171	17,095	14,975	13,104	12,439	12,766	131,511
Expected annual AIDS deaths in absence of EGPAF interventions	21,493	21,559	21,571	21,574	21,611	21,722	21,933	22,254	173,717
Number of lives saved/deaths averted	228	863	2,400	4,479	6,636	8,618	9,494	9,488	42,206
Percent of lives saved/deaths averted	1%	4%	11%	21%	31%	40%	43%	43%	24%

Source: Data from modeling exercise, 2001.

**FIGURE 11. NUMBER OF ESTIMATED DEATHS AVERTED AMONG ADULTS AND CHILDREN, 2004–2011**



**Enrollment and retention of children in C&T programs**

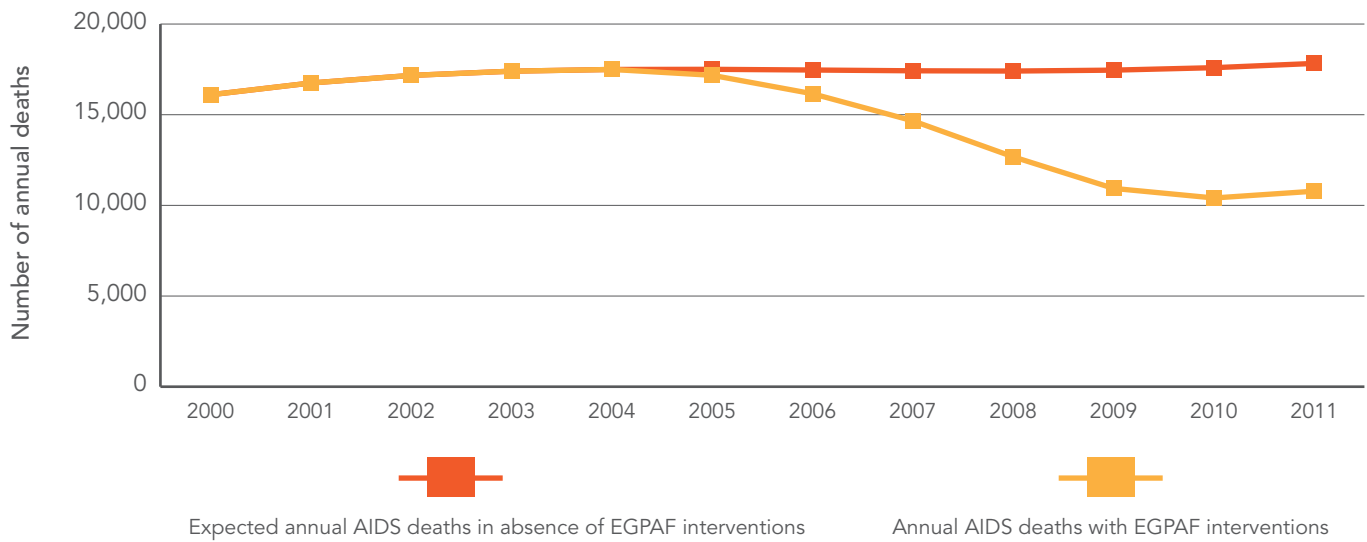
By December 2011, children under 15 years of age represented 9 percent of all C&T clients at the supported sites. By December 2011, out of 14,543 children who had cumulatively enrolled in C&T services, 5,931 were actively receiving the services. That amounts to a 41 percent overall retention rate for this group.

**ACHIEVEMENTS REALIZED AT THE IMPACT LEVEL**

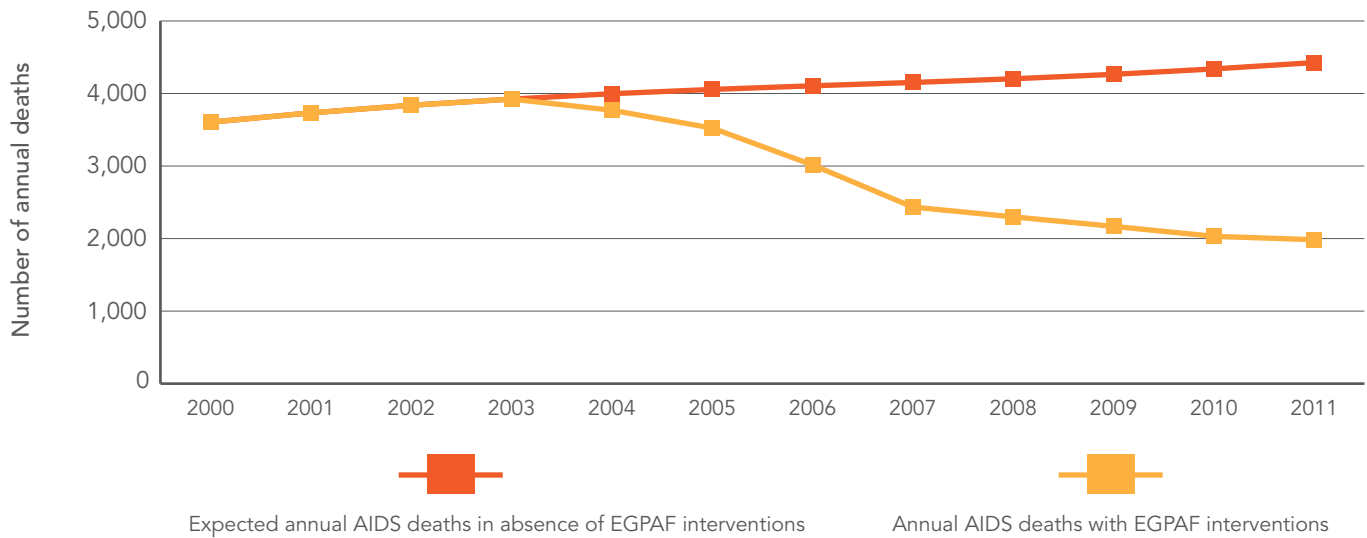
Conducting impact analyses, in addition to program monitoring, provides an important component of program review and allows for a better understanding of the effects of ART in patients’ lives. The modeling and cohort analysis conducted shows that Project HEART had a positive impact in reducing AIDS-related deaths and improving the quality of life of those with HIV.



**FIGURE 12. NUMBER OF AIDS-RELATED DEATHS AMONG ADULTS WITH AND WITHOUT PROJECT HEART**



**FIGURE 13. NUMBER OF AIDS-RELATED DEATHS AMONG CHILDREN WITH AND WITHOUT PROJECT HEART**



Modeling analysis suggested that from 2004 to 2011, an average of 24 percent of AIDS-related deaths were averted (21.3 percent among adults, 36.7 percent among children), saving the lives of an estimated 42,206 people who may have died in the absence of Project HEART (see Table 8 and Figure 11). It should be noted that the over-reporting mentioned above (found during the data quality assessment) is not significant for the deaths-averted estimations as there was no drop or change in the trends of averted deaths (seen in Figures 12 and 13). The discrepancies do not affect the absolute numbers needed for the modeling exercise.

AIDS-related deaths averted among adults and children Project HEART had a particularly significant impact on children’s AIDS-related deaths averted. The estimated total number of deaths averted among children between 2004 and 2011 was 12,320, representing 36.7 percent of deaths expected in the absence of EGPAF interventions. Figure 12 presents the comparison of the annual AIDS-related deaths prevented with EGPAF interventions and the expected deaths in the absence of EGPAF interventions among adults between 2004 and 2011, while Figure 13 presents the same for children.

## PROJECT HEART: TANZANIA

### Infections averted and life years gained

Estimated infections averted were calculated using Spectrum modeling software version 4.4 (see Appendix 2). Baseline projection data using a historical Tanzania epidemic were used to calculate new infections in the base case. Then the number of adults receiving ART through Project HEART was subtracted from the overall national number receiving ART, and the number of new infections was re-estimated.

The number of infections averted by Project HEART is the difference between the cumulative number of new infections in the base case (1,242,640) and the projection without Project HEART (1,221,054). A total of 21,586 infections were averted by Project HEART from 2004 to 2011. According to the DALYs (disability-adjusted life years) calculation,\* with Project HEART one averted infection provided roughly 32 additional life years, and thus 21,586 averted infections provides 690,752 total life years gained.†

### Impact on quality of life for people living with HIV

The indicators used to monitor and assess improvement in quality of life among people living with HIV include (1) the number and percentage of HIV-positive children and adults whose CD4 count improved and (2) the number and percentage of HIV-positive children and adults whose functional status improved (bedridden, ambulatory, and working).

\* See Appendix 2 for details on the methodology.  
† Spectrum version 4.4 AIM model estimations.

### Median CD4 count

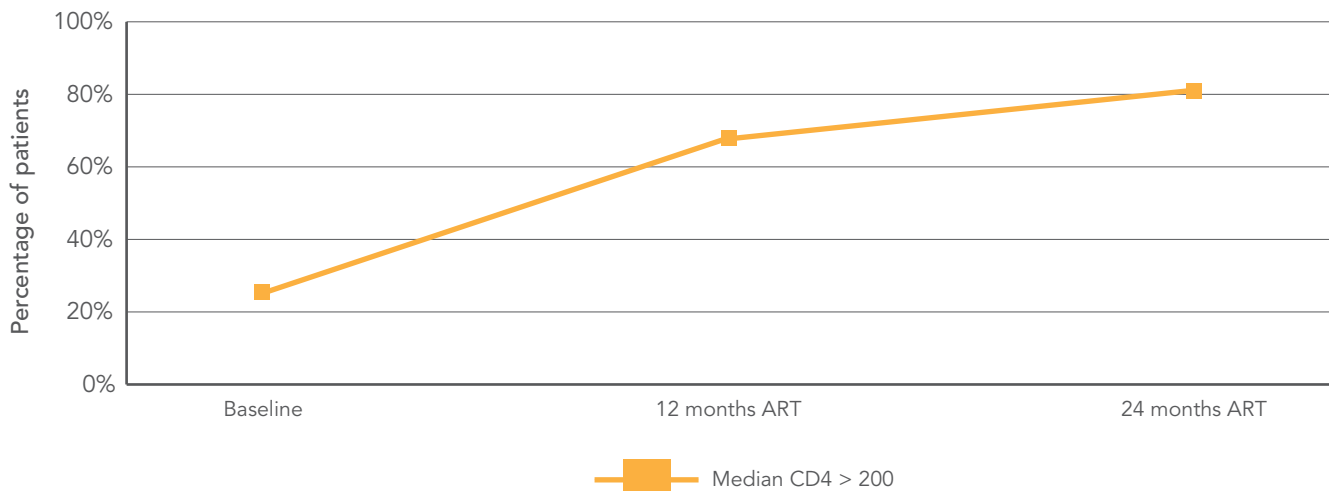
Cohort analysis showed that the percentage of patients on ART with CD4 counts greater than 200 cells/mm<sup>3</sup> increased from 26 percent at baseline to 68 percent at 12 months and 81 percent at 24 months.

As presented in Figure 14, the median CD4 count improved progressively during the first year of treatment of the enrollees. For example, in 2005 a total of 2,353 people had their CD4 count test performed. Their average median CD4 count at baseline in 2005 was 86. In December 2010 the median CD4 count of a comparison cohort of patients who were receiving ART services was 136, indicating the positive effect of Project HEART in early initiation of ART to patients in need compared with early years. This seeks to show a measure of quality of service. During the early years of Project HEART, clinicians were initiating patients late, which had a negative effect in patients' improvement. The current practice of early initiation has seen improved health outcomes among patients.

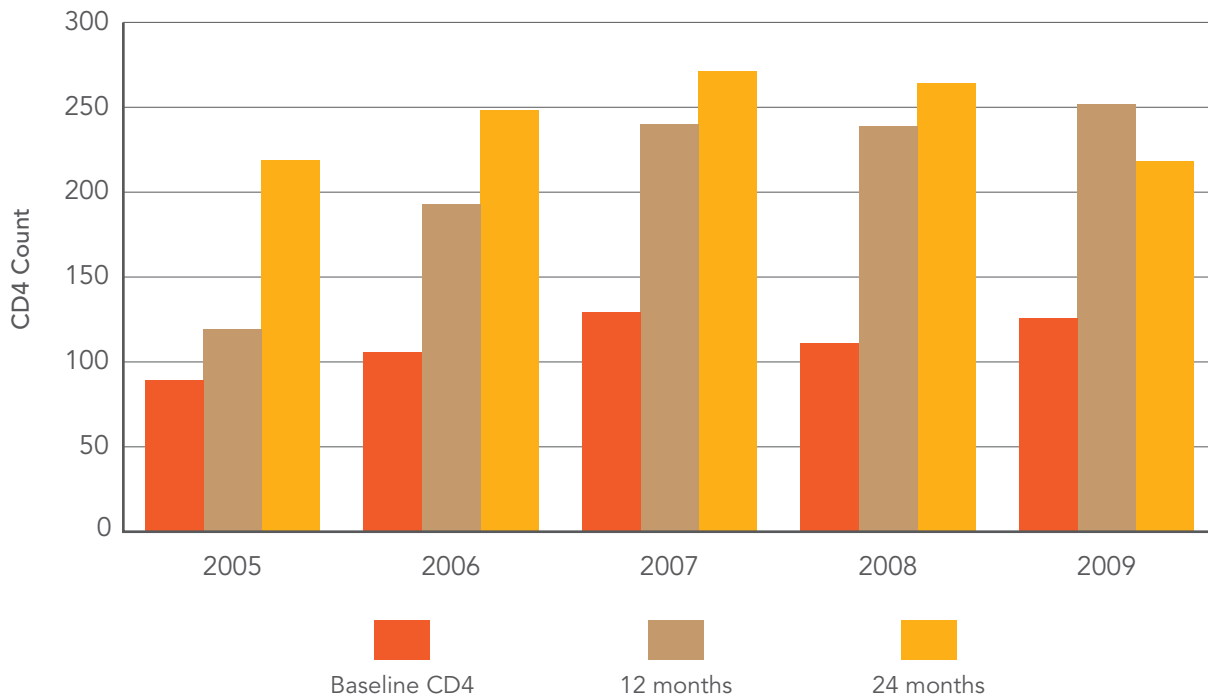
### Trend in median CD4 count in specific cohorts

We assessed Project HEART's impact on quality of life, as seen through health of the immune system, by looking at the proportion of people living with HIV who had a median CD4 count above 200 microliters (μl)/mm<sup>3</sup> in given cohorts. Analysis of the available cohort data presents progressive improvement between the baseline

**FIGURE 14. IMPROVEMENT IN MEDIAN CD4 COUNT FROM BASELINE TO 24 MONTHS**



**FIGURE 15. CHANGE IN MEDIAN CD4 COUNT AMONG PEOPLE LIVING WITH HIV IN COHORTS, 2005–2009**



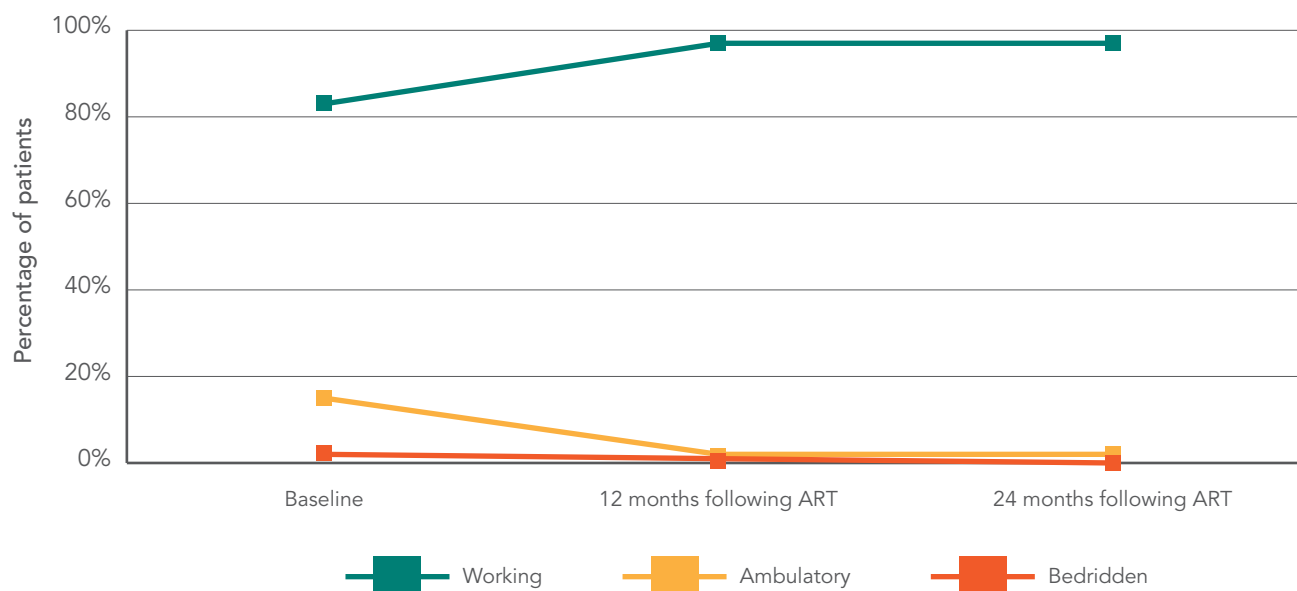
and after one year, as well as after two years following enrollment on ART. Figure 15 presents the change in median CD4 count among cohorts recruited into the ART program from 2005 to 2009.

*Changes in functional status among people living with HIV*

We also assessed Project HEART's impact on quality of life, as seen through WHO's definitions of functional status. The available data suggest that Project HEART had a positive impact on the functional

status of people living with HIV in given cohorts. As Figure 16 shows, the proportion of patients with *working status* increased from 83 percent at baseline to 97 percent after 24 months of ART, whereas the proportion of patients with *bedridden* and *ambulatory (mobile)* status decreased from 2 percent to zero and from 15 percent to 2 percent, respectively, at baseline to after 24 months of ART as the health of those patients improved from *nonworking* to *working status*.

**FIGURE 16. IMPROVEMENT IN WORLD HEALTH ORGANIZATION–DEFINED FUNCTIONAL STATUS FOLLOWING ART INITIATION**



**TABLE 9. COST-EFFECTIVENESS ANALYSIS RESULTS**

TOTAL ANTI-RETROVIRAL (ARV) COSTS <sup>9</sup>	TOTAL COST (DIRECT AND INDIRECT COST)	PATIENTS RECEIVING ART	PERSON-YEARS OF ART PER INFECTION AVERTED*	LIFE YEARS GAINED PER INFECTION AVERTED	COST OF SAVING A LIFE YEAR EXCLUDING ARV	COST OF SAVING A LIFE YEAR INCLUDING ARV COSTS
A	B	C	D = 138,024/ 21,586	E	F = [(B/C)D]/E	G = [(A+B)/C]D/F
\$85,618,080	\$65,465,548	158,552	6.4	32	\$82.60	\$192.60

\*Spectrum estimation number of patients receiving antiretroviral therapy (ART).

**Cost-effectiveness analysis results**

Cost-effectiveness was calculated using the Goals model of Spectrum version 4.4 (see Appendix 2 for detailed methodology).

As Table 9 shows, according to the cost-effectiveness analysis the project spent US \$82.60 to save a life year, which is less than the per capita Tanzanian gross national income and therefore considered very cost-effective according to the Macroeconomic Commission on Health.

As Appendix 2 (on cost-analysis methodology) explains, although Project HEART did not provide financial support for ARV drugs, the analysis also calculates effectiveness by including the cost of ARV drugs (as provided by the Global Fund, World Bank, and GoT) in order to obtain a comprehensive picture of the cost-effectiveness of the ART program.

With the ARV drug expenses included, the cost of saving a life year is estimated to be \$192.60—still very cost effective according to the standards.

## CHALLENGES, LESSONS LEARNED, AND RECOMMENDATIONS

This chapter presents a summary of the key challenges faced and lessons learned during the project implementation period, as well as recommendations to be considered for future improvement of the EGPAF/Tanzania program.

### CHALLENGES

- Tanzania and the supported regions face a critical shortage of skilled staff; many sites are run by low-level cadres such as medical and clinical attendants. This may affect the quality of program implementation.
- High staff turnover is common in the supported regions. This affects continuation of services and also necessitates expensive retraining.
- There is poor implementation of logistics management information systems at all levels. This leads to regular stock-outs of key medical supplies, including HIV test kits. Consequently, this leads to inconsistencies in service delivery.
- Pediatric-specific program components receive low priority in terms of funding and programming.
- The number of sites providing C&T services is still low compared with the number of PMTCT sites. This negatively affects efforts to create linkages between programs and ensure continuum of care.
- The attrition rate among patients registered in C&T is very high, currently estimated at about 40–50 percent, most of which is caused by a high rate of loss to follow-up.
- Incomplete and poor data quality at all levels and the lack of an appropriate system for setting targets has led to unrealistic targets for pediatric enrollment in C&T services.
- Poor M&E systems at all levels and ineffective use of program data for reporting and program improvement have led to poor ownership of the program.
- In some regions few or no partners work on HIV/AIDS impact mitigation at the community level. This makes it difficult for people living with HIV to access other services that are not provided by EGPAF. Such services include support for income-generating activities; livelihood support; and other social

## “I AM IMPRESSED BY the good work that EGPAF is doing in Tanzania towards saving women’s and children’s lives.”

First Lady of Tanzania Mama Salma Kikwete at the opening ceremony of an EGPAF-supported maternity ward in Mtwara Province

protection services for people living with HIV, orphans, and vulnerable children.

- Stigma against people living with HIV is a challenge in many communities. This affects the uptake and disclosure of HIV test results. Ultimately, this affects the uptake of C&T services in general.
- There are low rates of screening of people living with HIV for TB at the C&T sites, due to several factors, including a shortage of TB screening tools, a lack of staff trained on TB screening, and some clients sending their treatment supporters to pick up ARV drugs for them.

### LESSONS LEARNED

- Ensuring access to, and use of, PMTCT and C&T services and ensuring the continuum of care requires close collaboration between multiple partners, including those providing non-health services, such as income-generating activities, nutritional support, and other impact-mitigation interventions at the community and other levels.
- Training and retention of community health workers needs significant investment, as those individuals are of paramount importance in tracking and enhancing clients’ retention in C&T programs.
- The many components of health systems do not function in isolation; they reinforce each other. Hence, weaknesses in one component may have a negative impact on others. Therefore, health systems strengthening needs comprehensive approaches.
- Building the capacity of local partners (e.g., district councils) through the district approach enhances the rapid expansion of services and increases the potential for sustainability.
- A well-developed TB screening tool for both children and adults that integrates the case identification process for TB and allows follow-up of activity over time has rewarding outcomes.

## PROJECT HEART: TANZANIA

### RECOMMENDATIONS

- The EGPAF/Tanzania program should develop and implement a strong community-based health management information system to keep records and track attrition and retention rates for clients in C&T programs.
- To increase program ownership and use of data for program improvement, districts should have staff dedicated to M&E and data management, including supportive supervision and technical support to the sites.
- There is a need to strengthen the logistics management information system at all levels, especially at the regional and district levels. This will lead to proper quantification and forecasting, thus ensuring consistent availability of key medical supplies.
- The national target for the enrollment of children in C&T programs should be reviewed to ensure that it is realistic and achievable.



## CONCLUSION

The generous support of the U.S. government and the American people, administered through CDC and funded by PEPFAR, allowed EGPAF to implement Project HEART to support the ART roll-out and rapid scale-up of C&T services in five regions of Tanzania. In Tanzania, human resource, technical capacity, and financial resource constraints continue to limit rapid expansion and hence access to C&T services for the population, especially those living in remote rural areas. EGPAF's work in the supported districts has significantly contributed to alleviating such barriers and constraints by striving to ensure that services are provided not only at the hospitals but also at the health centers and dispensaries.

Through Project HEART, EGPAF adopted the district approach, whereby district councils worked as EGPAF's major sub-grantees and the implementers of the program. This approach resulted in significant achievement in the rapid scale-up of services in all districts in the five supported regions and in the building of long-lasting capacity for quality service delivery, management, and operational functions, all of which have contributed to strengthening the country's health systems. The approach has increased the potential for sustainability of these services.

At the 165 supported sites, EGPAF has cumulatively enrolled 169,024 people living with HIV in C&T programs and 96,131 in ART services. That is equivalent to about 23 percent and 25 percent of the national coverage, respectively. Children under the age of 15 years reached by EGPAF through Project HEART make up 9 percent of those enrolled on ART. With this coverage, EGPAF has contributed up to 30 percent of the national ART coverage for children in that age group. At both the output and outcome levels, this achievement is quite significant. It has assisted Tanzania in moving forward on its targets and has significantly contributed to the PEPFAR targets.

The modeling analysis shows that from 2004 to 2011, an average of 24 percent of AIDS-related deaths were averted (21.8 percent among adults, 38.4 percent among children), saving the lives of an estimated 42,206 people who would have died in the absence of Project HEART.

Focusing on quality of care and continuous quality improvement in the HIV continuum of care, Project HEART significantly contributed to increased access to care, service delivery improvements, infrastructure improvements, medical equipment and supplies logistics and health information system improvements, and personnel motivation. While these are major components of health systems strengthening, they also significantly contributed to improvements in quality of life among those with HIV.

Analysis of cohort data also indicates that Project HEART had a significant positive impact on the lives of those with HIV in terms of median CD4 count and functional status, as well as deaths averted and new infections prevented. Despite the challenges encountered over the course of eight years of implementation of the project, taking all factors together and considering the results at different levels of the results chain, it is clear that Project HEART has been very successful.

Geographic and population coverage is not yet at 100 percent. Efforts to further expand C&T services—addressing the challenges encountered by implementing the recommendations noted in this report—coupled with the expansion of comprehensive prevention, care, and support services in a continuum of care cannot be overlooked while striving to make virtual elimination of pediatric AIDS a reality.

The time to eliminate pediatric AIDS is now.

APPENDIX 1:  
KEY INDICATORS AND AREAS OF FOCUS FOR THE END-OF-PROJECT REPORT

AREA OF EVALUATION	INDICATORS	DATA SOURCE AND METHODOLOGY
<b>Impact of Project HEART on quality of life of people living with HIV</b>		
Reduced number of deaths due to HIV/AIDS	Number and percentage of averted deaths of children and adults Number of new infections prevented through care and treatment (C&T) program	CTC2 database Modeling techniques
Improved quality of life of children and families living with HIV/AIDS	Number and percentage of HIV-positive children and adults whose functional status improved (bedridden, ambulatory, working)	CTC2 database Cohort reports analysis (in stratified conveniently selected sites with electronic database)
	Change in patients' World Health Org. (WHO) HIV stage	
	Number and percentage of HIV-positive children and adults whose CD4 count improved	
<b>Contribution of Project HEART to achieving President's Emergency Plan for AIDS Relief goals and C&amp;T national targets</b>		
Increased adult enrollment and retention in C&T	Cumulative number and percentage of adults enrolled in C&T	GLASER data Trend analysis, comparing baseline and annual targets improvement Cohort data analysis
	Number and percentage of adults receiving cotrimoxazole	
	Cumulative number and percentage of adults on antiretroviral therapy (ART)	
	Number and percentage of adults currently on ART	
	Number and percentage of adults still on ART after 6 and 12 months from initiation of treatment	
Increased pediatric enrollment and retention in C&T	Cumulative number and percentage of children enrolled in C&T	CTC2 database Cohort analysis
	Number and percentage of children receiving cotrimoxazole	
	Cumulative number and percentage of children on ART	
	Number and percentage of children currently on ART	CTC2 database Trend analysis
	Number and percentage of children still on ART after 6 and 12 months from initiation of treatment	
	Number and percentage of HIV-exposed children tested (2 months/total)	
	Number and percentage of lost-to-follow-up patients in specific cohorts	
<b>Impact of Project HEART on strengthening health systems and ensuring sustainability</b>		
Strategic planning, monitoring and evaluation, and reporting capacity of sub-grantees strengthened in 5 regions	Number and percentage of sub-grantees submitting timely monthly/quarterly reports to National AIDS Control Program	C&T quarterly summary report analysis
	Number and percentage of sub-grantees implementing activities as per work plans/targets	
	Number and percentage of sites/sub-grantees able to submit timely monthly/quarterly reports without direct support from EGPAF	
Improved capacity of region/district official and site health staff	Number of community and regional health management team officials trained by program area	Project HEART annual report, training reports
	Number of site health providers trained by program area	



AREA OF EVALUATION	INDICATORS	DATA SOURCE AND METHODOLOGY
Effectiveness and efficiency of Project HEART in increasing coverage and quality of C&T services		
Increased service coverage	Number and percentage of health facilities providing C&T services	C&T and EID quarterly report trend analysis
	Number and percentage of sites providing early infant diagnosis (EID) services	
	Number of CTCs with the capacity to perform CD4 tests	
Improved quality of service delivery in supported sites	Percentage of sites meeting 10 out of 15 indicators of the quality improvement (QI) score matrix	QI assessments (both adult and pediatric file review)
	EID cascade	Various sources, including district quarterly reports
	Number and percentage of HIV patients screened for tuberculosis (TB)	
	Number and percentage of HIV patients started on TB treatment	
	Number of laboratories meeting 5 WHO criteria for accreditation	
	Average turnaround time of tests and results	
	Number and percentage of sites that experienced ART stock-outs	
Number and percentage of sites providing psychosocial support / children's groups		
Cost-efficiency	Cost of identifying and treating patients	GLASER, quarterly reports Cost-analysis methodologies

### APPENDIX 2: IMPACT ANALYSIS AND COST- EFFECTIVENESS ANALYSIS METHODOLOGY OVERVIEW

#### 1. IMPACT ANALYSIS METHODOLOGY

The following methods were used to analyze the impact of Project HEART on people living with HIV.

##### AIDS-related deaths averted (among adults and children) and new HIV infections prevented

The indicators—(1) *number of new HIV infections prevented* and (2) *number of deaths averted*—were analyzed using Spectrum version 4.4, a disease modeling tool developed by the Futures Institute. The Tanzania national HIV prevalence, the HIV prevalence in the supported regions in 2003–2004, and the number of EGPAF-supported patients on antiretroviral therapy (ART) from 2004 to December 2011 were used as inputs to calculate the number of new infections prevented and deaths averted. Those were calculated using Spectrum 4.4, the Estimation and Projection Package, and the 2011 Ministry of Health and Social Welfare (MOHSW) and Joint United Nations Programme on HIV/AIDS (UNAIDS) projections for Tanzania. This analysis used care-and-treatment patients' data collected from 2004 to December 2011 from the 165 sites that received support from EGPAF and Project HEART in the five regions. These data were routinely collected and stored in EGPAF's GLASER database.

##### Changes in median CD4 count and patients' functional status

This analysis was used to assess the change in (1) *median CD4 count* and (2) *functional status* (as defined by the World Health Organization [WHO], i.e., nonworking [bedridden or ambulatory] or working) of patients in different cohort groups over a given period by comparing baseline and follow-up status. A retrospective study was employed whereby groups of different cohorts of patients (adults and children) who were started on ART between 2004 and 2011 were analyzed using routinely collected data available from the GLASER database as well as the CTC2 database (exported data files that are submitted to the National AIDS Control Program on a quarterly basis). Only data from the 70 sites\* with electronic databases were used. Those sites constitute 42.4 percent of all the sites supported by EGPAF and host more

than 90 percent of patients receiving care and support services in the supported regions. Data were analyzed by looking at specific cohorts, year by year, from 2004 to 2011.

#### 2. COST-EFFECTIVENESS ANALYSIS METHODOLOGY

In health and in ART programs, cost-effectiveness analysis is used to determine the value of a medical intervention: the analysis compares the costs and health effects of an intervention to assess the extent to which it can be regarded as providing value for the money. In this component, the total cost incurred by Project HEART in enrolling and treating patients each year from 2004 to 2011, direct and indirect, was divided by units of effects (HIV infections prevented, lives saved, and life years gained), which were calculated using Spectrum modeling. A literature review and national estimate data and HIV estimates from MOHSW, WHO, and UNAIDS were also used. The assumption of no intervention (null alternative) was used to compare the results to determine the cost-effectiveness of this program.

In estimating the cost-effectiveness of Project HEART, the following fundamentals were applied.

##### Program costs

Both direct and indirect costs were included in the analysis: funds disbursed to sub-grantees and program support costs (such as administration, supervision, training, and transport). Although antiretroviral (ARV) drugs were not supplied through Project HEART, the cost-effectiveness was calculated using costs both with and without ARV drugs.

##### Health effects

- **Infections averted:** Estimated infections averted was calculated using the Spectrum version 4.4 Goals model, with the total number of patients receiving ART each year through Project HEART and total national data used as inputs. Baseline projection data using a historical Tanzania epidemic that matches the actual national number of adults on ART was used to calculate new infections in the base case. Then the number of adults receiving ART through Project HEART was subtracted from the overall national number receiving ART, and the number of new infections was re-estimated. The number of infections averted by Project HEART is the difference between the cumulative number of new infections in the base case and the projection without Project HEART.

\* Eighty-two sites have electronic databases, but 70 sites were enrolled for this purpose as a representative sample.

- **Life years gained:** The number of life years gained is calculated in a manner similar to that used for infections averted. It is the cumulative number of people alive in each year in the base case minus the projection without Project HEART.
- **Person-years of ART per infection averted:** This is the total number of years on ART needed to avert one infection. This assumption from the model is calculated by taking the cumulative number receiving ART and dividing it by new infections averted.

### Cost terms

**Cost per life year gained:** This is calculated by dividing the cost of the program by the number of life years gained.

**The cost per person-year of treatment:** This is calculated by dividing the overall program cost by the total number of patients served.

**Cost per infection averted:** All ART costs are divided by the number of ART patients served to get the cost per person-year of treatment. Then the cost per person-year is multiplied by person-years of ART per infection averted to get the cost per infection averted.

### Assumptions

The Macroeconomic Commission on Health argues that any intervention that saves a life year for less than three times gross national income (GNI) per capita is cost-effective, and if it saves a life year for less than the GNI per capita, then it is very cost-effective.<sup>10</sup> In 2010, the GNI per capita in Tanzania was US \$592.08; therefore, an intervention is said to be cost-effective if it saves a life year for less than \$1,776.24 and very cost-effective if it does so for less than \$592.08.<sup>11</sup>

In ART programs, according to the literature, life years gained is the preferred way to calculate effectiveness rather than lives saved. On average a newly infected adult will die from AIDS after 11 years without treatment. Thus a person becoming infected at

age 25 would expect to live until age 36 without treatment. If the average life expectancy at age 25 is 68, averting an infection provides about 32 (68 – 36) additional life years. The following is a standard formula for calculating DALYs (disability-adjusted life years), which is used to calculate the discounted life years gained by averting one infection:<sup>12</sup>

$$DALY = - \left[ \frac{(D)(C e^{\beta a})}{(\beta + r)^2} \right] \left[ e^{-(\beta + r)L} (1 + (\beta + r)(L + a)) - (1 + (r + \beta)a) \right]$$

*D* is the disability weight (= 1 for a year lived without any disability), *C* is a constant, beta is another constant, *a* is the year when death occurs, and *L* is the life expectancy in the absence of the condition.

An intervention would be cost-effective if it averted an infection for less than \$65,000 (\$1,776.23 × 32) and very cost-effective if it averts a new infection for less than \$19,000 (32 × \$592.078). The analysis also assumes that without Project HEART those patients would not have been able to get on ART through some other means, which is a standard assumption for this type of analysis.

Limitations and challenges of this analysis included (1) the quality of data used as inputs to the model, (2) the acquisition and validity of cost data, (3) the assumptions that were used that did not necessarily give a complete reflection of the actual picture, and (4) failure to calculate/include the opportunity costs among patients and the productivity effect.

In addition, distortion of costing data due to the long period of the review and the choice of which discount/exchange rate to use were factors identified as limitations and challenges to this analysis. Finally, construal of cost data was a limitation, especially for health facility structures and staff costs that are not disclosed to EGPAF. Therefore, on the whole, the results were driven by the model structure, the assumptions, and the quality of data.





### RESOURCES

- <sup>1</sup>Tanzania National Bureau of Statistics. Tanzania HIV Indicator Survey, 2009–2010. 2010.
- <sup>2</sup>Tanzania National Bureau of Statistics. Tanzania HIV/AIDS and Malaria Indicators Survey, 2007/08. 2008.
- <sup>3</sup>National Institute for Medical Research, Tanzania Commission for AIDS, and Joint United Nations Programme on HIV/AIDS. The Drivers of the HIV/AIDS Epidemic in Tanzania Mainland. 2010.
- <sup>4</sup>Tanzania Ministry of Health and Social Welfare and National AIDS Control Program. Updates on PMTCT and Care and Treatment Services at the Joint Technical Working Group on HIV/AIDS. 2011.
- <sup>5</sup>Elizabeth Glaser Pediatric AIDS Foundation. Rapid Scale-Up of PMTCT Service Provision Using a District Approach: The Tanzania Experience. 2009.
- <sup>6</sup>Tanzania Ministry of Health and Social Welfare and National AIDS Control Program. HIV/AIDS/STI Surveillance Report, No. 22. 2011.
- <sup>7</sup>Joint United Nations Programme on HIV/AIDS. Report on the Global AIDS Epidemic. 2010.
- <sup>8</sup>Joint United Nations Programme on HIV/AIDS. UNAIDS World AIDS Day Report, 2011. 2011.
- <sup>9</sup>Menzies N, Berruti A, Berzon R, Filler S, Ferris R, Ellerbrock T, Blandford J. The Cost of Providing Comprehensive HIV Treatment in PEPFAR-Supported Programs. *AIDS*. 2011; 25(14), 1753–60.
- <sup>10</sup>Commission on Macroeconomics and Health. Macroeconomics and Health: Investing in Health for Economic Development. 2011.
- <sup>11</sup>The World Bank. Tanzania. 2012. <http://data.worldbank.org/country/tanzania>. Accessed June 26, 2012.
- <sup>12</sup>Hormedes N. The Disability-Adjusted Life Year (DALY) Definition, Measurement and Potential Use. Human Capital Development Working Papers. July 1996. [http://www-wds.worldbank.org/external/default/WDSContentServer/WDS/IB/1996/07/01/000009265\\_3970311114344/Rendered/PDF/multi0page.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDS/IB/1996/07/01/000009265_3970311114344/Rendered/PDF/multi0page.pdf). Accessed June 22, 2012.



# ELIZABETH GLASER PEDIATRIC AIDS FOUNDATION

The Elizabeth Glaser Pediatric AIDS Foundation is a nonprofit organization dedicated to preventing pediatric HIV infection and eliminating pediatric AIDS through research, advocacy, and prevention, care, and treatment programs. Founded in 1988, the Foundation works in 15 countries around the world.



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