



Elizabeth Glaser Pediatric AIDS Foundation | End of Project Report

ELIMINATING PEDIATRIC AIDS IN SWAZILAND (EPAS)

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Elizabeth Glaser
Pediatric AIDS
Foundation

Until no child has AIDS.



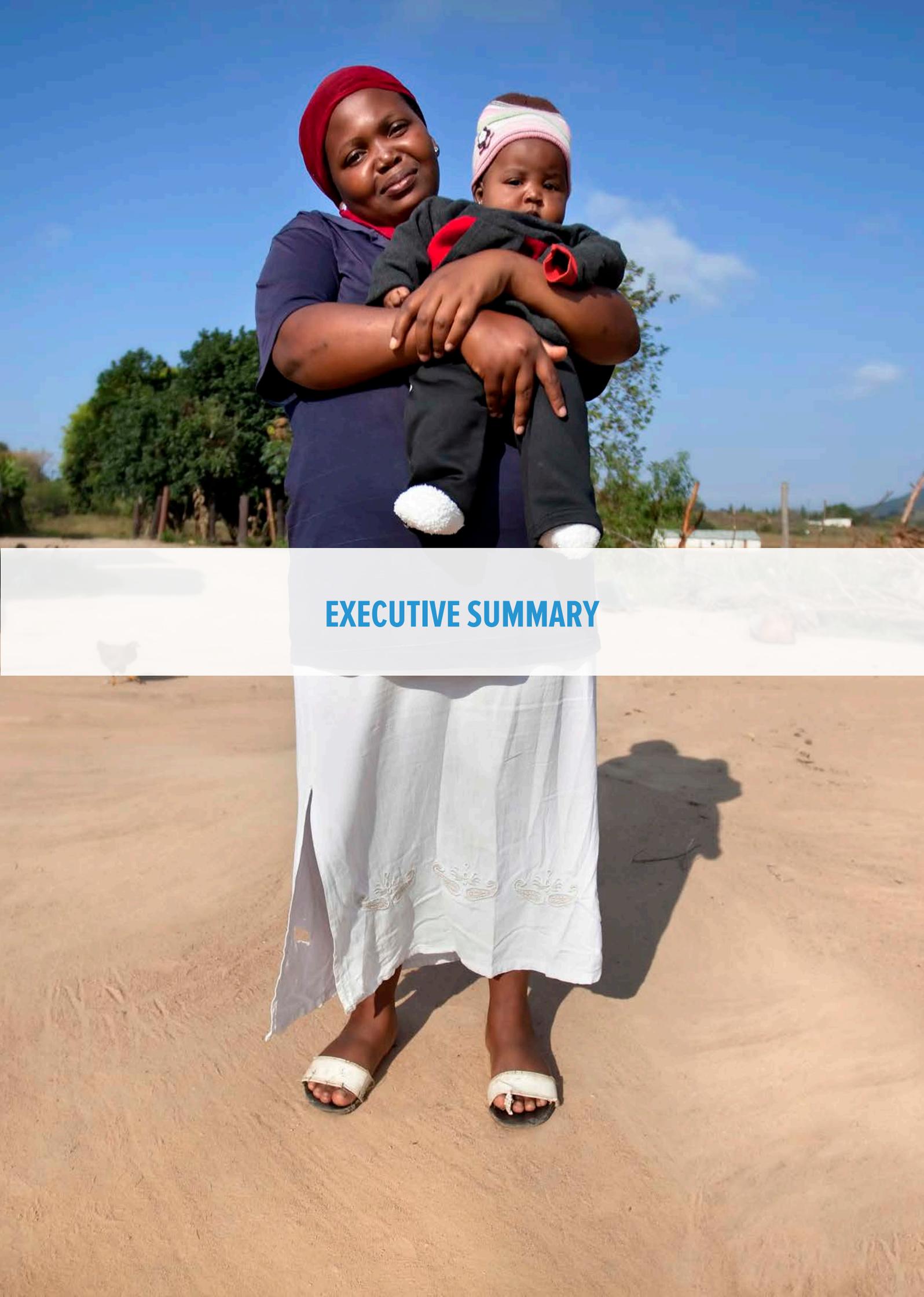
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ACRONYMS

AMICAALL	Alliance of Mayors' Initiative for Community Action on AIDS at Local Level
ANC	Antenatal care
ART	Antiretroviral therapy
DNA PCR	Deoxyribonucleic Acid polymerase chain reaction
DBS	Dried blood spot
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EID	Early infant diagnosis
EPAS	Eliminating Pediatric AIDS in Swaziland
HCW	Healthcare worker
HEI	HIV-exposed infant
HTC	HIV testing and counseling
L&D	Labor and delivery
LLAPLa	Life-Long ART for Pregnant and Lactating Women
MCH	Maternal and child health
MDT	Multi-disciplinary team
M&E	Monitoring and evaluation
MNCH	Maternal, newborn and child health
MOH	Ministry of Health
m2m	mothers2mothers
MTCT	Mother-to-child transmission of HIV
NARTIS	Nurse-led ART Initiation in Swaziland
NGO	Non-governmental organization
NVP	Nevirapine
PEPFAR	The United States President's Emergency Plan for AIDS Relief
PITC	Provider initiated testing and counseling
PMTCT	Prevention of mother-to-child transmission of HIV
PNC	Post-natal care
PSS	Psychosocial support
PHU	Public Health Unit
QI	Quality Improvement
SINAN	Swaziland Infant Nutrition Action Network
SNAP	Swaziland National AIDS Program
SRH	Sexual and Reproductive Health
TB	Tuberculosis
USAID	The United States Agency for International Development
WHO	World Health Organization



EXECUTIVE SUMMARY

The Elizabeth Glaser Pediatric AIDs Foundation (EGPAF) received a five-year award (2010 –2015) from the United States Agency for International Development (USAID) through the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) for the Eliminating Pediatric AIDS in Swaziland (EPAS) Project. The goal of EPAS was to support EGPAF to assist the government of Swaziland in its efforts to achieve virtual elimination of pediatric HIV. The specific objectives of the project include 1) Universal access to PMTCT, including expanded delivery of services to achieve elimination of mother-to-child transmission of HIV (MTCT), 2) Sustained quality, comprehensive, integrated PMTCT services at government health facilities, 3) Strengthened national health system in accordance with the Ministry of Health (MOH)’s plans for prevention of mother-to-child transmission of HIV (PMTCT) and 4) MOH’s policies, protocols and guidelines for PMTCT services reviewed and improved on a regular basis.

EGPAF provided support at national, regional, facility, and community level to achieve the EPAS objectives with key strategies that focused on increasing access to PMTCT through scaling up of the number of health facilities providing comprehensive PMTCT services; strengthening the maternal, newborn and child health (MNCH) platform; reducing missed opportunities for service delivery; and addressing cultural norms that limit service uptake. Ultimately the EPAS Project facilitated a seamless continuum of care for mothers and their families by improving and sustaining quality PMTCT services; strengthening comprehensive care for mothers and their families; achieving full integration of HIV services into MNCH platforms, and strengthening community linkages. Integral to its success, EGPAF worked in close collaboration with key stakeholders at the national, regional, facility and community levels to strengthen coordination, ensure sustainability, and expand access to integrated HIV services throughout the country. In its participation in technical working groups and their sub-committees with support from the EPAS Project, EGPAF was able to improve the policies, protocols, and guidelines on PMTCT, HIV care and treatment. Through the EPAS Project, EGPAF contributed to building the capacity of the national health system by strengthening human resources; improving strategic information; strengthening logistics management; and building capacity for supportive supervision. Ultimately EGPAF achieved the intended outcomes of the project to provide comprehensive PMTCT services at 100% of public facilities and to achieve 98% uptake of HIV counseling and testing in antenatal care (ANC), maternity, and postnatal settings. In addition, EGPAF reached over 95% of all pregnant women in Swaziland and reduced MTCT rates from 8% in 2009 to 2% in 2013 at six weeks and from 16.4% in 2011 to 4% in 2015 at 18months.







INTRODUCTION

The Current State of HIV and PMTCT in Swaziland

With an estimated adult HIV prevalence of 27.7%, Swaziland has the highest HIV prevalence in the world, including among women with an HIV prevalence of 41%.^{1,2} There are 210,000 people living with HIV in Swaziland, of which 19,000 are children (ages 0-14).³ Women are disproportionately affected by HIV and represent 63% of adults living with HIV.⁴ Recent research has highlighted key drivers and other factors fueling the HIV epidemic in Swaziland that include multiple and concurrent sexual partners, HIV stigma and discrimination, sex work, gender inequality and gender-based violence, early sexual debut, intergenerational sex and men having sex with men.⁵

Since the first AIDS case in Swaziland in 1986, the Government of Swaziland demonstrated high level commitment to address the HIV/AIDS epidemic. It established the Swaziland National AIDS Programme (SNAP) in 1987 and Short Term (1986-1988) and Medium Term (1989-1992) Plans for preventing and controlling HIV/AIDS in Swaziland that focused on providing information, education and communication, promoting and distributing condoms, managing sexually transmitted infections and ensuring safe blood transfusions.⁶ In 1999, the King of Swaziland declared HIV/AIDS a national disaster. The National Emergency Response Council for HIV and AIDS was established in 2003 through an act of Parliament to lead and coordinate the HIV response and has presided over the development of three national AIDS strategic plans since its inception.⁷

National interventions for PMTCT were introduced in Swaziland in 2003. The PMTCT program and its supporting partners, especially EGPAF, have implemented many actions to scale up PMTCT interventions, including expanded, targeted mentoring on PMTCT at health facilities, improved coordination at national, regional, and facility level, strengthened and expanded PMTCT service provision to communities, implementation of innovative program interventions to engage male partners and tracing and follow up of ANC clients and HIV exposed infants.⁸

Over the last decade substantial results have been achieved in curbing the HIV/AIDS epidemic in Swaziland and preventing new HIV infections in infants through PMTCT programming.⁹ Some of the key results due to focused efforts to enhance PMTCT services include:

- An increase in the PMTCT facility coverage from 44 to 162 sites of the 183 (88%) health facilities providing ANC services in 2015¹⁰
- An increase in overall HIV testing rates in pregnant women from 67 percent in 2009 to 97% in 2014¹¹

- An increase in the percentage of women that received ARVs (excluding single dose NVP) to prevent new HIV infections among children went from 63% in 2009 to >95% in 2014¹²
- A decrease in MTCT at six weeks from 8% in 2009 to 2% in 2013¹³
- A decrease in MTCT at 18 months from 16.4% in 2011 to 4% in 2015¹⁴

Figure 1: The Evolution of the PMTCT program in Swaziland

2002	PMTCT Guidelines 1st Edition using single dose nevirapine (NVP)
2009	Early Infant Diagnosis (EID) of HIV using Deoxyribonucleic Acid polymerase chain reaction (DNA PCR) established
2010	PMTCT Guidelines 3rd Edition adopting Option A
2011	Elimination Framework and Operational Plan 2011-2015
2014	Swaziland Integrated HIV Management Guidelines using Option B+ Life-Long ART for Pregnant and Lactating Women (LLAPLa)

EGPAF-Swaziland

EGPAF is a non-profit organization dedicated to preventing pediatric HIV infection and eliminating pediatric AIDS through research, advocacy and implementation of HIV prevention, care, and treatment programs. Founded in 1988, EGPAF works in 14 countries in Sub-Saharan Africa and Asia, including Swaziland. With funding from the EPAS Project, from 2010 to 2015 EGPAF supported the MOH's national plan to scale up access to PMTCT services to 100 percent of public health facilities and contribute towards achieving elimination of MTCT.

Since the launch of the national PMTCT program in 2003, EGPAF has served as the leading national partner for PMTCT in Swaziland. With initial support through the Global Call to Action Project that ended in September 2010 and subsequent support through the EPAS Project, EGPAF has played a critical role in supporting the MOH to scale up PMTCT access to more than 85% of Swaziland's population (29,466/34,357 of the expected deliveries had access to PMTCT services).¹⁵

EGPAF's strategic support is aligned with a comprehensive PMTCT approach adopted by Swaziland's Ministry of Health (MOH) and involves provision of technical assistance at the national, regional, facility, and community levels. In 2014, with EGPAF's support, the MOH rolled out Option B+ (known as life-long ART for pregnant and lactating women [LLAPLa] in Swaziland). The 2013 WHO treatment guidelines recommend Option B+ where lifelong ART is provided to all pregnant and breastfeeding women living with HIV regardless of CD4 count or WHO clinical stage and ART should be maintained after delivery and completion of breastfeeding for life.¹⁶

At national level, EGPAF supports SNAP and Sexual Reproductive Health (SRH) Unit to improve the availability, accessibility, and utilization of HIV prevention, care and treatment services among pregnant and lactating women. Support is provided mainly through technical assistance in adaptation of guidelines, development of tools, policies, planning, implementation, coordination, monitoring and evaluation (M&E) of PMTCT, HIV care and treatment services.

At regional level, EGPAF supports the regional health management teams in managing HIV care and treatment programs in their regions and in coordination off-site trainings for HCWs.

At facility level, EGPAF capacitates HCWs through comprehensive health systems mentoring, supportive supervision and on-site trainings on PMTCT, HIV care and treatment.

At community level, supports community mobilization activities (education, dialogues) on PMTCT/MNCH and community tracking of clients lost to follow up.



OVERVIEW OF EPAS PROJECT

EGPAF received a five-year award (from October 2010 – September 2015) from USAID through PEPFAR for the EPAS Project. The goal of EPAS was to support EGPAF to assist the government of Swaziland in its efforts to achieve virtual elimination of pediatric HIV (Figure 1). The intended outcomes of these objectives include to provide comprehensive PMTCT services at 100% of public facilities and to achieve 98% uptake of HIV counseling and testing in ANC, maternity, and postnatal settings.

EGPAF provided support at national, regional, facility, and community level to achieve the EPAS objectives and in the process supported the MOH strategy that includes all four prongs of PMTCT. The key strategies of the EPAS project focused on increasing access to PMTCT through scaling up of the number of health facilities providing comprehensive PMTCT services; strengthening the MNCH platform; reducing missed opportunities for service delivery; and addressing cultural norms that limit service uptake.

Ultimately the EPAS Project facilitated a seamless continuum of care for mothers and their families by improving and sustaining quality PMTCT services; strengthening comprehensive care for mothers and their families; and achieving full integration of services. Through the EPAS Project, EGPAF contributed to building the capacity of the national health system by strengthening human resources; improving strategic information; strengthening logistics management; and building capacity for supportive supervision. Through its participation in technical working groups and their sub-committees with support from the EPAS Project, EGPAF was able to improve the policies, protocols, and guidelines on PMTCT and HIV care and treatment.

As of September 30, 2015, EGPAF-Swaziland was supporting 144 sites (out of the 162 total PMTCT sites in Swaziland) to provide PMTCT services. EGPAF provided more than 189,121 women in Swaziland with PMTCT and care and treatment-related services.

Figure 1: EPAS Objectives and major activities

Objective 1	<p>Universal access to PMTCT, including expanded delivery of services to achieve elimination of MTCT</p> <ul style="list-style-type: none">• Scaling up comprehensive PMTCT services• Strengthen the MNCH platform• Reducing missed opportunities for PMTCT service delivery• Addressing cultural norms that limit service uptake
Objective 2	<p>Sustained quality, comprehensive, integrated PMTCT services at government health facilities</p> <ul style="list-style-type: none">• Improving and sustaining quality services• Strengthening comprehensive care for mothers, children and families• Achieving full integration of services
Objective 3	<p>Strengthened national health system in accordance with the MOH's plans for PMTCT</p> <ul style="list-style-type: none">• Strengthening human resources• Improving strategic information• Strengthening logistics management• Building capacity for supportive supervision• Enhancing program and financial management
Objective 4	<p>MOH's policies, protocols and guidelines for PMTCT services reviewed and improved on a regular basis</p> <ul style="list-style-type: none">• Participating in Technical Working Groups and their sub-committees• Providing lead support for the adoption and roll out of the 2009/2013 World Health Organization (WHO) recommendations• Collaborating and coordinating with partners



PROJECT ACHIEVEMENTS

Health Systems Strengthening

Throughout the EPAS project EGPAF engaged in a number of activities to strengthen the health system in Swaziland, including provision of technical assistance, capacity building, supply chain management, and quality improvement (QI), and strategic information.

Technical Assistance

EGPAF provided technical assistance and guidance on improving PMTCT, care and treatment activities for adults and children to the MOH and partners through its participation and leadership roles in different technical working groups and sub-committees. EGPAF consistently had a technical leadership role in the adaptation and implementation of technical guidelines, particularly those related to PMTCT: 2010 World Health Organization (WHO) PMTCT and Infant and Young Child Feeding Guidelines and the 2013 WHO Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection. Through leadership roles on the PMTCT Working Group, the Option B+ Task Team and the LLAPLa Task Team, EGPAF played an instrumental role in piloting new approaches, adapting and finalizing guidelines and implementation rollout. EGPAF contributed to key national documents that defined Swaziland's HIV response, some examples include:

- The National Strategic Framework for the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive
- The Global AIDS Response Progress Report (GARPR) (formerly UNGASS report)
- National Health Sector Strategic Plan 2008 – 2013 Midterm review
- National Health Sector Strategic Plan 11 2014 – 2018 development
- The Extended National HIV Strategic Framework (2014-18) and the subsequent country operational plan.
- The development of the first ever in-service integrated management of pregnancy and childbirth training curriculum.

Capacity Building

Training

Throughout the duration of the EPAS Project, EGPAF provided various technical assistance and support at the national level including human resources to support key position at regional and national levels. EPAS provided technical assistance in the development of the National Supportive Supervision and Mentorship Framework, tools for

implementation of nurse-led ART initiation in Swaziland (NARTIS) and supported the orientation of supervisors and HCWs working in public and private sector health facilities on the revised national PMTCT Guidelines in preparation for implementation at health facilities.

EGPAF provided substantial numbers of healthcare workers (HCWs) in-service and on-site trainings on a range of relevant PMTCT and HIV care and treatment technical topics each year of the EPAS Project. Over the duration of the project EGPAF provided in-service trainings on:

- PMTCT for 3,437 HCWs;
- HIV care and treatment, including the Integrated management of adolescent and adult illness and NARTIS, for 482 HCWs;
- Pediatric and adolescent HIV counseling and psychosocial support (PSS) for 380 HCWs;
- M&E for 925 HCWs;
- EID for 63 HCWs;
- Couple HIV testing and counseling (HTC) for 25 HCWs; and
- Adolescent SRH for 18 HCWs.

In addition, EGPAF conducted on-site trainings to 2,717 HCWs in PMTCT, pediatric and adult HIV care and treatment, M&E, EID, QI, cervical cancer screenings, referrals and linkages and tuberculosis (TB)/HIV. EGPAF provided strong and consistent on-site supportive supervision and mentorship at the facility level to reinforce and complement these trainings.

Mentorship

EGPAF employed a systematic, data-driven approach to clinical mentorship in order to optimize the use of resources across a large volume of facilities currently supported. Mentorship visits were conducted using EGPAF-developed guidelines and tools. EGPAF developed criteria to guide the frequency of mentorship visits, which was based on facility performance against selected Health Management Information System (HMIS) indicators that fall into the four PMTCT priority areas: percentage of ANC attendees (pregnant women) who are HIV tested, percentage of women found to be HIV-positive through ANC testing who are initiated on ART, percentage of women attending ANC who receive CD4 testing and the percentage of HIV-exposed infants (HEI) receiving prophylaxis. The overall performance of a facility was determined by assigning a five-point scale for each indicator (as shown in Table 1) and combining all indicator scores to determine the total performance value.

Table 1: Performance Scale

Indicator Performance	Description
<50%	Very Low Performance
50% - <70%	Low Performance
70% - <80%	Medium Performance
80% - <90%	High performance
> 90%	Very High performance

High volume and low performing sites were visited monthly and well-performing sites were visited quarterly. During each visit, mentorship was provided to HCWs from different disciplines across all service points in the facility. On average, visits were conducted over a two hour period. Visits consist primarily of one-on-one mentorship between a health worker and a mentor, but also included presentations to larger groups of HCWs. The successes achieved under the EPAS project were largely anchored on the mentorship provided by EGPAF. Over the project life, EGPAF provided mentorship to over 2,000 HCWs in the supported facilities.

EGPAF's clinical mentorship activities have resulted in significant achievements for the national PMTCT program in Swaziland. Key interventions designed to strengthen health worker capacity, advocate for greater service integration and improve partner coordination to support clinical mentorship have led to universal public PMTCT service coverage and improved health outcomes among HIV-positive pregnant women, children and families.

Success Story

Improving HCWs skills on PMTCT through mentorship



Nurse S.Dube (L) and EGPAF mentor Hloniphile Lokotfwayo (R) during a mentorship session

EGPAF's intensive mentorship of HCWs to improve their knowledge and skills in PMTCT is recognized by the MOH and partners as one of its areas of expertise. All EGPAF mentors are trained midwives who provide mentorship to nurses through direct observations, case reviews, chart reviews and also through multi-disciplinary teams (MDT)/ QI. They visit health facilities at least once a month or more frequently depending on the challenges on ground. EGPAF encourages use of a data driven mentorship to work with HCWs to identify gaps and address the identified gaps to strengthen service provision.

One such facility to benefit from the mentorship is Mafutseni clinic. EGPAF started supporting the clinic in 2012. The facility was struggling with provision of PMTCT and EID services. EGPAF mentors worked with the facility to improve pediatric follow up care, M&E including documentation on the new tools, strategies on the family centered approach, client flow, report writing and record keeping.

The facility improved its performance in PMTCT and the areas in which it received support throughout the project. At baseline, the clinic was in the medium performance category with an average score of 70-80% in four indicators- HTC uptake, ARV uptake, CD4 testing uptake and infant NVP uptake. Following the intensive support provided by EGPAF, the facility shifted to the very high performance category (highest category), which reflects an average above 90% in the four indicators. This performance improvement increased the confidence of the nurses working at the facility.

Mafutseni clinic extends their gratitude to USAID for their continued support by providing PMTCT mentors who work tirelessly to ensure that clinics get the best support. According to Dube, a nurse who works at the clinic, "We wish that EGPAF can continue to support us to achieve our goal of being one of the centers of excellence in the provision of holistic and quality health services to the community of Mafutseni".

Supply Chain Management, Medical Equipment, and Infrastructure



US Ambassador, Makila James, handing MNCH equipment to Swaziland Deputy Prime Minister and Minister of Health

Throughout the EPAS project, EGPAF Swaziland was the primary recipient of the PMTCT Determine Donation Program for pregnant women from Direct Relief. Over the years, EGPAF received 2,700 determine test kits (270 000 tests) and 3,500 chase buffer solution to help scaling up of HTS for pregnant women. EGPAF was also the primary recipient of NVP suspension and tablets used as prophylaxis for the PMTCT program from AXIOS. Through AXIOS, EGPAF availed 2,150 of 20mls NVP suspension and 895 NVP tablets units (53,700 doses) to support the PMTCT Program.

EGPAF has also supported maternities with equipment (autoclaves, delivery beds, baby warmers) valued more than \$60,000 to strengthen MNCH services provision. Additionally, EGPAF also partnered with Project C.U.R.E to source and distribute medical equipment valued about \$800 000 to support facilities in provision of PMTCT/MNCH services.

Throughout the life of the EPAS project, infrastructure improvements were supported in different health facilities and these included procurement of park homes for Pigg's Peak Public Health Unit (PHU) and U- Tech clinic. EPAS also supported renovations of facilities to create privacy and improve clients flow during PMTCT and EID services delivery. Renovations were supported in the following health facilities: Mankayane PHU, Mbabane, Siteki PHU and Hlathikhulu PHU, Lobamba clinic, Ndzevane clinic, Nkonjwa clinic, Hlane clinic, and Siphofaneni clinic.

Quality Improvement and Strategic Information

EGPAF supported a number of QI and capacity-building activities at the regional and facility-level through the EPAS project to strengthen PMTCT, HIV care and treatment and the health system in general. Throughout the course of the project EGPAF assisted in the development of M&E tools and indicators to monitor PMTCT and other guidelines. At the regional level, the EGPAF M&E team and technical director reviewed data obtained from the MOH each month for consistency and followed up with the MOH on any data-related issues or questions. The entire technical team participated in quarterly data and program reviews. These reviews encompassed the review of progress for each site, identification of priorities for on-site mentorship, supervision and support for the coming period and discussion about areas for further research.

EGPAF encouraged data use at the health facilities as part of the EPAS Project by facilitating HCWs to review patient level data, identify bottlenecks to essential services and come up with site level improvement plans. MDTs/QI committees at 12 sites were established through EGPAF support and facilitation. These teams met monthly to review PMTCT data, identify gaps and create strategies to address the gaps. Several sites were able to meet their targets through QI projects, such as improving re-testing among HIV negative women; improving re-testing of children at 18-24 months; and improving ART initiation among eligible pregnant women. In the QI-supported facilities, EGPAF procured and placed computers and printers to assist the HCWs in analyzing their data to improve performance.

Computers and printers procured for KSII PHU to support QI activities



Success Story

Improving data quality through MDTs and QI meetings

One of EGPAF's main strengths is the use of data to improve the quality of care. In 2009 EGPAF engaged Public Health Units (PHUs) to formulate MDTs as a strategy to improve quality of services for pregnant women and their families. The focus of the MDT/QI meetings was to discuss data trends, and improve the efficiency of service delivery and client flow. Conducted once a month by an MDT/QI coordinator with a targeted agenda, the meetings served as a platform for staff from all units including child welfare, ANC, post-natal care (PNC), ART, pharmacy, laboratory and maternity to receive new updates on PMTCT. EGPAF supported the PHUs to conduct the MDT/QI in the first 2 years and then transitioned to the facilities to run the meetings on their own. The PHUs were trained on how to generate their own cascade. Data captured routinely was analyzed using the cascade to identify gaps, root causes, and possible solutions. The HCWs utilized the data to improve service delivery through QI projects.

One of the facilities that benefited from the MDTs/QI meetings is Hlathikhulu PHU, a site where EGPAF has supported PMTCT, pediatric follow up and care and treatment since 2006.

The MDT at Hlathikhulu was formed in 2009 with the focus on improving data and quality of services. EGPAF provided mentorship to the facility on a monthly basis and joined the facility during their MDT/QI meetings. Through the meetings, the facility was able to identify gaps in skills in certain departments and provide mentorship to address these areas. As a result of these efforts, the facility improved its provision of services by changing its client flow and service integration and greatly improved register documentation and reporting over the years. Hlathikhulu PHU nurses now understand the PMTCT cascade and can conduct the meetings independently

Hlathikhulu PHU extends their sincere gratitude to USAID through EGPAF staff who introduced this initiative and their support throughout. Nurse Nosipho Dlodlu from Hlathikhulu PHU said: "MDT/QI meetings has helped us to see if work is of quality and mentors have really helped us as a facility to be able to identify gaps and improve on them." Nurse Dlodlu also highlighted that through the MDT/QI meetings they are able to share experiences from different departments that is ANC, CWC, FP, PNC and it has also helped us build our capacity in terms of skills and knowledge. She further expressed gratitude to EGPAF by saying "I thank EGPAF assistance for making this happen and the USAID. We are looking forward to continue working with EGPAF in the coming years."

EGPAF conducted a retrospective analysis from January to March 2012 and July to September 2013 on the 12 selected sites where monthly MDT/QI meetings are held. Across the twelve selected facilities, the development of reports resulted in identification of gaps in data reporting during monthly meetings, improved reporting on key indicators and ultimately led to the introduction of key interventions to improve gaps in the quality of HTC and ART services care. During January to March 2012 and July to September 2013, 100% of pregnant women attending ANC received a HIV test result at their first ANC visit; HIV negative women with a repeat HIV test in maternity increased from 6% to 98%; HIV positive pregnant women who received CD4 test results increased from 69% to 89%, those who were eligible and received ART increased from 20% to 79%. The percentage of HIV exposed infants who received HIV test results increased from 44% to 80%, however on average each quarter 28% to 39% of HIV positive infants under two were started on ART.

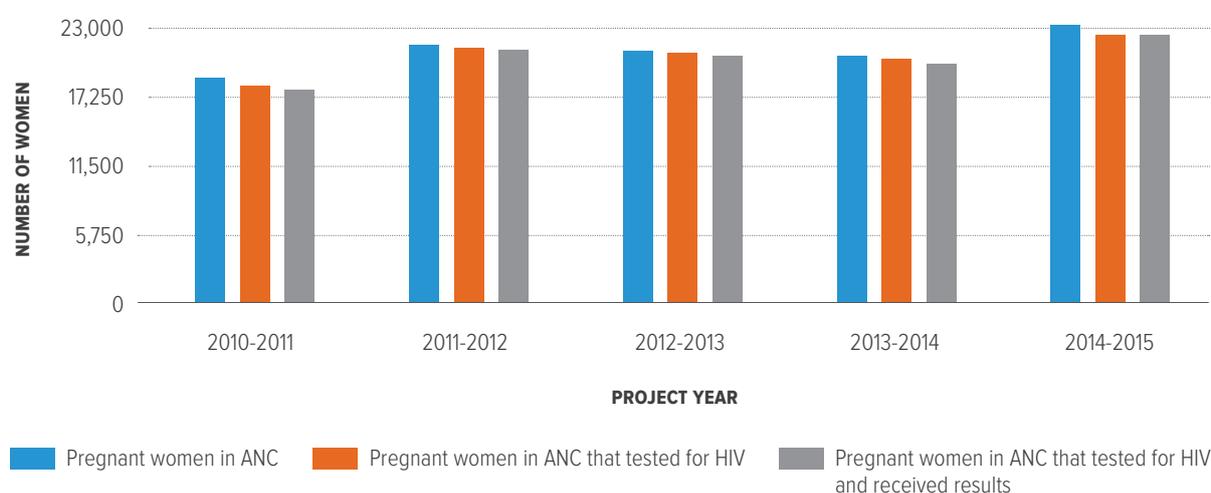
Prevention of Mother-to-Child HIV Transmission

In the absence of any PMTCT interventions the likelihood of a mother transmitting HIV to her infant is 45%.¹⁷ Antiretroviral treatment (ART) and other effective interventions for the PMTCT can reduce this risk of mother-to-child transmission to below 5%.¹⁸ Strengthening PMTCT programs was a main feature of the EPAS project. Key program components in relation to PMTCT included provider initiated testing and counseling (PITC), CD4 testing, provision of ARV prophylaxis and LLAPLa.

Provider-initiated Testing and Counseling

PITC is an important intervention to increase uptake of HIV testing.¹⁹ Throughout the duration of the EPAS project 104,334 pregnant women were seen for their first ANC visit at EGPAF-supported sites. Of these 98%, a total of 102,173 pregnant women seen in these facilities, were tested for HIV. Almost 99% of those that received HIV testing received results (100,962 pregnant women). These high levels of HIV testing could be attributed to trainings and mentorship that EGPAF provided on PITC as well as improved documentation and reporting. Figure 2 shows the number of pregnant women attending one ANC visit and the proportion of those that received HIV testing and results each year of the EPAS Project. Despite the success of PITC in initial testing at maternal and child health (MCH) points, re-testing of pregnant women who initially test negative in these contexts remains a challenge. Re-testing pregnant women is key to preventing HIV transmission to their child, as there is a high risk of transmitting HIV through childbirth. Throughout the project a total of 47,270 pregnant women (60%) who tested HIV negative in ANC were retested at ANC, of which an average of 2% tested HIV positive and were given ARVs as prophylaxis or ART.

Figure 2: Pregnant women attending ANC and proportion of those testing for HIV and receiving results



CD4 Testing

As the cornerstone of HIV management, CD4 count is recommended for immunological staging and monitoring patients for ART as well as informing treatment decisions.²⁰ Expanding access and coverage of CD4 testing was an integral component of the EPAS project. CD4 testing coverage increased the first half of the EPAS project from 73% in 2010/2011 to 80% in 2012/2013. During the second half of the project however, CD4 testing coverage declined to 68% in the last year of the project. This is due in part to challenges related to consistent CD4 reagents supply and stock-outs. Of HIV positive women that received CD4 testing, the proportion that received CD4 test results increased steadily from 59% in first year of the project to 85% at the end of the project. It is noted that the introduction of point of care CD4 testing midway through the project played a role in trends toward higher receipt of CD4 count results.

Antiretroviral Prophylaxis

Provision of ARVs for PMTCT can dramatically reduce the risk of vertical transmission from around 40% to less than 5% in some research and pilot settings in Sub Saharan Africa.²¹ Expanding coverage of ARV prophylaxis was a priority for the EPAS project and improved over the duration of the project. Coverage of ARV prophylaxis for pregnant women living with HIV was 86% the first year of the project, after which it increased and maintained levels over 94% each year. Figure 3a shows ARV prophylaxis coverage each year of the project. There was a decrease in single dose NVP to less than 1% over the project duration in conjunction with a rapid scale up of ART for pregnant women to 96% the final year of the project that coincided with international recommendations for universal ART for HIV-positive pregnant women (Figure 3b).

Figure 3a: Overall ARV prophylaxis coverage over time

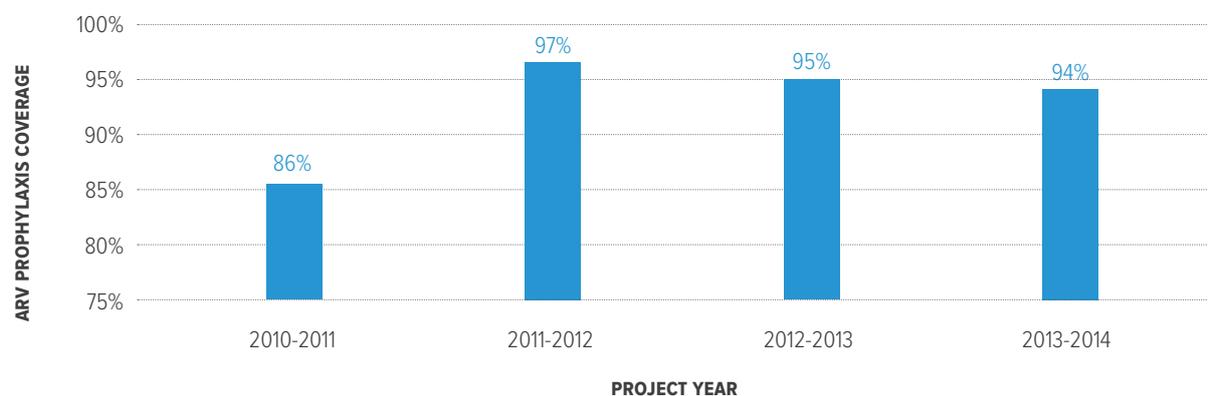
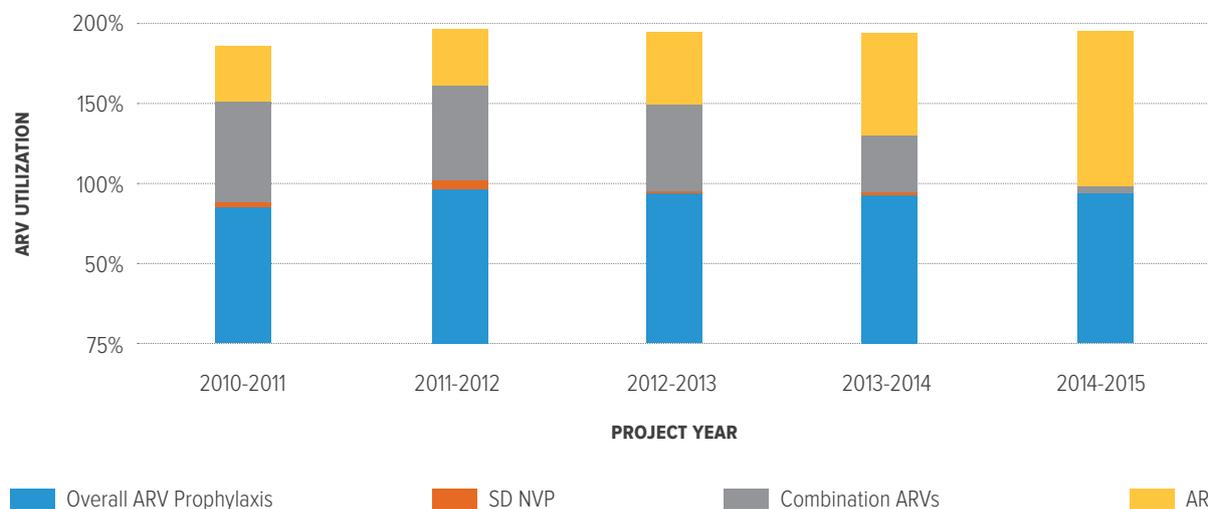


Figure 3b: Distribution of different ARV prophylaxis regimens



LLAPLa Implementation

Throughout the project EGPAF provided technical assistance and leadership in updating the national consolidated guidelines on HTC, PMTCT, and HIV care and treatment in-line with the most current WHO guidelines. EGPAF served as a co-chair of the PMTCT working group and provided strong leadership in finalizing the PMTCT chapter of the Swaziland Integrated HIV Management Guidelines in accordance with the 2013 WHO Consolidated Guidelines. Subsequently EGPAF co-chaired the national LLAPLa task team established in 2013, which developed a national rollout plan and initiated implementation of the rollout. In the final year of the project EGPAF led the roll-out of LLAPLa part of the guidelines, which included conducting pre-transition trainings in 99 phase I public health facilities, training a total of 105 doctors, 1,447 nurses, 168 mentor mothers and expert clients. These efforts resulted in the transitioning of 99/99 phase 1 facilities, 6/6 phase 2 and all private facilities to LLAPLa.

Success Story

Cell Phone Use Improves PMTCT Service Utilization

In 2009, EGPAF-Swaziland's clinical services team performed a needs assessment in 30 facilities to assess gaps in PMTCT service delivery to HIV-positive pregnant women and HEI. Results indicated low numbers of clients returning to clinics to receive CD4 and DNA PCR test results, and low levels of adherence and retention among clients in HIV care and treatment. To improve HIV test result acquisition, adherence, and retention in care and treatment, EGPAF adopted the use of mobile phones to actively follow-up clients.

Mobile phones were given to senior nurses in ten facilities with high client volume and high lost to follow-up (LTFU) rates. Clients provided phone numbers at clinic registration and were called if they had infants with positive DNA PCR results, were defaulting on ART, or were considered LTFU. EGPAF developed a standard operating procedure for this follow-up activity, including the use of a log book to track calls. In addition, a quarterly report that documents the number of clients called, those who returned to a facility, those reported as deceased, and the amount of mobile phone airtime used. As of today, 78 EGPAF-supported sites are using mobile phones.

Between January and September 2013, a total of 2,672 clients were called for follow up. Of these, 56% (1,488) were brought back to the PMTCT program. The cost to bring back one client was estimated at less than US\$1.00. The facilities were able to identify 20 (0.7%) clients recorded as LTFU who were deceased. Mobile phone usage has shortened turnaround time for positive DNA PCR results from one week to one day, as labs are proactively sending results to facilities through the mobile phones. Challenges noted included poor documentation of outcomes and patients providing wrong mobile numbers.

EGPAF-Swaziland can build on mobile phone usage to strengthen follow-up of clients using automated SMS to send clients appointment reminders. Following this initiative, other implementing partners collaborated with EGPAF to provide mobile phones to all facilities in Swaziland.

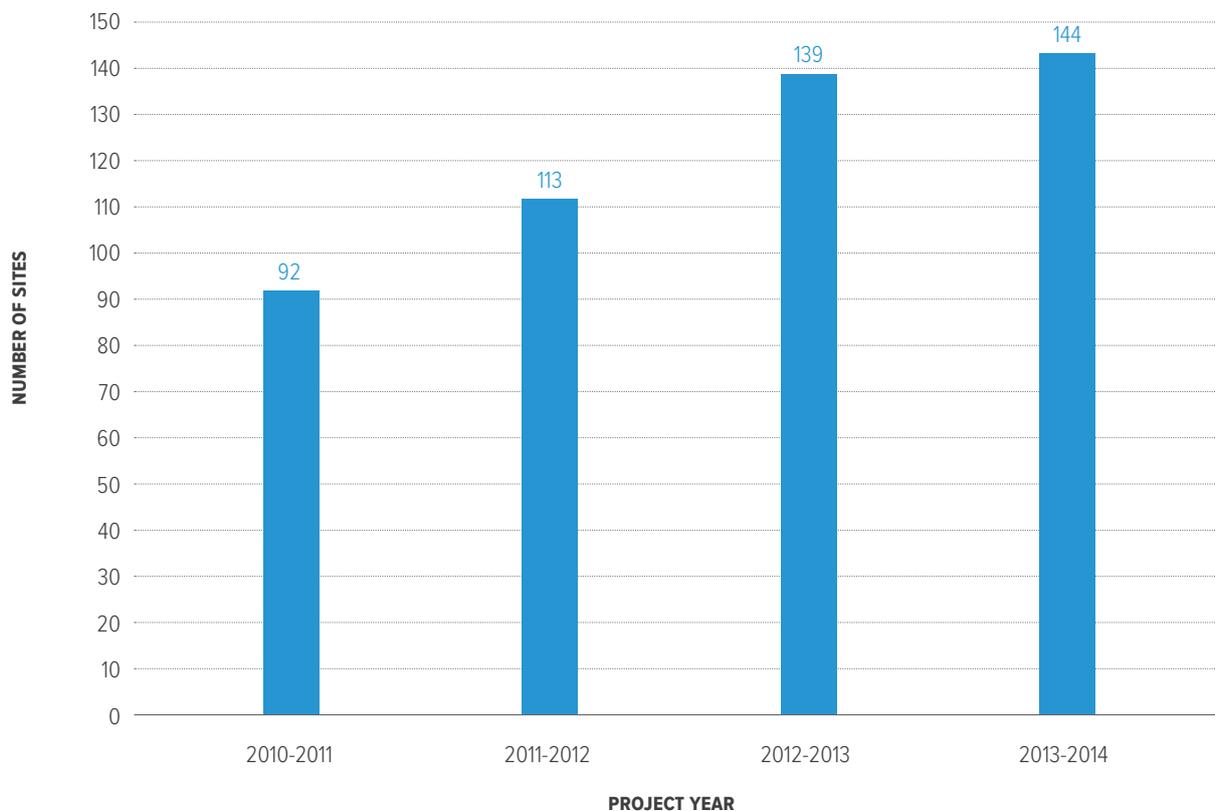
Maternal, Neonatal, and Child Health

Strengthening linkages and integration between PMTCT, HIV care and treatment and ART services into MNCH services at all levels of the health system including national, regional and health facilities has been an integral component of EGPAF Swaziland's Five Year Strategic Plans, including the most recent strategic plan (2012-2017). This is consistent with priorities set forth in Swaziland's National Multi-Sectoral Strategic Framework for HIV and AIDS 2009-2014 and the Extended National Multi-Sectoral Framework 2014-2018. Throughout the EPAS Project EGPAF supported multiple activities to strengthen linkages between and integration of PMTCT, HIV care and treatment and ART services into MNCH services including supporting sites to increase uptake of HTC at MNCH service points, integrating ART into MNCH settings, identification of HEI and provision of key HIV and other services to these infant, national management and human resources capacity development in this area and different activities to build and enhance national efforts in cervical cancer screening.

Integrating HIV into Maternal, Neonatal, and Child Health Service Delivery Points

Integrating HIV services into MNCH has tremendous potential to strengthen health systems and improve efficiencies. ANC and other MCH settings provide a critical entry point for women to access all HIV-related services. Integration of HIV into ANC and other MCH settings provides greater reach into catchment populations and offers patient convenience that can promote uptake, adherence and retention.²² For these reasons, there has been a strong and consistent emphasis on service integration within the context of PMTCT. From 2010-2014, EGPAF supported a total of 144 sites to increase uptake of HTC at MNCH service points, including ANC and Labor and Delivery (L&D) (Figure 5).

Figure 5: Number of sites supported to increase uptake of HIV testing at ANC and L&D over the duration of the EPAS project



Through EPAS, EGPAF supported the integration of ART services into MNCH selected sites. EGPAF-Swaziland was one of the first counties (among EGPAF supported countries) to integrate ART services into MNCH settings and hosted several countries, including Zimbabwe, for learning visits on how to integrate ART into MNCH. EGPAF-Swaziland also presented lessons learnt from this integration at the AIDS Conference in 2010.

Phases in integrating ART service into MNCH setting:

Phase 1

All MNCH facilities should:

- Provide comprehensive care services for pregnant women and children.
- Have all nurses trained in integrated management of adulthood and adolescent illnesses (IMAI)
- Have pre-ART registers, individual patient files and locked cabinets for care services.
- Be able to collect CD4 specimens at least 4 times a week.
- Be trained in drug management to avoid frequent stock outs of essential HIV care drugs especially cotrimoxazole.
- Create at least one room for consultation and follow up for pre-ART clients.
- Be supported with cellphones and phone cards to actively follow up clients for care and treatment services.
- Start systematic provision and documentation of comprehensive care services.
- All MNCH facilities have a MDT (with a focal person) which meets regularly to discuss HIV care and treatment services.

Phase 2

- Doctors from the main ART centers visit the MNCH facilities at least once a week to initiate eligible pregnant women and children.
- MNCH facilities start initiation of pregnant women and children on ART at least once a week.
- All MNCH facilities have ART registers
- Nurses start refilling of ARVs for women and children initiated at their facility.

Phase 3

- Nurses are trained in Nurse led ART initiation in Swaziland (NARTIS) and start ART initiation with oversight from visiting ART doctors
- Renovations of existing infrastructure should be considered for all the facilities so that they have adequate space for consultation, adherence counseling, and drug and equipment storage.
- All MNCH facilities need computers and data clerks to capture all pre-ART and ART data.
- MNCH facilities start to operate as independent ART centers for pregnant women, their spouses and children.

In 2014/2015 the program focus shifted to building the capacity of sites to implement LLAPLa in all facilities in the country (these efforts are described in previous section). Related to integrating ART into MNCH settings, EGPAF was engaged in concerted efforts to build the capacity of nurses to prescribe and manage patients on ART in an initiative called NARTIS. EGPAF was part of the National NARTIS Steering Committee, contributed to the development of and piloting of tools for NARTIS, played a role in mapping the rollout of NARTIS and conducting NARTIS trainings for all nurses in its supported sites.

Maternal, Neonatal, and Child Health Capacity Building

EGPAF engaged in a number of other activities related to enhancing management and HCWs technical capacity in relation to MNCH. EGPAF supported the overall strengthening of SRH Unit and MNCH program management by seconding an MNCH advisor and training officer to the MOH. In 2014, EGPAF provided technical support for the development and adaptation of a comprehensive refresher training package to better equip midwives to provide improved integrated care during pregnancy, childbirth, and the postnatal period. The Integrated Management of



Training of midwives in integrated management of pregnancy and child birth

Pregnancy and Child Birth/PNC and PMTCT curriculum package included a training guide, a participant manual, job aids, and electronic materials. An initial training-of-trainers and training for midwives was conducted in October 2014 followed by additional trainings in 2015. EGPAF staff provided continuous support throughout the trainings in collaboration with the MOH and the SRH Unit. Throughout the project, EGPAF conducted additional trainings on MNCH including trainings on new MNCH data collection tools for clinic supervisors, preceptors and nurses and in-service MNCH trainings.

Cervical Cancer Screening

Cervical cancer is the most common cancer diagnosed among women and responsible for cancer-related death in eastern and central Sub-Saharan Africa.²³ There is evidence of a synergistic link between HIV and cervical cancer.²⁴ HIV-positive women are more likely to develop precancerous lesions that can develop into invasive cervical cancer, women infected with HIV face an increased risk of persistence and recurrence of human papilloma virus (HPV); and HIV infection is associated with a higher risk of invasive cervical cancer.^{25,26,27} Given the critical links between HIV and cervical cancer, during the EPAS Project EGPAF provided technical assistance to the MOH to develop and launch a national cervical screening program.

These efforts encompassed developing a roadmap for provision and scale up of cervical cancer services, developing national guidelines for cervical cancer screening and services, and creating an implementation rollout plan for cervical cancer screening. In addition EGPAF procured cervical cancer screening equipment for five facilities. In the last two years of the project, EGPAF provided in-service training on cervical cancer screening to 222 HCWs.

Pediatric and Adult Care and Treatment

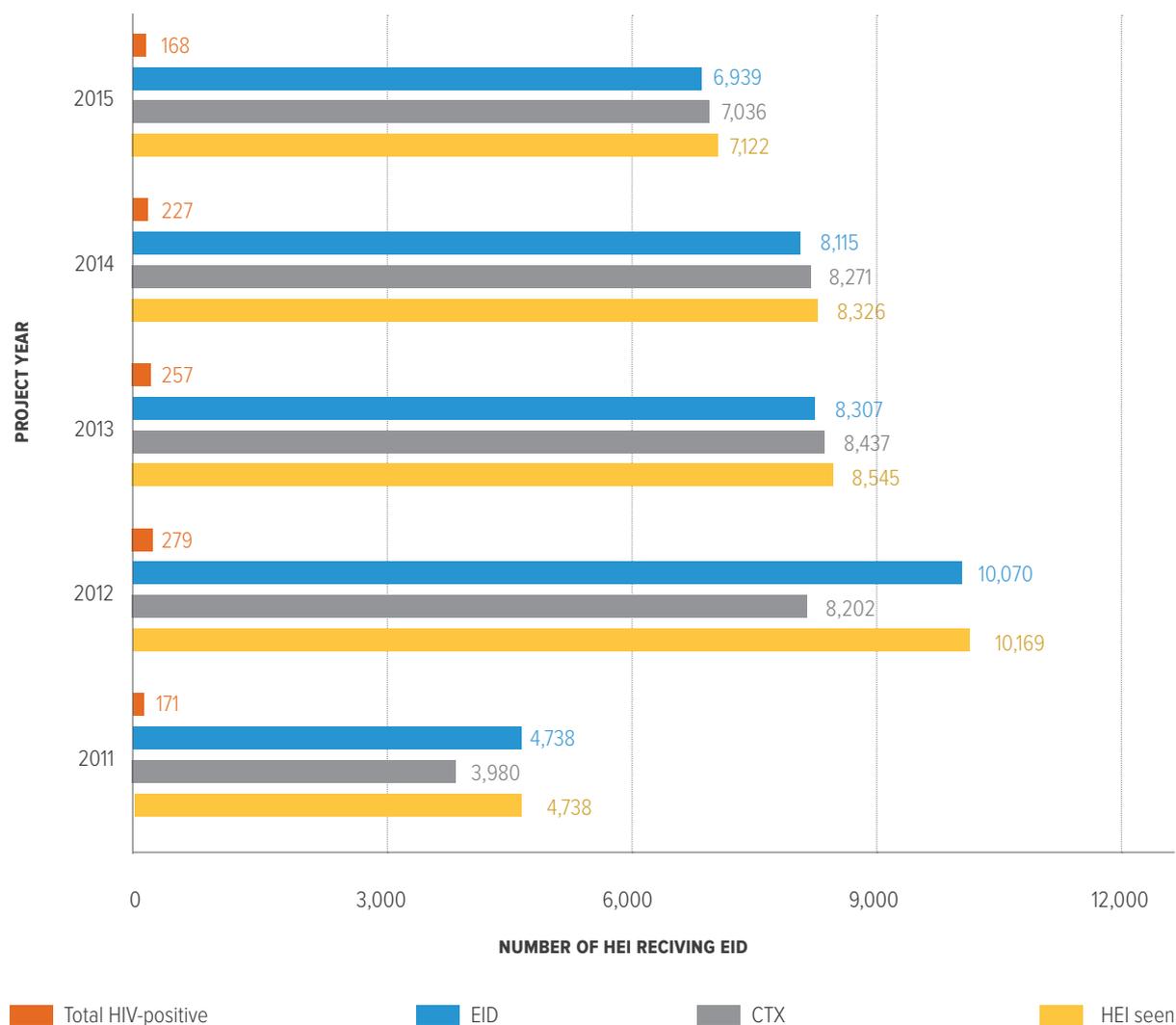
HIV Testing among HIV-exposed infants

Infant mortality is very high during the first year of life for infants living with HIV that have not initiated and adhered to ART. This makes EID, quick turnaround of test results and rapid treatment essential.^{28,29} EGPAF enhanced HIV testing of HEI throughout the EPAS Project resulting in high rates of HIV testing in HEI. Rates of HIV testing for HEI tested by the age of 12 months exceeded 90% every year of the project. Rates of HIV testing for HEI by two months of age exceeded 85% every year of the project.

EGPAF supported efforts to strengthen the identification HIV exposed infants and provide necessary services to them at postnatal clinics and child welfare clinics. EPGAf mentored HCWs at these sites to build their capacity to identify HIV exposed infants through use of ANC cards and child health cards and ensure that HEI receive cotrimoxazole and NVP prophylaxis as well as all other care services as defined in the PMTCT guidelines including immunizations,

growth monitoring and infant feeding counseling. In addition, EGPAF mentored HCWs on the importance of EID and early ART treatment for HIV-infected infants.

Figure 6: Number of HEI receiving EID in all 144 Supported Sites



Antiretroviral Therapy

The introduction of ART has transformed the HIV/ AIDS epidemic; death rates in populations with access to ART have plummeted.³⁰ Early initiation of ART significantly improves survival.³¹

The 2015 WHO guidelines recommend initiation of ART in everyone living with HIV at any CD4 cell count.³² Expanding access to ART in adults and children living with HIV was a priority for the EPAS project. Efforts in this area focused on building technical capacity at the national level and in human resources, expanding HIV testing in HEIs and expanding coverage of ART, especially in pregnant women and children.

Increasing the number of people initiated on ART, especially pregnant women and children, was a priority for the EPAS project. Trends from 2010-2014, reflected increasing overall numbers of people initiated on ART each year. While the number of pregnant women initiated on ART increased during this time, the number of children initiated on ART decreased (Figure 7). The number of people newly initiated on ART in 2015 decreased. This was because of the PEPFAR regionalization where EPAS was only implemented in two of the four regions for the last half of 2015. Overall treatment adherence after 12 months consistently increased throughout the project duration (Figure 8).

Figure 7: Number of individuals, pregnant women, and children initiated on ART in Select Facilities

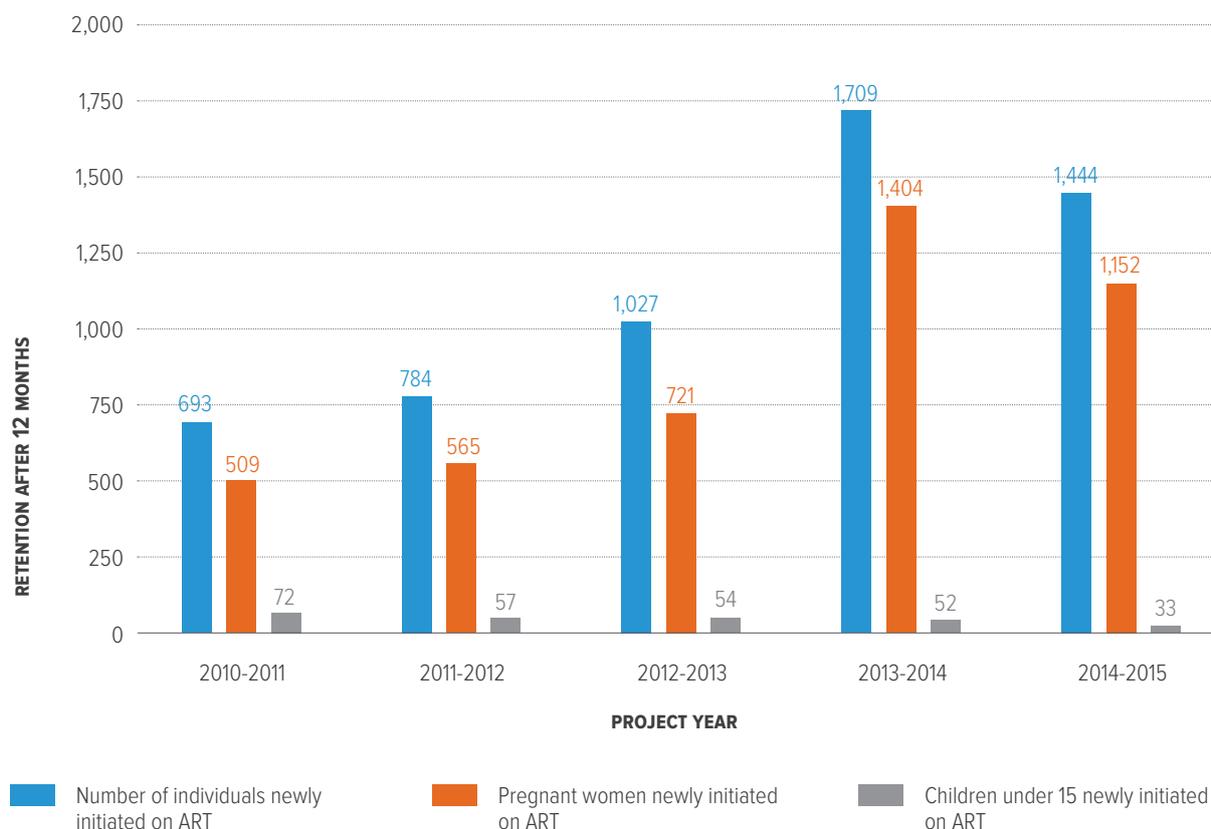
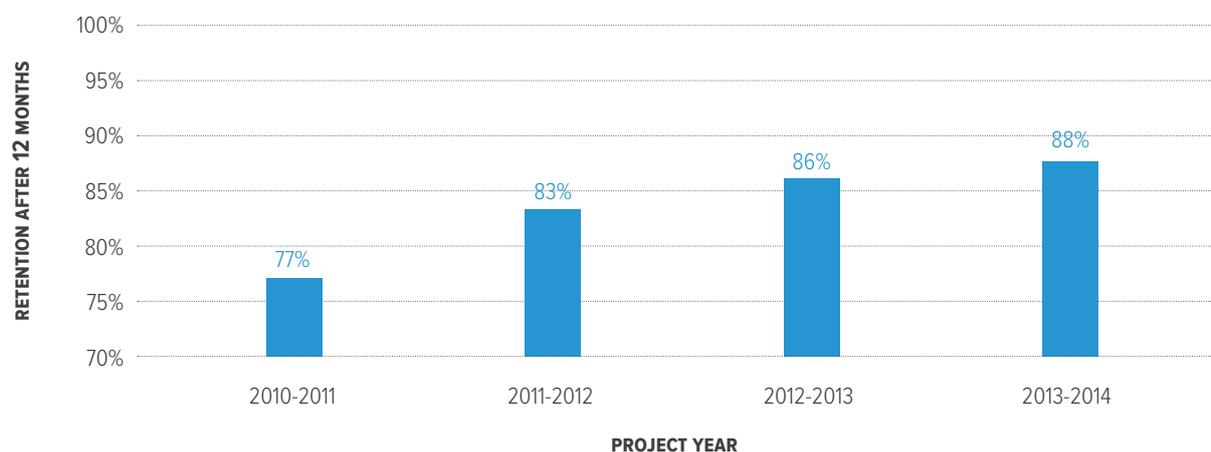


Figure 8: Overall ART retention



Technical Assistance

EGPAF participated in the HIV Care and Treatment Technical Working Group and Sub-Technical Working Groups within the MOH and played a leadership role in ensuring Swaziland's adoption and adaptation of current WHO guidance in relation to ART. As discussed in the MNCH section EGPAF scaled up efforts to integrate ART into MNCH settings and build the capacity of nurses to prescribe ART (NARTIS). In addition, over the course of the project EGPAF trained 482 HCWs through in-service trainings on HIV care and treatment, including basic and advanced integrated management of adolescent and adult illness and NARTIS, and 285 HCWs on pediatric and adolescent HIV counseling and PSS.

Project Success

Scaling up Early Infant Testing

Strengthening PITC among children can reduce morbidity and mortality as it leads to increases in early linkage to care and treatment among HIV- positive children.² Because many parents and caregivers are not bringing their children in to facilities early enough in Swaziland, HTC rates among children in primary health care facilities remains low. Several factors contribute to this, including the HCWs perceived incongruity of the accompanying guardian to consent for HIV testing on behalf of the child, failure to prioritize children who were not exposed (and screen children above two years of age), and poor general knowledge on the importance of having children tested early.

In August 2014 EGPAF, in collaboration with partners and the SNAP HTC program conducted a national pediatric HIV testing campaign aimed at increasing the number of children tested. The focus for the 2014 campaign was on children between the ages of 6 weeks and 15 years. A total of 19 facilities throughout Swaziland were selected to participate and community members were mobilized to bring their children for testing by offering HTC to every child who visits the selected facilities.

Siteki PHU was one of the facilities selected to participate in the campaign. After the facility supervisor was made aware of the campaign, the staff was sensitized by the facility supervisor on the campaign and requested to intensify screening of HIV status for children. EGPAF also sensitized nearby communities on the importance of testing children for HIV through media and health education. Facility staff created awareness during open health talks (health educational sessions provided to all patients while awaiting service provision) in the morning and nurses routinely screened all children. All children over two years of age with an unknown HIV status were offered HTC and referred to a focal HIV counsellor for testing. Incentives such as tooth brushes and tooth paste were given to all children who tested.

According to Sr. Simelane, the Facility Supervisor, “the commitment of both the HCWs and supervisors is important if you want to improve uptake and acknowledging your subordinates for the good work they have done and assisting those with challenges are key. I wish the campaigns would be done annually.”

Community Approaches

The community has a critical influence on uptake of PMTCT programs and adherence to PMTCT program components.³³ Implementation of community approaches to link communities and health facilities, address community norms and behaviors and increase uptake of and adherence to PMTCT programs were instrumental to the success of the EPAS Project. Working through existing community structures and in collaboration with partners, community approaches focused on several activities such as PMTCT dialogues, targeted efforts to engage men in PMTCT, community-health facility linkages and PSS, including support groups and camps.

Community Dialogues

EGPAF created community dialogues as part of the EPAS project in response to numerous sociocultural barriers that affect MNCH services as identified by supported health facilities. The community dialogues utilized dramas and facilitated discussions to explore the community beliefs, norms and behaviors that underlie delayed health care-seeking, sexual risk-taking, gender inequities, stigma, and poor communication between couples about general and reproductive

health issues. The dialogues provided a forum that brought together participants from many parts of the community to provide accurate MNCH/PMTCT information face-to-face, share personal stories and experiences, clarify myths about health issues, and develop responses to community concerns as well as opportunities to promote health-seeking behavior. Within community dialogue days, specialized dialogues were held for PMTCT, men and women.

EGPAF worked with health facilities and regional health management teams to engage community leaders (such as chiefs) within a health facility catchment area to introduce the idea of community dialogues, explain the issues driving the need for the community dialogues and enlist the support of these leaders to gain access to different groups within the communities to participate in the dialogues. Subsequently, a community dialogue planning committee was established, consisting of community members, health facility staff, regional health management teams, rural health motivators.

During community dialogue days, EGPAF worked with trained drama groups who provided edutainment on MNCH/PMTCT issues that also cultivated conversations around these issues. Following the drama, community members were divided into groups by age and gender where MNCH/PMTCT discussions were held based on a standard discussion guide developed by EGPAF. During the dialogues, myths were addressed and health seeking behaviors are encouraged. Key services such as HTC, BP checks and diabetes checks are also provided during the events. Community dialogue planning committees met within two weeks of conducting the dialogue to review the event and develop any necessary recommendations as needed. EGPAF tracked if there are any improvements in service uptake at the facility after the community event.

EGPAF provided technical assistance to the drafting of the LLAPLa communication strategy. Working with the Health Promotions Unit and the other implementing partners, 10 sensitization meetings were conducted at constituency level and 6 more provided at chiefdoms around Dvokolwako Health Center to increase awareness on LLAPLa services.

Throughout EPAS, EGPAF conducted 276 male dialogues, which reached 9,428 men. Of those men, 1,886 were tested for HIV and 38 were found to be HIV-positive, all of whom were referred to HIV care and treatment clinics.

Success Story

Community Engagement: Traditional Leader Appreciates EGPAF Community HIV Initiatives

The kaGucuka community is situated in Hhohho region in the North East part of the Kingdom of Swaziland, about 5 kilometres from the Dvokolwako Health Centre, under the Madlangempisi constituency.

Led by one of the young chiefs in Swaziland, Prince Malambe Dlamini, this chiefdom has been able to turn things around in as far as community members' behaviour is concerned, thanks to a community dialogue conducted by the EGPAF with the support of the American people through USAID.

Before the community dialogue hosted by the Foundation in April 2015 the behaviour of community members, especially the youth, was said to be contributing to the spread of the virus, due to the number of girls that were getting pregnant.

Prince Malambe attests to the fact that the community dialogues have helped his community members to change their behaviour which will curb the spread of HIV and teenage pregnancies.

The Prince, who commands a lot of respect from his community because of his standing in supporting community development initiatives, says attending the community dialogue helped him learn somethings about curbing the spread of HIV and the importance of supporting your pregnant partner.

As a result of this, the young chief has made sure that he includes HIV talks during his community meetings to continuously bring awareness to the people about HIV and AIDS.

The Prince strongly believes that community leaders have a responsibility to speak out on issues of HIV/AIDS to their communities hence after the community dialogue held by the EGPAF in the community he made sure that he took lead and included HIV issues in community meetings. He says this provides an opportunity for him as a leader to reach out to the innermost emotions of the people he leads.

Prince Malambe said: “A leader is like a parent and it is his responsibility to mentor and give direction to the subjects he leads in as far as HIV and other social ills are concerned. It is now policy for me and leadership in the chieftdom, to talk about HIV/AIDS in any gathering that we have with the community and we want to make sure that no one is stigmatised or discriminated because of HIV in my community.”

Speaking on male involvement, the Prince said the community dialogue conducted in his chieftdom made him take a decision to encourage all men in the community to give support to their spouses to prevent MTCT.

The chief believes that with more men in his community supporting their pregnant partners, the community will see drastic decline in HIV infections in the community.

He appreciated the efforts put by EGPAF in reaching out to communities and educating them about HIV/AIDS. He said such events are an opportunity for communities to be together with their leaders and learn about HIV, which then makes it easier for the leaders to follow-up their subjects on what they have learnt. “We are grateful to your donors (USAID) for supporting His Majesty’s vision to fight against new HIV infections in the country.”

Engagement of Male Partners

There is widespread acknowledgement in Swaziland and other countries of the importance of engaging male partners in MNCH/PMTCT programs to enhance demand, uptake and adherence in relation to HIV services and health outcomes.³⁴ Several strategies to involve men have been tried in several countries with varying successes.³⁵ EGPAF Swaziland strengthened male involvement during the EPAS project through two main activities: male dialogues and use of partner invitation letters. Male dialogues were conducted mainly in male dominated industries e.g. mines, defense and police forces. Men were convened to participate in dialogue to identify barriers to male involvement in PMTCT/MNCH, discuss possible ways to address the barriers and address any myths around male involvement in PMTCT/MNCH. In some of the dialogues, men were requested to sign promise cards on the behavior changes they will undertake as a result of the dialogue. Partner invitation letters were distributed to all pregnant women during ANC to request their partners to come to the health facility in support of their pregnant spouses and also during male dialogues. Upon arrival at the facility, men were provided with several services including BP checks, HTC and diabetes checks (if available). In addition to these services, HCWs also took the opportunity to educate the men on PMTCT/MNCH issues and how they can support their partners. Over the project life EGPAF conducted 65 community dialogues, which reached 37,052 individuals. Of those, 4,817 were tested and 241 were HIV-positive, all of which were referred for HIV care and treatment.



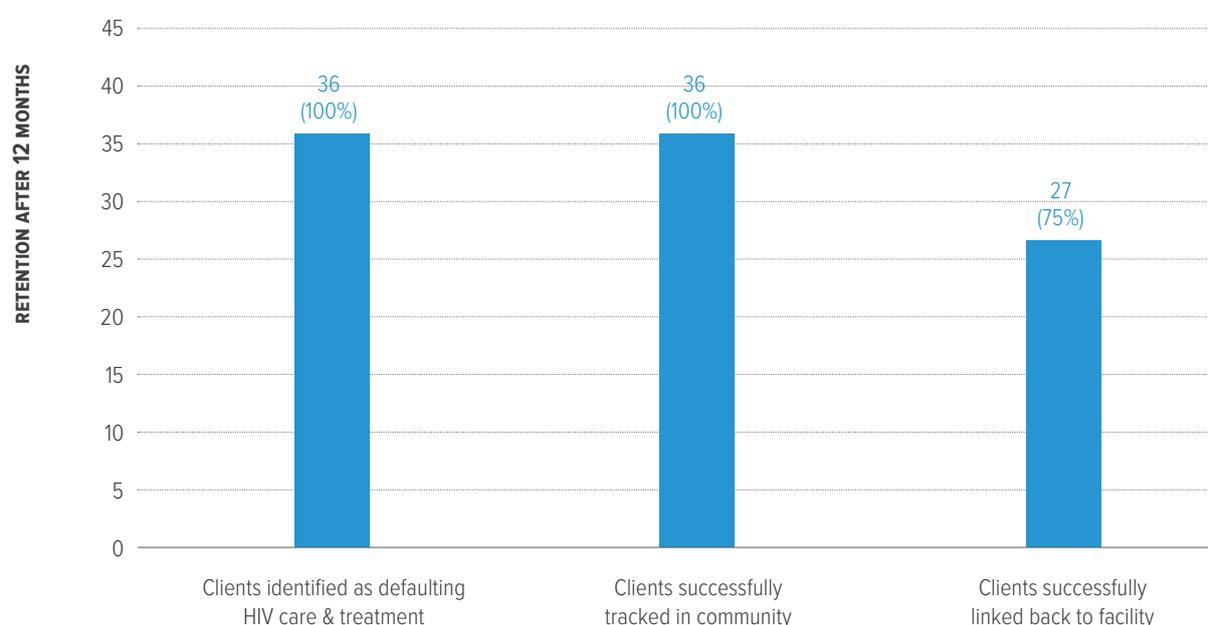
Male dialogue with police

Community Health Facility Linkages

Strengthening linkages between health facilities and communities is an integral component of establishing the continuum of care.³⁶ Through the EPAS Project, as part of a pilot program EGPAF engaged in activities to strengthen community and health facility linkages mainly through working with rural health motivators, who tracked clients in the community defaulting HIV care and treatment services and linked them back to the facility. A total of 192 health motivators working at three health facilities, Bhekinkosi, Mliba and Cana were identified and trained by EGPAF on PMTCT, care and treatment and tracking individuals lost to follow up. HCWs at the selected facilities identified clients that were lost-to-follow up or that had defaulted care and treatment services with a special focus on pregnant women and forwarded patient names to the health motivators. The health motivators then tracked identified clients in the community and linked them back to facilities. Every month the health motivators convened at their respective facilities to share experiences and results.

Figure below shows the results of number of clients who were successfully traced and linked back to facilities for HIV care and treatment services over 6 months.

Figure 9: Community-Health Facility Referral and Linkages in three selected facilities



In addition to tracking clients in the community, RHMs also provided routine education during their door-to-door visits:

- 488 community members (256 men and 232 women) were encouraged and referred to the health facilities to test and know their HIV status.
- 270 (including 92 men) parents and care givers were taught on breastfeeding, encouraged to take their infants for immunization and EID.
- 142 women were educated on benefits of ART and taking and adhering to treatment.

Psychosocial Support Groups

Establishing and maintaining the psychosocial well-being of children affected by HIV is fundamental to establishing and maintaining successful treatment outcomes and overall quality of life.³⁷ During the EPAS project, EGPAF provided PSS for HIV-infected children, aiming to improve adherence to care and treatment as well as overall emotional and physical

health. In 2013/2014 EGPAF-Swaziland established 11 support groups for children living with HIV. Early HIV status disclosure to HIV-positive children is recommended to promote a healthy mental state that is essential for efficacious and successful treatment outcomes.³⁸ EGPAF also engaged 117 parents and caregivers in support group sessions aimed at helping them disclose to their children.

In partnership with Baylor Clinic Swaziland, Young Heroes, and the Children Serious Fun Network, EGPAF conducted a camp for 182 children and adolescents living with HIV in 2014. The camp enabled children and adolescents to share the experiences and challenges of living with HIV/AIDS. The camp also helped to promote treatment adherence among children and adolescents by reducing effects of stigma and instilling the importance of taking ARV medications. The camp program also educated the adolescents on SRH issues, strategies for coping with stigma and discrimination, and general life skills.

Also in collaboration with Baylor Clinic Swaziland, EGPAF conducted three teen leadership trainings in 2014 for 88 teenagers who are living with HIV/AIDS and who were members of the support groups. These leadership trainings aimed to empower the teenagers and improve their communication, facilitation, leadership and mentoring skills to enable them to run and manage the support groups on their own. EGPAF is exploring this strategy further to develop a sustainable support group program that ensures children and adolescents have full ownership of their meetings. EGPAF will also be conducting an evaluation of the support groups to assess their impact on ART adherence and viral load suppression.



Children at a support group meeting

Success Story

Psychosocial Support

PSS groups are open to children and adolescents between the ages of 8 and 19, as long as the children are aware of their HIV status. Over the years, older participants have begun to take on leadership roles, teaching the younger children about HIV/AIDS stigma, adherence to ART, nutrition, disclosure of HIV status, and other issues.

“Now that I am growing up, or have grown up already, I might be starting dating,” says Mbongeni Dlamini, a 21-year-old living with HIV in rural Swaziland. During most of his teen years, Dlamini wondered if he would ever ask a girl to go out with him. When he was 17, Mbongeni became a founding member of a support group for young people living with HIV sponsored by EGPAF. The Mkhuzweni PSS group began in 2010, at the beginning of the EPAS project, with three members—and has since grown to more than 100.

Mbongeni continues to attend the group today and acts as a role model for younger participants. “I always teach the youngest and say, ‘you should take care of yourself and continue living. It doesn’t matter that you’re HIV-positive, life is still going on.’”

Mbongeni learned about his HIV status in 2008, when he was 16 years old. “Some people would put me down and be scared of me,” Mbongeni explains. But joining a children support group, even though the group was small at first, gave Mbongeni and the other members a chance to share with each other and understand that they were not alone.

“It has really helped me to attend the support group,” says Gcebile Tsabedze, 19, also one of the original members of the Mkhuzweni PSS group. “At first, I felt like, ‘why am I the only child [living with HIV]?’ Even in the community I did not know any other child living with HIV. But by attending the support group I came to know that I am not the only one. This encourages me to say I should press on.”

“The main goal for EGPAF is PMTCT,” says Fikelephi Mazibuko, program officer at EGPAF-Swaziland. “But we are very aware that some kids still get infected, for many reasons. We go an extra mile to take care of those kids.” According to Mazibuko, “We are aware that there is still stigma and discrimination out there,” says Mazibuko. “But we are capacitating [the children] on how to address people who are looking down on them because of their HIV status.”

In addition to the monthly PSS meetings, EGPAF—along with the Baylor Pediatric AIDS Initiative and Young Heroes—organizes residential camps for HIV-positive kids during school holidays. The camps give children from the PSS groups a chance to get away from their home environments and share experiences with other HIV-positive children from around the country. “We try to have fun with them, play with them, and give them the opportunity to just be a child, for once in life,” says Fikelephi, who the children call “Auntie Fikso.” “We know that most of these kids are parentless, so they haven’t experienced the love of a parent. That is what we are trying to restore in their lives.”

Program Evaluations

EGPAF and USAID conducted key program evaluations to address specific gaps identified during the course of the project implementation and to evaluate effectiveness of interventions implemented.

Antenatal Care

The main objective of this evaluation was to determine the facilitating factors and barriers associated with ART initiation among eligible HIV positive women during pregnancy who deliver in health facilities in Swaziland. This was a qualitative cross-sectional study with sets of interviews and focus group discussions from seven health facilities in four regions among both HCWs and HIV-positive, treatment eligible women who had recently given birth.

This study revealed several barriers to acceptance of ART among eligible pregnant women that will be critical to address, particularly as WHO ART guidelines move towards lifelong ART for all HIV-positive women. The barriers included: a fear of stigma and disclosure of status; facility challenges, including lack of privacy for clients and long wait period to receive CD4 test results; lack of general ART knowledge, including side effects and access to drugs; and the need for increased training of lay counselors.

Barriers to Delivery of EID Results to Caregivers

Despite strengthened testing of HEIs in Swaziland, challenges remained in delivering EID results to caregivers in MNCH clinics in Swaziland. The main objective of the assessment was to understand barriers to delivery of EID results to caregivers at four ART-MNCH clinics. This assessment revealed several barriers to the delivery of EID results, including: results were not ready when the caretaker returned to the clinic; the fear of not knowing if the child’s status will be negative; the fear the child will not live after testing positive; the fear that the child’s father would not approve of the child taking ARVs since he does not allow the mother to take ARVs herself; and the lack of money for transport.

In order to increase uptake of EID test results by caregivers and reduce the number of exposed children missed for DBS testing, our study found several potential interventions, including: strengthening the quality and frequency of EID counseling at all PMTCT points of care; involving fathers in EID; reconfirming appointments and rescheduling when results are not ready; and actively following clients to collect EID results to reduce fear of receiving results.

Assessment of Health Facility Community Health Committees

Both research and practical experience have shown that people are most committed to implementing programs that they have helped plan. Communities' participation in services delivery is therefore critical in improving both quality and uptake services, therefore the MOH established health committees in health facilities that include both community members and health facility staff. The purpose of these health committees was to ensure that the community members took an active role and personal investment in the provision of their health services. Despite these committees being in place, no formal assessment has been done to determine how they are functioning; what challenges or shortcomings are they facing; whether their functions are standard across the country; and what can be done to better improve their functionality.

The MOH and EGPAF-supported assessment revealed several weaknesses in the formation and functionality of the health facility community health committees which need immediate remediation. Key findings are summarized follow:

- Of the 163 public facilities assessed, only 58% (91) have health committee in place, and most health committees were lacking members and did not have required member participation.
- Only 13% of committees reported having a strategic plan, which illustrates that even functional committees may not express long term goals for the health facilities.
- Relationships with key stakeholders were reported to be weak or nonexistent.
- Finances were reported to be collected mainly through the community levy, but management of finances was frequently absent or unclear.

Nationally, it is recommended that the MOH design a curriculum and train health committees on their roles. At the community level, it is recommended that communities be sensitized to the existence and importance of health committees. At the facility level, it is recommended that sensitization be done to improve the strained relationships between nurses and health committee members.

Measuring PMTCT Program Effectiveness among Women and Infants Through Community-based Household Surveys

The primary objectives were; 1) to determine the proportion of HIV-exposed study children who are alive and free of HIV at 18-24 months of age (HIV-free survival), 2) to determine the proportion of HIV-exposed study children who died by 18-24 months of age, 3) to determine the proportion of HIV-exposed children who are HIV-infected at 18-24 months of age, including children who have died but were known to be HIV-infected prior to death.

Key results included:

- The overall HIV-free survival rate among this cohort of 724 known HIV-exposed children, including twins, at 18-24 months was 95.86 (95% CI: 94.15-97.09).
- The mortality rate in the entire cohort was 0.46% (95% CI: 0.21-0.85) with a rate of 0.55% (95% CI: 0.2-1.43) among known HIV-exposed children and 0.44% (95% CI: 0.18-1.06) among known unexposed children.
- Mortality rates including estimates of the number of exposed and unexposed children born to women of unknown status, are 0.52% (95% CI: 0.28-1.38) and 0.41% (95% CI: 0.1-0.95) respectively.
- The HIV transmission rate in known HIV-exposed children was 4.01% (95% CI: 2.80-5.74) and was 3.77%

(95% CI:2.61-5.32) in the total estimated HIV-exposed study population.

- ANC attendance of 98%.
- HIV testing coverage of 95.9%.
- ARV uptake of close to 90%.

USAID EPAS Evaluation

In 2014 an external evaluation of the EPAS project was conducted to assess the project effectiveness in supporting and strengthening the technical capacity for a high quality, integrated and comprehensive PMTCT program in Swaziland. The purpose of the evaluation was to assess the quality of implementation, document lessons learned, explore challenges and accomplishments, and provide strategic guidance for the remaining years of the project and any follow-on activities. The evaluation employed five methods of data collection, including 1) document review, email survey of EGPAF and sub-partner staff, analysis of secondary data, individual and group key informant interviews and checklists for focused observations, across four levels of the health system (national, regional, facility and community).

Major findings from the evaluation include EPAS accomplishments in the following areas:

- Where “universal access” is defined as 90%, EPAS has supported the MOH to attain universal access for both pregnant women in Swaziland to receive HIV testing and results in ANC and for HEI to have DBS taken for PCR at 6-8 weeks of age.
- EPAS achieved its objective of good quality comprehensive, PMTCT services integrated into the ANC, PNC and child welfare services of the MNCH platform.
- EPAS training, mentoring, and other technical assistance-supported health facilities to increase their performance providing PMTCT services integrated into MNCH from 2010 to 2013.
- EPAS contributed technical assistance to the development and printing of MOH-developed protocols, guidelines, and job aids that was greatly valued by the MOH.
- There is potential for addressing male involvement, post-delivery PMTCT behaviors and service uptake, and AIDS stigma using the EPAS approach where evidence-based approaches are beyond the scope of available resources for the EPAS project.
- EPAS implementation through the existing health care system in support of the National Strategic Framework has institutionalized its gains.
- EPAS strengthened the MNCH services as far as possible within its manageable interest and within the limits on use of PEPFAR funding imposed by the U.S. Congress.
- In terms of major barriers, lack of CD4 laboratory equipment will be less of a barrier with the roll out of Option B+ while socio-cultural and gender barriers to improving PMTCT outcomes remain challenges to be effectively addressed.
- The EPAS approach to providing facility level support through training, in service training and mentoring was effective in integrating PMTCT services in to the MNCH platform at PHUs, health centers and clinics.

Partnerships

Integral to its success, EGPAF worked in close collaboration with key stakeholders at the national, regional, facility and community levels to strengthen coordination, ensure sustainability, and expand access to integrated HIV services throughout the country. Implementing partners include international and local organizations such as the University Research Corporation, ICAP, and World Vision International. Community partners include the Health Communication Capacity Collaborative, Swaziland Infant Nutrition Action Network (SINAN), and the Alliance of Mayor's Initiative on Community Action on AIDS at the Local Level (AMICAALL), Lutsango Lwaka Ngwane, and the Swaziland National Network of People Living with HIV and AIDS. EGPAF also collaborated with other sector partners such as the Center for HIV and AIDS Prevention Studies, Population Services International, Management Sciences for Health, Clinton Health Access Initiative, Baylor, American Cancer Society, and Young Heroes.

Major areas of collaboration included early infant male circumcision, HTC, cervical cancer screening and pain alleviation and management, TB/HIV, drug supply management and EID, pediatric HIV testing, HIV care and treatment, PSS issues, and community involvement. EGPAF also collaborated with United Nations agencies, including United Nations Children Fund, United Nations Population Fund, United Nations Global Programme for HIV & AIDS (UNAIDS), and the WHO to strengthen the efforts towards the elimination of pediatric AIDS.

Project Sub-partners

EGPAF worked in close collaboration with four sub-grantee partners to implement the EPAS project, AMICAALL, mothers2mothers (m2m), Lutsango Lwaka Ngwane, and SINAN.

AMICAALL is a national non-governmental organization (NGO) that works in collaboration with local government and communities and NGO partners to facilitate HIV prevention, PMTCT, care and support and HIV response management in the 11 towns of Swaziland. Together EGPAF and AMICAALL supported community mobilization through community days (dialogues at the chiefdom level for different ages and both genders) as well as “manhood” and “motherhood” meetings. Through a combination of EGPAF's support at health facilities and AMICAALL's household visit program, the partnership strengthened linkages between communities and facilities, enhanced family-focused support, and generated timelier demand for services. A key intervention generated from the partnership was the use of partner invitation letters to spouses of pregnant women, which were used to encourage men to participate in the health of their partners and children.

M2m utilizes “mentor mothers” living with HIV to support PMTCT efforts through one-to-one peer education and PSS for newly-diagnosed pregnant women and mothers during ANC, delivery and postnatal care. In this partnership, mentor mothers played a critical role in facility-based support groups and work at the community level to reinforce health education related to infant feeding and infant NVP administration, improve adherence and trace defaulters and lost to follow up patients, through the use of mobile phones to call the patients. Through m2m, EPAS was able to achieve the following: 34,427 HIV-positive clients were enrolled into the program during 2010-2012 and 45% of these were pregnant; 44,007 women were reached through group pretest education offered by m2m Mentor Mothers whereby mentor mothers provide basic education on the importance of taking an HIV test, the possible results/outcome of the test in preparation for taking the actual HIV test; a total of 301,058 interactions with women and 1490 interactions with male partners were reported during 2010-2012. 95366 (32%) of these interactions were new and 94417 (31%) of these total interactions; 46 support groups were established over the period and 905 support group meetings held.

Lutsango Lwaka Ngwane is the national regiment whose membership covers all women in Swaziland and was named ‘Lutsango’ meaning windbreaks or protector of the nation. The patron of the this group is Her Majesty The Queen Mother. With support from PEPFAR, through EGPAF, Lutsango Lwaka Ngwane played a role in contributing to PMTCT through conducting community dialogues and mass educational campaigns during the traditional festivals in Swaziland namely The Reed Dance and The Amarula Festival. The program aimed to increase knowledge on PMTCT and MNCH and to also encourage increase in male involvement in PMTCT. Through Lutsango Lwaka Ngwane, EPAS managed to reach more than 2,000 women and men with PMTCT messages during the traditional festivals.

Additionally, the group secured buy in from royalty to promote PMTCT services as witnessed by the King's wives wearing of traditional regalia with PMTCT messages during the traditional festivals.



King's wives wearing traditional clothes with PMTCT messages through EPAS

SINAN was founded in 1984 as a network of individuals, organizations, institutions and academics interested and involved in Infant and young child nutrition issues. It was then formally registered in 2003 as a not-for profit organization. Over the years, it has transformed from just being a network to an implementation organization and has assisted the MOH and other organizations with issues concerning Infant and Young Child Nutrition. Under the EPAS project, SINAN main objective was to improve infant feeding practices through capacity building of HCW, facility-based lay counselors and community-based HCWs and motivators. SINAN was achieving this objective through the following activities: Conducting training of community-based health motivators) on infant and young child nutrition and feeding; work with regional mentors to provide on-going mentorship of HCWs, facility-based lay counselors and community motivators on infant and young child nutrition and feeding; working with health motivators to identify and refer malnourished infants from community to clinic; providing technical assistance in the revision, printing and distribution of IEC material and job aids on infant and young child nutrition and feeding; and creating awareness for populace on IYCF through the use of IEC materials and job aids, conducting media campaigns and community days. SINAN managed to train 952 health motivators on infant and young child feeding (IYCF); and conducted 15 radio and 8 TV campaigns to promote IYCF especially in the context of HIV.



SINAN staff during a TV IYCF campaign





PROJECT CHALLENGES



Despite tremendous accomplishments associated with the EPAS Project, a number of challenges affected delivery of PMTCT and HIV services to clients throughout the project. There were a range of issues including health system (data collection, human resources, referrals and linkages, availability of guidelines at sites, supply and sample transport issues), male involvement, and demand issues.

- **Data:** There were challenges with correct data collection, especially in situations where HCWs were using new data collection tools and in the context of program changes such as the transition to LLAPLa. The lack of computerized M&E systems at PHUs caused delays and inconsistencies in data collection.
- **Human resources:** Frequent rotation of staff negatively affected knowledge, capacity and service delivery within facilities. This was particularly challenging in the context of provision of ART where nurses trained in ART were frequently rotated and left less experienced nurses in ART departments. In addition to existing staff shortages within the health system, there were challenges with nurses in NARTIS leaving the public health system to work in other contexts. Lack of confidence by nurses to initiate pediatric patients on ART was a major challenge in relation to pediatric ART service provision.
- **Referrals and linkages:** Weak referral linkages, follow up and defaulter tracing systems made it difficult to link patients to services and track those lost to follow up. The late roll out of referral and linkage tools exacerbated this challenge.
- **Availability of guidelines at sites:** The limited availability of comprehensive HIV care and treatment guidelines at site level left many sites without tools, resources and guidance on how to implement new guidelines.
- **Supply and sample transport issues:** Low CD4 testing and retesting rates were attributed to stock outs of CD4 reagents in some laboratories, point-of-care machines running out of ink cartridges, and an unreliable national sample transportation system. Stocks-outs of HIV test kits, syphilis test kits and receipt of drugs with a nearing expiration compromised service delivery.
- **Low male involvement:** Despite concerted efforts to engage men through community dialogues and partner invitation letters, male involvement in PMTCT services was limited and there were continued low rates of male HIV testing. In the last year of the project EGPAF piloted a package of strategies to improve male involvement which include: use of a male mobilization volunteer based at the facility, provision of male friendly services, use of invitation letters and facilitation of male dialogues. During the pilot, 27% (12/45) women coming in for ANC had their partners tested for HIV. This proportion is higher than what is reported here for all other facilities which means this might be a promising package to improve male involvement in PMTCT.
- **Demand issues:** Demand-related issues affected the timing and frequency in which women attended ANC and their uptake of HIV re-testing. Demand issues also affected provision of pediatric ART services. A low proportion of mothers and caregivers collected DNA PCR results to know their infant's HIV status, an essential step to initiating ART. Often relatives, caring for children while their mothers worked and without the ability to provide consent, brought children to clinics and this also affected uptake of pediatric HIV services. In addition, some mothers/caregivers refused ART for their children because they were not ready for their children to be started on ART.



CONCLUSIONS/FUTURE DIRECTIONS

EPAS has been largely successful with significant contributions to increasing PMTCT facility coverage to 88% of health facilities providing ANC services; increasing overall HIV testing rates in pregnant women from 67% to 97%; increasing proportion of women that receiving ARVs to prevent new HIV infections among children from 63% to >95%; decreasing MTCT at six weeks from 8% to 2%; and decreasing MTCT rates at 18 months from 16.4% to 4%. Clinical mentorship has been an anchor to the success of the EPAS program.

An independent consultant sourced by USAID to evaluate the effectiveness of EPAS made this conclusion: “If universal access is defined as 90%, EPAS has supported the MOH to attain universal access for pregnant women in Swaziland to be HIV tested and receive their result in ANC. EPAS has also supported the MOH to attain universal access for exposed infants having DBS taken for PCR at 6-8 weeks of age. EPAS has contributed technical assistance greatly valued by the MOH to the development and printing of protocols, guidelines, and job aids—developed with the MOH at policy level. EPAS approach to providing facility level support through training, in service training and mentoring was effective in integrating PMTCT services in to the MNCH platform at PHUs, health centres and clinics.”³⁹

Despite successes, gaps still remain in poor male involvement; poor follow up of children in the post natal period i.e. up to end of breastfeeding; and low retention rates for women under LLAPLa. In addition, there is still limited data on the final HIV transmission rates post breastfeeding. To continue the aforementioned successes, we recommend intensifying male involvement strategies; strengthening mother baby follow up; improve data collection on final HIV transmission to validate virtual MTCT elimination; and developing strategies to retain more women in care especially those under LLAPLa.



REFERENCES

- ¹ UNAIDS. 2014 HIV and AIDS Estimates. Accessed on 2/9/16 at: <http://www.unaids.org/en/regionscountries/countries/swaziland>
- ² UNAIDS. 2014 HIV and AIDS Estimates. Access on 2/9/16 at <http://www.unaids.org/en/regionscountries/countries/swaziland>
- ³ UNAIDS. 2014 HIV and AIDS Estimates. Access on 2/9/16 at <http://www.unaids.org/en/regionscountries/countries/swaziland>
- ⁴ UNAIDS. 2014 HIV and AIDS Estimates. Access on 2/9/16 at <http://www.unaids.org/en/regionscountries/countries/swaziland>
- ⁵ UNAIDS. Swaziland Global AIDS Response Progress Reporting 2014. Accessed on 2/14/16 at: http://www.unaids.org/sites/default/files/country/documents/SWZ_narrative_report_2014.pdf
- ⁶ WHO. Swaziland Summary Country Profile for Treatment Scale Up. Accessed on 2/13/16 at: http://www.who.int/hiv/HIVCP_SWZ.pdf
- ⁷ UNAIDS. Swaziland Global AIDS Response Progress Reporting 2014. Accessed on 2/14/16 at: http://www.unaids.org/sites/default/files/country/documents/SWZ_narrative_report_2014.pdf
- ⁸ UNAIDS. Swaziland Global AIDS Response Progress Reporting 2014. Accessed on 2/14/16 at: http://www.unaids.org/sites/default/files/country/documents/SWZ_narrative_report_2014.pdf
- ⁹ UNAIDS. The Gap Report. UNAIDS. 2014.
- ¹⁰ Service Availability Mapping Report (SAM) 2013
- ¹¹ Swaziland MOH. Annual HIV Programs report. 2014
- ¹² Swaziland MOH. Annual HIV Programs report. 2014
- ¹³ UNAIDS. Swaziland Progress Report on the Global Plan. 2014. Accessed on 3/1/16: http://www.unaids.org/sites/default/files/media/documents/UNAIDS_GlobalplanCountryfactsheet_swaziland_en.pdf
- ¹⁴ Measuring PMTCT Program Effectiveness among Women and Infants through Community-based Household Surveys. Draft report. 2015.
- ¹⁵ MOH. 2014 HMIS Program Data.
- ¹⁶ WHO. 'Guideline on when to start antiretroviral therapy and on pre-exposure prophylaxis for HIV. Geneva, 2015.
- ¹⁷ De Cock KM, Fowler MG, Mercier E, de Vincenzi I, Saba J, Hoff E, et al. Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. JAMA 2000;283(9):1175-1182.

- 18 WHO. 'HIV/AIDS: Prevention of mother-to-child HIV transmission,'2014.
- 19 Kennedy, Caitlin E., et al. "Provider-initiated HIV testing and counseling in low-and middle-income countries: a systematic review." *AIDS and Behavior* 17.5 (2013): 1571-1590.
- 20 Peter, Trevor, et al. "Challenges in implementing CD4 testing in resource-limited settings." *Cytometry Part B: Clinical Cytometry* 74.S1 (2008): S123-S130.
- 21 WHO. Antiretroviral drugs for treating pregnant women and preventing HIV infection in infants: recommendations for a public health approach-2010 version. World Health Organization, 2010.
- 22 Chi, Benjamin H., Carolyn Bolton-Moore, and Charles B. Holmes. "Prevention of mother-to-child HIV transmission within the continuum of maternal, newborn, and child health services." *Current opinion in HIV and AIDS* 8.5 (2013): 498.
- 23 Sylla BS, Wild CP. A million Africans a year dying from cancer by 2030: what can cancer research and control offer to the continent? *Int J Cancer* 2012;130:245–250.
- 24 Huchko MJ, et al. Building capacity for cervical cancer screening in outpatient HIV clinics in the Nyanza province of western Kenya. *Int J Gynaecol Obstet* 2011;114:106–110.
- 25 Chirenje ZM. HIV and cancer of the cervix. *Best Pract Res Clin Obstet Gynaecol* 2005;19:269–276.
- 26 Heard I, et al. High rate of recurrence of cervical intraepithelial neoplasia after surgery in HIV-positive women. *J Acquir Immune Defic Syndr* 2005;39:412– 418.
- 27 Serraino D, et al. Risk of invasive cervical cancer among women with, or at risk for, HIV infection. *Int J Cancer* 1999;82:334–337.
- 28 Marston M, Becquet R, Zaba B, Moutleon LH, Gray G, Coovadia H et al. Net Survival of perinatally and postnatally HIV-infected children: a pooled analysis of individual data from sub-Saharan Africa. *International Journal of Epidemiology*: 2011 40(2) 385-396.
- 29 Newell M, Coovadia H, Cortina Borja M, Rollins N, Gaillard P, Dabis F. Mortality of infected and uninfected infants born to HIV-infected mothers in Africa: a pooled analysis. *Lancet* 2004;364(9441):1236-1243.
- 30 Rabkin, Miriam, et al. "Antiretroviral treatment in resource-poor settings: clinical research priorities." *The Lancet* 360.9344 (2002): 1503-1505.
- 31 Kitahata, Mari M., et al. "Effect of early versus deferred antiretroviral therapy for HIV on survival." *New England Journal of Medicine* 360.18 (2009): 1815-1826.
- 32 WHO. Guidelines on When to Start Antiretroviral Therapy and on Pre-Exposure Prophylaxis for HIV. WHO. 2015.
- 33 Busza, Joanna, et al. "Community-based approaches for prevention of mother to child transmission in resource-poor settings: a social ecological review." *Journal of the International AIDS Society* 15.4 (2012).
- 34 Simelane, Bongani, et al. "Swaziland: Male involvement in addressing the HIV epidemic." *Exchange* (2012): 12.
- 35 Dunlap, Julie, et al. "Male involvement for the prevention of mother-to-child HIV transmission: A brief review of initiatives in East, West, and Central Africa." *Current HIV/AIDS Reports* 11.2 (2014): 109-118.
- 36 WHO. Operations Manual for Staff at Primary Health Care Centres. Chapter 4: Community. Accessed on 3/2/15 at: http://www.who.int/hiv/pub/imai/om_4_community.pdf
- 37 Amzel, Anouk, et al. "Promoting a combination approach to paediatric HIV psychosocial support." *AIDS (London, England)* 27.0 2 (2013): S147.
- 38 Amzel, Anouk, et al. "Promoting a combination approach to paediatric HIV psychosocial support." *AIDS (London, England)* 27.0 2 (2013): S147.
- 39 Eliminating Pediatric AIDS in Swaziland Project Evaluation Report. MIDEGO, Inc: Ruth Hope, Saul Onyango and Celso Mondlane. 2014.

Contact Person:

DR. GREGORY JAGWER

Elizabeth Glaser Pediatric AIDS Foundation
MTN Office Park
Karl Grant Street
Mbabane, Swaziland

gjagwer@pedaids.org
