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CHASS-SMT END OF PROJECT REPORT



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Clinical HIV/AIDS Services Strengthening Project, Sofala, Manica, Tete Provinces
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ACRONYMS

AOR	Agreement Officer Representatives
ANC	Antenatal Care
ART	Antiretroviral Therapy
CBO	Community-Based Organization
CD4	Cluster of Differentiation
CHASS-SMT	Clinical HIV/AIDS Services Strengthening Project in Sofala, Manica, and Tete provinces
COP	Chief of Party
DPS	Direcção Provincial de Saúde (Provincial Health Directorate)
eMTCT	Elimination of Mother-to-Child Transmission
EP	<i>Equipa Polivalente</i> (Polyvalent Team)
EPTS	Electronic Patient Tracking Systems
GAAC	<i>Grupo de Apoio e Adesão da Comunidade</i> (Community Support and Adherence Group)
GBV	Gender-based Violence
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
MOH	Ministry of Health
PCR	Polymerase Chain Reaction
PEPFAR	President's Emergency Plan for AIDS Relief
PIMA	CD4-analyzing machine
SDSMAS	<i>Serviços Distritais de Saúde Mulher e Acção Social</i> (District Health Directorates)
SIMAM	<i>Sistema de Informação de Medicamentos e Artigos Médicos</i> (Pharmaceuticals and Medical Commodities Information System)
SMS	Short Message Service
SOPs	Standard Operating Procedures
TB	Tuberculosis
USAID	United States Agency for International Development
VMMC	Voluntary Male Medical Circumcision

1 INTRODUCTION

The Clinical HIV/AIDS Services Strengthening Project in Sofala, Manica, and Tete (CHASS-SMT) in Mozambique was a five-year project (2011-2015) funded by the United States Agency for International Development (USAID) and implemented by Abt Associates (Abt) and partner FHI360. The goal of the project was to improve HIV clinical services in Sofala, Manica, and Tete within a strengthened comprehensive primary health care system. CHASS-SMT was the follow-on to a project that provided intensive clinical support to HIV and AIDS services in the provinces of Sofala and Manica. USAID/Mozambique tasked CHASS-SMT with pivoting support to the HIV and AIDS response in the Mozambique's central provinces from an emergency response under the President's Emergency Plan for AIDS Relief (PEPFAR) I, to focus on improving sustainability by strengthening local health systems under PEPFAR II. The project's three original objectives were:

1. Strengthening Mozambican health systems and institutional capacity to provide high-quality services and ultimately receive and manage direct support from the United States Government
2. Improving integration of HIV and related primary health care services and linkages between the community and the health system
3. Increasing demand, use and provision of high-quality HIV services

In Year Two of the project (2012), USAID requested that CHASS-SMT support the Mozambican Ministry of Health's (MOH) strategy of decentralizing HIV and AIDS services to peripheral health facilities. In response to this request, the project added a fourth objective:

4. Increasing coverage of services for HIV care and treatment and elimination of mother-to-child transmission (eMTCT)

Originally, the project consisted of two distinct components: (1) a health systems strengthening component applied mostly at the provincial level and aimed at objective 1, and (2) a clinical component, applied mostly at the health facility level, and aimed at objectives 2-4. In 2013, the Mozambique MOH's National HIV Prevention, Care and Treatment Acceleration Plan targeted districts with the highest unmet need for HIV treatment to intensify efforts to expand access to and quality of treatment. Based on lessons learned during the first years of implementation, and to better respond to the MOH's Acceleration Plan, CHASS-SMT shifted its implementation strategy in 2013. Under the new strategy, the District Approach, CHASS-SMT integrated its health systems strengthening and clinical activities and focused assistance at the district level, to build the capacity of districts to provide quality expanded HIV services. The District Approach and its elements are described in detail in other CHASS-SMT End-of-Project (EOP) documentation¹. This report focuses on the results, challenges, lessons learned, and recommendations of the CHASS-SMT project.

1 Please note that the Results Brief distributed at the EOP event in September, 2015 in Maputo included only data until July 2015. The results described in this document are updated with data through the end of the project (September 2015).

2 RESULTS AND ACHIEVEMENTS

Project data provide good evidence that CHASS-SMT succeeded in achieving its four objectives. Table 1 provides examples of indicators that demonstrate project achievements under each objective. The following sub-sections highlight the most significant life-of-project results by four categories: key PEPFAR indicators and targets; access, quality, and sustainability.

TABLE 1. EXAMPLES OF PROJECT ACHIEVEMENTS BY OBJECTIVE

Objective	Achievements
1. Strengthening Mozambican health systems and institutional capacity to provide high-quality services and ultimately receive and manage direct support from the United States Government	<ul style="list-style-type: none"> • Priority districts improved their capacity to manage health services functions from 38% to 83% compliance with MOH standards • This improvement showed a positive, statistically significant association with improvements in key service-delivery indicators • District capacity to manage direct funding improved from an average of 47% to 80% execution of planned activities in 21 months
2. Improving integration of HIV and related primary health care services and linkages between the community and the health system	<ul style="list-style-type: none"> • One Stop Model for tuberculosis (TB)/HIV and eMTCT introduced in 215 health facilities • 41,223 lost-to-follow-up patients placed back on anti-retroviral therapy (ART) through community outreach
3. Increasing demand, use and provision of high-quality HIV services	<ul style="list-style-type: none"> • Percent of HIV+ pregnant women receiving eMTCT increased from 59% to 92% • Percent of TB/HIV+ patients initiating ART improved from 22% to 81% • Adult ART 12 month retention rate improved from 65% to 71% • Pediatric ART 12 month retention rate improved from 64% in to 71%
4. Increasing coverage of services for HIV care and treatment and elimination of mother-to-child transmission (eMTCT)	<ul style="list-style-type: none"> • 129 new ART sites opened • 162,707 new patients enrolled in ART • 101,253 new HIV+ pregnant women received antiretrovirals for eMTCT

2.1 KEY PEPFAR INDICATORS AND TARGETS

Table 2 below summarizes CHASS-SMT's life-of-project performance on key PEPFAR indicators. Adult and pediatric anti-retroviral therapy (ART) 12-month retention rates (indicators 1 and 2) improved slowly but steadily over five years. However, by Year Five, both rates were 71percent, still short of the target of 85 percent. This is consistent with national-level trends in retention rates, which are notoriously difficult and slow to improve. New enrollment on ART also increased steadily, with Year Five values reaching three times or more the Year One values. By Year Two CHASS-SMT consistently achieved greater than 90 percent performance against

adult enrollment yearly targets through the end of the project. Pediatric enrollment remains the biggest challenge. In Year Five the project reached 64 percent of its new pediatric enrollment target. Other provinces in Mozambique face the same challenge in accelerating new pediatric enrollment. Section 4.1 discusses the remaining challenges with retention and pediatric enrollment.

CHASS-SMT showed consistently high performance on the eMTCT indicator (indicator 6). After a slow start in Year One, the project maintained the improvement achieved in Year Two, surpassing its PEPFAR target from then on. The TB/HIV indicators also show positive life-of-project trends. The number of HIV positive patients screened for TB (indicator 5) increased steadily, reaching 151 percent of the PEPFAR target in Year Four and 102 percent in Year Five. Finally, the number of TB/HIV+ patients on ART (indicator 7) also increased with every year, as well as achievement of targets. In Year Three CHASS-SMT reached 85 percent of the PEPFAR target, rising to 110 percent in Year Four and 102 percent in Year Five.

TABLE 2. SUMMARY OF LIFE- OF-PROJECT PERFORMANCE ON SIX KEY PEPFAR INDICATORS

Indicator	Performance (% yearly PEPFAR target achieved)				
	Year 1	Year 2	Year 3	Year 4	Year 5
1. Proportion of ART patients <15 years known to be alive and in treatment after 12 months of treatment (Indicator: T-ARV.04.)	64% (80%)	64% (80%)	66% (77%)	68% (80%)	71% (84%)
2. Proportion of ART patients 15+ years known to be alive and in treatment after 12 months of treatment (Indicator: T-ARV.04.)	65% (81%)	64% (80%)	73% (86%)	67% (79%)	71% (84%)
3. Number of patients <15 years with advanced HIV infection newly enrolled on ART during the reporting period (Indicator: T-ARV.02.)	1,344 (53%)	2,357 (88%)	4,960 (99%)	4,077 (27%)	3,987 (64%)
4. Number of patients 15+ years with advanced HIV infection newly enrolled on ART during the reporting period (Indicator: T-ARV.02.)	12,611 (74%)	21,392 (119%)	29,709 (90%)	43,197 (148%)	40,963 (99%)
5. Number of HIV-positive patients who were screened for TB at last visit in HIV care or treatment setting (Indicator: C-CLC.04.)*	137,136 (285%)	140,062 (175%)	98,187 (69%)	216,360 (151%)	433,156 (102%)
6. Number of HIV-positive pregnant women who received ART to reduce risk of mother-to-child-transmission (already on ART or initiated ART in ANC) (Indicator: P-MTCT .06.04.)	13,806 (64%)	21,975 (127%)	22,495 (109%)	20,729 (114%)	22,990 (102%)
7. Number of HIV-positive TB patients who are known to have started ART (Indicator: C-TB.04.)	1,774 (34%)	2,972 (63%)	2,904 (85%)	5,205 (110%)	5,453 (102%)

* The tracking methodology for this indicator changed in the third quarter of Year Two, likely explaining the apparent sharp decrease from Year Two to Year Three.

2.2 ACCESS

The achievement of project objectives 1-4 contributed towards increasing access to high quality HIV and AIDS services in Sofala, Manica, and Tete. The main activities that CHASS-SMT implemented to expand access to HIV and AIDS services included:

- Supporting the opening of new ART and eMTCT sites by:
 - Providing training and clinical tutoring to health facility staff on ART and eMTCT protocols, including use of registries and data reporting
 - Supporting critical infrastructure improvements and providing basic equipment and materials
- Providing clinical tutoring and technical assistance to health facility staff to improve the delivery of services, including improving patient information systems and data flow
- Improving the linkages between communities and facilities by supporting community-based organizations (CBOs) to work with facility staff on demand creation of HIV services and the active outreach of ART patients lost to follow up

The above activities led to the following results:

- **129 new ART sites opened**
- **162,707 new patients placed on ART**, of which 16,700 (10%) are children
- **101,253 new HIV+ pregnant women placed on eMTCT**
- **41,223 lost-to-follow-up patients recovered back into ART** through active outreach
- **1,952,461 people tested for HIV**, of which 10 percent (195,857) were positive:
 - Community counseling and testing tested 268,371 people, referring the 19,740 (7%) who were positive to health facilities for care
 - Monthly average of people tested through provider-initiated counseling and testing increased from 39,604 in the first year of the project to 193,697 in the last year
- Introduction of voluntary medical male circumcision (VMMC) services, with **19,628 VMMCs conducted** over five quarters
- Introduction of health services for gender-based violence (GBV) survivors in 75 new facilities; provision of **post-GBV care to 4,509 people**

FIGURE 1. NUMBER OF ART SITES BY PROVINCE

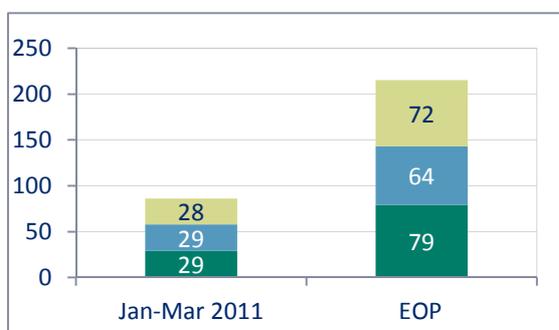
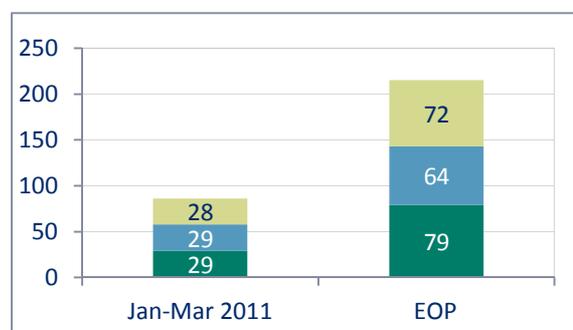


FIGURE 2. PATIENTS ACTIVE ON ART BY PROVINCE

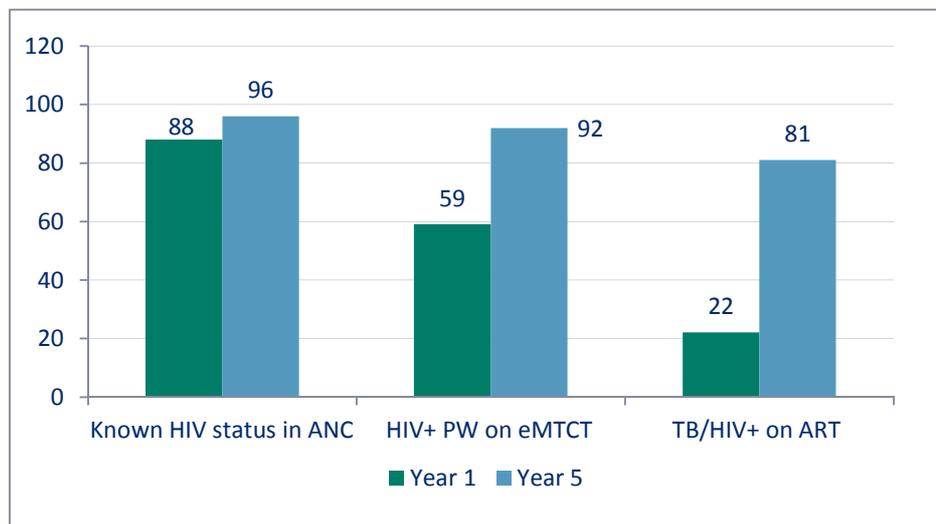


2.3 QUALITY

Project objectives 2 and 3 also sought to improve the quality of HIV and AIDS and related health services. Project activities for improving health service quality were sometimes the same, or closely linked to the activities for improving access:

- Providing clinical tutoring, technical assistance, and targeted interventions at the health facility level to improve provider knowledge and skills and systems and processes
- Strengthening district health managers' capacity to manage health programs, laboratory services, and community engagement
- Supporting critical infrastructure improvements and providing basic equipment and materials
- Improving the linkages between communities and facilities, with a focus on community adherence support groups (GAACs) to improve ART retention
- These activities contributed to the following improvements in service quality from Year One to Year Five:
- Proportion of pregnant women in antenatal care (ANC) with known HIV status improved from 88 to 96 percent
- Percent of HIV+ pregnant women receiving antiretrovirals (ARVs) for eMTCT increased from 59 to 92 percent
- Percent of HIV+ pregnant women receiving Option B+ increased from 14 to 83 percent
- Percent of TB/HIV+ patients on ART improved from 22 to 81 percent

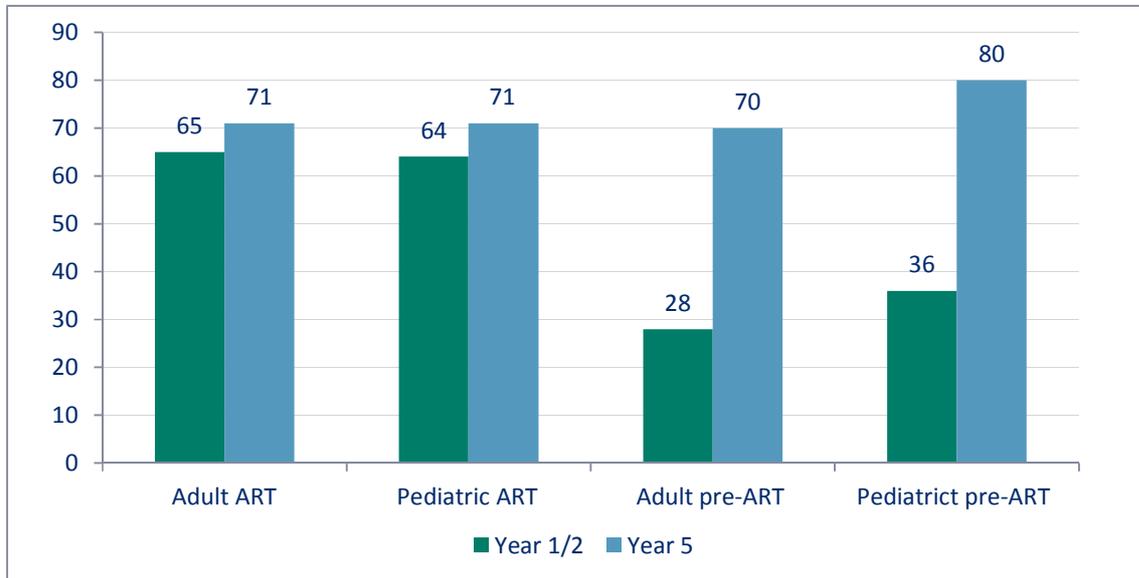
FIGURE 3. IMPROVEMENTS IN KEY SERVICE QUALITY INDICATORS FROM YEAR ONE TO YEAR FIVE



- **12-month ART retention:**
 - Adult ART retention rate improved from 65 percent to 71 percent
 - Pediatric ART retention rate improved from 64 percent to 71 percent
 - **12-month pre-ART retention:**

- Adult pre-ART retention rate improved from 28 percent² to 70 percent
- Pediatric pre-ART retention rate improved from 36 percent² to 80 percent

FIGURE 4. IMPROVEMENTS IN 12-MONTH ART RETENTION RATES



- Referral completion rates for community-facility referrals improved from 37 percent to 67 percent
- **5,293 new GAACs** were formed with 20,659 members

2.4 SUSTAINABILITY

In addition to expanding access to and quality of HIV and AIDS services, CHASS-SMT was also tasked with strengthening Mozambican systems to ensure sustainability of service provision and capacity to receive direct funding. This was the aim of project objective 1. Although true sustainability can only be demonstrated over the long term, CHASS-SMT achieved significant, measurable milestones that strengthened the Mozambican health system at different levels and contributed to sustainability. Key project activities to strengthen the health system included:

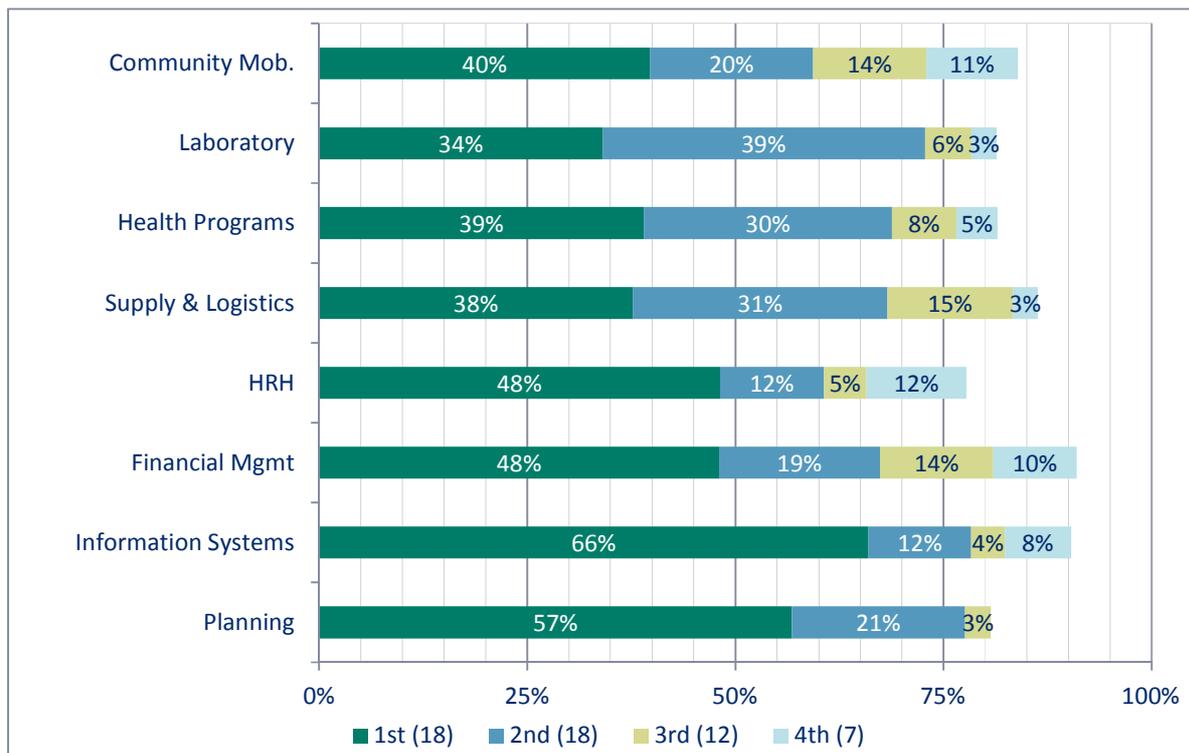
- Providing sub-agreements to all three Provincial Health Directorates (DPS) and 36 District Health Directorates (SDSMAS) in Sofala, Manica, and Tete
- Providing intensive technical assistance to DPS and SDSMAS on sub-agreement management
- Strengthening SDSMAS management capacity through the Graduation Path
- Supporting Human Resources for Health by funding pre-service training of new health workers and providing gap-year funding for their immediate deployment
- Providing financial and technical support for the expansion of essential MOH systems such as electronic patient tracking system (EPTS) and pharmaceuticals and medical commodities information system (SIMAM)
- Directly procuring essential equipment, materials, and repairs for health facilities

² In the second year of the project.

Key results from these activities include:

- Priority districts improved their overall management capacity from 45 percent to 79 percent compliance with MOH operating standards
- There was a **positive, statistically significant relationship between improved district capacity to manage services functions** (health programs, laboratory, and community mobilization), and the following *access and quality indicators*³ (five out of six indicators analyzed):
 - Number of new ART enrollees
 - Number of new pre-ART enrollees
 - New enrollees in pediatric HIV care
 - Percent of pregnant HIV+ women in ANC on ART for eMTCT
 - Percent of TB/HIV+ patients on ART

FIGURE 5. AVERAGE GRADUATION PATH SCORES BY CHARACTERISTIC FOR EACH ASSESSMENT (NUMBER OF DISTRICTS)

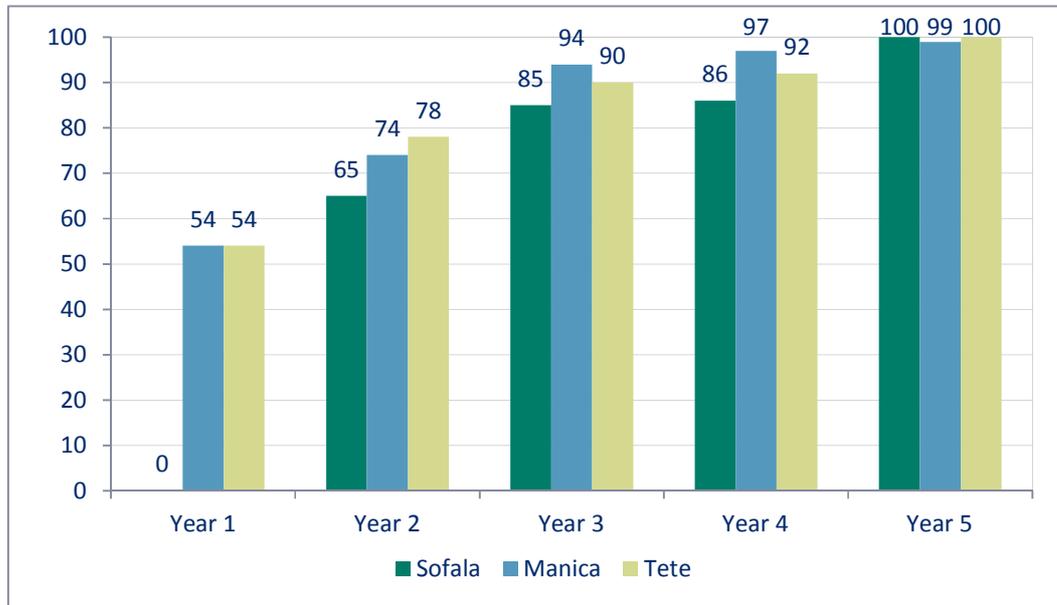


- More than US\$16 million provided to health facilities in essential materials and equipment
- US\$4.5 million provided to DPS' through sub-agreements to support essential functions

³ Results of the study "Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project". The study report was submitted to USAID on October 30th, 2015.

- **Improved DPS capacity to manage direct funding:** the percent of disbursed sub-agreement funding successfully liquidated by the DPS increased steadily every year, reaching 100 by the end of the project

FIGURE 6. PERCENT OF DISBURSED DPS SUB-AGREEMENT FUNDING LIQUIDATED



- Over US\$1.3 million channeled to 36 districts through innovative results-based sub-agreements to support essential service delivery functions
- **Improved SDSMAS capacity to manage direct funding:** the percent of planned quarterly sub-agreement activities executed increased from an average of 47 to 80 in 21 months
- **352 new nurses, lab technicians, and pharmacists** graduated with project support
- 193 new health workers deployed to health facilities with gap-year funding, of which 172 (89%) were successfully transferred to the DPS payroll
- EPTS expanded to 29 new ART sites, contributing to improved data quality
- SIMAM coverage expanded from 8 percent of districts to 100 percent, contributing to improved commodities supply
- Over 2,000 health workers provided with in-service training on clinical topics to improve HIV and AIDS services

3 IMPLEMENTATION AND MANAGEMENT

3.1 STRATEGIES AND ACTIVITIES

3.1.1 DISTRICT APPROACH

As mentioned earlier, the District Approach is described in detail in the District Approach technical brief from the EOP materials. In this report we focus on analysis and lessons learned. CHASS-SMT implemented a full version of the District Approach in the 18 priority districts from Sofala, Manica, and Tete. The MOH's Acceleration Plan⁴ identified the districts, targeting those with the highest unmet need for ART. The remaining districts received a less intensive form of the approach. Table 3 summarizes the main differences in District Approach implementation between priority and non-priority districts. The objective was to focus efforts on the districts that needed the most improvement, and therefore have greater impact on them.

TABLE 3. PACKAGE DISTRICT APPROACH INTERVENTIONS APPLIED TO PRIORITY VS. NON-PRIORITY DISTRICTS

Intervention	Priority Districts (PD)	Non-Priority Districts (NPD)
Technical assistance visits from multidisciplinary teams	Monthly	Quarterly
Graduation Path intervention	✓	
Sub-agreements	✓	✓
District Profile	✓	✓
Monitoring and Evaluation support (data collection and reporting)	✓	✓
Clinical Tutoring	✓	✓
Re-engineering of patient flow	✓	
Quality improvement initiatives	✓	✓
Community-level interventions	✓	✓

As part of the study that examined the relationship between improved district management capacity and service delivery outcomes, CHASS-SMT assessed differences in service delivery outcomes between priority and non-priority districts⁵. The project analyzed six indicators, three

⁴ The MOH Acceleration Plan assigned "priority status" to districts based on their unmet need for ART. However, CHASS-SMT had to make slight adjustments to this assignment to accommodate for factors such as political instability in certain districts. There were also changes in the MOH assignment through the course of the project. By the end of the project, the priority districts receiving the full version of the District Approach were: Barue, Chimoio City, Gondola, Machaze, Mossurize and Sussundenga in Manica Province; Buzi, Chemba, Beira City, Dondo and Nhamatanda in Sofala Province, and Changara, Chifunde, Tete City, Moatize, Mutara and Tsangano in Tete Province.

⁵ For a detailed description of the study design, methodology, and results please see the full study report: "Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project". Study report submitted to USAID on October 30th, 2015.

related to access (A) and three related to quality (Q). Table 4 displays the indicators analyzed in the study and the results. At first glance, results seem mixed.

TABLE 4. INDICATORS ANALYZED IN STUDY AND RESULTS

Indicator (A = access; Q = quality)	Relationship detected with “Priority District” status
1. Number of new enrollees in ART (A)	None
2. Number of new pre-ART enrollees (A)	None
3. Number of new enrollees in pediatric HIV care (A)	Negative
4. Percentage of pregnant women in antenatal care (ANC) who knew their HIV status after first consultation (Q)	Negative
5. Percentage of HIV-positive pregnant women in ANC who received anti-retrovirals (ARVs) for eMTCT (Q)	Positive
6. Percentage of co-infected TB/HIV+ patients that initiated ART in the TB ward (Q)	Positive

However, when looking only at the quality indicators (4, 5, and 6), two of the three – indicators 5 and 6 – had a positive, statistically significant relationship with district priority status. Indicator 4 had a negative relationship; however, the baseline for this indicator was already very high, especially in priority districts (89% versus 85%). **These are encouraging results regarding the potential effect of the full District Approach on service quality**, especially considering two factors: the study only examined an 18-month time period; and it was not a “pure” intervention versus non-intervention design (non-priority districts also received many of the District Approach interventions, including sub-agreements).

For the access indicators, only indicator 3 had a statistically significant relationship with district priority status, and it was negative. However, results for these indicators are more difficult to interpret due to the ongoing decentralization of ART services over the course of the study (an unknown number of patients were transferred from sample facilities to non-sample facilities, possibly artificially decreasing patient volumes unevenly between priority and non-priority districts).

3.1.1.1 LESSONS LEARNED

The roll-out of the District Approach marked a turning point for the CHASS-SMT project. The most important feature of this approach was the **integration** of the project’s technical areas. Under the new approach, project staff shifted from providing discrete technical assistance to district and health facility counterparts on specific topics, to providing comprehensive, integrated technical assistance. This integration had several positive effects:

- Allowed for greater synergies across technical areas, including between health systems strengthening and clinical areas
- Improved accountability of project staff for results, since teams were now clearly assigned to and responsible for particular districts
- Decreased the burden on the MOH district and health facility counterparts during technical assistance visits
- Enabled stronger capacity building of district and health facility managers, by focusing on their ability to see, analyze, and problem-solve the “full picture” affecting the delivery of health services.

These effects were frequently cited by project staff during project meetings. Project staff noted improvements in their own work and motivation as a result of the integration and the District

Approach. District and health facility staff also expressed their satisfaction with this new integrated approach during key informant interviews⁶:

“The team doesn’t look at just one area, which is very beneficial to the achievement of the different targets of the different health programs” – Dondo District Health Directorate Staff, Sofala Province.

“The integrated approach brings to our attention attitudes that need to be changed” – Gorongosa District Health Directorate Staff, Sofala Province.

The integration of technical areas in the District Approach was facilitated by three main factors:

- **The Equipas Polivalentes (EPs):** multi-disciplinary teams that provided integrated technical assistance to districts. Each EP was formed by four to five project staff comprising health systems strengthening, clinical, M&E, and sub-agreement areas. They planned, conducted, and analyzed their field visits together. Although each EP member had his/her own area of specialty, they were each trained to address the basic requirements of all technical areas using the Graduation Path instrument as a guide.
- **The Graduation Path:** discussed below, it was the main instrument used by EPs to guide their technical assistance visits at district level.
- **The District Sub-Agreements:** also discussed below, they funded activities across all clinical areas and their successful execution was dependent on key health system capacities (planning, financial management, monitoring).

Another key feature of the District Approach was the **systematization** of project assistance. CHASS-SMT was a complex project with a large breadth and depth of technical areas covering a large geographic area. Determining *which* assistance to give *when* and *where* was a major operational challenge in the beginning of the project, especially when each technical team worked separately. Hence the first step in overcoming this challenge was the integration of the teams. The second step was the introduction of tools and systems that provided standardized guidance to the teams on how to prioritize, provide, and monitor assistance. These tools and systems included the standard operating procedures (SOPs) for the EP district visits, the Graduation Path, the District Profile, and the Clinical Tutoring Tool (all of which are described in the EOP materials). Once again, project staff expressed great satisfaction with the systematized feature of the District Approach methodology. Technical staff frequently cited how their jobs had improved after the introduction of the approach. They noted how they had an increased understanding of their roles and what they needed to do in the field, as well as how all the different project pieces fit together to improve health services.

The introduction of the District Approach presented some challenges, mostly because it marked a significant change from the way the project was originally structured. CHASS-SMT had to reconfigure its original staffing plan to fit the new approach, and in some cases the fit was not optimal. The successful implementation of the approach also required a major change in attitude of project staff. They needed to move from seeing themselves as discrete, parallel teams who were only responsible for their own technical areas, to integrated teams who were collectively responsible for the overall improvement of a district. Although all project staff eventually came to embrace and appreciate the new approach, there was an initial resistance to this shift and it took time to materialize.

⁶ CHASS-SMT carried out these key informant interviews as part of the study “*Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project*”.

3.1.2 GRADUATION PATH

The Graduation Path methodology is described in the Graduation Path technical brief from the EOP materials. The main goal of this methodology was to inform, guide, and monitor the project's efforts to strengthen SDSMAS management capacities. The methodology proved to be successful in achieving these goals. Results of the Graduation Path assessments described above show consistent improvements in districts' management capacity with every assessment. District staff noted specific improvements in SDSMAS operations as a result of the Graduation Path⁷. For example: stronger culture of documentation and reporting, greater quality and emphasis on data, and better maintenance of laboratory equipment.

Most importantly, results from the study carried out by CHASS-SMT showed that improvements in certain Graduation Path functions had strong, positive associations with improvements in access to and quality of HIV and AIDS services⁸. This is important evidence regarding the potential relationship between district management capacity and service delivery performance. The functions that showed an association with improved service delivery were the *services functions*: health programs, laboratory services, and community engagement. The remaining *systemic functions* (planning, information systems, financial management, human resources, and supply and logistics) showed mixed results.

A total of 18 districts participated in the Graduation Path methodology. The strategy was originally intended for use only in the 12 priority districts. Because there were changes to the assignment of priority districts, the final number of participating districts was higher. Districts launched the Graduation Path at different points in time. Of the 18 districts, they all carried out at least two assessments, 12 carried out three assessments, and seven carried out four assessments. Assessment frequency varied from every four-six months.

3.1.2.1 LESSONS LEARNED

CHASS-SMT designed the Graduation Path to be ultimately a district-led quality improvement process. Before rolling it out, CHASS-SMT advocated with the three DPS' to obtain their buy-in into the strategy. All three DPS' supported the introduction of the Graduation Path; in fact, the Sofala DPS also expressed its interest in adopting the methodology as part of the Province's regular processes. As expected, there was wide variation on the implementation experiences across different districts.

On one end of the spectrum were districts where EPs and SDSMAS staff worked hand-in-hand to carry out the Graduation Path assessments. In these districts SDSMAS staff had high appreciation for the value of the self-assessment as part of a greater, continuous quality improvement process. Their assessments included rich, detailed action plans to address weaknesses identified, and the SDSMAS took increasing ownership of the process with each assessment round. They clearly saw the link between the Graduation Path and other project support such as technical assistance and the sub-agreements.

On the other end of the spectrum, were districts that still saw the assessment process as a "project requirement," with little value to their day-to-day activities. In these districts, assessment instruments and action plans tended to be minimally, sometimes partially completed, and SDSMAS staff ownership levels remained low. The level of SDSMAS understanding and ownership of the Graduation Path was at least in part related to the corresponding levels in their

⁷ Information obtained through the qualitative component of the study "*Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project*".

⁸ Results of the study "*Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project*".

assigned EPs. That is, it reflected varying levels of understanding of the methodology across the different EPs. As with the overall District Approach, it took some time until the EPs fully absorbed the purpose of the methodology, how it fit within the District Approach, and how to implement it. Ultimately some EPs were better at this than others.

DPS and SDSMAS ownership is possibly the area with the greatest room for improvement in the Graduation Path. Given that the project introduced the methodology relatively late in the life of the project (end of 2013), project staff may have felt pressed to rush its introduction to have enough time to show results. As a result, the project may have underestimated the time and effort needed to obtain full buy-in from districts. Taking the time to introduce the methodology jointly with the DPS would have probably strengthened SDSMAS ownership and provided a stronger foundation for eventual institutionalization.

However, CHASS-SMT did not expect to have the methodology fully institutionalized within MOH processes in the short time between its introduction and the closing of the project. Successful adoption of strategies such as the Graduation Path takes time, and happens gradually. Overall, there was a clear positive pattern in terms of increasing SDSMAS and DPS ownership, with the potential to lead to full ownership and sustainability.

In terms of the instrument itself, results of the study showed that as expected, the *services functions*, which are more closely related to the delivery of health services, had a much stronger and more positive association with improvements in service delivery. However, the importance of the *systemic functions* should not be minimized by these findings. *Systemic functions* play an important role in supporting the *services functions*, and likely take more time than 18 months to show an association with service delivery outcomes.

3.1.3 SUB-AGREEMENTS

CHASS-SMT provided sub-agreements to three different types of institutions: DPS, SDSMAS, and training institutions. Sub-agreements to the DPS' were "classic" cost-reimbursable grants to cover basic DPS operating expenses. The project designed the sub-agreements for the training institutions to pay for the pre-service education of new health care workers. In this report we focus on the district or SDSMAS sub-agreements due to their innovative nature and the impact they had on project results.

CHASS-SMT provided fixed-price sub-agreements to all 36 districts in Sofala, Manica, and Tete. The purpose of the sub-agreements was to provide the districts with the essential resources they needed to function, such as fuel and per diem for supervision visits and transportation of commodities. CHASS-SMT designed the sub-agreements as fixed-price or output-based grants with two goals in mind:

- Reducing the administrative burden on district management; and
- Using the grant mechanism as an incentive for districts to perform their functions

The sub-agreement design was based in part on the lessons learned from a performance-based incentives pilot that CHASS-SMT implemented in Manica in 2012-2013⁹. Results from the evaluation of this pilot showed no clear impact of performance-based incentives on service delivery. However, the qualitative component of the evaluation found that resources for improving working conditions in health facilities may create a stronger incentive to health workers than individual monetary incentives.

The activities covered by the grants came directly from the district annual plans (*Plano Económico Social e Orçamento Distrital* – PESOD). CHASS-SMT worked with district teams to

⁹ Draft evaluation report submitted to USAID on May 22, 2014.

select indicators for the grants and assign quarterly targets (see Annex I for the district sub-agreement indicator list). Each quarter, project staff and district teams assessed district performance against the indicators, and districts received a quarterly payment based on their performance. CHASS-SMT staff provided continuous technical assistance to SDSMAS administrative teams on sub-agreement budgeting, execution, and verification. Over the seven quarters of sub-agreement implementation, districts' ability to execute their planned activities for the quarter improved from 47 percent to 80 percent.

The introduction of the district sub-agreements had a profound positive impact on the effectiveness of project interventions. The first and most obvious effect was the availability of essential resources for the provision of health services. There is a limit to the impact that technical assistance can have on service delivery when facilities and districts do not have the minimum conditions necessary. Once those resources were available, district and facility staff was able to better perform their functions and implement solutions identified through the technical assistance. The level of motivation and collaboration with project staff also increased significantly. Key informant interviews revealed that the sub-agreements were perceived by district and facility staff to have had the greatest impact on improvements of district management and service delivery¹⁰. It is important to note that in addition to the sub-agreements, CHASS-SMT also provided more than US\$16 million worth of equipment and materials to health facilities and districts through a major procurement effort (*kit básico*) and a donation from partner Project CURE. This additional material support was also critical to enabling improvements in service delivery, increasing motivation of health workers, and facilitating a collaborative partnership with the DPS' and SDSMAS'.

In addition to providing essential resources for improved district functioning and service delivery, the sub-agreements proved to be a powerful health system strengthening tool. By placing the districts in charge of managing their own resources, their capacities visibly improved as they "learned by doing" with mentoring from CHASS-SMT. The sub-agreements served as a convergence point between service delivery and health system strengthening, where clinical and financial and administrative teams were "forced" to work together on the planning, budgeting, executing, and reporting of activities. Both project and district staff reported notable improvements in the integration and collaboration within and across teams, as well as improved communication and coordination between districts and health facilities.

The sub-agreements also improved transparency and accountability. Clinical staff had to advocate for funding for their programs and activities. All district and facility staff knew how the funding was eventually assigned, who was responsible for spending what, and when the money was received. Therefore all staff was motivated to work together to ensure that planned sub-agreement activities were executed and reported on time.

"(...) with the direct sub-agreement from CHASS-SMT, the only funding we don't receive during the quarter is for activities that we weren't able to execute. That is, if we don't have funding it's our own fault." – Gorongosa District Health Directorate Staff, Sofala Province

"Before the sub-agreements, the activities were carried out (well or not), but were not reported, no one did the reports; now with the sub-agreements everyone is concerned with reporting their activities so that they can be converted into products." – Dondo District Health Directorate Staff, Sofala Province

¹⁰ Information obtained through the qualitative component of the study "Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project".

3.1.3.1 LESSONS LEARNED

Planning

It is common for implementing partners to approach sub-agreements from only an administrative and contractual perspective. The most successful sub-agreements programs obtain maximum impact when the following conditions are in place:

- There are clear objectives
- Stakeholders are identified
- Rules are set
- Risk is managed
- Work breakdown structures are used
- Schedules are realistic
- Estimates are accurate
- Communications are clear
- Progress is measured
- Management is organized

In this sense CHASS-SMT managed to strike the balance among the various tasks mentioned by employing a team planning approach with technical officers across the various areas of the project and the MOH staff, so that priorities could be set and support structures would be suitable.

Task-Based Budgeting

Managing a sub-agreement with USAID funding can be a daunting task for organizations with little or no USAID experience. Utilizing task or milestone based budgeting and reporting, which are designed to achieve deliverables and important events, simplifies sub-agreement management for the sub-grantee. It also provides clarity on where efforts must be focused. By providing focus to the sub-grantee, they do not get overwhelmed by the sheer volume of rules and regulations and can direct their efforts towards implementation.

Right-Sizing Compliance

Sensitive items or items that are often the subject of noncompliance can be provided “in-kind” to the grantee by the implementing partner, to ensure that the proper approvals are in place and disallowances are avoided. Examples of such items are international travel, vehicle acquisitions, and the purchase of durable goods. In this regard, CHASS-SMT complemented sub-agreements with in-kind purchases to support the sub-grantee. Examples of in-kind purchases and support provided include: the delivery trucks provided to each DPS; 36 motorcycles provided for districts; and furniture and equipment provided in the basic package to improve district facility functionality.

Shadowing and Capacity Building

When implementing sub-agreements, after the sub-agreement signing, the sub-grantee is often left alone to implement the sub-grant, as the donor or partner moves on to the next priority. To build capacity of the sub-grantee in technical and administrative areas, the CHASS-SMT project maintained constant contact with the sub-grantee throughout all phases of implementation (planning, implementation, reporting, close-out), and provided significant training and human resources support in all of these areas. Technical staff met with their counterparts as frequently

as monthly, to ensure activities were being implemented, and to assist in managing those activities that were falling behind schedule or would not occur altogether. The close link between technical and administrative staff, including the inclusion of a sub-agreement manager in the EPs ensured that obstacles and challenges were shared and resolved in an integrated manner.

3.1.4 CLINICAL TUTORING

As part of the District Approach, CHASS-SMT developed and introduced a Clinical Tutoring Tool to be used by EPs during technical assistance visits to health facilities.

This Excel-based tool covered all key components that affect HIV and AIDS service delivery in the health facilities (Box 1), including general conditions such as facility infrastructure and supply of basic materials. The tool consisted of a checklist for supervisors to complete by observing clinical consultations and general facility conditions. Its main purpose was to structure and guide the joint EP-SDSMAS supervision visits to health facilities. SOPs associated with the tool provided clear guidance on how to apply it while assessing the performance of health staff and determining ways to strengthen their clinical skills through on-the-spot mentoring and tutoring.

In addition to tutoring, technical assistance teams discussed and helped mitigate any observed weaknesses and recommended targeted interventions at the facility. These interventions included: formal training; quality assurance/improvement initiatives; thorough reviews of patient files; and/or improvement of basic infrastructure or acquisition of basic materials. SDSMAS could implement these interventions using funding from the district sub-agreements.

Overall, use of the tool was critical in standardizing and systematizing the supervision provided by SDSMAS' and CHASS-SMT to health facilities. District supervisors had a clear roadmap on how to proceed during supervision visits, while health facility staff knew what to expect from the visits. The district/facility teams were able to clearly identify areas in need of improvement and provide ways in which issues could be quickly addressed. Additionally, they engaged in consistent follow up during subsequent visits to ensure that facilities implemented and sustained corrective actions and/or interventions. By using the same tool and process each time, district and facility staff could also identify improvements that needed to be made and track progress against these indicators.

Additionally, CHASS-SMT applied the tool to district supervisors to ensure that their clinical skills were up-to-date and to reinforce the correct use of the tool. District and health facility staff reported widespread improvements in the quality of supervision visits and in the quality of care as a result of this tool. Enhancements reported by facility staff included better compliance with clinical protocols, and more consistent and correct use/filling of registries and patient files.

3.1.4.1 LESSONS LEARNED

As with every new strategy or tool that is introduced, it took some time until the EPs and their district counterparts became familiar with the tool and its SOPs. There was also variation on the comfort level with using the tool. Some EPs easily adopted the concept and the tablet. Others felt that use of the tablet could be intrusive, that the tool was too rigorous, or that they were focusing too much on the tablet rather than the consultation. CHASS-SMT senior technical staff

Clinical Tutoring Tool Components

Observation checklists:

- General conditions
- Pharmacy
- Laboratory

Clinical observation and tutoring checklists:

- Antenatal care - HIV counseling and testing
- Antenatal care - HIV care and treatment
- Adult HIV counseling and testing
- Adult HIV care and treatment
- Pediatric HIV counseling and testing
- Pediatric HIV care and treatment

worked closely with the EPs to understand and overcome these challenges. By the end of the project, all 11 EPs were using the tool across the three provinces. As clinical staff became more comfortable using a tablet-based technical assistance guide, they found that it was a useful strategy for guiding their clinical tutoring. The tool made it easier to target the weakest areas, and provide immediate technical assistance following each observed consultation to strengthen the quality of HIV and AIDS prevention, care and treatment services. For those older staff that never became comfortable using a tablet-based tool, they were still able to take advantage of the tool's checklists and prioritization function by printing the different sections out on paper. As PEPFAR shifted towards more detailed monitoring of the type of support each health facility receives, this tool also helped to facilitate the accurate tracking and reporting of clinical tutoring, as well as enable project managers to identify best practices and trends to maximize impact.

Although CHASS-SMT did not formally evaluate the impact of the tool, the improvements in quality indicators and feedback from SDSMAS and health facility staff were encouraging. The tool also offered the possibility of adding another layer of quantitative monitoring of service quality, in addition to facility-level service delivery indicators. Given more time, the project would have migrated the tool over to DHIS2 to facilitate data aggregation, analysis and reporting, thereby enabling EPs and project managers to look beyond a specific consultation room or clinical sector to analyze data at the health facility, district, province, or project level.

3.1.5 RE-ENGINEERING OF PATIENT FLOW

In Year Four, CHASS-SMT introduced a methodology for re-engineering patient flow in high-volume health facilities. The goal of the methodology was to assess and address key bottlenecks in patient flow within the facility that affected access and quality of HIV and AIDS services. The project introduced this methodology in two health facilities: Ponta Gea Health Center in Beira City, and Health Center Number Four in Tete.

Ponta Gea Health Center has one of the largest flows of patients in the country. It was commonly believed that the main reason for the long patient waiting times and poor quality of services was insufficient health staff and resources. The analysis of the prenatal-care clinic showed that in 2013 the total number of patients attended was 21,222 and the average waiting time per patient was over four hours. However, the patient flow assessment also showed that Ponta Gea actually has the capacity to attend 27,000 prenatal-care patients per year. The main bottlenecks identified were: lack of punctuality to start the work; constant interruption of activities by other staff; health information system (it is located in other offices); high demand on Mondays and Fridays and early in the morning; and no orientation to patients (some patients are in the wrong lines).

Solving these problems requires deep management and attitude changes in the facility. Given other project priorities, CHASS-SMT did not have the resources to dedicate the technical assistance required to address these problems. Nevertheless, the Sofala DPS appreciated how the exercise helped them understand the real bottlenecks hindering effective service delivery at the facility. It was an important realization that even without financial resources, Ponta Gea could still respond to the population health needs, if properly organized. The vast majority of large health facilities in Mozambique suffer the same kind of problems as Ponta Gea. In response to a request from the DPS Director, CHASS-SMT developed guidelines and training curricula on the methodology so that Sofala and other DPS can apply it to other facilities.

In Health Center Number Four, CHASS-SMT carried out the same assessment, and was able to provide technical assistance to address the identified bottlenecks. Interventions implemented by Health Center staff included: small infrastructure improvements, mapping the facility and utilization of space, improving the efficient use of staff, and improving signage in the facility. A

six-month evaluation of these efforts showed that although there was no change in overall patient waiting time (which remained at approximately 1.5 hours), duration of consultations increased slightly from seven minutes to nine minutes, and patient satisfaction improved slightly from 3 in a 0-5 scale to 3.4. However, when looking at critical sectors within the facilities, there were more noticeable improvements: for consultations for chronic diseases, which include HIV, average waiting time decreased from two hours and 24 minutes to one hour and 48 minutes; duration of consultation increased from approximately three minutes approximately nine minutes, and; patient satisfaction improved from 2.8 to 3.3. For laboratory services, although patient waiting time increase slightly from one hour and 10 minutes to one hour and 25 minutes, consultation time increase from two to seven minutes, and patient satisfaction improved from 2.8 to 3.5. These early trends are promising in terms expected improvements in patient flow.

3.1.5.1 LESSONS LEARNED

The most valuable outcome of this intervention was the demonstration that relatively simple interventions, some of which do not require any financial resources, have the potential to address major bottlenecks in service provision in high-volume facilities. Given the continuing decentralization of HIV and AIDS services, the trend will likely be for ART patient volumes in these large facilities to decrease, with volumes increasing in smaller peripheral health facilities. These smaller facilities suffer less from inefficient patient flows.

Therefore, in the future, application of this methodology might be more effective and impactful if focused on two key areas where large health facilities will continue to play a major role: laboratory and pharmacy. Bottlenecks on these two areas continue to pose a major barrier to effective delivery of ART services, including new enrollment and retention. Furthermore, concentrating on these two services would make the task of applying the methodology and implementing interventions more manageable and feasible (as opposed to trying to address the entire health facility).

3.2 IMPLEMENTATION AND MANAGEMENT CHALLENGES AND LESSONS LEARNED

3.2.1 START-UP AND DPS BUY-IN

The transition from the previous project to CHASS-SMT was a very complex operation due to the sheer size of the project. Abt had to quickly set up the new project to minimize the gap between the two projects and avoid interrupting life-saving treatment to the thousands of patients who depended on USAID assistance. Therefore, CHASS-SMT had to carefully balance fast hiring of staff for rapid start-up with thoroughly vetting personnel, especially those who came from the previous project. Indeed, data analyzed by USAID in collaboration with CHASS-SMT staff from the transition period between the two projects indicated that there was a significant decrease in access to eMTCT services and new enrollment in ART during the period when there was no project support from USAID. However, these trends were quickly reversed once USAID had signed its cooperative agreement with Abt and the CHASS-SMT project began directly supporting HIV and AIDS prevention, care and treatment services.

Another major challenge in the beginning of the project was the shift in strategy that CHASS-SMT represented. The previous project was launched during PEPFAR I, where the emphasis was on the emergency response and placing as many patients on treatment as possible. Under this strategy, the previous project had directly employed hundreds of health workers, data clerks, and activists to complement the national health care system, as well as liberally providing “emergency response” funds and resources to the supported DPS’. USAID tasked

CHASS-SMT with shifting this assistance strategy to one that emphasized technical assistance and strengthening local systems for sustainability. As expected, the DPS' did not initially welcome this shift. It took roughly two years for CHASS-SMT to appease DPS concerns and establish a productive and collaborative partnership with them. However, once the project overcame this challenge, the project observed a remarkable shift in all three DPS'. They understood the value of the new strategy and were eager to collaborate and implement initiatives to improve their capacity to provide quality HIV and AIDS services.

3.2.2 STAFFING

Another major implementation challenge that CHASS-SMT faced was the difficulty in finding qualified staff, especially for senior-level positions. After determining that the initial Chief of Party (COP) was not a good fit, the project was not able to find a replacement with the appropriate mix of technical, management, and language skills and experience, and who inspired confidence. In response, CHASS-SMT changed its strategy. The project installed the Acting COP, Mr. Mario de Almeida, as the permanent COP. He was previously the Director of Planning and showed a strong performance as Acting COP. The project then created a new position of Deputy COP for Technical.

Recruitment for the new position also proved to be challenging and lengthy. To provide technical support to the COP and the team during this process, Abt deployed short-term technical assistance led by Dr. Carlos Cuellar, a former COP of several highly-successful service delivery projects. Dr. Cuellar spearheaded the process of redesigning CHASS-SMT's implementation strategy, which led to the District Approach.

Eventually the project hired Dr. Marcelo Castrillo as Deputy COP. Despite these challenges, having a Mozambican as COP in the first years of the project proved to be an asset. Abt was a new partner in Mozambique, and Mr. Almeida's ease navigating the highly-political environment in the country proved essential to the establishment of a successful partnership between the project and the DPS' and central MOH. Dr. Castrillo also brought enormous value to the project, introducing the Clinical Tutoring Tool and leading the complete roll-out of the District Approach.

Towards the end of the project, the key personnel position of Clinical Director, held by FHI360, also presented some challenges. The original Clinical Director resigned in July 2014, and FHI360 quickly identified a replacement (on 31 July, 2014) in consultation with Abt. This individual took up the position after USAID granted approval in October 2014, but also resigned one month later, and the key position remained vacant until a new candidate was identified and approved by USAID in February 2015. Abt worked diligently with FHI360 during this time to ensure that a qualified candidate was identified and posted as quickly as possible. During the period that the project was recruiting and hiring a qualified replacement for the Clinical Director, our integrated provincial teams, with leadership and guidance from the Deputy COP and other members of the project senior team, continued to move the clinical program forward. There were no lapses in either the pace of program activities or our program deliverables.

Other positions that were difficult to fill were related to health systems strengthening. CHASS-SMT was not able to find qualified staff for certain positions such as a Senior Logistics Technical Officer. To adapt to this, the project shifted some roles and responsibilities of existing staff, ensuring coverage of all technical areas in all three provinces.

3.2.3 CHANGES IN SCOPE, PRIORITIES, STRATEGY, AND MANAGEMENT

CHASS-SMT was a very large project with over 150 staff in four offices. Over the course of its five years, USAID and the project introduced key changes or additions in scope, priorities, and strategy. Although there were good reasons for introducing all of these changes, CHASS-SMT

was a “large ship to turn.” That is, every time a change was introduced, it took time to be fully absorbed. This process of absorption likely diverted some attention away from direct implementation. In addition, over its five years, CHASS-SMT had six different Agreement Officer Representatives (AOR’s). Every change in AOR leads to delays associated with differences in management style, communication, and each AOR’s interpretation and prioritization of USAID priorities for any given year.

CHASS-SMT’s introduction of the District Approach was a significant change. This included reconfiguring the project’s organizational structure to be more provincial-focused and technically integrated. It took time until senior management determined the best way to reorganize the existing staff, and even more time for the staff to be fully onboard with the new strategy. However, these challenges were inevitable and the introduction of the new strategy proved to be a turning point for CHASS-SMT. By the end of the project it was evident that the time invested in making the new approach work was worthwhile.

Other changes or additions that occurred throughout the five years included: supporting the MOH’s major expansion of ART sites, re-focusing support to the implementation of the MOH’s Acceleration Plan (which was related to the District Approach), and introduction of new technical areas such as GBV and VMMC. Although all of these changes presented management challenges, CHASS-SMT was able to overcome them and successfully integrate and implement all of them.

4 REMAINING CHALLENGES AND RECOMMENDATIONS

4.1 PEDIATRIC ART AND RETENTION

As in the rest of Mozambique, the biggest remaining challenges in the HIV and AIDS response in Sofala, Manica, and Tete are:

- Accelerating new enrollment in pediatric ART
- Improving ART retention

The greatest barriers to increasing new pediatric ART enrollment are identifying eligible children for testing and improving polymerase chain reaction (PCR) testing for early infant diagnosis. The identification of eligible children is closely linked to the facility-level patient data and registration issues described in the following sub-section. It also requires continuous expansion of testing children in all entry points. CHASS-SMT began implementing the case index testing strategy with the expectation that this would identify HIV-positive children at higher rates than general testing. However, in most cases HIV prevalence rates in case index testing have been similar to those in general testing. The issues with PCR testing are discussed in the Laboratory sub-section below. Community linkages are also essential for improving pediatric enrollment and overall ART retention. This is discussed in sub-section 4.4 below.

There are many underlying issues related to pediatric ART and retention. Eventually it comes down to the unique context in each facility. Each district and health facility presents a different combination of these issues, and therefore the precise mix of interventions needs to be tailored to each context. There are also external factors that affect ART enrollment and retention, such as financial and geographic barriers, and cultural norms such as gender roles. The following sections describe the main issues related to the health system identified by CHASS-SMT and strategies to address them.

4.2 FACILITY-LEVEL PATIENT DATA AND REGISTRATION

The EPs spent a large amount of their time and effort working with SDSMAS and facility staff to improve the use of facility-level data and registration systems. The inconsistent use and updating of these systems leads to two major problems: poor quality of facility-level data, and most critically, poor linkages between the different sectors within the health facility. The second problem is a major cause of lost opportunities and loss to follow up of patients who should be tested for HIV, initiated, or retained on pre-ART and ART.

The massive effort that CHASS-SMT supported of cleaning clinical records in high-volume facilities provided a glimpse into the magnitude of this problem. This process unearthed more than 80,000 patients who had been lost to follow up. Other exercises such as the quality assurance/improvement initiative for pediatric ART revealed significant discrepancies in registration between sectors such as: registry books in at-risk child consultations; registry books for PCR; patient card from at-risk child consultations; pre-ART registry book; ART registry book; and ARV drug pick-up forms.

Therefore, to increase the number of at-risk patients identified, especially pediatric, and to place them and retain them in care, it is critical to solve this problem. Improving the proper use of these registration systems and therefore the reliability of facility-level data would enable more precise pinpointing of major bottlenecks within the facilities. It would then be possible to design and implement more effective strategies to address these bottlenecks.

This is a complex problem that stems from a number of issues. The insufficient human resources for health facilities means health workers are constantly overloaded, and data registration is usually the first task to be “sacrificed” in this case. Furthermore, many of the registration tools and systems are overly complicated and redundant. Finally, there needs to be a stronger culture of data and use of strategic information for decision making in districts and health facilities, so that staff understand the value of proper data use and therefore are more motivated to improve. Some of these issues depend on larger health systems and processes (i.e. human resources and registration tools and systems).

It is worth noting that during key informant interviews many SDSMAS and facility staff mentioned improved documentation and use of information systems as outcomes of the Graduation Path and district sub-agreements. If this is really the case, it would confirm the potential of these strategies for enacting sustainable systemic changes that can improve service delivery. While it is important to continue to provide technical assistance to facility staff on the proper use of registration tools, eventually the right incentives need to be in place for them to actually use these tools.

4.3 LABORATORY

The problem of data registration extends to the laboratory, where PCR and CD4 tests are affected. The long waiting times between having a sample taken and receiving the results is a major barrier to ensuring timely initiation and retention in treatment. Districts also need to improve their management of laboratory logistics. Simple actions such as planning sample collection routes, mapping out PCR and CD4 testing capacities, better management of reagent stocks, and ensuring preventive maintenance of equipment, can greatly improve laboratory logistics. Another key initiative implemented by CHASS-SMT was the analysis and monitoring of PCR turnaround time in selected health facilities. This analysis enabled district and facility managers to identify the main bottlenecks in the multi-step process of PCR testing and develop action plans to address them.

CHASS-SMT has also found that ensuring accountability for laboratory services is critical. For example, EPs observed many cases where there was a backlog of PCR test results due to trivial problems such as short-message service (SMS) printers not being plugged in, being out of paper, or without network coverage. EPs then worked with facility staff to assign a person responsible for ensuring that everything was in place for the timely printing of test results. Finally, strategic investment of sub-agreement funds and small project procurement for things such as printing paper, small repairs, and network time was essential for improving laboratory services.

CHASS-SMT implemented all of these interventions in collaboration with district staff in the context of the Graduation Path methodology. In addition to EP observations, project data suggest that these are effective strategies. The average Graduation Path scores for the laboratory function increased from 34 percent to 82 percent compliance with MOH standards in the 18 participating districts. In addition, initiatives to monitor PCR turnaround time in key health

facilities showed consistent improvements over time as shown in Table 5 below¹¹. Therefore, CHASS-SMT recommends continuing with these strategies in scale-up districts to accelerate improvements in laboratory services.

TABLE 5. IMPROVEMENTS IN PCR TURNAROUND TIME

Health Facility	Average PCR turnaround time	
	(baseline period)	(endline period)
Búzi Rural Hospital (Sofala)	268 (Oct-Dec 2013)	13 (Jan-Mar 2015)
Nhamatanda Rural Hospital (Sofala)	95 (Oct-Dec 2013)	55 (Jan-Mar 2015)
Health Center Number 1 (Tete)	36 (Dec 2014)	33 (Feb 2015)
Health Center Number 2 (Tete)	52 (Dec 2014)	48 (Feb 2015)
Health Center Number 3 (Tete)	48 (Dec 2014)	33 (Feb 2015)
Health Center Number 4 (Tete)	48 (Dec 2014)	37 (Feb 2015)

It is worth noting that ideally, all ART sites should have access to PIMA for CD4 and a point-of-care viral load machine for PCR and viral load. This would solve many of the complex logistics issues affecting laboratory services.

4.4 COMMUNITY LINKAGES

Effective linkages between communities and health facilities are critical for ensuring that all eligible patients, especially children, are identified, tested, and placed and retained in treatment. CHASS-SMT made significant strides in improving these linkages over its five years. The project supported the creation of over 5,000 new GAACs. Community testing, referrals, and referral completion rates increased significantly and the project identified over 40,000 lost-to-follow-up patients and returned them to ART. Eight CBOs led CHASS-SMT's community-level activities through sub-awards from partner FHI360:

- In Sofala: Kuwanguissana, Kugharissica, and Kuphedzana
- In Manica: Mberi and AIPDC
- In Tete: Kupulumussana, Igreja Anglicana, and Ademucha

CBO activists carried out critical activities in coordination with health facilities such as:

- Supporting the creation of GAACs
- Conducting active outreach to patients lost to follow up
- Providing HIV counseling and testing services in the communities and referring those who test positive to health facilities for treatment
- Conducting information, education, and communication activities in the communities to improve knowledge, attitudes, and practices regarding health, hygiene, and gender issues, create demand for health services, and screen and refer patients to health facilities for certain health services

¹¹ CHASS-SMT did not carry out this analysis in Manica Province because the National Health Institute was already conducting a similar assessment in the province as part of a greater study looking Option B+.

In the future, collaboration with CBOs could be strengthened by working more closely with CBOs to review data regularly and more effectively target their interventions to better align them with the PEPFAR agenda. For example, by the end of the project, only pilots were conducting case index testing, which may explain why prevalence rates were not yet higher for this strategy (low volume). Most community HIV testing done by CBOs was still generalized and untargeted. CBOs could also be leveraged more effectively in the use of mHealth tools, moving beyond discrete pilots and improving their monitoring and evaluation to inform scale up. USAID could invest more heavily in communications (i.e. phones, SMS blasters) and transportation (i.e. public transportation vouchers for activists and/or bicycles) to improve activists' capacity, reach, and motivation.

4.5 SYSTEM CAPACITY

4.5.1 FACILITY LEVEL

Clinical skills and knowledge of health providers improved with the continuous clinical tutoring and training that was provided by CHASS-SMT. Although there is always more room for improvement, this is not the main barrier to improving services at the facility level. Issues discussed earlier such as data registration, laboratory, and community linkages strongly affect the delivery of services. Many times the reason providers do not adhere to protocols is not lack of knowledge. Lack of materials, proper infrastructure, accurate data, and appropriate processes and systems can all hinder a provider's ability to perform their job. It is important to continue to approach the facility-level challenges as a whole, as opposed to analyzing each sector or area separately. Only then are facility managers and their staff truly empowered and motivated to identify and solve the problems affecting service delivery. In addition to providing essential resources (through sub-agreements and direct procurement), improving the capacity of facility staff to problem solve is probably the most effective and sustainable strategy for improving the provision of HIV and AIDS services.

4.5.2 DISTRICT LEVEL

Remaining capacity gaps at the district level are similar to those at the facility level. As mentioned before, providing districts with the essential resources they need to perform their functions through sub-agreements is probably the most important and effective intervention. Without these resources, critical gaps would re-emerge that would hinder the districts' ability to function (i.e., money for gas, per Diem, for all logistics of supervision, transport of drugs, labs, etc.).

Although districts showed important improvements in their management capacity over the life of the project, it is important to continue to build this capacity. As in the health facilities, ultimately district managers need to continue to strengthen their problem-solving and supervision skills. This would enable SDSMAS' to effectively supervise and support health facilities, improving the provision of health services. For example, use of Human Resources data for decision making remains weak. The Graduation Path and sub-agreements have proven to be effective tools for improving district management capacity. Therefore CHASS-SMT recommends continuation of these strategies, with further refining and focusing on scale-up districts to enhance their impact.

5 CONCLUSIONS

CHASS-SMT was an ambitious effort by USAID that represented a major shift in assistance from PEPFAR I to PEPFAR II. USAID tasked the project with continuing and expanding improvements in service delivery, while also strengthening local systems to ensure that improvements are sustained. While these may seem like conflicting goals, the CHASS-SMT experience shows that this is indeed possible. The service delivery improvements achieved by CHASS-SMT over the past five years were similar to those achieved in other provinces, where system strengthening efforts were considerably smaller. However, the results of CHASS-SMT are arguably more sustainable.

In addition to the service delivery gains, CHASS-SMT achieved important systems improvements that have enhanced the capacity of the DPS', SDSMAS', and health facilities in Sofala, Manica, and Tete to deliver quality HIV and AIDS services to all of those who need it. Results from the study carried out by the project even showed that enhanced capacity at the district level is associated with better service delivery gains.

The project achieved its objectives by applying a combination of integrated technical assistance interventions focused on local capacity building, with the injection of significant financial and material resources into the system. This combination was crucial for success.

The results and lessons learned from CHASS-SMT provide a solid foundation for the successful implementation of PEPFAR 3.0 in Mozambique. The DPS' and the SDSMAS' are fully onboard and empowered to take the lead on accelerating access to HIV and AIDS services and control the epidemic. The project has identified several strategies that show promise in improving services and building local capacity. Further refining and targeting of these strategies in scale-up districts has the potential for great impact towards achieving the 90-90-90 goal in Mozambique.

ANNEX I: DISTRICT SUB-AGREEMENT INDICATORS

INDICADORES E ACTIVIDADES FINANCIADAS / RÚBRICAS ORÇAMENTAIS

1. Transporte de amostras / resultados laboratoriais e/ou medicamentos essenciais/ Botijas de Gás das SDSMAS e US periféricas

- a. Ajudas de custo para 1 motorista e, se estiver a transportar medicamentos, 1 Agente/ Técnico de Farmácia
- b. Combustível

1.1 Indicador de Processo: Nº de quilómetros percorridos por mês para transporte de Botijas de gás

Meta: Distância necessária para transportar mensalmente as botijas de Gás do distrito para o PAV de US.

1.2 Nº de quilómetros percorridos por mês para transporte dos medicamentos essenciais

Meta: Distância necessária para transportar os medicamentos essenciais para depósito de US periféricas.

1.3 Nº de quilómetros percorridos por mês para transporte amostras / resultados laboratoriais das US periféricas para a Sede distrital

Meta: Distância necessária para transportar amostras / resultados laboratoriais das US periféricas para a Sede distrital

NOTA: Indicador 1.1 é principalmente um indicador de gestão para facilitar a operacionalização das actividades e a auditoria das mesmas

1.4 Indicador de Produto: % das US periféricas sem rotura de stock de botijas de gás durante o trimestre quando for disponível no DDM/PAV

Numerador: Nº das US periféricas sem rotura de stock de botijas de gás durante o trimestre quando for disponível no DDM/PAV

Denominador: Nº de US periféricas do distrito

Meta: 100%

1.5 Indicador de Produto: % das amostras de CD4 que foram recolhidos e processados, e cujos resultados foram devolvidos às US periféricas

Numerador: Nº de amostras de CD4 que foram recolhidos e processados, e cujos resultados foram devolvidos às US periféricas

Denominador: Nº de amostras de CD4 que foram recolhidos

Meta: 80% (ajustar em função da proporção de amostras processados do total dos pacientes novos e activos em pre-TARV e TARV)

1.6 Indicador de Produto: % das US periféricas sem rotura de stock de medicamentos essenciais disponíveis no DDM

Numerador: N° das US periféricas sem rotura de stock de medicamentos essenciais disponíveis no DDM

Denominador: N° de US periféricas

Meta: 100%

2. Manutenção e pequenas reparações de imóveis (consertos pequenos de infra-estrutura, mudanças de fechaduras, rede mosquiteira de janelas, gradeamento etc.)

2.1 Indicador de Processo: % de edifícios que beneficiaram de manutenção e/ou pequenas reparações de imóveis

Numerador: N° de pequenas reparações de imóveis realizadas.

Denominador: N° de pequenas reparações de imóveis planificadas.

Meta: 100%

3. Reuniões e Encontros (Ajudas de custo, transporte, material, lanches)

- Conselho Coordenador Distrital
- Reunião de planificação de nível distrital

3.1 Indicador de Produto: N° de reuniões de Conselho Coordenador Distrital realizada com financiamento do sub-acordo que resultaram na elaboração de uma acta e plano de acção (dentro de 30 dias)

Meta: N° de reuniões planificadas

3.2 Indicador de Produto: N° de reuniões de planificação de nível distrital realizada com financiamento do sub-acordo que resultaram na elaboração de uma acta e plano de acção (dentro de 30 dias)

Meta: N° de reuniões planificadas

4. Supervisão às Unidades Sanitárias Periféricas

- Uma visita de por trimestre a cada US periférica por técnicos do distrito para apoio técnico e monitoria de actividades;
- Ajuda de custo / dia/ n° de técnicos e 1 motorista em cada supervisão;
- Abaixo desta actividade e rubrica, deve incluir a ajuda de custo para o digitador deslocar até as US periféricas para a actualização dos SESP's quando for necessário;
- Combustível;

4.1 Indicador de Processo: % das US periféricas que receberem uma visita de supervisão no trimestre com um relatório de retro-informação com recomendações documentadas (dentro de 30 dias da visita)

Numerador: N° de US periféricas que receberem uma visita de supervisão no trimestre e um relatório de retro-informação com recomendações (dentro de 30

dias da visita; recomendações podem ser documentadas num relatório ou no Livro Pautado de Recomendações)

Denominador: N° de US periféricas que deveriam ter recebido uma visita de supervisão (de acordo com a definição, deve ser uma visita por US periférica por trimestre; caso não, deve ser estipulado na definição do indicador)

Meta: 100%

5. Brigadas Móveis

- Ajudas de custo
- Combustível

5.1 Indicador de Processo: % de brigadas móveis que deslocaram para as comunidades

Numerador: N° de brigadas móveis que deslocaram para as comunidades

Denominador: N° de brigadas móveis que foram planificadas

Meta: 100%

6. Formação em serviço

- Aplicável ao nível distrital e para US periféricas;
- Ajuda de custo para os técnicos em cada visita;
- Combustível

6.1 Indicador de Processo: N° de técnicos de saúde que receberem a formação continua (seminário e/ou workshop)

Meta: N° de técnicos de saúde planificados para receber a formação continua (seminário e/ou workshop)

6.2 Indicador de Processo: % de técnicos de saúde que receberem uma formação continua (seminário e/ou workshop) por trimestre cuja formação foi documentada no SIFo

Numerador: N° de técnicos de saúde que receberem uma formação continua (seminário e/ou workshop) por trimestre cuja formação foi documentada no SIFo

Denominador: N° de técnicos de saúde que receberem uma formação continua (seminário e/ou workshop) por trimestre

Meta: 100%

6.3 Indicador de Produto: % das formações continuas (seminário e/ou workshop) com uma avaliação pre e pós-formação

Numerador: N° das formações continuas (seminário e/ou workshop) com uma avaliação pre e pós-formação

Denominador: N° das formações continuas (seminário e/ou workshop)

Meta: 100%

ANNEX II: LIST OF CHASS-SMT PARTNERS

Main partners:

- FHI360
- Project CURE

Other partners:

- Community-based organizations (sub-awards with FHI360):
 - In Sofala: Kuwanguissana, Kugharissica, and Kuphedzana
 - In Manica: Mberi and AIPDC
 - In Tete: Kupulumussana, Igreja Anglicana, and Ademucha
- COWI Group Mozambique (collaborated on study “Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project”)
- Village Reach (carried out logistics assessment)

ANNEX III: END-OF-PROJECT DOCUMENTATION

(Attached separately due to file size)

- Success stories booklet
- Improving HIV and AIDS Clinical Services and Strengthening Health Systems: The District Approach
- Technical Brief: Graduation Path Methodology
- Technical Brief: Clinical Tutoring Tool
- Technical Brief: District Sub-Agreements
- Technical Brief: Targeted Interventions in Health Facilities

ANNEX IV: STUDY REPORT - STRENGTHENING DISTRICT HEALTH SYSTEMS AND HIV SERVICE DELIVERY OUTCOMES IN MOZAMBIQUE: FINDINGS FROM THE CHASS- SMT PROJECT

(Attached separately due to file size)

ANNEX V: STUDY REPORT: EVALUATION OF PERFORMANCE-BASED INCENTIVES PILOT

(Attached separately due to file size)

ANNEX VI: FINAL PERFORMANCE MONITORING PLAN INDICATORS

(Attached separately due to file size)