



Strengthening District Health Systems and HIV Service Delivery Outcomes in Mozambique: Findings from the CHASS-SMT Project

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ABSTRACT

Introduction: While there is growing consensus within the global health community on the importance of health systems strengthening (HSS) to improving service delivery and health outcomes, evidence linking HSS interventions to such outcomes is only beginning to emerge. This study sought to examine the relationships between the District Approach intervention in Mozambique and HIV service delivery outcomes, as well as the relationship between strengthened district health systems and HIV service delivery outcomes.

Intervention: The Clinical HIV/AIDS Services Strengthening Project in Sofala, Manica, and Tete provinces (CHASS-SMT) designed the District Approach to address key weaknesses that lead to underperformance of districts on HIV service delivery: low managerial capacity; scarcity of resources; and sub-optimal systems and processes. District Approach interventions included the Graduation Path, district sub-agreements, and clinical tutoring. The goal of the Graduation Path was to improve the capacity of districts to manage *systemic functions* (planning, information systems, human resources, financing, supply and logistics) and *services functions* (health programs, laboratory, community mobilization). The Graduation Path included a periodic, quantitative assessment of district management capacity based on process indicators.

Methods: CHASS-SMT implemented the District Approach differently among the 36 districts in Sofala, Manica, and Tete: twelve high-priority districts (HPDs) received the full package, including the Graduation Path, and the remaining 24 non-priority districts (NPDs) received a less intensive form of the District Approach, which did not include the Graduation Path. We used the Graduation Path scores to measure changes in district management capacity, and six facility-level HIV services indicators to measure service delivery outcomes: three quality indicators and three access indicators. We used both bivariate (mean comparison) and multivariate analyses to answer the study's two research questions. We also carried out key informant interviews to examine the changes that occurred in districts and health facilities after the implementation of the District Approach.

Results: The analyses showed that the District Approach is associated with better performance on two of the three quality indicators, and with lower performance on the third quality indicator and on one access indicator. Further analyses detected positive, statistically significant relationships between improvements in district capacity to manage *services functions* and improvements in five of the six service delivery outcome indicators. Results for *systemic functions* were mixed: there were negative associations with two access indicators and with one quality indicator, and a positive association with one quality indicator.

Conclusions: Although the study design presents limitations, we conclude that the District Approach may be positively associated with improved HIV service quality, and that improvements in district capacity to manage *systemic functions* may be positively associated with improved quality and access of HIV services. More research is needed to establish stronger links between HSS interventions, strengthened health systems, and service delivery outcomes.

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ACRONYMS

ANC	Antenatal Care
ART	Anti-retroviral Therapy
ARV	Anti-retroviral
CBO	Community-Based Organization
CHASS-SMT	Clinical HIV/AIDS Services Strengthening Project in Sofala, Manica, and Tete provinces
DPS	<i>Direcção Provincial de Saúde</i> (Provincial Health Directorate)
eMTCT	Elimination of Mother-to-Child Transmission
EP	<i>Equipa Polivalente</i> (Polyvalent Team)
GAAC	<i>Grupo de Apoio e Adesão da Comunidade</i> (Community Support and Adherence Group)
HA	High Achiever
HCT	HIV Counseling and Testing
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HPD	High Priority District
HR	Human Resources
HSS	Health Systems Strengthening
IEC	Information, Education, Communication
IT	Information Technology
LA	Low Achiever
M2M	Mother-to-Mother Groups
MCH	Maternal and Child Health
MOH	Ministry of Health
NPD	Non-Priority District
OLS	Ordinary least-squares
PEPFAR	President's Emergency Plan for AIDS Relief
PLHIV	People Living with HIV
QA/QI	Quality Assurance/Quality Improvement
SD	Service Delivery
SDSMAS	<i>Serviços Distritais de Saúde, Mulher e Ação Social</i> (District Health Directorate)
TB	Tuberculosis
US	United States
USAID	United States Agency for International Development
WHO	World Health Organization

I. INTRODUCTION

1.2 HEALTH SYSTEMS STRENGTHENING AND SERVICE DELIVERY AND HEALTH OUTCOMES

There is growing consensus within the global health community on the importance of strong health systems for achieving an AIDS-free generation and other improved health outcomes. At the same time, donors and governments are increasingly demanding evidence of the impact of health systems strengthening (HSS) programs on health and service delivery outcomes. The United States Agency for International Development (USAID) defines HSS as “the strategies, responses, and activities that are designed to sustainably improve country health system performance” (USAID, 2015). Governments, donors, and global health partners typically apply these strategies, responses, and activities to one or more of the World Health Organization’s (WHO) health system building blocks: service delivery; health workforce; information; medical products, vaccines and technologies; financing; and leadership and governance (World Health Organization, 2007).

Research studies exploring the linkages between HSS interventions and access to and quality of HIV services are particularly relevant considering the shift in the United States President’s Emergency Plan for AIDS Relief (PEPFAR) from PEPFAR I’s emergency response, to PEPFAR II’s emphasis on strengthening health systems to enable a sustainable HIV response. With the launch of PEPFAR 3.0 in 2013 there continues to be an emphasis on strengthening health systems, but with a greater focus on evidenced-based interventions that target populations in areas of greatest HIV incidence to ensure sustainable control of the epidemic (PEPFAR, 2013). These types of studies are also especially relevant to the current context in Mozambique, where the Ministry of Health (MOH) is in the process of decentralizing HIV care and treatment services to the district level as a part of the National HIV Prevention, Care and Treatment Acceleration Plan (2013-2017) to increase anti-retroviral therapy (ART) coverage to at least 80 percent by 2017.

Challenges to producing evidence of the HIV-related outcomes of HSS include the relatively nascent nature of the field of HSS research, the difficulty in defining and measuring a “strengthened health system,” and the often distant relationship between HSS and the front lines of service delivery (Hatt, 2015).

Nonetheless, there is some evidence emerging on the link between HSS and service delivery and health outcomes. A recent comprehensive analysis of 66 systematic reviews on the subject found the following interventions had a positive effect on outcome measures such as reduced morbidity and mortality and increases in service utilization: accountability and engagement interventions, contracting out, health insurance, information technology support (mHealth), and task-sharing/task-shifting (Hatt, 2015). Findings from a review of HIV and AIDS system-level interventions indicated that such interventions are promising in improving HIV and AIDS prevention and treatment services (Bauermeister, 2009). The authors of this review recommended future research and evaluations that focus on “expanding/refining system-level theoretical frameworks and sharing lessons learned from implementing these initiatives.”

Donors have placed increasing emphasis on “capacity building” as a cross-cutting and central aspect of HSS programs. Potter and Brough have called attention to the lack of consensus on the definition of “capacity building,” and proposed a framework for “systemic capacity building” in the form of a hierarchy of health system needs that can be applied at any level of a health system (Potter, 2004). Bradley et al. go further and suggest that management capacity is essential for the proper functioning of the six WHO building blocks and the health system in general (Bradley, 2015). Yet, evidence demonstrating the impact of improved

management capacity of a health system on service delivery or health outcomes is only beginning to emerge. A recent evaluation of an HSS program in Nigeria to improve the management capacity of state agencies for the control of AIDS has found positive associations between interventions and lower HIV prevalence and reduced sexual risk behaviors (Eluwa, 2015). These are encouraging results, and the limited number of such studies is related to the challenges related to measuring such impact.

1.1 CHASS-SMT PROJECT

The Clinical HIV/AIDS Services Strengthening Project in Sofala, Manica, and Tete (CHASS-SMT) in Mozambique was a five-year (2011-2015) project funded by USAID and implemented by Abt Associates with the following objectives:

- Strengthening Mozambican health systems and institutional capacity to provide high-quality services and ultimately receive and manage direct support from the US Government;
- Improving integration of HIV and related primary health care services and linkages between the community and the health system;
- Increasing demand, use and provision of high-quality HIV services; and
- Increasing coverage of services for HIV care and treatment and elimination of mother-to-child transmission (eMTCT).

The project's task was to pivot USAID's support of the HIV and AIDS response in the central provinces of Mozambique from an emergency response under PEPFAR I, to focus on improving sustainability by strengthening local health systems under PEPFAR II. Originally, the project consisted of two distinct components: (1) HSS, applied mostly at the provincial level, and (2) clinical, applied mostly at the health facility level. In 2013, the Mozambique MOH's National HIV Prevention, Care and Treatment Acceleration Plan targeted districts with the highest unmet need for treatment, also known as high-priority districts (HPDs).

To better support the implementation of the MOH Acceleration Plan, CHASS-SMT rolled out a new strategy in late 2013, called the District Approach. This strategy aimed to improve district health teams' capacity to manage *systemic functions* (planning, information systems, human resources, financing, supply and logistics) and *services functions* (health programs, laboratory, community mobilization). The underlying assumption behind the District Approach was that **stronger district health systems in the form of improved management capacity will lead to better health services performance**. The Graduation Path, a systematic and participatory process that guided all project interventions, was a key element of the District Approach (described in [Section 2.1](#)). The Graduation Path included a periodic, quantitative assessment of district management capacity based on pre-defined process indicators. This quantitative measure of district management capacity produced by the Graduation Path provided a unique opportunity to test the assumption that strengthened district health systems lead to better-performing health facility services. This report describes the study that CHASS-SMT designed and carried out to test this assumption, including results and recommendations.

1.2 STUDY OBJECTIVES

The **primary** objectives of this study are:

- To examine whether there is a relationship between the District Approach and performance on key HIV service delivery indicators; the hypothesis is that the HPDs who received the full District Approach show better performance; and
- To investigate whether HPDs with greater improvements in their Graduation Path scores (district-level performance) also show greater improvements in their service-delivery indicators (service-level performance); the hypothesis is that stronger district health systems in the form of improved management capacity provide better health services.

The **secondary objective** of the study is to explore the mechanisms through which strengthened district health systems may affect HIV-service provision.

Ultimately this study aims to produce much-needed evidence on the effects of management capacity-building interventions. Empirical evidence on the relationship between strengthened health systems through improved management capacity and improved service delivery outcomes will help guide policy makers on the best investments to maximize their objectives.

2. INTERVENTION DESCRIPTION: DISTRICT APPROACH

In Mozambique's decentralized health system the roles of district health directorates (also known as the *Serviços Distritais de Saúde, Mulher e Acção Social* or SDSMAS) in delivering quality HIV and AIDS and other health services include: providing regular clinical supervision and training to facility staff; transporting laboratory samples and medications to and from health facilities and referral laboratories and depots; and planning for and allocating material and human resources. However, SDSMAS often underperform in their delivery of HIV care, due to several challenges that stem from three main causes:

- Low managerial capacity at the district/facility level;
- Scarcity and misallocation of resources; and
- Suboptimal support systems and key processes.

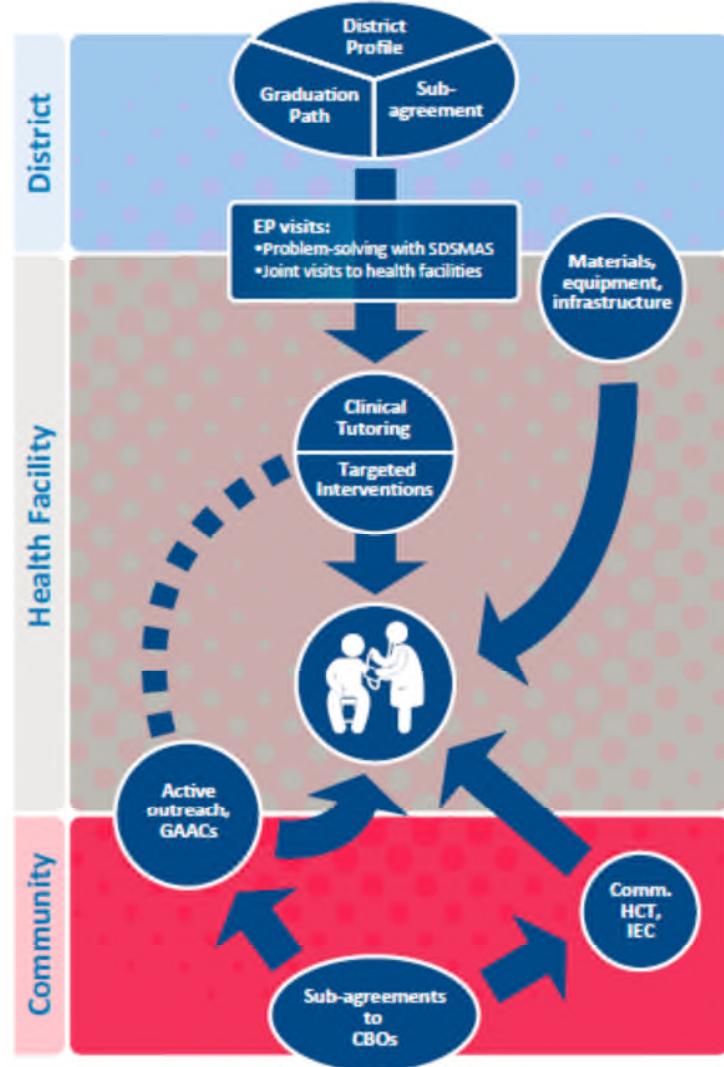
CHASS-SMT designed the District Approach to address these causes and build the capacity of SDSMAS to manage and deliver quality services in an environment of rapidly growing demand. The District Approach targeted key health system functions starting at the district level and flowing down to the facility and community levels, with improved service delivery as the end goal (Figure 1). The approach can be broadly described in three intervention levels:

- **District:** Building the capacity of SDSMAS to manage district health systems and services essential to supporting health facilities in delivering quality health services
- **Health facility:** Improving the capacity of health facilities to provide quality health services
- **Community:** Strengthening the links between the community and health facilities to improve demand for and access to services

Each level has a series of interrelated components, which help integrate the system strengthening and service delivery components of the District Approach. CHASS-SMT's polyvalent teams (*Equipas Polivalentes* or EPs) carried out district visits to implement the interventions. The project worked in all 36 districts in Sofala, Manica, Tete. After the MOH Acceleration Plan identified twelve HPDs in the three provinces, CHASS-SMT provided more intensive technical support to these districts in the form of the full District

Approach to support the achievement of the Acceleration Plan's goals. The remaining 24 districts – non-priority districts (NPDs) – continued to receive project support, but received fewer interventions and/or at lower intensity (see Table I in [Section 4.1.1](#)).

Figure 1. Overview of District Approach



2.1 DISTRICT-LEVEL INTERVENTIONS

Graduation Path: At the core of the Graduation Path is an assessment tool to measure district management capacity that is based on MOH program management standards. Districts used this tool to conduct a baseline assessment, and repeated the assessment every four to six months to measure progress. This methodology offered a way to structure technical assistance and quantitatively measure progress on HSS interventions, while also linking the interventions to the ultimate goal of improving service delivery. The self-assessment tool – called the District Health Management Standards Tool – measures district performance under eight priority components or functions that form the backbone for sustainable HIV and AIDS health service delivery:

- Systemic functions:
 - I. Planning

- 2. Information systems
 - 3. Human resources
 - 4. Financing
 - 5. Supply and logistics
 - Services functions:
 - 6. Health programs
 - 7. Laboratory
 - 8. Community mobilization

Each function contains standards, and each standard contains sub-criteria – overall the tool contains a total of 23 standards and 115 sub-criteria. The sub-criteria are measurable indicators which ultimately produce a numerical assessment score in the form of “percent compliance with MOH norms,” which is used to measure progress toward “graduation.” CHASS-SMT systematically supported the districts to conduct this assessment and develop action plans to address the weaknesses identified, as illustrated by the cycle in Figure 2. Districts then used other elements of the District Approach to support the implementation of their action plans.

District Sub-Agreements: CHASS-SMT provided direct funding through fixed-cost sub-agreements to districts to sustain crucial program implementation activities, facilitate improved operation of the HIV and AIDS program, and empower districts to lead and execute key activities. Sub-agreement-funded activities included: transportation of medications and laboratory sample/results; transport and per diem for district staff to conduct facility supervision; mobile brigades to provide clinical services at the community level; data analysis meetings; and in-service training. CHASS-SMT teams mentored district staff on the budgeting, execution and justification of the sub-agreement funds, supporting their capacity to receive direct funding.

District Profile Analysis: This is a quarterly snapshot of a compendium of district and health facility level indicators, such as district management capacities (Graduation Path), logistics systems for medications and laboratory networks, population coverage rates for key health services, and clinical indicators related to HIV and AIDS services. CHASS-SMT worked with the SDSMAS to systematically analyze these indicators and use the data to determine where to focus efforts and assistance.

2.2 HEALTH FACILITY-LEVEL INTERVENTIONS

Clinical Tutoring Tool: In response to the need to systematically examine health service provision to facilitate continued improvement, CHASS-SMT designed an Excel-based Clinical Tutoring Tool. The tool includes the following components:

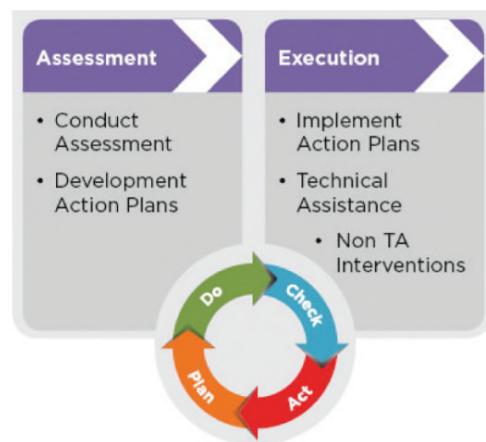
Observation checklists:

- General health facility conditions
 - Pharmacy
 - Laboratory

Clinical observation and tutoring checklists:

- Antenatal care – HIV Counseling and Testing (HCT)

Figure 2. Graduation Path Assessment and Implementation Cycle



- Antenatal care – HIV care and treatment
- Adult HCT
- Adult HIV care and treatment
- Pediatric HCT
- Pediatric HIV care and treatment

CHASS-SMT and district supervisors used the tool to monitor service delivery and provide on-the-spot feedback to reinforce weak-performing areas through joint clinical consultations. CHASS-SMT and district supervisors discussed the overall results with health facility staff at the end of each facility visit, and identified any targeted interventions (see below) and/or materials and minor infrastructure repairs needed to improve services (in addition to the clinical tutoring). Districts used sub-agreement funding or other CHASS-SMT support (see “Materials, equipment, and infrastructure” below) to fulfill any materials needs.

Targeted interventions: In many cases, analysis of the District Profile and results from the Clinical Tutoring Tool pointed to critical challenges to service delivery that could not be addressed through tutoring alone. In those cases, CHASS-SMT collaborated with district teams to implement targeted interventions, based on the needs of each facility, to help “boost” HIV and AIDS services. The main interventions included:

- **Clinical training** to update providers’ skills or introduce new clinical norms and protocols;
- **Quality Assurance/Quality Improvement (QA/QI) initiatives** to target a particular problem or service, such as early infant diagnosis;
- **Re-engineering of patient flow** in high-volume facilities to decrease patient waiting times, improve internal referrals and increase efficiency of services,
- **Improving facility-based information systems** such as systematic cleaning of patient and facility records and data quality audits; and
- **Assessment of turn-around time for laboratory tests** to identify and address bottlenecks that cause major delays, and affect initiation and adherence to treatment.

Materials, equipment, and infrastructure: In addition to the direct financial support that CHASS-SMT provides through sub-agreements, the project also provided direct material support at the district and facility levels to allow timely provision of essential materials, equipment, and infrastructure required to continue and improve health services.

2.3 COMMUNITY-LEVEL INTERVENTIONS

At the community level, CHASS-SMT partnered with community-based organizations (CBOs), and entered into sub-agreements with them to carry out crucial activities to increase demand for HIV and AIDS services, and reduce barriers to access to services:

- **Creating and supporting community ART adherence support groups** such as *Grupos de Apoio à Adesão Comunitários* (GAACs), in collaboration with health facilities;
- **Conducting active outreach to patients lost to follow up** identified by health facilities;
- **Providing HCT services in the communities** and referring those who test positive to health facilities for treatment; and

- **Conducting information, education, and communication (IEC) activities** in the communities to improve health-seeking behaviors.

3. THEORY OF CHANGE

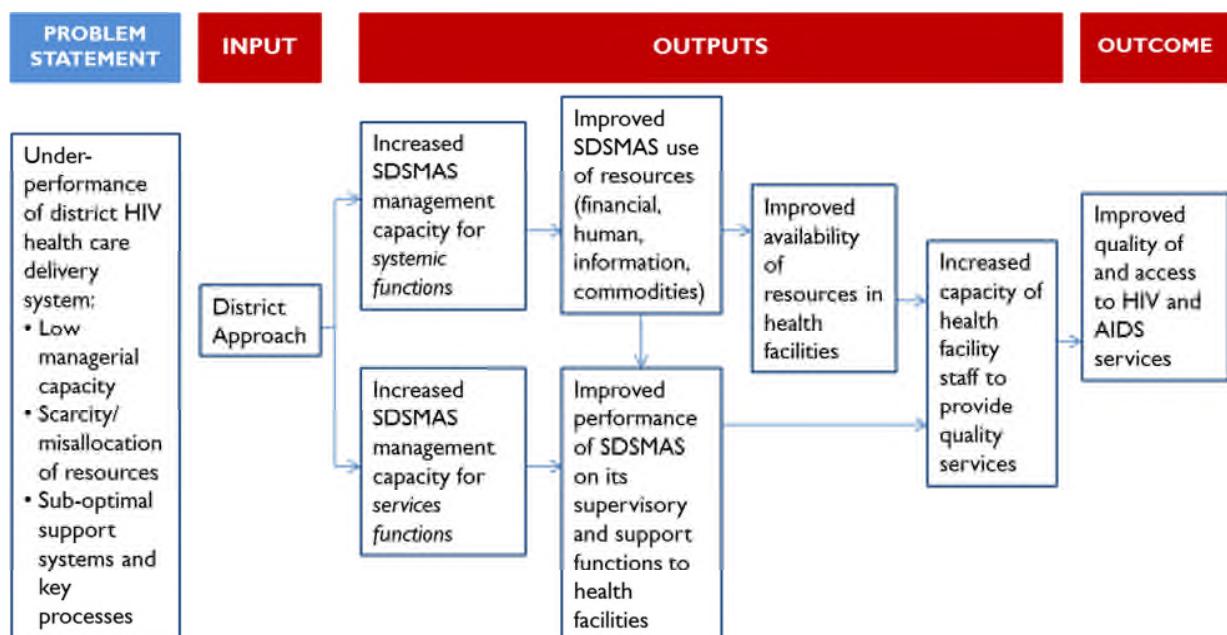
As described earlier, the District Approach includes interventions that are applied at the district, health facility, and community levels, aimed at addressing the key causes of underperformance. Because the focus of this study is on the effects of the strengthened **district** health system, our Theory of Change focuses only on the outputs that occur at the district level. Figure 3 displays the Problem Statement and illustrates the Theory of Change for how the District Approach (“Input”) first leads to strengthened district health systems in the form of improved management capacities (“Outputs”), which then lead to improved quality of and access to HIV and AIDS services (“Outcome”). District Approach interventions improve SDSMAS capacity to manage *systemic functions* and *services functions*. Each of these function categories follow their paths through sequential outputs towards the intended outcome:

Systemic functions path: increased capacity of SDSMAS to manage these functions (planning, information systems, human resources, financing, supply and logistics) enables districts to better plan for, acquire, use, and monitor resources such as funding, staff, information, and commodities. This in turn leads to (1) better availability of all these resources at the health facility, and also (2) supports SDSMAS’ ability to perform their supervisory and support functions to health facilities. Both of these outputs contribute to the increased capacity of facility staff to provide quality services, and finally the desired outcome of improved quality of and access to services.

Services functions path: increased capacity of SDSMAS to manage its health programs, laboratory services, and community engagement activities leads to better supervision and technical support to health facilities. This directly supports improved capacity of health staff to provide quality services, also leading to the desired outcome.

The path from the services functions output to the outcome is shorter and more direct than the path from the *systemic functions*. However, the *systemic functions* reinforce the *services functions*.

Figure 3: District Approach Theory of Change



4. METHODS AND DATA

We designed a mixed method study to achieve the study objectives described in [Section 1.2](#). We used **quantitative** methods to investigate whether HPDs show better performance than NPDs, and most importantly, whether districts with greater improvements in their Graduation Path scores also show greater improvements in their service-delivery indicators (primary objectives). Using **qualitative** methods, we explored the mechanisms through which strengthened district health systems may affect HIV-service provision (secondary objective). This section describes the methodology applied in each method, including the research questions that each component sought to answer.

4.1 QUANTITATIVE

The quantitative component of the study was guided by the following questions:

- What is the relationship between the District Approach intervention and service delivery outcomes at the facility level?
- What is the relationship between strengthened district management capacity (as measured by the Graduation Path scores) and service delivery outcomes at the facility level?

4.1.1 Study Design

This study employs a prospective and longitudinal analysis approach relying on a quasi-experimental design to answer the two research questions. As explained earlier, all 36 districts from the provinces of Sofala, Manica, and Tete were classified by the MOH as either HPDs or NPDs, based on their levels of unmet need for ART among people living with HIV (PLHIV). This classification took place before the project implemented the District Approach and the Graduation Path interventions. Under that classification, twelve districts were labeled as HPDs and were assigned by CHASS-SMT to receive a comprehensive version of the District Approach, including the Graduation Path. The other 24 districts labeled as NPDs received a much smaller package of support from the project. Table I summarizes the differences in the package of District Approach interventions received by HPDs and NPDs. Although NPDs received most of the interventions, the key differences are the frequency of the technical assistance visits, through which CHASS-SMT delivered most of the interventions, and the Graduation Path, which the project did not introduce in NPDs.

Table I. Package District Approach Interventions Applied to HPDs vs. NPDs

Intervention	High-Priority Districts (HPD)	Non-Priority Districts (NPD)
Technical assistance visits from EPs	Monthly	Quarterly
Graduation Path	✓	
Sub-agreements	✓	✓
District Profile	✓	✓
Monitoring and Evaluation support (data collection and reporting)	✓	✓
Clinical Tutoring	✓	✓
Re-engineering of patient flow	✓	
QA/QI initiatives	✓	✓
Community-level interventions	✓	✓

The initial aim for the study was to have three districts from each province in the HPD group. Table 2 shows all the districts that should have been categorized as HPDs highlighted in yellow according to the “ART unmet need” criteria (at the top of the table). However, due to both internal and external factors specified below, CHASS-SMT had to arbitrarily re-assign a few districts. In the end, the project labeled the districts shown in red font in Table 2 as “high priority.”

- In Manica Province, Machaze was re-labeled NPD due to escalating conflict in the district, which made implementing the intervention in that district very difficult and risky. It was replaced with Bárue. A fifth district had to be included as HPD to compensate for the fact that only four districts were labeled HPDs in Sofala. Mossurize was considered a “conflict zone,” so Sussundenga took that place.
- In Sofala Province, Marromeu could not be labeled as HPD due to escalating conflict in the area. Since other districts in Sofala Province had low unmet need, the project replaced Marromeu with Sussundenga (from Manica Province).
- In Tete Province, even though Cidade de Tete had negative unmet need in practice (which reflects the fact that many PLHIV travel to that urban district to get ART), the project strategically chose it as HPD since it was estimated that about 50 percent of PLHIV in the Province of Tete travel to Cidade de Tete for HIV care. In order to include Cidade de Tete, the project dropped Cahora Bassa from HPDs.

Table 2. ART Unmet Need by Province and District: HIGH PRIORITY DISTRICTS

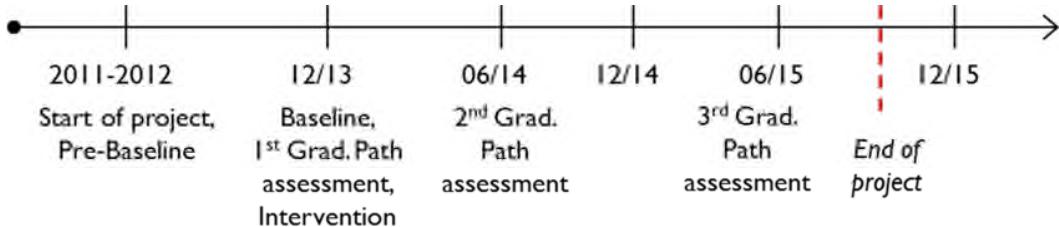
Sofala		Manica		Tete	
District	Unmet Need	District	Unmet Need	District	Unmet Need
Cidade de Beira	14,496	Cidade de Chimoio	9,483	Chifunde	4,122
Dondo	4,142	Gondola	5,051	Changara	2,892
Nhamatanda	3,954	Manica	4,436	Mutarara	2,568
Marromeu	2,182	Machaze	3,451	Cahora Bassa	1,125
Búzi	1,126	Bárue	2,839	Chiuta	1,090
Machanga	1,017	Mossurize	2,693	Macanga	1,047
Caia	838	Sussundenga	2,133	Mágoé	1,026
Cheringoma	800	Guro	1,593	Tsangano	513
Chibabava	695	Macossa	255	Angónia	297
Chemba	358	Tambara	134	Marávia	208
Muanza	120			Zumbo	152
Gorongosa	-6			Moatize	122
Maríngue	-80			Cidade de Tete	-1,717

4.1.2 Data and Timeline

CHASS-SMT supported health facilities that were providing HIV prevention, care and treatment services in the three project provinces; those facilities reported utilization data on a monthly basis to the SDSMAS through an electronic platform, since the beginning of the project in January 2011. Yet, data for all the variables included in this study started being fully reported since April 2012. Thus, for this study we use only the data that were collected for the period from April 2012 through June of 2015. Figure 4 below shows the timeline of the CHASS-SMT project and the Graduation Path assessments conducted at the district level. The time period before December 2013 represents the time before the District Approach intervention

started. Thus, since the project rolled out the District Approach intervention in December 2013, our dataset contains 20 months of data before the intervention, and 19 months of data after the intervention started. The project reported all variables on a monthly basis, except for the number of tuberculosis (TB) patients, which was reported quarterly.

Figure 4: Study Timeline



A total of 257 health facilities across the 36 districts reported data. Table 3 below displays the number of facilities by province and by HPD/NPD status.

Table 3. Number of Facilities by Province and HPD/NPD Status

Status	Sofala	Manica	Tete	Total
HPDs	62	43	35	140
NPDs	25	48	44	117
Total	87	91	79	257

4.1.3 Key Variables

4.1.3.1 Outcome Variables

In this study, we focus on six outcome variables: the first three variables relate to access to services, while the last three relate to service quality¹. They are:

1. Number of new enrollees in ART²
2. Number of new pre-ART enrollees
3. Number of new enrollees in pediatric HIV care
4. Percentage of pregnant women in antenatal care (ANC) who knew their HIV status after first consultation
5. Percentage of HIV-positive pregnant women in ANC who received anti-retrovirals (ARVs) for eMTCT
6. Percentage of co-infected TB/HIV+ patients that initiated ART in the TB ward³

These outcome variables were selected as they represent CHASS-SMT's primary outcome indicators related to HIV prevention (i.e. eMTCT), care (i.e. new pre-ART enrollees), and treatment (i.e. new ART enrollees in HIV, Maternal and Child Health (MCH), and TB wards) service delivery. Furthermore, these outcome

¹ The main sources for the outcome variables include HIV and antenatal care (ANC) MOH monthly reports, as well as TB registers and TB quarterly reports.

² It is important to consider that, in Mozambique, to start ART, a patient must be HIV+, have a CD4 that is ≤ 350 , have WHO-stage IV, or have a WHO stage III and a CD4 < 500 .

³ Because active TB is classified as a WHO stage IV disease, all co-infected TB/HIV+ patients are eligible to receive ART regardless of their immunological or clinical status. Data source for this variable are TB/HIV quarterly reports and TB registers at the facility level.

variables were deemed to be relatively sensitive to changes over time (unlike ART retention for instance) and data were easily accessible at all supported sites over the life of the project.

4.1.3.2 Other Variables

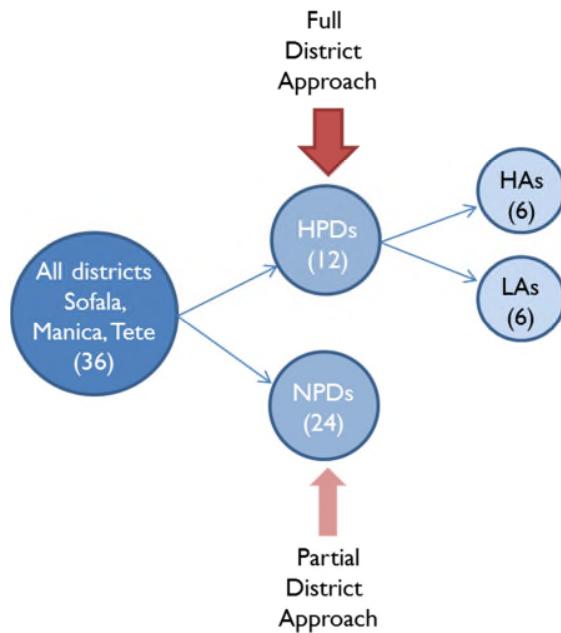
We used the three Graduation Path assessment scores as measures of strength of district management capacity in the HPDs. We estimated improvement during the life of the project by obtaining the percent change between the scores from the first to the last (third) assessment round (the scores are for “*systemic functions* management capacity” and for “*services functions* management capacity”). Of the twelve HPDs that carried out the Graduation Path, the six districts with higher percent change of improvement in their scores were labeled high-achievers (HA) – while the other six districts were labeled low achievers (LA). We did this to evaluate whether HPDs that registered greater improvement in their scores also displayed better HIV-care service delivery outcomes (this study’s second research question). Table 4 below displays the rankings and HA/LA status for the twelve HPDs for the *systemic functions* score and the *services functions* score.

Table 4. Ranking and HA/LA Status Between 1st and 3rd Graduation Path Assessments

District name	<i>Systemic functions</i>		<i>Services functions</i>	
	Ranking	HA/LA	Ranking	HA/LA
Changara	3	HA	8	LA
Chifunde	4	HA	5	HA
Cidade de Chimoio	6	HA	1	HA
Cidade de Tete	2	HA	11	LA
Manica	10	LA	2	HA
Mutarara	1	HA	6	HA
Bárue	8	LA	9	LA
Cidade da Beira	7	LA	7	LA
Dondo	9	LA	10	LA
Gondola	11	LA	3	HA
Nhamatanda	5	HA	12	LA
Sussundenga	12	LA	4	HA

Figure 5 below summarizes the design of the study. First we compared service delivery outcomes between HPDs (who received the full District Approach intervention, including the Graduation Path) and NPDs (who received a leaner version of the District Approach, which did not include the Graduation Path). For our second research question, we compared service delivery outcomes between facilities from HA districts and facilities from the LA districts.

Figure 5. Summary of Study Design

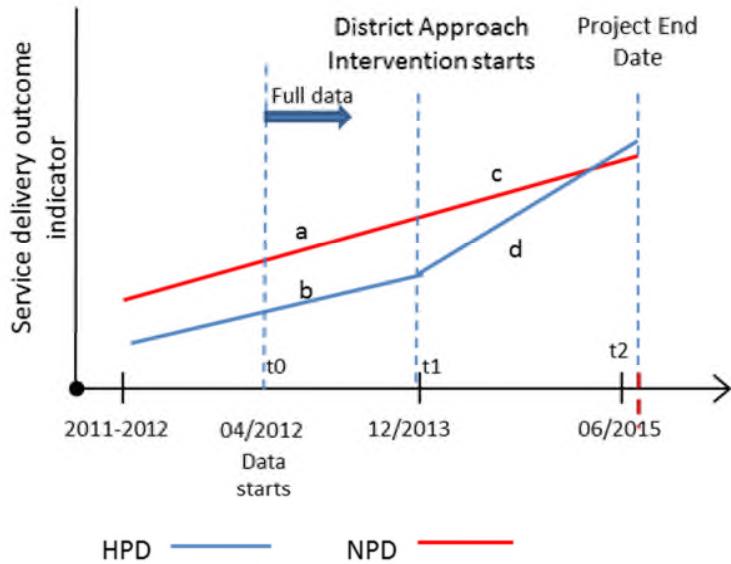


4.1.4 Analytic Methods

We conducted both bivariate (mean comparison) and multivariate analyses to answer the study's two research questions. This report presents the results from the multivariate analysis, which includes a difference-in-difference regression analysis that allows us to capture more accurately the relationships indicated in our research questions (results from the bivariate analysis are very similar to the results from multivariate analysis and are not shown here).

As mentioned in the beginning of the Methods and Data section, we first examined whether there is a relationship between the District Approach intervention and service-delivery outcomes at the facility level. A difference-in-difference specification allows for a comparison of differences in average outcomes before and after an intervention for two different groups. In this case, those two groups are the facilities from the HPDs and NPDs. Figure 6 illustrates the expected scenario according to the hypothesis for this analysis using hypothetical data. The blue and red lines represent the average of a certain service delivery outcome for facilities belonging to HPD and NPD, respectively. The symbol t_0 represents the starting point; t_1 represents the point where the District Approach intervention started; and t_2 represents the last month of data for the project. Thus, the time between t_0 and t_1 represents the pre-intervention period and the time between t_1 and t_2 represents the post-intervention period. For the HPD, the first difference is $(d-b)$; for NPD, the first difference is $(c-a)$. Those two numbers represent the average improvement for each outcome, for each group, between the period of time after the intervention and before the intervention started. The second difference (or the difference-in-difference) is calculated as $[(d-b)-(c-a)]$, which provides with the difference in the improvement or changes across the two groups. The hypothesis is that HPDs will show greater improvement than the NPDs in the service delivery outcome after the project introduced the District Approach intervention.

Figure 6. Difference-in-Difference Approach



It is important to note a few factors with this approach. First, it is necessary to take into consideration that HPDs and NPDs have different *starting points*; as shown in the next section, facilities from HPDs had worse outcome indicators before the District Approach started, which is why Figure 5 has the blue line starting at a lower level. Second, it is important to consider that HPDs and NPDs had slightly different *trends* before the intervention started.

To obtain a more precise estimate of the nature of the relationship between HSS and service delivery outcomes (and therefore, a better estimate of the difference-in-difference estimate), it is necessary to control for multiple factors that can confound such a relationship. We used multivariate regression analysis, including controlling for secular trends before and after the intervention. We obtained regression-adjusted means after running regular Ordinary least-squares (OLS) regressions for the key outcome variables measured after the intervention. We controlled for the following covariates: average outcome variable before the intervention, overall number of patients registered for ANC per month, type of facility, urban/rural location of facility, facility level, a linear and a quadratic time trend, seasonal fixed effects, province fixed effects, and district fixed effects. See [Annex I](#) for a detailed explanation of the main equations, specification and vectors of controls used to address these issues.

We conducted the analysis under two different timeframes. The first timeframe includes all months of data before and after the District Approach intervention was implemented, as outlined in Figure 5. The second timeframe includes all months before the intervention, but only the last twelve months (out of a total of 19 months) after the intervention; in other words, between July of 2014 to June 2015. We developed these timeframes to take into consideration the fact that HSS interventions usually take time to create an impact on service delivery outcomes. Averaging outcomes throughout all months after the intervention does not consider this potential time-lag between implementation and outcomes and increases the likelihood of not finding a relationship when in fact there is one. We conducted sensitivity analysis to identify multiple cutoff points. We present the results using the second timeframe; results using the first timeframe are similar.

To answer the research question of whether strengthened health systems in the form of improved management capacity are associated with improved health services, we used the same analytic methods described above, but with a focus on the HPDs only. We estimated the differences on key outcomes between the districts that registered greatest improvement in their Graduation Path assessments, the HAs, and the ones that registered less improvement, the LAs. In this case, the hypothesis would be the same as in Figure 5, but comparing HAs with LAs instead: it is expected that HA districts will show greater improvement than LA in the service delivery outcomes.

Since the overall total Graduation Path score is the sum of the scores of two large sub-components (*systemic functions* management capacity, and *services functions* management capacity), we conducted the analysis separately after ranking all the districts using the *systemic functions* capacity score and the *services functions* capacity score.

4.1.5 Descriptive Statistics

Table 5 displays the descriptive statistics for the facilities included in the analysis by priority status. The number of women registered for ANC and urban/rural facility location are displayed by province as well. In general, the average facility in HPD in Manica and Sofala had registered a larger number of women for ANC compared to the average facility in NPD in the same province. In addition, on average, a greater proportion of facilities from HPDs are located in urban areas, relative to facilities from NPDs (26 percent and 19 percent, respectively). We did not observe a large difference in the distribution of facilities by type or level. The bottom half of Table 5 displays the average outcome measured before the intervention.

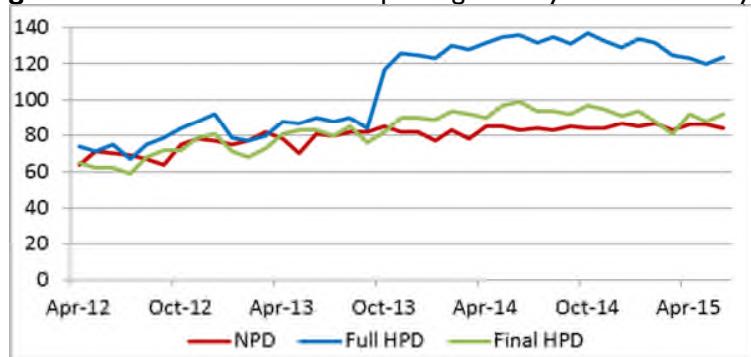
Table 5. Descriptive Statistics by Priority Status Before Intervention

	HPD	NPD
Average number of women registered for ANC		
Manica	111.2	85.5
Sofala	147.8	94.7
Tete	123.6	149.0
Percentage of facilities located in urban areas		
Manica	17%	19%
Sofala	37%	17%
Tete	29%	23%
Type of facility (all provinces)		
Health Center Type II	30%	19%
Health Center Type III	25%	33%
Rural Health Center	31%	35%
Urban Health Center	7%	1%
Rural Hospital	1%	3%
Health Post, others	6%	8%
Facility level (all provinces)		
Primary	92%	89%
Secondary, Tertiary	8%	11%
Outcome variables		
New ART enrollees	44.6	16.5
New pre-ART enrollees	49.2	20.0

New enrollees in pediatric HIV care	3.7	1.5
% pregnant women who knew HIV status	89%	84%
% HIV+ pregnant women, ART for eMTCT	48%	54%
% TB/HIV+ co-infected patients on ART in TB ward	56%	61%

The number of facilities from HPDs reporting data increased significantly after the District Approach intervention started. This was due to a project assumption that the Gradation Path was an intervention that affected all health facilities in the district. The quarterly analysis of the District Profiles encouraged SDSMAS managers to target health facilities most in need of support based on the triangulation of various data sources (and not just those sites supported by the CHASS-SMT project). Figure 7 below shows the average number of facilities that reported data by district-priority status for every month. Before the intervention started, an average of 80 facilities from HPDs reported data; after the intervention started, the number increased to an average of 129 facilities (see blue line for “Full HPD”). In the case of NPDs, the increase was smaller, from an average of 76 to 84 facilities. The facilities that started reporting data after October 2013 were, on average, smaller, more isolated, and also more likely to be rural compared to the ones that had already been reporting data from the beginning of the project. In order to be consistent with the difference-in-difference approach, it was necessary to look only at the facilities that had been providing data since the beginning of the project, which are represented by the green line “Final HPD”.⁴

Figure 7. Number of Facilities Reporting Data by District Priority



4.2 QUALITATIVE

The qualitative component was designed to answer the secondary objective of the study: to explore the mechanisms through which strengthened district health systems affect HIV-service provision. The project used the Theory of Change in [Section 3](#) to frame the different stages in the causal pathway explored under this component. The questions that we sought to answer qualitatively included:

1. Which District Approach interventions contributed towards improvements in district management capacity? (from inputs to the first output); and
2. What were the subsequent outputs from “improvement district management capacity” that eventually contributed towards improved health services (outcome)?

⁴ Missing data has been an issue during data collection on this activity. We acknowledge that missing data can be a problem if some of the data are missing at random. For this report, we assume data are missing at random and regression analysis only excluded the facilities that had not reported data consistently since before the intervention started. Case-wise deletion or multiple-imputation are steps that should be further explored.

4.2.1 Sampling

The qualitative sample was composed of six HPD districts, two in each province. We selected the sample districts first on the basis of their performance on Graduation Path assessments and service delivery outcomes, using preliminary data available at the time. The intention was to select a variety of districts in terms of their performance on HSS (HA vs. LA classification according to Graduation Path scores) and service delivery (using two outcome indicators for simplicity sake: percentage of pregnant women who knew of their HIV status after first ANC consultation; and percentage of HIV-positive pregnant women in ANC who received ARVs for eMTCT). For the service delivery indicators, we considered districts that showed a strong positive trend during the period of analysis used in the quantitative component to have strong service delivery performance (SD+). We considered districts that showed either no change or a negative trend to have weaker service delivery performance (SD-).

Because this selection was based on preliminary data, some of the districts changed their status between HA and LA after the sampling was finalized. After we completed the initial selection using these criteria, substitutions had to be made to accommodate field logistics (indicated in Table 6). Table 6 below shows the final selection of sample districts and their HA/LA and SD+/SD- classification.

Table 6. Final Selection of Sample Districts Based on HSS and Service Delivery Performance

Province	Selected Districts	HA/LA Status and Service Delivery Performance (SD-/SD+) (% of pregnant women with known HIV status)	HA/LA Status and Service Delivery Performance (SD-/SD+) (% of HIV+ pregnant women in ANC on ARVs for eMTCT)
Sofala	<ul style="list-style-type: none"> • Dondo* (Beira) • Nhamatanda 	<ul style="list-style-type: none"> • HA/SD- (HA/SD-) • LA/SD- 	<ul style="list-style-type: none"> • HA/SD+ • LA/SD+
Manica	<ul style="list-style-type: none"> • Manica • Sussundenga* (Gondola) 	<ul style="list-style-type: none"> • HA/SD+ • LA/SD+ 	<ul style="list-style-type: none"> • HA/SD+ • LA/SD+
Tete	<ul style="list-style-type: none"> • Chifunde* (Changara) • Cidade de Tete 	<ul style="list-style-type: none"> • HA/SD- (LA/SD+) • LA/SD- 	<ul style="list-style-type: none"> • HA/SD+ (LA/SD+) • LA/SD+

HSS performance: HA = high achiever; LA = low achiever

Service Delivery performance: SD+ = higher performer; SD- = low performer

*Substitute for district in parenthesis

We selected health facilities for the sample – one per district – based on those with the highest ART patient volume (including for eMTCT) in facilities providing the full range of HIV program interventions. The selection process was done in collaboration with CHASS-SMT central and provincial staff, as well as with the respective Provincial Health Directorate (DPS) and SDSMAS (see [Annex II](#) for the full list of health facilities in the sample).

The project selected stakeholders at different levels to be study participants in each province, district, and health facility, as well as the central level:

- **CHASS-SMT staff:** central-level senior management; provincial-level technical staff that implemented the District Approach (EPs).
- **DPS and SDSMAS staff:** program managers and supervisors (counterparts of CHASS-SMT technical staff).

- **Health facility staff:** administrative and health staff in different sectors.

[Annex III](#) provides a full list of the categories of staff interviewed.

4.2.2 Data Collection and Analysis

We obtained approval from the Mozambique Bioethics Committee to carry out key informant interviews. Interviewers carried out two rounds of data collection in the form of semi-structured, key informant individual and group interviews (see [Annex IV](#) for data collection instruments in Portuguese). The purpose of the second round was to (1) interview informants who were not available during the first round, and (2) clarify, verify, and deepen key themes that emerged from the first round.

Interviewers took detailed notes during the interviews and compiled them for analysis. We analyzed seven of the eight functions of the District Health Management Standards Tool. We did not include the eighth function – community mobilization – in the analysis because during fieldwork it became apparent that stakeholders under this function did not have sufficient direct connection with and knowledge of the intervention to be able to provide specific information to answer the research questions.

For each of the seven functions analyzed, we identified specific examples to “populate” the different stages of the Theory of Change:

- **Inputs:** specific interventions from the District Approach package perceived to have had an effect.
- **Output I:** perceived effects of these interventions on district management capacity that can be detected by the District Health Management Standard Tool (and therefore could have affected the Districts’ Graduation Path scores). These would represent examples of the two immediate outputs in Figure 2 ([Section 3](#)): “Improved SDSMAS management capacity for systemic/services functions”.
- **Subsequent Outputs:** other perceived outputs that continue the causal pathway in the Theory of Change and eventually contribute towards the desired outcome of improved quality of and access to HIV and AIDS services.

5. RESULTS

5.1 QUANTITATIVE

This section presents first the results of the analysis of the relationship between the District Approach intervention and key outcomes. We measured this relationship as the difference between the regression-adjusted means for the facilities in HPDs and NPDs pre- and post-intervention.

Table 7 summarizes the main results from the analysis. The second and third columns display the regression-adjusted means for the facilities from HPDs and NPDs respectively, after the start of the intervention. It takes all control variables at their estimated mean values, and accounts for their averages before the intervention. The fourth column represents the difference-in-difference estimate, or the actual estimate of the relationship between our key outcomes and HPD status after the intervention.

Table 7. Relationship Between District Approach Intervention and Key Outcomes

Outcome	HPDs	NPDs	Diff-in-diff		p-value	Obs. ⁺
New ART enrollees	29.713 (1.294)	29.445 (0.660)	0.269 (1.757)		0.878	3,292
New pre-ART enrollees	35.649 (1.476)	35.129 (0.638)	0.520 (1.843)		0.778	3,956
New enrollees in pediatric HIV care	2.212 (0.159)	2.595 (0.086)	-0.383 (0.219)	*	0.080	3,178
% pregnant women who knew HIV status	87.9% (0.010)	91.4% (0.004)	-3.5% (0.012)	***	0.005	4,823
% HIV+ pregnant women, ART for eMTCT	60.9% (0.017)	53.6% (0.007)	7.3% (0.021)	***	<0.001	4,469
% TB/HIV+ co-infected patients on ART in TB ward	78.0% (0.040)	69.1% (0.019)	9.0% (0.052)	*	0.083	634

Note: These are regression-adjusted means. Standard errors in parentheses. *p≤0.1. **p≤0.01. ***p≤0.001.

+ Observations represent the number of facilities multiplied by the number of months (or quarters) with data reported.

Table 7 shows that, on average, we found a strong, statistically significant, and positive association between belonging to an HPD and both the proportion of HIV+ pregnant women who were on ART for eMTCT and the proportion of HIV+/TB co-infected patients who were on ART, with differences of 7.3 and 9 percentage points, respectively. However, facilities from HPDs had about 0.4 fewer new enrollees in pediatric HIV care compared to facilities from NPDs, as well as a smaller proportion of pregnant women who knew their HIV status at time of admission.

As a robustness check, for the last three outcomes we ran the same specification model but used logarithmic transformation of the dependent variables to account for the fact that they are censored at the value of one. After dropping 3.2 percent, 19.4 percent and 14 percent of observations respectively because of values of zero before the logarithmic transformation, we obtained similar results in terms of the existence of associations. In the specific case of our fifth and sixth outcomes (% HIV+ pregnant women on ART and % TB/HIV+ patients in ART), the difference-in-difference coefficients were 12.9 and 8.8 percentage points, respectively.

Regarding our research question of whether there is a relationship between the District Approach and service delivery outcomes, we arrived at a couple of general conclusions. First, there is a strong positive and statistically significant relationship between being assigned to an HPD and the two key quality-of-service indicators: (i) the proportion of HIV+ pregnant women who are on ART, and (ii) the proportion of TB/HIV+ co-infected patients on ART. Second, there is a negative and statistically significant relationship between being assigned to an HPD and (i) the number of new enrollees in pediatric HIV care and (ii) % of pregnant women who knew their HIV status after first consultation.

Table 8 summarizes the results for the research question of whether there is a relationship between strengthened district management capacity and service delivery outcomes. Again, the second and third columns display the regression-adjusted means for the facilities from districts labeled HA and LA, respectively after the start of the intervention, taking all control variables at their estimated mean values, including the averages of the outcomes before the intervention. The fourth column represents the difference-in-difference estimate, which is the actual estimate of the relationship between the key outcomes and improvement in the district management capacity, measured by the scores from the Graduation Path assessments.

Table 8. Relationship Between Graduation Path Assessment Scores and Key Outcomes

Outcome	HA	LA	Diff-in-diff		p-value
<i>Ranking by 'Systemic Functions Capacity' score</i>					
New ART enrollees	38.8	43.6	-4.8	*	0.065
New pre-ART enrollees	44.0	51.8	-7.8	***	0.007
New enrollees in pediatric HIV care	3.4	3.4	0.0		0.997
% pregnant women who knew HIV status	96.5%	91.9%	4.6%	**	0.014
% HIV+ pregnant women, ART for eMTCT	48.4%	55.3%	-6.9%	**	0.018
% TB/HIV+ co-infected patients on ART	66.3%	70.5%	-4.2%		0.542
<i>Ranking by 'Services Functions Capacity' score</i>					
New ART enrollees	48.9	40.9	8.0	***	<0.001
New pre-ART enrollees	61.1	48.2	12.9	***	<0.001
New enrollees in pediatric HIV care	4.7	3.0	1.7	***	<0.001
% pregnant women who knew HIV status	93.5%	92.1%	1.4%		0.349
% HIV+ pregnant women, ART for eMTCT	66.2%	51.2%	15.0%	***	<0.001
% TB/HIV+ co-infected patients on ART	80.0%	66.8%	13.2%	*	0.055

Note: These are regression-adjusted means. *p≤0.1. **p≤0.01. ***p≤0.001.

After ranking and labeling districts based on their scores for services functions management capacity, there was a positive, strong and statistically significant association between these scores and almost all of the service delivery outcomes, with the exception of the proportion of pregnant women who knew their HIV status after first consultation. As can be observed in the bottom panel of Table 8, in most cases, the magnitude of the coefficients is quite large: HA districts registered an average increase of 8 and 13 new ART and pre-ART enrollees, respectively, which represents increments of more than 20 percent. Similarly, for two quality outcome indicators (% of HIV+ pregnant women in ART, and % HIV+/TB patients on ART), the HA registered an increase of 15 and 13.2 percentage points, which is a very important improvement for facilities with high levels of unmet need for ART.

The team obtained mixed results when ranking districts by their scores on systemic functions management capacity. Four coefficients were statistically significant, however, three of the coefficients are negative and only one is positive.

These findings show that among the facilities that belong to the districts that received the full District Approach intervention (HPDs), **the districts that experienced greatest improvement in services functions management capacity, as measured by their respective Graduation Path assessment scores, also experienced the greatest improvements in service delivery outcomes.**

5.2 QUALITATIVE

Key informants provided rich information regarding the interventions of the District Approach and their perceived effects. For the purposes of this study, we analyzed only the information that related to the immediate outputs of **improved district management capacity**, following the Theory of Change. This section summarizes the findings of the qualitative component, first looking at the *systemic functions* and then at the *services functions*.

In some cases, respondents were able to identify several steps in the causal pathway, starting with inputs, then specific outputs related to improved management (Output I), and subsequent outputs that continue to lead towards the outcome. In other cases, respondents only mentioned one or two steps and therefore we only completed one or two columns in the analysis tables below.

4.2.1 Systemic functions

The most frequently-cited input perceived to have had an effect on management of *systemic functions* were district sub-agreements (Table 9). This included both the funding provided by the sub-agreements, which allowed for the implementation of routine activities, as well as the sub-agreement reporting requirements, which contributed towards improved information and reporting. Other inputs mentioned included the Graduation Path, the District Profile Analysis, and technical assistance. Informants were able to cite several specific improvements in district management capacity linked to those inputs, many of them related to improved reporting, documentation, and use of data. In most cases respondents also identified subsequent outputs from improved management capacity. However, in virtually none of those cases were they able to make the direct connection to improved service delivery (Outcome). This is consistent with the quantitative results, which suggests that *systemic functions* have a longer path towards the desired outcome and therefore would take a longer time to show a direct effect.

It is worth noting that respondents mentioned staff motivation as a subsequent output both under the Human Resources function, and also under Supply and Logistics. There was a distinct perception that training and improvement in the Human Resources system has led to increased staff motivation, which in turn is associated with better job performance.

Table 9. Summary of Qualitative Results for *Systemic Functions*

Function	District Approach Interventions (Inputs)	Improvement in Management Capacity (Output I)	Subsequent Outputs
Planning	• Sub-agreement funds and other material resources for transport	• More regular supervision visits, including follow up on plans	
	• Sub-agreement funds for training on planning methodologies	• Improved planning skills	
	• Sub-agreement reporting requirements • Graduation Path – culture of documentation	• More regular reporting and documentation	• Districts focus efforts on areas that need most improvement
Information Systems	• Graduation Path	• Improved skills on information systems • Data analysis now common practice	• Improved data quality
	• Sub-agreement funds for training on information systems		

		<ul style="list-style-type: none"> • More reporting and evidence production 	
	<ul style="list-style-type: none"> • Sub-agreement funds for transport 	<ul style="list-style-type: none"> • Regular supervision 	
	<ul style="list-style-type: none"> • District Profile Analysis 	<ul style="list-style-type: none"> • Priorities are information-based 	<ul style="list-style-type: none"> • Interventions are targeted
Financial Systems	<ul style="list-style-type: none"> • Technical assistance 	<ul style="list-style-type: none"> • More regular financial reporting 	<ul style="list-style-type: none"> • Improved budget control and accountability
	<ul style="list-style-type: none"> • Sub-agreement funds for procurement and regular activities 	<ul style="list-style-type: none"> • More purchases • Realization of regular activities (meetings, supervisions, trainings) 	
Human Resources (HR)	<ul style="list-style-type: none"> • Sub-agreement funds and material support for office equipment 	<ul style="list-style-type: none"> • Improved HR archives and data files at the district 	<ul style="list-style-type: none"> • Swifter access to files and career progress, which leads to improved motivation of staff • Decrease in unlawful payments ("phantom staff" on payroll)
		<ul style="list-style-type: none"> • Staff more knowledgeable of their rights; HR managers more aware of staff's rights 	
		<ul style="list-style-type: none"> • "Need-based staffing": correct allocation of relevant staff in qualification and numbers 	<ul style="list-style-type: none"> • Increased staff • Staff is more motivated and less overloaded
	<ul style="list-style-type: none"> • Sub-agreement funds for training of HR staff 	<ul style="list-style-type: none"> • Improved knowledge of HR staff 	<ul style="list-style-type: none"> • Improved performance of HR staff
	<ul style="list-style-type: none"> • Technical and material support for introduction of MOH electronic HR registration system 		<ul style="list-style-type: none"> • Improved HR services
Supply and Logistics ⁵	<ul style="list-style-type: none"> • Technical assistance on information systems • Material support for information system supplies (logbooks, IT equipment) 	<ul style="list-style-type: none"> • Improved stock control • Introduction of maintenance plans and logs 	<ul style="list-style-type: none"> • Elimination of stock outs • Reduction of breakages in transport, lab equipment
	<ul style="list-style-type: none"> • Targeted intervention (cleaning of drug pick-up form files) 	<ul style="list-style-type: none"> • Improvement in drug pick-up form files 	<ul style="list-style-type: none"> • Reduced workload of pharmacy technician • Improved tracking of client adherence
	<ul style="list-style-type: none"> • Sub-agreements funds and material support for purchase of storage materials 	<ul style="list-style-type: none"> • Improved medicine conservation 	<ul style="list-style-type: none"> • Improved supply of quality medicine
	<ul style="list-style-type: none"> • Sub-agreement reporting requirements 	<ul style="list-style-type: none"> • Regular circulation of information 	<ul style="list-style-type: none"> • Reduced stock outs
	<ul style="list-style-type: none"> • Sub-agreement funds for transport 	<ul style="list-style-type: none"> • Improved medicine distribution 	
	<ul style="list-style-type: none"> • Sub-agreements 	<ul style="list-style-type: none"> • Improved regularity and quality control of MOH procedures 	
	<ul style="list-style-type: none"> • Sub-agreement funds for training on logistics management 	<ul style="list-style-type: none"> • Improved skills on logistics mgmt. 	<ul style="list-style-type: none"> • Improved motivation

⁵ In the District Health Management Standard Tool, the "Supply and Logistics" function includes the logistics of laboratory sample transport. Therefore the "Laboratory" function includes only aspects related to laboratory equipment and consumables.

		<ul style="list-style-type: none"> • Logistics system more organized 	<ul style="list-style-type: none"> • Reduced loss of lab samples • Better follow up on patient status
	<ul style="list-style-type: none"> • Sub-agreement requirements 	<ul style="list-style-type: none"> • Plan developed for lab sample collection 	<ul style="list-style-type: none"> • Reduced waiting time for lab results

4.2.2 Services functions

As with *systemic functions*, the inputs most frequently cited for *services functions* were also related to sub-agreements (Table 10). The sub-agreements and other direct material support enabled districts to acquire essential materials and carry out essential activities, such as training, distribution of medications and supervision to health facilities. Other interventions noted by respondents included the Graduation Path, targeted interventions, and clinical tutoring. In contrast with the *systemic functions*, it was much easier for respondents to link the output of improved management capacity of *services functions* to further outputs and even outcomes that are directly related to improved access to and quality of health services (hence in this table the last column includes Outcomes as well as Outputs).

Although staff motivation was not mentioned specifically as part of the causal pathway, in general most respondents also expressed the effect of improved working conditions with new material and equipment, and of capacity building on staff motivation and therefore performance.

Table 10. Summary of Qualitative Results for Services Functions

Function	District Approach Interventions (Inputs)	Improvement in Management Capacity (Output)	Subsequent Outputs/Outcomes
Laboratory ¹	<ul style="list-style-type: none"> • Sub-agreement funds for purchase and distribution of lab supplies 	<ul style="list-style-type: none"> • Improved availability of lab supplies 	<ul style="list-style-type: none"> • Faster processing of samples • Reduction in waiting time for lab results • Improved quality of test results
	<ul style="list-style-type: none"> • Material support 	<ul style="list-style-type: none"> • Improved laboratory technology • Improved information for data quality control 	<ul style="list-style-type: none"> • Improved quality of testing
	<ul style="list-style-type: none"> • Graduation Path 	<ul style="list-style-type: none"> • Preventive maintenance of lab equipment introduced 	<ul style="list-style-type: none"> • Fewer equipment breakdowns • Continuous provision of lab services
	<ul style="list-style-type: none"> • Sub-agreement funds for transport 	<ul style="list-style-type: none"> • Improved planning of lab activities 	
	<ul style="list-style-type: none"> • Sub-agreement reporting requirements 	<ul style="list-style-type: none"> • Increased planned supervisions to health facilities 	
		<ul style="list-style-type: none"> • Data analysis and sharing used in planning 	
Health Programs	<ul style="list-style-type: none"> • Sub-agreement funds 	<ul style="list-style-type: none"> • Introduction of new services 	
		<ul style="list-style-type: none"> • Regular supervision visits 	<ul style="list-style-type: none"> • Timely identification of weaknesses

		<ul style="list-style-type: none"> More regular mobile brigades to provide clinical services at community level 	<ul style="list-style-type: none"> Improved follow-up on defaulters Improved diagnostics at community level Improved adherence
<ul style="list-style-type: none"> Targeted interventions (introduction of new strategies, cleaning of patient files) 	<ul style="list-style-type: none"> One Stop Model introduced 	<ul style="list-style-type: none"> Improved patient flow Reduced loss to follow up 	
	<ul style="list-style-type: none"> Regular revision of clinical files 	<ul style="list-style-type: none"> Reduced loss to follow up and improved adherence 	
	<ul style="list-style-type: none"> Improved registry of patient data 	<ul style="list-style-type: none"> Improved monitoring of pediatric patients 	
<ul style="list-style-type: none"> Sub-agreement reporting requirements 	<ul style="list-style-type: none"> Regular data analysis which informs interventions 		
<ul style="list-style-type: none"> Sub-agreement funds for training 	<ul style="list-style-type: none"> Improved technical skills 	<ul style="list-style-type: none"> Improved cooperation among health programs Improved comprehensive care 	
<ul style="list-style-type: none"> Overall District Approach 	<ul style="list-style-type: none"> Improved integration across sectors (i.e. pharmacy and ART) 	<ul style="list-style-type: none"> Improved efficiency in logistics Reduced waiting times for patients 	
<ul style="list-style-type: none"> Clinical Tutoring 	<ul style="list-style-type: none"> Improved capacity to provide counseling 	<ul style="list-style-type: none"> Improved counseling 	
	<ul style="list-style-type: none"> Improved referral among services 	<ul style="list-style-type: none"> Improved quality of care 	
<ul style="list-style-type: none"> Sub-agreement funds and technical assistance to ART committee meetings 	<ul style="list-style-type: none"> Improved evaluation of patient files 	<ul style="list-style-type: none"> Improved services 	
	<ul style="list-style-type: none"> Improved staff management 		<ul style="list-style-type: none"> “Everyone contributes”

6. DISCUSSION

The results of this study represent a valuable addition to the body of evidence on the relationship between HSS and service delivery outcomes. In the context of Mozambique and the CHASS-SMT project, the analysis of the relationship between the District Approach intervention and the six service delivery outcomes examined in the study (the HPD vs. NPD comparison) showed a mostly positive association between the intervention and quality of care. We have controlled for several potential factors that could confound this relationship, but further confounding, especially on factors that cannot be measured or observed, is always possible. For two of the three quality outcome indicators – percent of HIV+ pregnant women receiving ART, and percent of TB/HIV patients on ART – there was a strong positive relationship with receiving the full District Approach intervention. The third quality outcome indicator, percent of pregnant women with known HIV status, showed a negative relationship. This could be explained at least partly by the fact that performance on this indicator was already quite high at baseline, especially for the HPDs (89 percent).

For two of the access outcome indicators – new ART and pre-ART enrollees – we were not able to find a significant relationship with the District Approach, while the number of new enrollees in pediatric HIV care was found to have a significant negative association. The results regarding association between access indicators and the District Approach are more difficult to interpret since the decentralization of ART services took place concurrently with the implementation of the District Approach. The number of health facilities providing ART services in Sofala, Manica, and Tete grew continuously during the period analyzed as a result of project support. However, the facilities included in the sample remained the same. This means that in most districts some patients who were under ART treatment in a health facility included in the sample were transferred to new, more peripheral sites that were not in the sample. This may have potentially created an artificial decrease in patient volume in the study sample in an uneven way between HPDs and NPDs.

In context of these mixed results regarding the HPD vs. NPD comparison, it is also worth noting the qualitative findings that SDSMAS and health facility staff perceived that the sub-agreements, which was an intervention applied equally to HPDs and NPDs, had the strongest effect on service delivery outcomes. The sub-agreements are arguably the District Approach intervention with potential for the most immediate effect on health services, since they instantly fill the critical gap of scarcity of resources.

In order to test the study's hypothesis that stronger district health systems provide better health services, we carried out further sub-analyses within HPDs to examine the relationships between district capacity to manage *systemic functions* and *services functions*, and service delivery outcomes. Results of these analyses suggest that improvements in *services functions* are positively associated with five of the six service delivery outcomes within the 18 month time frame of this study, while results for the *systemic functions* were mixed. This is consistent with the study's Theory of Change, where the path from the *systemic functions* to the desired outcomes is longer and more indirect than the path from the *services functions*. These findings provide only suggestive evidence; it is important to consider that, for example, districts that did better on their Graduation Path assessments may have had different management capacity to begin with, which enabled them to both improve service delivery outcomes and Graduation Path scores. There may also be other factors that we cannot assess or control for that influence district management capacity and service delivery outcomes. Therefore, we are not able, in this study, to assess why some districts improved their Graduation Path assessment scores more successfully than other districts.

The qualitative findings support the quantitative results in terms of the differences between the relationships between *systemic* and *services functions* and the service delivery outcomes. Respondents found it much easier to connect improvements in the management of *services functions* at the district level to improvements in service delivery outcomes in facilities, than they did with *systemic functions*. The qualitative component provided some concrete examples of management capacity improvements perceived by the stakeholders. This component also shed some light into the mechanisms or causal pathways through which this improved management capacity at the district level may have contributed towards improved health services. In addition to providing specific examples along the causal pathway in the Theory of Change, the qualitative findings also revealed that activities most likely to generate change in service delivery outcomes were linked to staff motivation.

The design and context of this study present several limitations. First, the assignment of HPDs and NPDs was not done in a random manner, or in a manner that would allow us to use "ART unmet need" as a criteria for a different type of empirical approach (a regression discontinuity design, for example). This made

it hard to control for potential confounders and to attribute with confidence causal impacts to the District Approach. Second, missing data was a problem that possibly can be hiding other data quality issues; this is something that should be further addressed. Third, the District Approach was implemented by different EPs in different districts (each EP was assigned to two or three districts). Although there is a certain amount of standardization to the interventions, there were undoubtedly variations in how they were implemented by each EP, including quality of implementation and application of the Graduation Path assessment. However, since each team had a balanced mix of HPDs and NPDs that they supported, this influence should have been uniformly applied across both types of intervention and control districts.

Finally, an important limitation of this study is that it explored health systems relationships within a particularly short timeframe; the team collected the last data only 18 months after the project launched the District Approach intervention. HSS interventions, especially those in the *systemic functions* of planning, information systems, human resources, financing, and supply and logistics, are expected to take more time to create an effect on service delivery (Hatt, 2015). Services *functions*, on the other hand, are more directly linked to service delivery performance and therefore improvement in their management is expected to have a faster effect on service delivery outcomes. We hypothesize that given more time, the improvement in *systemic functions* management capacity would also begin to show a stronger and positive relationship with service delivery outcomes at the health facility level.

On the other hand, one of the strengths of this study is that it relies on a comprehensive dataset, covering a wide time period before and after the intervention, with data reported at the facility level for many outcomes, covering a large geographic area of a resource-constrained country. This allowed for the consideration of trends before and after the intervention, adding a level of robustness to the results. For a study on HSS, these are great assets. The qualitative component also provided more insight to the quantitative findings, by describing what happened in the districts and health facilities after the introduction of the District Approach.

This study adds important information to the body of evidence on HSS-service delivery link. A key difficulty in HSS-service delivery studies is the long causal pathway between HSS interventions and service delivery, often referred to as a “black box.” Most emerging studies look only at associations between inputs and outcomes/impact – the most extreme ends of the causal pathway – leaving a lot of room for confounders among the outputs in between. In such studies, the input, the HSS intervention, is assumed to have had its intended immediate output, a strengthened health system – which then continues the chain of events towards better service delivery outcomes or health Impact. This study looks directly at the relationship between a strengthened health system (output) and service delivery outcomes. We therefore shed some light into the black box between an HSS intervention and service delivery outcomes and ultimately, health impact.

7. CONCLUSIONS

The study results showed that after 18 months of implementation the District Approach is associated with better performance on two of the three quality indicators at health facilities, and also suggest that improvement in district management of services *functions* are positively associated with five of the six service delivery outcomes. Although the design of the study presents limitations on how much we can conclude from these results, the findings are nevertheless encouraging. These results are consistent with findings from recent similar studies and reviews showing positive associations between HSS and management capacity

interventions and service delivery and health outcomes. The qualitative findings also provided specific examples of improvements perceived by SDSMAS staff at different levels of the causal pathway.

The emerging evidence on HSS-service delivery link is promising in terms of the potential of HSS programs to improve service delivery, yet more research is needed to strengthen the evidence base. In the context of this specific study, further research on the factors that influenced districts to be either HA or LA, how these factors and the different District Approach interventions influence health service delivery, and other contextual factors, would help enrich the findings. For example, we could attempt to determine exactly how many patients moved from health facilities in the study sample to those outside the sample during the course of the study and account for this in the analysis of the access indicators. We can also examine what is the effect of the sub-agreements alone on service delivery outcomes by using existing sub-agreement performance indicators.

In general, rigorous evaluations and studies that track associations between each step in the causal pathway between HSS and service delivery over longer periods of time would further strengthen the evidence base and provide more clarity on the mechanisms by which HSS may improve services and health outcomes.

8. ACKNOWLEDGMENTS

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ANNEX I: DETAILED EXPLANATION OF MAIN EQUATIONS

Our main specification for the first research question is presented in Equation I:

$$Y_{ijt} = \beta_0 + \beta_1 X_{ijt} + \beta_2 W_j + \beta_3 HP_j + \beta_4 Post_{jt} + \beta_5 (HP * Post)_{jt} + \theta Z_t + \lambda R_j + \varepsilon_{ijt} \quad (I)$$

Where i is for health facility, j is for district, and t is for month or quarter. Y_{ijt} represents each of our six key outcome indicators. X represents a vector of variables at the facility level, both time variant and invariant, including number of patients registered, urban/rural location, type and level of the health facility. W represents a vector of variables at the district level, including a vector of district and province fixed effects in order to control for time invariant characteristics that are constant across facilities within each district and province, respectively. HP is a district variable equal to one for HPDs and equal to zero for NPDs. $Post$ is measured at the district level and is equal to one for the period after the “District Approach” was implemented in December 2013, and zero before that. β_5 is the coefficient of interest, reflecting the difference between HPDs and NPD after the start of the program, and will tell us whether, and by how much, the “district approach” intervention is associated with improvements in our six outcomes.

Z_t represents vectors of time controls, including season dummies, a linear time trend and a quadratic time trend in order to control for seasonal fixed effects and secular time trends, respectively. This is relevant considering that between October and December it is harvest season, which brings rain and also religious year-end holidays, usually associated with lower patient volumes and higher absenteeism of health providers; April to June represents the dry season, when providers are less likely to be absent. Finally, ε represents the random error. To correct for the fact that the variance of the error term may not be constant under the linear probability model, we estimated heteroskedasticity-robust standard errors.

To answer our main research question, we explore the association between HA/LA status and our six main outcomes. We restrict our analysis only to health facilities from the HPDs (since the facilities from NPDs did not receive the full “District Approach” and, therefore, did not receive the Graduation Path assessments). As explained earlier, we ranked all HPDs according to their percent increase between the first and third Graduation Path assessments. Our new specification is presented in equation 2 below:

$$Y_{ijt} = \delta_0 + \delta_1 X_{ijt} + \delta_2 W_{jt} + \delta_3 HALA_j + \delta_4 Post_{jt} + \delta_5 (HALA * Post)_{jt} + \phi Z_t + \rho R_j + v_{ijt} \quad (2)$$

Where i is for health facility, j is for district, and t is for month or quarter. X , W , $Post$, Z and R represent the same vectors of covariates or fixed effects as in equation (I). $HALA$ is a dummy variable equal to one for those districts that displayed “high achievement” among the HPDs and equal to zero for the districts that displayed “low achievement”. δ_5 is the coefficient of interest and will tell us whether greater improvement in health systems capacity (as measured by the GP assessment scores) is associated with better final outcomes. Finally, v represents the random error adjusted to correct for heteroskedasticity.

ANNEX II: LIST OF HEALTH FACILITIES IN THE QUALITATIVE SAMPLE

Province	District	Health facility
Beira	Beira District	Ponta Gêa Health Center (for pre-test and data collection purposes)
	Nhamatanda District	Nhamatanda District Hospital
Manica	Manica District	Manica District Hospital
	Sussundenga District	Sussundenga District Hospital
Tete	Tete District	Health Center #2
	Chifunde District	Chifunde District Hospital

ANNEX III: LIST OF CATEGORY OF RESPONDENTS INTERVIEWED

Level	Category to be interviewed	Stakeholders
Central	CHASS-SMT staff	Group interview with: Project Coordinator, Doctor Psychologist
Provincial	Provincial health staff (DPS)	Group interview with: Chief Medical Doctor Managers Admin/financial department, Human Resources, Planning system, Information system, Supply and logistic systems operations (pharmacy and laboratory), Health programs management
District	District health staff (SDSMAS)	Individual interviews with: SDMAS Director; Managers: Admin/financial department, Human Resources, Planning system, Information system, Supply and logistic systems operations (pharmacy and laboratory), Health programs management
	CHASS-SMT staff – "Equipas Polivalentes" (EPs)	Group interviews with 4/5 EPs member
Health Facility	Health facility staff	Individual interviews with: Clinic Director, Nurse/ antenatal care technician, Nurse/pediatrics technician, Lab technician, Pharmacy technician, Laboratory technician, TB and HIV technician

ANNEX IV: QUALITATIVE DATA COLLECTION INSTRUMENTS

Guião de Entrevista com o pessoal da DPS

Introdução: O projecto CHASS-SMT pretende levar a cabo um "Estudo do Efeito do Reforço dos Sistemas de Gestão dos Serviços Distritais de Saúde na Prestação de Serviços Clínicos de HIV" em 6 distritos nas províncias de Sofala, Manica e Tete, em colaboração com a COWI Moçambique, Lda. O objectivo principal deste estudo é de investigar se sistemas de gestão distritais estão associados de alguma forma à melhorias no acesso, qualidade e sustentabilidade da prestação de serviços de HIV. Para o alcance dos objectivos do estudo, será aplicada uma metodologia qualitativa; que consistirá em entrevistas individuais com pessoal do CHASS-SMT, DPS, SDSMAS, unidades sanitárias, assim como pacientes das unidades sanitárias, após o consentimento informado de todos .

Objectivo: explorar a percepção da DPS sobre o funcionamento e os efeitos da Graduação Distrital

Grupo alvo são: "Gestores Provinciais" que trabalham com HIV na Direcção Provincial de Saúde (como o médico chefe provincial, o responsável provincial de HIV, responsável provincial de laboratório, responsável provincial da farmácia, director de finanças, director de RHs, director de planificação, etc).

Serão realizadas entrevistas semi-estruturadas. As notas das entrevistas serão anotadas no caderno.

Data e Local	
Nome do Entrevistado	
Posição que ocupa	
Sector	
Data/Ano de início de trabalho na DPS	

1. O projecto CHASS-SMT implementa uma série de actividades para apoiar o sistema e os serviços de saúde em Sofala/Manica/Tete. Neste estudo estamos a explorar especificamente as actividades que ocorrem ao nível distrital, através da estratégia do Caminho de Graduação. (*mostrar o instrumento para que saibam exatamente do que estamos a falar*) Pode nos falar sobre esta estratégia? Em que consiste, quais são os seus objectivos?

2. Qual é a sua opinião em relação as actividades específicas que realiza como resultado da avaliação no âmbito CdG, nas quais tem participado na sua província? Por favor liste as actividades e justifique o seu ponto de vista?:
 - a. Treinamento sobre a estratégia e/ou a ferramenta
 - b. Avaliação num dos distritos usando a ferramenta
 - c. Elaboração ou revisão dos planos de acção
 - d. Apoio técnico na implementação dos planos de acção
 - e. Análise dos resultados da avaliação
 - f. Outras

3. Nota alguma mudança na forma de funcionamento dos distritos participantes no programa após a introdução da metodologia do programa fortalecimento do sistema distrital de saúde/CdG? Se sim, Por favor descreva as mudanças observadas.

Perguntar sobre:

O uso dos resultados da avaliação e dos planos de acção para orientar a tomada de decisões

Mudanças nas operações distritais (nível distrital)

Mudanças nas capacidades de gestão dos gestores distritais

Mudanças ao nível das unidades sanitárias (interacções com a equipa da US, intervenções)

Como os distritos determinam quais as unidades sanitárias a visitar

Como os distritos documentam as suas actividades, priorizam problemas, e dão seguimento aos problemas

4. N sua opinião, a introdução do CdG teve algum impacto no funcionamento da DPS? A DPS utiliza os resultados da avaliação do programa de fortalecimento do sistema Distrital de saúde? Caso sim, descreva de que forma teve impacto no funcionamento do seu sector em particular.
5. Na sua opinião, quais são os principais pontos fortes pontos fracos do CdG?
6. Há mais alguma coisa que queira partilhar sobre o CdG e o respectivo impacto sobre os distritos e as unidades sanitárias?

Guião de Entrevista com o pessoal do SDSMAS

Introdução: O projecto CHASS-SMT pretende levar a cabo um "Estudo do Efeito do Reforço dos Sistemas de Gestão dos Serviços Distritais de Saúde na Prestação de Serviços Clínicos de HIV" em 6 distritos nas províncias de Sofala, Manica e Tete, em colaboração com a COWI Moçambique, Lda. O objectivo principal deste estudo é de investigar se sistemas de gestão distritais estão associados de alguma forma à melhorias no acesso, qualidade e sustentabilidade da prestação de serviços de HIV. Para o alcance dos objectivos do estudo, será aplicada uma metodologia qualitativa; que consistirá em entrevistas com pessoal do CHASS-SMT, DPS, SDSMAS, unidades sanitárias, assim como pacientes das unidades sanitárias, após o consentimento informado de todos .

Objectivo: explorar a percepção do SDSMAS sobre o funcionamento e o impacto da Graduação Distrital.

Apresentar ao SDSMAS as sugestões da DPS quanto aos distritos selecionados para a pesquisa e dar a conhecer os critérios de selecção. Apresentar à SDSMAS para a selecção final dos distritos.

Grupo alvo: Director distrital de saúde, Gestores distritais do SDSMAS para cada um dos sectores e médico chefe (que estejam a trabalhar a mais de 1 ano). Caso consida com o mesmo responsável na US, este entrevistado será substituído por alguém do mesmo sector, mas que tenha participado no CGD.

Entrevistador, por favor solicitar os seguintes doc. antes de iniciar a entrevista:

- Plano de acção distrital

E os seguintes documentos para características 6.1-8.2:

- Diagnóstico situacional
- Plano de fortalecimento das US periféricas
- Calendário de supervisões

- Plano de acção das unidades sanitárias/matriz de recomendações (que saiu da visita de supervisão)

Nome	
Cargo/posição	
Anos que está naquela posição	
Nº de avaliações CdG feitas	
Contacto	
Distrito	
Data e Local	

- O projecto CHASS-SMT implementa uma série de actividades para apoiar o sistema e os serviços de saúde em Sofala/Manica/Tete. Neste estudo estamos a explorar especificamente as actividades que ocorrem ao nível distrital, através da estratégia do Caminho de Graduação.

Mostrar o instrumento para que saibam exatamente do que estamos a falar

- Pode nos falar sobre a estratégia do CdG? Em que consiste, quais são os seus objectivos?

- Agora gostaríamos que nos falasse da sua experiência no uso da ferramenta do CdG (faz referência à amostra física da ferramenta) para o Fortalecimento dos Sistemas Distritais de Saúde
 - Tem conseguido usar a ferramenta
 - Com que facilidade tem usado. O tempo e os recursos humanos necessários?
 - Tem sido útil ou não o uso desta?

Nota para o entrevistador: Para as questões subsequentes, observe o *plano de acção distrital*, *diagnóstico situacional* e *Plano de fortalecimento das US periféricas*, *calendário de supervisões*, *Plano de acção das unidades sanitárias/matriz de recomendações*.

9. Em que actividades específicas, relacionadas com o CdG, tem participado? Fale especificamente da sua área. (ver o plano de acção distrital que é o resultado da avaliação)
 - a. Por favor liste as actividades;
 - b. Qual é o seu grau de participação/envolvimento, por actividade;
Com que frequência desempenha as actividades listadas;
10. Pode dar exemplos específicos de algumas actividades que tenham implementado com base na avaliação de gestão distrital (CdG), que pensa que tiveram o maior impacto? (Esta pergunta está relacionada com a anterior)
 - a. Listar as actividades e o impacto nas áreas de gestão (estrutura, formação, implementação, Monitoria e Avaliação), com base na implementação do plano de acção distrital?

Caso o respondente não tenha conhecimento de todas as áreas de gestão, priorize as seguintes 3 áreas: Implementação, monitoria e avaliação/tomada de decisões.
(nota – em anexo a tabela resumindo possíveis melhorias implementadas).
11. Na sua opinião, das actividades implementadas para reforçar a gestão distrital do seu programa, referidas na pergunta 5, teve algum impacto nos serviços prestados na US? Como?

Por favor, pedir a cada gestor os planos de fortalecimento, de calendários de supervisão, matriz de recomendações e planos de acção das US:

 - a. Especifique as actividades que ocorreram no sector e que tiveram maior impacto na prestação dos serviços de saúde nas Unidades Sanitárias?
 - b. A forma como os gestores selecionavam as US para a supervisão antes da implementação do CdG é diferente/ou não da forma aplicada após a implementação do CdG?
 - c. Tem um diagnóstico situacional para as unidades sanitárias (documentar os resultados/fraquezas)?
 - d. Tem um Plano de supervisão e relatórios de visita? Onde é registado o seguimento deste plano?
 - e. Evidências que eles fazem o seguimento/supervisão?
 - f. Fale das distinções gerais entre as US – quais é que mudaram mais? Quais é que mudaram menos? Quais as razões?

Nota ao Entrevistador: Explorar estes pontos caso o assunto não surja espontaneamente antes nos probes.

- Deve analisar a tabela 2x2 antes da visita e anotar qual foi o desempenho do distrito visitado em relação os dois indicadores que foram analisados (% de mulheres que sabem o seu seroestado e % de mulheres grávidas HIV+ recebendo tratamento).
 - Com base nessa informação explorar mais - se houve melhoria; e perguntar por que acha que ocorreu.

12. Na sua opinião, quais são os principais pontos fortes do desta intervenção de fortalecimento dos sistemas distritais de saúde (CdG)? Quais são os principais pontos fracos?

a. Incluir também sobre os pontos fortes e fracos do processo de avaliação.

13. Há mais alguma coisa que queira partilhar sobre o Caminho de Graduação Distrital e o respectivo impacto sobre os distritos e as unidades sanitárias?

Características / Gestor Distrital	Estrutura	Formação	Implementação	Monitoria	Avaliação / Tomada de Decisões
<i>1. Planificação / NEP Distrital</i>	<ul style="list-style-type: none"> - Termos de referência e organograma do colectivo distrital definido? - Guiões de planificação disponíveis? 	<ul style="list-style-type: none"> - Gestores distritais formados em planificação (PESOD, PES, etc.) 	<ul style="list-style-type: none"> - Planos mensais e trimestrais documentados e alinhados com PES / PESOD? 	<ul style="list-style-type: none"> - Planos de implementação e/ou actualizados trimestralmente em função do balanço do PESOD? 	<ul style="list-style-type: none"> - Prova da implementação e/ou seguimento de acções correctivas para melhorar o grau de cumprimento dos planos?
<i>2. Sistemas de Informação / NEP Distrital</i>	<ul style="list-style-type: none"> - NEP distrital tem TdR? - NEP distrital tem guião / POPs documentados de monitoria e avaliação? - Instrumentos do SIS disponíveis? 	<ul style="list-style-type: none"> - NEP distrital formado em monitoria, avaliação, construção de indicadores, uso de Modulo Básico, medição do desempenho dos planos, e/ou o processo de disseminação e uso de informação estratégica 	<ul style="list-style-type: none"> - Stock dos instrumentos do SIS adequado e armazenado de forma organizada - Resumos mensais arquivados em pastas por sector clínico? - Evidências que o NEP centraliza toda a informação da rede sanitária num quadro estatística? - Prova da realização de reuniões de análise de dados? 	<ul style="list-style-type: none"> - Evidências que existe um sistema de avaliação de qualidade de dados? - Prova que existe um sistema de supervisão para reforço do SIS dentro das US no distrito? - Existe um sistema de retro informação aos gestores e US periféricas? 	<ul style="list-style-type: none"> - Provas e outras indicações da adopção de acções correctivas em resposta às inconsistências na aderência aos padrões do SIS - Prova da implementação e/ou seguimento das acções correctivas? - Evidência do uso de informação estratégica para a tomada de decisões?

Característica s / Gestor Distrital	Estrutura	Formação	Implementação	Monitoria	Avaliação / Tomada de Decisões
3. Gestão Financeira / Gestor Distrital de Finanças e UGEA	<ul style="list-style-type: none"> - Evidência duma equipa de gestão financeira e UGEA com actas das reuniões mensais? - Existe sistema de informação financeira com arquivos das despesas e todas as transacções conforme as normas? - Existe tabela de inventário de equipamento e outros bens? 	<ul style="list-style-type: none"> - Evidência que a equipa de gestão financeira e os responsáveis para aquisições foram formados em administração / gestão financeira, uso do SISTAFE, e / ou o seguimento dos procedimentos relevantes para aquisições de bens / serviços? 	<ul style="list-style-type: none"> - Prova da capacidade da equipa de gestão financeira para preparar e analisar os relatórios de execução financeira (balancetes)? - Evidência da segregação de funções? - Desempenho da equipa de gestão financeira verificada por auditorias? - Evidência que as aquisições feitas obedecem as normas de UGEA? 	<ul style="list-style-type: none"> - Existência de actas de reunião que evidencia a análise do grau de execução financeira (balancetes)? - Prova da implementação das recomendações estipuladas nas auditorias? - Evidência do uso dos instrumentos de gestão dos stocks? - Existência de relatórios de supervisão das actividades do armazém? 	<ul style="list-style-type: none"> - Evidência documentada das reuniões de análise da execução orçamental? - Prova da implementação e seguimento de acções correctivas decididas nas reuniões de análise da execução orçamental?
4. Recursos Humanos / Gestor Distrital de RHs	<ul style="list-style-type: none"> - Existência do núcleo de formação continua? - Diagnóstico situacional de sistema de registo e cadastramento de pessoal de saúde instalado no SDMAS (eCAF) disponível? - Existência do quadro de pessoal que trabalham nas US no distrito; 	<ul style="list-style-type: none"> - Existência de pessoal treinado para operar com o eCAF, SIFo e SIP? - Evidência de pessoal treinado em planificação e orçamentação de pessoal? 	<ul style="list-style-type: none"> - Disponibilidade de arquivo de cadastro de pessoal actualizado; - Evidência que o pessoal precário foi contratado seguindo as normas? - Evidencia duma orçamentação das necessidades para pessoal? - Evidência que os trabalhadores de saúde têm acesso às formação continuas (relatórios, processos 	<ul style="list-style-type: none"> - Disponibilidade de relatórios periódicos com a situação real administrativa de pessoal (aposentação, novos ingressos, promoções, etc.)? - Evidência de actividades de monitoria do plano de RH? - Evidência de aplicação do plano distrital com um 	<ul style="list-style-type: none"> - Existência de plano actualizado de treinamento de pessoal? - Evidência de relatórios sobre a distribuição do pessoal de saúde? - Evidencia de um arquivo de processos individuais devidamente organizados?

Característica s / Gestor Distrital	Estrutura	Formação	Implementação	Monitoria	Avaliação / Tomada de Decisões
			individuais)?	sistema de rotação de pessoal?	
5. Fornecimento e Logística / Gestores distritais do DDM, Farmácia e Laboratório	<ul style="list-style-type: none"> - Evidências do uso correcto pelos técnicos de farmácia dos instrumentos de planificação e controlo de stock? - Existência de um calendário distrital de visitas as US periféricas para distribuir medicamentos e recolher amostras / entregar resultados? - Existência de um plano de manutenção preventiva para os meios de transporte? 	<ul style="list-style-type: none"> - Prova que os responsáveis de transporte e técnicos do laboratório foram formados em sistemas de logística, livros de controlo de stock e/ou logbooks para monitorar a recolha e envio de amostras e resultados laboratoriais? - Evidência que os técnicos da farmácia foram formados na quantificação, gestão e controlo de stock de medicamentos e artigos médicos? 	<ul style="list-style-type: none"> - Prova que os sistemas logísticos são funcionais para a distribuição atempada de medicamentos e a recolha e envio de amostras e resultados laboratoriais? - Existem condições de armazenagem e conservação de medicamentos? - Evidência do uso do Sistema de Informação de Medicamentos e Artigos Médicos? 	<ul style="list-style-type: none"> - Evidência de uso dum sistema de registo das colheitas das amostras e a entrega dos resultados? - Evidência de uso dos logbooks e dos planos de transporte? - Existência dos planos de supervisão e assistência técnica à farmácia em cada visita que contem os achados e recomendações? 	<ul style="list-style-type: none"> - Prova da avaliação periódica e sistemática dos indicadores do programa? - Evidência do uso dos relatórios das visitas para assegurar a implementação das recomendações dirigidas a melhorar o sistema de controlo de stock de medicamentos e consumíveis e rede de logística das amostras e resultados laboratoriais?
6. Gestão de Prog. de Saúde / Gestor Distrital de HIV / SMI / TB	<ul style="list-style-type: none"> - Existência de um mapa “diagnóstico situacional” que mostra as necessidades em falta e fraquezas em cada US periférica no distrito dentro do sector clínico 	<ul style="list-style-type: none"> - Disponibilidade e de um plano de fortalecimento para reforçar o acesso e qualidade dos serviços prestados no sector clínico em questão (baseado no diagnóstico) 	<ul style="list-style-type: none"> - Evidência que o gestor distrital do programa de saúde em questão está a implementar o plano de fortalecimento (evidências em termos de matrizes de recomendações ou relatórios de supervisão, etc.)? 	<ul style="list-style-type: none"> - Evidências do seguimento ao plano de fortalecimento do programa de saúde em questão, e da monitoria e análises dos indicadores do programa de saúde em questão? 	<ul style="list-style-type: none"> - Prova da avaliação periódica e sistemática dos indicadores do programa de saúde em questão? - Evidências do uso dos relatórios das visitas para assegurar a implementação

Característica s / Gestor Distrital	Estrutura	Formação	Implementação	Monitoria	Avaliação / Tomada de Decisões
	em questão?	situacional para resolver as fraquezas identificadas)? - Evidências que os gestores distritais dos programas de saúde foram capacitados para elaborar e implementar um plano de fortalecimento ?	- Evidências da implementação de intervenções de melhoria e garantia de qualidade em pelo menos uma US?	- Existência dos planos de supervisão e assistência técnica, e a produção dum relatório em cada visita que contem os achados e recomendações?	das recomendações dirigidas a melhorar a implementação do programa de saúde em questão? - Evidência da implementação das recomendações ?
7. Laboratório / Gestor Distrital do Laboratório	- Existência de um mapa de diagnóstico situacional? - Disponibilidade do instrumento de controlo e seguimento da manutenção preventiva e correctiva para cada equipamento existente no distrito? - Existência do plano de manutenção preventiva e correctiva? - Evidências do uso correcto dos instrumentos de planificação e controlo de	- Prova que os técnicos do laboratório foram formados em manutenção preventiva? - Evidência do pessoal técnico formado na gestão e controlo de stock de reagentes e consumíveis de laboratório?	- Evidência da execução do plano de manutenção preventiva para cada equipamento (como o uso de reagentes de limpeza e calibração do equipamento)? - Evidência da detecção, reparação de pequenas avarias em equipamentos, e referimento de avarias para o nível superior? - Sistemas logísticos funcionais para a distribuição atempada de reagentes e consumíveis em todas as US?	- Existência de sistema de informação da manutenção preventiva, detecção e reparação de avarias implementado? - Evidência da utilização do sistema de informação na tomada de decisões dos SDSMAS (como uma solicitação do técnico da DPS)? - Existência dos planos de supervisão, assistência técnica e produção dum relatório em cada visita com	- Evidência da avaliação periódica dos indicadores do sistema do programa? - Evidência do uso dos relatórios das visitas para assegurar a implementação das recomendações dirigidas a melhorar o sistema de manutenção preventiva, detecção e reparação de avarias, e sistema de controlo de stock? - Evidência da implementação das recomendações .

Característica s / Gestor Distrital	Estrutura	Formação	Implementação	Monitoria	Avaliação / Tomada de Decisões
	stock de reagentes e consumíveis?			recomendações?	
8. Mobilização Comunitária / Gestor Distrital da Mobilização Comunitária - SESP	<ul style="list-style-type: none"> - Existência de um diagnóstico situacional das estratégias comunitárias, estratégias de IEC, mecanismos de coordenação com os serviços de saúde, e o ponto da situação dos problemas mais comuns que requerem intervenção e grupos alvo? - Disponibilidade de um Plano de Fortalecimento das Estratégias Comunitárias ? 	<ul style="list-style-type: none"> - Disponibilidad e de um plano de fortalecimiento para reforçar as estratégias comunitárias (baseado no diagnostico situacional para resolver as fraquezas identificadas)? - Evidencia que o gestor distrital de mobilização comunitária foi capacitado para elaborar e implementar um plano de fortalecimento ? 	<ul style="list-style-type: none"> - Evidências da execução atempada das actividades dentro do plano de fortalecimiento das estratégias de IEC e mobilização comunitária? 	<ul style="list-style-type: none"> - Evidência da monitoria e análises dos indicadores das estratégias comunitárias? - Evidências do seguimento ao plano de fortalecimiento das estratégias comunitárias por meio de supervisão e assistência técnica? - Existência dos planos de supervisão e assistência técnica e produção dum relatório em cada visita que contem os achados e recomendações? 	<ul style="list-style-type: none"> - Prova da avaliação periódica e sistemática dos indicadores das estratégias comunitárias? - Evidências do uso dos relatórios das visitas para assegurar a implementação das recomendações dirigidas a melhorar a implementação das estratégias comunitárias? - Evidência da implementação das recomendações ?

Gestores distritais:

Administração e finanças, Recursos Humanos, Técnico chefe de laboratório, Técnico chefe de SMI, Técnico chefe de TARV, Técnico chefe da Farmácia, Responsável pela ligação com a comunidade e Responsável pelo Economato

Guião de Entrevista Individual com o pessoal da Unidade Sanitária

Introdução: O projecto CHASS-SMT pretende levar a cabo um "Estudo do Efeito do Reforço dos Sistemas de Gestão dos Serviços Distritais de Saúde na Prestação de Serviços Clínicos de HIV" em 6 distritos nas províncias de Sofala, Manica e Tete, em colaboração com a COWI Moçambique, Lda. O objectivo principal deste estudo é de investigar se os sistemas de gestão distritais estão associados de alguma forma a melhorias no acesso, qualidade e sustentabilidade da prestação de serviços de HIV. Para o alcance dos objectivos do estudo, será aplicada uma metodologia qualitativa; que consistirá em entrevistas com pessoal do CHASS-SMT, DPS, SDSMAS, unidades sanitárias, assim como pacientes das unidades sanitárias, após o consentimento informado de todos.

Objectivo: explorar a percepção da Unidade Sanitária sobre os efeitos do Caminho de Graduação Distrital, através das opiniões sobre a interação entre SDSMAS e US

Grupo alvo: Director clínico da Unidade Sanitária, técnicos e agentes de medicina (que fazem consultas de HIV), enfermeiras de SMI e TB, técnico de laboratório e técnico da farmácia.

Nome	
Cargo/Posição	
Sector/Serviço	
Data de Início de trabalho nesta US	
Nome Unidade Sanitária	
Distrito/província	

- I. Gostaríamos de falar sobre a relação entre o SDSMAS e a Unidade Sanitária, no âmbito do da implementação do Reforço do Sistema de Saúde. Da sua experiência, descreva as diferentes formas através das quais o SDSMAS interage com esta unidade sanitária? *Cada técnico de saúde responderá para a sua área específica*)

Para cada interacção, liste: (Entrevistador, explicar o CdG (diagnóstico, identificação dos problemas e plano de acção).

- a. Quem está envolvido (do lado do SDSMAS e do lado da unidade sanitária),
- b. A frequência que se efectua a interacção, e
- c. O que acontece durante a interacção (exemplos abaixo):

- Visitas de supervisão
- Recolha de dados
- Análise e discussão de dados
- Treinamentos
- Entrega de medicamentos, materiais, resultados de testes
- Recolha de amostras de laboratório
- Implementação de iniciativas (Melhoria de qualidade, resolução de problemas, etc.)
- Outras

2. Gostaríamos de falar das mudanças que poderão ter ocorrido nas formas de interação com o SDSMAS que referiu a cima. Consegue dar exemplos concretos de alguma mudança, nos últimos 17 meses⁶ (2014- Maio 2015)? Pode descrever mudanças que possam estar relacionadas com as actividades implementadas no âmbito do reforço do sistema de saúde, em relação a:
- a. Frequência da interacção,
 - b. As pessoas envolvidas,
 - c. Ao que acontece durante a interacção, ou novas interacções/actividades,
 - d. Ao seguimento das recomendações e o apoio para implementar os mesmos.
3. Na sua opinião, qual foi o impacto dessas mudanças para esta unidade sanitária? Favor descrever quaisquer efeitos que cada uma dessas mudanças teve na prestação dos serviços de saúde desta unidade sanitária, em relação à:
- a. A motivação do pessoal
 - b. O desempenho do pessoal
 - c. A adesão aos sistemas e procedimentos
 - d. A qualidade dos serviços
 - e. A infra-estrutura da unidade sanitária
 - f. Outras possíveis mudanças identificadas
4. Gostaríamos de explorar o impacto dessas mudanças em determinados serviços de saúde. Nos últimos 17 meses (2014- Maio 2015), esta unidade sanitária teve alguma mudança (positiva ou negativa) no desempenho relativo aos seguintes serviços:

Serviços de saúde	Desempenho	Qualidade dos serviços	Volume de pacientes	Cobertura	Retenção
TARV (Novos inícios ao TARV)					
PTV (Nº e % das MGs que conhecem seu seroestado na CPN; Nº e % das MGs					
HIV+ na CPN que receberem ARVs para PTV)					
TB/HIV (Nº e % dos pacientes co-infectados com TB/HIV que fizerem TARV)					

5. Caso a resposta seja positiva, que actividades foram implementadas que levaram a essas mudanças?
Caso a resposta seja negativa, quais são os desafios para a melhoria destes serviços?
6. Há mais alguma coisa que queira nos dizer sobre o apoio recebido do SDSMAS para suportar e melhorar os serviços clínicos prestados nesta US, ou sobre quaisquer mudanças que ocorreram nesta unidade sanitária recentemente?

⁶ O número real será diferente dependendo de cada distrito e quando a Graduação Distrital foi iniciada.

Guião de Entrevista com o pessoal de CHASS-SMT

Introdução: O projecto CHASS-SMT pretende levar a cabo um "Estudo do Efeito do Reforço dos Sistemas de Gestão dos Serviços Distritais de Saúde na Prestação de Serviços Clínicos de HIV" em 6 distritos nas províncias de Sofala, Manica e Tete, em colaboração com a COWI Moçambique, Lda. O objectivo principal deste estudo é de investigar se os sistemas de gestão distritais estão associados de alguma forma com a melhoria no acesso, qualidade e sustentabilidade da prestação de serviços de HIV. Para o alcance dos objectivos do estudo, será aplicada uma metodologia qualitativa; que consistirá em entrevistas com pessoal do CHASS-SMT, DPS, SDSMAS, unidades sanitárias, assim como pacientes das unidades sanitárias, após o consentimento informado de todos.

Objectivo: Perceber melhor o funcionamento e o processo de implementação do Caminho da Graduação, bem como a percepção do pessoal do CHASS-SMT em relação ao plano de implementação (objectivos, indicadores e resultados planificados e alcançados) e seu possível impacto no acesso, qualidade e sustentabilidade da prestação de serviços de HIV. Não se pretende avaliar o performance da equipa do programa.

Grupo alvo: entrevista de grupo a nível central (Maputo) e uma entrevista de grupo com a equipa polivalente no distrito/CHASS-SMT província (Entre 4 a 5 participantes por distrito/província).

O guião é composto por duas secções (A e B) – a secção "A" será aplicada ao CHASS-SMT Central e as EPs; enquanto a secção "B" será aplicada somente as EPs. As notas das entrevistas serão anotadas no caderno.

Nome				
Cargo/posição				
Anos de trabalho no projecto CHASS_SMT				
Contacto				
Distrito/província (EPs)				

A. CHASS-SMT Central (Gestor do programa) vs Equipas Polivalentes

- I. Gostaríamos de explorar o funcionamento/implementação do Caminho de Graduação Distrital (CGD).

Explorar:

- *Em que consiste o CGD? Como funciona a estratégia (desde o CHASS central até o distrito)*
- *Objectivo/propósito*
- *Categorias e componentes/características de intervenção; objectivos, indicadores de medição; processo de avaliação, resultados planificados, etc.*
- *Como foram selecionados os Distritos prioritários. critérios*
- *Existem Planos de acção dos SDSMAS, assistência técnica/intervenções ligadas ao CGD*
- *Papel das EPs na estratégia*

2. O SDSMAS tem recebido da equipa do CHASS-SMT assistência técnica para fortalecer a sua capacidade em planificação estratégica e implementação dos planos de acção?

Perguntar sobre:

- Que aspectos da assistência técnica do CHASS-SMT mudaram com a introdução do CdG
 - Os SDSMAS têm utilizado os resultados da avaliação do plano de acção para orientar e priorizar a assistência técnica?
 - Em qual das 8 características os resultados tem sido positivos/bom desempenho ou negativos/Mau desempenho? Diferenças entre os distritos?
3. Depois da introdução do CGD, houve mudanças no funcionamento nos 6 distritos prioritários selecionados para o estudo?
- Perguntar sobre:*
- Alterações em cada uma das 4 características, nomeadamente
 - ❖ Planificação,
 - ❖ Sistema de Informação para a Saúde fortalecida,
 - ❖ Recursos Humanos,
 - ❖ Fornecimento e Logística.
4. Depois da introdução do CGD, houve mudanças no funcionamento das unidades sanitárias?
- Perguntar sobre:*
- Melhorou o acesso e a qualidade dos serviços prestados e quais os sectores/serviços de saúde que apresentaram melhoria;
 - Como os funcionários do distrito supervisionam / interagem com o pessoal da unidade sanitária?
 - As novas iniciativas ou intervenções implementadas como resultado da Graduação Distrital?
5. Que actividades implementadas, no âmbito do CGD, acha que levaram à essa(s) mudança(s) no funcionamento das unidades sanitárias e na qualidade da prestação de serviços? Favor descrever.
(Esta pergunta está relacionada com a anterior)
6. No geral, qual é a sua percepção sobre o envolvimento dos SDSMAS em relação a:
- Aceitação, entendimento, dedicação ao processo de avaliação
 - A facilidade ou dificuldade no uso da ferramenta da avaliação da graduação
 - O tempo e os recursos humanos necessários
7. Na sua opinião, quais são os principais pontos fortes do processo de implementação do CGD?
Quais são os principais pontos fracos?
8. Há mais alguma coisa que queira partilhar sobre o CGD e o respectivo impacto sobre os distritos e as unidades sanitárias?

**B. Questões dirigidas somente as Equipas polivalentes dos diferentes distrito
(entrevista de grupo)**

1. Gostaríamos de falar sobre o apoio técnico que o CHASS-SMT tem prestado ao SDSMAS. Que apoio técnico prestou e para quais os sectores? Qual tem sido o sector que requerido maior suporte técnico?
2. Descreva a sua experiência com o uso da ferramenta de avaliação da Graduação Distrital nos distritos prioritários. Quais são os aspectos que funcionam melhor? Quais são os aspectos que apresentam mais desafios?

Perguntar sobre:

O envolvimento de SDSMAS: aceitação, entendimento, dedicação

A facilidade ou dificuldade no uso da ferramenta

O tempo e os recursos humanos necessários

Dê exemplos concretos de melhorias no funcionamento no SDMAS e na US, em resultado da intervenção do CGD