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Life after PEPFAR's direct service support: program sustainability among South African HIV/AIDS organizations funded by PEPFAR

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LIFE AFTER PEPFAR'S DIRECT SERVICE SUPPORT:

PROGRAM SUSTAINABILITY AMONG SOUTH AFRICAN

HIV/AIDS ORGANIZATIONS FUNDED BY PEPFAR

by

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DEDICATION
To my love and light:
Khanyi Lily Chiliza

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ABSTRACT

Background

Public health practitioners have little guidance of how to plan for the sustainability of donor sponsored programs. The literature is broad and provides no consensus on a definition of sustainability. This study used a robust mixed-methods methodology to develop a list of program sustainability factors to inform donor-funded programs.

Methods

This study examined 61 health facilities in the Western Cape, South Africa, supported by four PEPFAR non-governmental organizations (NGOs) from 2007 to 2012. Retention in Care (RIC) was used to determine health facility performance. Sustainability was measured by comparing RIC during PEPFAR direct service, to RIC in the post PEPFAR period (2012 to 2015). Crude and

adjusted risk differences were calculated to estimate the association between the type of government ownership, PEPFAR NGO support, ART treatment policy change, size of ART patient cohort, human resource transition and our outcome of RIC at 12 and 24 months on ART.

Forty-three semi-structured in-depth interviews were conducted with key informants. The qualitative data were used to examine how predictor variables were operationalized at a health facility and NGO level.

Results and Discussion

Though the linear regression models showed no difference in RIC pre and post 2012, our graphed descriptive results showed a dip in RIC among the majority of the study facilities in 2012/2013. The RIC decrease was likely due to PEPFAR's move from direct service to technical assistance: the decrease in the numbers of community health workers and a change in HIV treatment eligibility guidelines.

Our qualitative results suggest the following lessons for the sustainability of future programs:

- Sufficient and stable resources (i.e. financial, human resources, technical expertise, equipment, physical space)
- Investment in organizations that understood the local context and have strong relationships with local government
- Strong leadership at a health facility level.

- Some disease specific staff (i.e. clinical, administrative, community)
- Joint planning and formalized skill transfer:
- Local positive perceived value of the program
- Stable financial and political support for the program

Conclusion

Sustainability is complex, context dependent, and reliant on various processes and outcomes. This study suggests additional health facility and community level staff should be employed in the health system to ensure RIC sustainability.

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List of Abbreviations

ART	Antiretroviral Treatment
CDC	United States Centers for Disease Control
CHW	Community Health Worker
CI	Confidence Interval
CoCT	City of Cape Town
CSSA	Child Survival Sustainability Assessment
DAH	Development Assistance for Health
DSF	Dynamic Sustainability Framework
FHI	Family Health International
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HAST	HIV, AIDS, STI and Tuberculosis
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
KIIs	Key informant interviews
LMIC	Low and Middle income countries
MODE	Measuring Organization Development and Effectiveness
MSF	Medecins Sans Frontieres
MSM	Men who have sex with men
M&E	Monitoring and Evaluation
NCDs	Non-communicable diseases
NDoH	National Department of Health
NGO	Non-Governmental Organizations
NSP	National Strategic Plan
PEPFAR	United States President's Emergency Fund for AIDS Relief
PFIP	Partnership Framework Implementation Plan

PHC	Primary Health Care
PI	Principal Investigator
PLHIV	People Living with HIV
PMTCT	Prevention of mother to child transmission of HIV
PPL	PEPFAR Provincial Liaison
PSAT	Program Sustainability Assessment Tool
PSI	Program Sustainability Index
RD	Risk Difference
RIC	Retention in Care
SAG	South African Government
SANAC	South African National AIDS Council
SIDA	Swedish International Development Agency
SWAp	Sector Wide Approach
TAC	Treatment Action Campaign
TB	Tuberculosis
US	United States
USAID	United States Agency For International Development
USG	United States Government
WCGH	Western Cape Government Health
WHO	World Health Organization

Chapter 1: Introduction

Problem Statement

Global health is a multibillion-dollar industry. Relatively new sources of donor funding from private foundations, philanthropists and the private sector have significantly expanded the field, specifically for HIV/AIDS. Recent data from UNAIDS and the Kaiser Family Foundation shows international funding for HIV increased annually by 7% from $1.2 billion in 2002 to $8.6 billion in 2014 (1). Since 2012, donors have started to shift HIV funding to domestic funding sources (private and public), where domestic funds account for 57% of all global HIV investments (2015) (2).

With the transition of funding, very little is known about what happens to programs or their benefits when donor funding ends. The literature estimates at least 40-50% of social programs collapse one year after funding ends (3,4). PEPFAR transition literature from South Africa, Nigeria and Uganda have highlighted decreased access and reduced quality of care, preventative and community services and retention in care (5–8). Additionally, Cekan found only 1% of development projects are evaluated post donor funding (9).

Africa has been referred to as "the graveyard of development projects" due to the failed ability of local entities to sustain projects post donor funding

(10). How to nurture the continuation of effective program benefits, especially

after donors leave, should be a priority for the public health community just as

much as implementing new programs. If efforts to scale up and sustain effective

health investments are not prioritized, donors are constantly re-inventing the

wheel, wasting scarce resources and time (11–13). There is also an ethical

perspective: Is it moral to develop effective programs with no ability to sustain

them? (14). This is particularly true for lifelong diseases such as HIV/AIDS and

non-communicable diseases (NCDs)

South Africa is the country with the greatest number of people living with

HIV globally (7.9 million). By the end 2017/2018 with 4.1 million adults on

treatment (15), South Africa is running the largest HIV treatment program in the

world (16). From 2004 to 2018, the United States President's Emergency Fund for

AIDS Relief (PEPFAR) invested $5.9 billion into the South African HIV/AIDS

response (17). The majority of PEPFAR funds in South Africa were distributed to

non-governmental organizations (NGOs) that work within state health facilities

to strengthen HIV/AIDS care and treatment programs. During the initial stages

of PEPFAR, the majority of funds supported the distribution of antiretroviral

treatment (ART) (18).

Over the years, there have been various changes to PEPFAR's leadership and strategy in South Africa. In 2012, there was a shift from direct service delivery to health systems strengthening, a gradual budget decrease and handover of the HIV program to the South African government (SAG). A study in Durban, South Africa, from March-June 2012, estimated during the early stages of the PEPFAR transition when PEPFAR funding initially decreased, that 20% of clients were lost to follow-up by care and treatment programs in South Africa (19). Based on Bassett's estimate (20), Kavanagh approximates the PEPFAR transition affected 50,000 to 200,000 of people living with HIV (PLHIV) (16). This high loss of clients was a major concern due to lack of adherence and possible increase of drug resistant strains of the virus. No formal evaluation of the PEPFAR transition in South Africa was ever undertaken; therefore, it is unclear what happened to thousands of clients on treatment, staff, NGOs formerly funded by PEPFAR or HIV outcomes, such as ART retention and mortality.

This dissertation evaluated PEPFAR program outcomes that were sustained following the withdrawal of funding for direct service support (2007-2012) and the factors that led to program sustainability. To this end we characterized health facilities by their ability to sustain HIV program outcomes

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post PEPFAR funding for direct service support and determined the

organizational (i.e. health facility and NGO), programmatic, and contextual

factors that led to sustainability. The results from this research provide practical

guidance for organizations, health facilities, governments and donors to plan for

and assess the long-term sustainability of their investments.

<u>Conceptual Framework</u>

The main hypothesis of this study was that program components that are

able to sustain themselves, are more likely to produce continued health outcomes

and overall healthier populations (21). Walugembe et al. (22) highlighted the

importance of using theory to develop, implement, evaluate and sustain

programs. For this study a conceptual framework was developed based on the

amalgamation of the Dynamic Sustainability Framework (DSF) (23), Sarriot (24),

Mancini and Marek (25) and Roger and Coates's (26) research applied to

PEPFAR funding structures. The commonality of the aforementioned research

was the focus on context: "*sustainability is the process of managing and supporting*

the evolution of an intervention within a changing context"(23), which implied

sustainability requires the adaptation of a program to the context.

Organizational, implementation and public health experts (27–29) agree

monitoring sustainability requires a quality improvement approach or

continuous cycles of evaluation, reflection, planning and action. These authors

suggested that monitoring the organizational, programmatic change process and

environment or contextual characteristics are required. Pettigrew highlights three

dimensions of context (29):

> 1. **Internal context:** organizational structure and culture and program characteristics which influence attitudes and behaviors toward change;
> 2. **External context**: economic conditions, patient demands, donor requirements, government priorities which create opportunities and threats to sustainability;
> 3. **History of change process**: it is important to understand the responses and decisions made throughout the life of the project to inform future project goals.

This study's conceptual framework (Figure 1) is based on the World

Health Organizations (WHO) health system's framework, comprised of six

building blocks: 1.) *leadership/governance*, 2.) *health workforce*, 3.) *information and

research*, 4.) medical products, 5.) vaccines/technologies and 6.) health care

financing (30). The focus of this study was on the first three building blocks

(highlighted by italics in the above sentence). We also added *supportive*

environment to the framework. Within the building blocks there are systems and

program processes when a program ends that result in the continuation of

program outcomes. The study hypothesis is that program, organizational (i.e.

NGO and health facility) and contexutual characteristics (supportive

environment) (see blue boxes Figure 1) of programs influence the sustainability of program outcomes. Though sustained finance is part of program sustainability, it was not included because the SAG continues to provide the majority of funding for HIV/AIDS in South Africa (Figure 7).

The top half of the framework (Figure 1, above Project Ends) highlights the quantitative part of this study, focused on the health facilities that sustained ART retention rates post PEPFAR 2012 funding. The qualitative part of the study (below Project Ends) attempted to understand the implementation of sustainability factors by PEPFAR NGOs and health facilities.

This study included an analysis of the context and adaptation of the PEPFAR program to the context. A document review, in-depth interviews with NGO and health facility staff captured the context (i.e. internal and external contextual factors). There were various external contextual factors, which influenced sustainability. These included donor, organizational, provincial and district government priorities and policies, managerial decisions and structures, organizational culture, health system strengths and weaknesses and relationships. The internal context was captured through an analysis of the organizational and programmatic factors of sustainability, while the history of the program was captured via in-depth interviews with the NGO and health

facility staff. The study assessed health system outcomes three years post donor funding, which was an adequate time to assess long term sustainability.
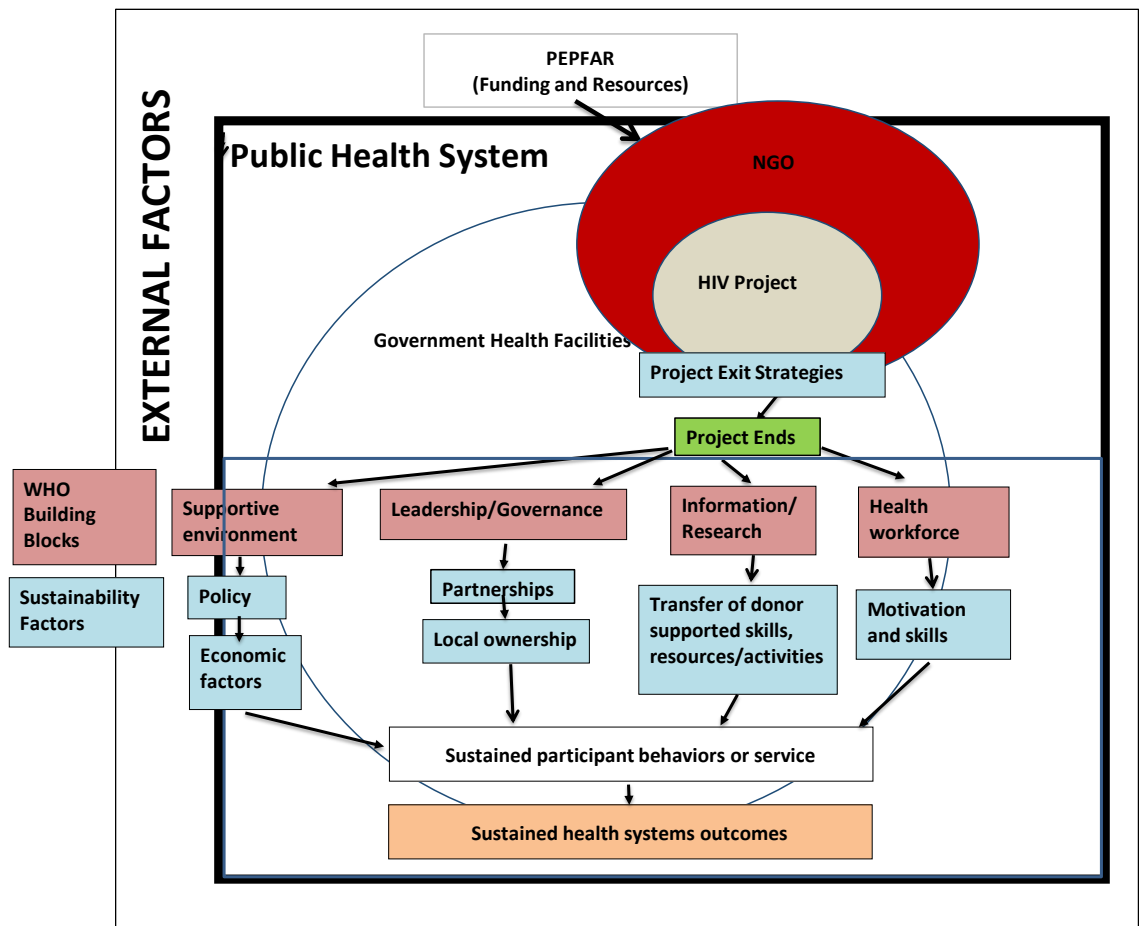
Figure 1: Conceptual Framework of Sustainable Health
Source: Adapted from, Chambers et al. (23); Sarriot et al. (24); Mancini and Marek (25) and Roger and Coates (26)

Chapter 2: Program Sustainability Literature Review

Literature Review Methods

A literature review was undertaken to establish a sustainability definition. This chapter reviews various definitions of sustainability to determine a study definition of sustainability. Sustainability research and tools were analyzed to establish the program, organizational and environmental sustainability factors. An attempt was made to distinguish between the definitions and tools that focus on sustaining programs vs sustaining outcomes, though the research does not consistently make this distinction.

Search Strategy

A literature search was conducted from September to December 2016 and updated in October to November 2019. Literature was reviewed from public health, implementation science, project management, monitoring and evaluation (M&E) and philanthropy research. The electronic databases listed below were searched for research published from 1990 to 2016. This reflects the time when sustainability became a public health priority (21). To locate the gray literature (i.e. conference proceedings, technical reports, policy documents), key word searches were used using internet search engines (*Google* and *Google Scholar*) and specific organizational websites. Reference lists were reviewed to locate

additional references related to the topic. Additionally, the reference organizer

(Mendeley) used for this dissertation recommended articles applicable to the

research topic. Factors of sustainability were extracted from frameworks,

systematic reviews and sustainability tools. Though the review included research

from developing and developed countries, since the focus was on externally

funded programs, most of the research was from developing countries

supported by Development Assistance for Health (DAH).

Electronic Databases:
- PubMed
- Web of Science
- Embase
- Google Scholar

Specific Journals
- Sustainability: Science, Practice and Policy

Organizational Websites
- Management Sciences for Health
- Family Health International
- U.S. Centers for Disease Control
- California Health Care Foundation
- World Vision
- USAID Development Experience Clearinghouse

A list of the search terms used with each database are listed in Appendix 1.

Inclusion Criteria
- Published in English
- Published between 1990 and 2016
- Research related to the sustainability of health programs and program outcomes
- Sustainability research in developing and developed countries
- Articles which defined sustainability
- Empirical research

Exclusion Criteria
- Articles focused on enabling environmental sustainability
- Articles which lacked a sustainability definition
- Tools to sustain programs at a country wide level

Review of the Literature: Definition of Program Sustainability

Sustainability remains in the infancy stage of conceptual development because much of the sustainability literature does not define sustainability (31) and if defined uses various definitions and multiple terms to describe the concept (14,31–33). A systematic review by Stirman et al. (31) found that 65% of the studies reviewed (n=125) failed to explicitly define sustainability.

Many studies view sustainability as an "*end goal*" post the program implementation stage. There are many unknowns about this phase because there is very little donor funding for long term program evaluations (9). Most of the literature conceptualizes sustainability as the continuation of programs, with the "hope" that program outcomes continue. Additionally there is a latency period of 3 to 10 years from the beginning of program implementation to the

observation of health benefits (34), which makes sustainability difficult to study.

Pluye et al. (32) argued that sustainability is a process that requires continuous

M&E over time. A shift in thinking from defining sustainability as an outcome to

a process, would change the sustainability paradigm (35).

Many donors are concerned with how long and how much funding is

required to sustain program outcomes, though very little research exists on this

topic. Since the research is nascent in this area, it is challenging for a donor to

predict the appropriate amount of resources required for programs to

realistically attain and sustain program objectives.

In 2017, Moore et al. (36) and 2018 Lennox et al. (35) reviewed the

sustainability literature to develop a comprehensive definition which included

seven themes:

1.) Delivery of the program
2.) Health benefits
3.) Behavior change
4.) Evolution or adaptation of program to context
5.) Time (when to start measuring sustainability post external funding)
6.) Capacity building inter-organizationally and
7.) Cost effectiveness.
The various definitions described below are distinct yet interconnected.

This section outlines the most common sustainability frameworks found in the

literature, followed by detailed descriptions. The literature highlights various

types of sustainability (e.g., financial, epidemiological, technical, and political),

we investigated one of the most underdeveloped concepts, program

sustainability. Table 1 described the most common program sustainability

definitions:

Table 1: Program Sustainability Definitions

	Name	Sustainability Focus	Sustainability Definition
1	Sustained programs within organizations	Programs	Program processes and structures are embedded into the habitual practices of organizations. (37)
2	Transition of international Donor funding to local government	Programs/Financing	Process of transitioning the finances and control of large-scale health programs from donors to local governments (38)
3	Program Replication	Program	Programs are implemented in different geographic locations (14)
4	Social Sustainability	Program Outcomes	The continued use of program components and activities for the continued achievement of desirable program and population outcomes (14).

Definition 1: Sustained Programs within Organizations

The sustainability research reflects the prevailing notion that

sustainability is the continuation of a program and program activities. This

definition includes both financial and programmatic continuation. To ensure

programs continue, the literature highlights the importance of sustaining

programs within an organization, via routinization and/or institutionalization. Often used synonymously, these concepts highlight two phases of integrating program practices into organizational structures and policies (37). Routinization is defined as *"the repeated use of program activities and resources in the daily operations of an organization"*(39). For example, if a project appears in the organizations budget on an annual basis, or if temporary staff become permanent employees, this would be considered a routine and more likely to be sustained within an organization.

Institutionalization builds on routinization. Routinization implies cycles of repeated action which result in the institutionalization or permanent changes to the way an organization functions (37). Institutionalization could include the establishment of new committees, changes to standard operating procedures, or the use of new technology to capture data, which becomes embedded into organizational systems. Therefore, as program activities become a permanent part of the organization, the program adopts new organizational norms, thus sustaining the program within the organization (4,40,41). Some authors state that any deviation from original program plans leads to unsustainable programs (42). This approach has been criticized for the failure to promote long-term health outcomes (43).

Definition 2: Transition of International Donor Funding to Local Government

The most recent definition of sustainability within the global health context involves, transition, graduation or the handing over of donor-funded programs to local government (44). Due to diminishing donor funds and the rapidly growing ability of low and middle-income countries (LMIC) to support their own health programs, donors are increasingly interested in transitions. The central premise of transition directly relates to sustainability and the long-lasting effects of development assistance for health (DAH). Transitions have been described as a "new art"(45), that is "complex" (5).

With little evidence around how to implement a transition effectively, there are some lessons which can be learned from the literature (46,47). Since transition typically involves a donor and local government it is imperative there is political will, accountability, a roadmap, communication and joint coordination involving various structures and stakeholders (47–49). Additionally, having a plan in place at a national and implementation level for all donor activities, monitoring of the process and providing technical capacity to the recipient country is important (47). Transition also relies on the ability of host countries to clearly articulate their needs, priorities and health strategies before the transition occurs (50). Evidence from Swedish International Development

Agency (SIDA) highlighted the factor of time, noting that a successful transition

must be gradual and should take more than a minimum of two years (51).

Avahan was a large-scale ($400 million) multi-year HIV/AIDS program,

funded by the Bill and Melinda Gates Foundation in India, which was

transitioned to the Indian government in stages in 2009, 2011 and 2012. Avahan

is the only prospective evaluation of a large scale transition (49). A statistical

analysis from Avahan revealed that transition preparedness and the use of an

exit strategy were predictive of sustaining HIV outcomes six months post

transition. Specifically, communication (i.e. NGO and government staff were

aware of the transition plans and were involved with transition planning),

alignment with government structures and norms (i.e. budget and reporting

changes) and the capacity of the program to produce positive results were

related to sustained health outcomes.

Definition 3: Program Replication

When designing public health programs the "scale-up," replication or

adoption of the program at other locations is often how donors define

sustainability (14). Program replication could include adopting the underlying

concept of the program or adopting from the original program and adapting to a

different context. According to the National Academies Press, program scale-up

is dependent on financial sustainability, organizational capacity and demand for the program (52).

Definition 4: Social Sustainability

Social sustainability relies on the ability of the local community and environment to sustain program outcomes. Sarriot et al's. (24) diagram below shows the program has very little control over sustainability after program support ends (Figure 2). When the program ends, a local process takes place where empowered program beneficiaries are responsible through their attitudes and changed behavior to maintain program outcomes (53).

END OF PROJECT = loss of control

PROJECT RESULTS (outcomes and processes)	LOCAL PROCESS	SUSTAINED IMPACT
Health and services improvement	Imagination Negotiation Decision	Post-Intervention Outcomes
Increased capacity and viability of local organization(s)		
Increased capacity of communities and progress in the social-ecological environment		
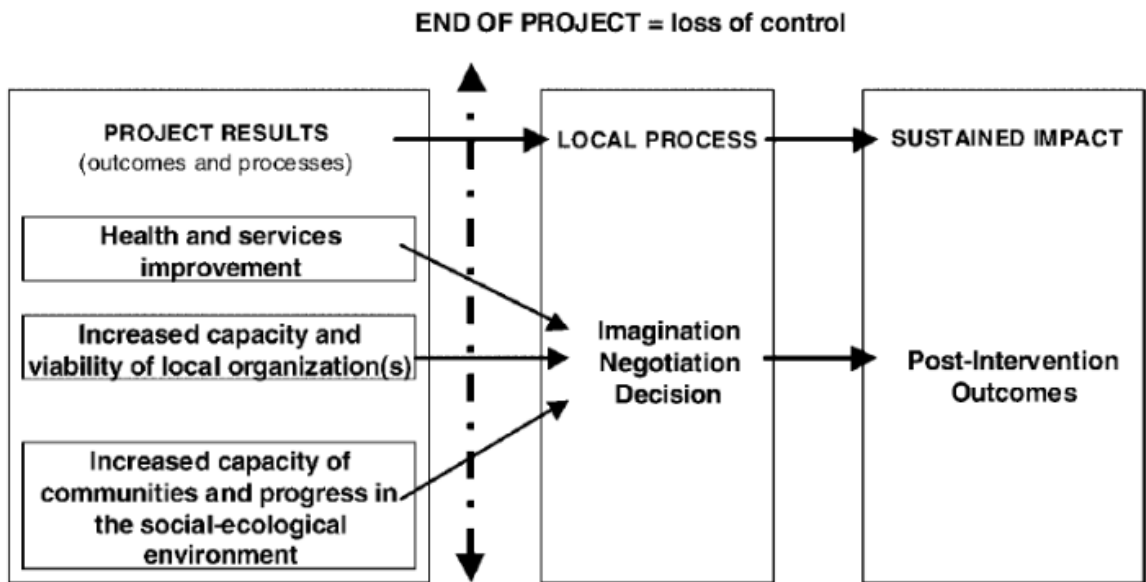
Figure 2: Social Sustainability: Program Results and Sustained Outcomes
Source : Sarriot, 2004 (24)

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Discussion

The common implicit factor among the sustainability definitions is the goal of maintaining health benefits at a population level (Definition 4). The difference among the concepts is the way in which health benefits are maintained. The first definition specifies the importance of the continuation of program activities, while the fourth definition specifies that empowered program beneficiaries are required to maintain changes in the community. The second definition is specific to large scale, donor-funded programs.

The other distinction is definition 1 views sustainability as a program outcome, where specific organizational and programmatic characteristics are necessary to sustain programs. The latter definitions take a systems perspective, to define sustainability as a change process that is ongoing and cyclical (27,31,32,54,55). This concept recognizes programs are situated within complex systems (i.e. new policies, funding decisions), whose attributes change over time, which directly and indirectly influence the implementation and sustainability of a program and program benefits.

Scheirer and Dearing explain that sustainability is likely to occur when the identification of the health problem, program design and implementation, the internal organizational capacity (14) and context are in alignment (27). Sarriot et

al. adds, sustainability is a combination of processes and outcomes over which programs only have partial influence (24). In conclusion, it is likely that a combination of program factors, empowered beneficiaries and contextual factors, lead to program and program outcome sustainability. Sustainability is a multi-dimensional concept, which should not be an afterthought when donor funding terminates, but built into all aspects of program design and implementation plans and continuously monitored.

Study Definition of Sustainability

This study focuses on sustaining program outcomes or benefits when donor funding terminates, which assumes continued financial support by local entities. The sustainability definition used for this study is a combination of sustainability definitions: **The continuous adaptation of program objectives to the context beyond the initial funding period for the continued achievement of population outcomes** (14).

Review of the Literature: Sustainability Factors

Understanding the key factors that lead to program sustainability is essential to ensuring donor investments are optimized. It is unclear if there is a set of core sustainability factors and how they evolve and interact with each other to achieve sustainability. Important to highlight is that every program

activity and outcome does not need to be sustained to be effective or useful

(56,57). The key question to ask: Is the sustainability of the program outcome

related to the objectives of the intervention? (58).

This section is divided into three main sections: comprehensive review of

sustainability factors (systematic review, sustainability evaluations, review of

sustainability tools), factors hindering sustainability and sustainability factors

used for this study.

Sustainability frameworks, tools, case studies, grey literature, statistical

and conceptual analyses and systematic and literature reviews were analyzed.

Appendix 2 is a summary of the review results. The purpose of Table 2 was to

quantify the number of times each sustainability factor was cited and summarize

the sustainability research and tools, which correspond with each sustainability

factor. The sustainability factors were sub-divided into three domains:

organizational, programmatic and enabling environment. Within these domains,

the sustainability factors were organized and analyzed within four categories

(Appendix 2):

- Program Tools: Tools focused on analyzing program sustainability
- Program Research: Research focused on sustaining programs
- Outcome Tools: Tools focused on sustaining health outcomes
- Outcome Research: Sustainability research focused on sustaining outcomes

Below each category is a summary of the research, which corresponds with the appropriate sustainability factor and domain.

PEPFAR (Sustainability Index Dashboard) and USAID (HIV/AIDS Program Sustainability Analysis Tool) both use sustainability tools specifically for HIV/AIDS to assess human resource, financial and epidemiological data at a national level. These tools were excluded from this study because they are applicable to sustaining national programs and more useful for use at a policy level.

Research

Systematic Review Results

The most recent sustainability systematic review found 40 factors were related to sustainability. Twelve factors were included in >60% (n=167) of the literature reviewed (35). The latest Cochrane review of sustainability results aligned with this review (58). The sustainability factors were organized into six themes. These factors are outlined in Table 2.

Table 2: Sustainability Factors from Systematic Review

	Themes	Sustainability Factors
1	Resources	general resources (e.g. funding, staff, time and infrastructure) (90%),
2	Program design	demonstrate effectiveness (89%),
3	Program design	monitor progress over time (84%),
4	People	stakeholder participation in program and policies (79%)
5	Organizational setting	integration with existing programs and policies (79%)
6	Program design	training and capacity building (76%)
7	People	leadership and champions (73%)
8	Organizational setting	intervention adaptation to the context and receptivity (73%)
9	Organizational setting	organizational values and culture (71%)
10	Resources	funding (68%)
11	People	relationships, collaboration, and networks (65%)
12	Environment	socioeconomic and political considerations (63%)
13	Program	belief in the initiative by program staff (63%)

The majority of the sustainability factors are related to program design, people and organizational setting themes. The meaning of factor 2, *demonstrating effectiveness*, also described as *program benefit,* is inconsistent in the literature. One approach defines *demonstrating effectiveness* as attaining quantifiable program objectives (58), while others define it as perceived value of the program by program beneficiaries (59). In the long run perceived value is more important to sustainability of outcomes, since program beneficiaries are the people who will sustain program outcomes.

Sustainability Evaluations

Five evaluations, (Lapelle et al.(33), Freedman et al. (60), Roger and Coates (26), Kwangware (61) and Walsh (62) which looked at the sustainability of health programs post donor funding were reviewed. One of the evaluations included an analysis of 12 programs. All of these studies agree on three main factors that were lost post-donor funding that affect long-term sustainability:

1. Motivation/demand,
2. Resources
3. Capacity (before the end of funding).

Motivation by the patient and health care provider or between organizations to collaborate was important for program sustainability. Program beneficiaries needed to be motivated to use the knowledge learned and motivated to use clinical services. Resources also included financial and human resources, technical support and training to ensure the capacity of the staff continues to improve. Since programs require large investments of human, financial and technical resources it would be important to look at the sustainability of all these program components. Rogers and Coates (26) added that a gradual exit or transition, linkages with other entities (i.e. private sector, other NGOs, government etc.) before the end of the funding and quality program inputs influence sustainability.

Sustainability Tools

Tools: Program Sustainability

The program sustainability literature highlights the Program

Sustainability Assessment Tool (PSAT), created by the University of Washington,

St. Louis (63). The PSAT is the only sustainability tool found which was

specifically designed for a public health program and has been validated and

assessed for reliability in both LMIC and developed countries. The tool consists

of a useful, comprehensive website (https://sustaintool.org) which includes links

to resources for each sustainability factor. The sustainability factors used in the

Program Sustainability Index (PSI) and the PSAT tool are very similar.

Developed by Mancini and Marek, PSI is a unique tool, which specifies two

levels of sustainability factors: the main sustainability elements (i.e.

collaboration, leadership, funding); middle range program results (i.e.

participants needs met, effective sustainability planning). The tool is also one of

the few tools which used statistics to determine the predictor variables associated

with program sustainability. One of the main strengths of the tool is it includes a

set of sustainability measures specific to each predictor variable, which have

been internally validated.

Family Health International's (FHI) tool focuses mainly on financial

sustainability and outlines how organizations can successfully obtain donor funding (64). The tool includes a Sustainability Rapid Assessment Tool, which uses specific contextual, programmatic and financial indicators, though many of the indicators used to measure sustainability are vague. For example, an indicator to measure organizational management is, "*We know who makes decisions*." It is not clear what decisions are being referred to from this indicator. Additionally, it is unknown if the tool and the factors of sustainability are evidenced based.

Measuring Organization Development and Effectiveness (MODE) was designed by a team at Boston University, School of Public Health with the goal of assessing organizational capacity among NGOs (65). The tool is an adaptation of Management Science's for Health (MSH) Measuring Management and Organizational Sustainability Tool (MOST) (66). The MODE assessment tool was field tested in India and validated in Ethiopia and Nigeria (65). The tool investigates some of the organizational characteristics (leadership, organizational capacity, communication, partnerships) which this study will examine.

Tools: Outcome Sustainability

Our review highlighted two tools which measure program outcomes. We found a comprehensive tool in the grey literature by Thomas and Zahn (59)

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which includes a toolkit and instructions of how to practically use the factors (including examples) to assess sustainability. The sustainability factors included: perceived value, staff, monitoring and feedback, leadership, shared models, organizational infrastructure, organizational fit, community fit, partners, spread, funding and government policies.

Sarriot et al., proposes a framework called the Child Survival Sustainability Assessment (CSSA), which outlines a process with steps required to assess sustainability (24). CSSA is a broad framework, focusing on the social/ecological, health services and organizational factors, which could be applied to any program. It has been widely published and has been applied in various different countries (53,67).

Factors Hindering Sustainability

The documented factors which hindered sustainability efforts are also important to highlight. Freedman et al. (60) and Gibbs et al. (10) found that when donor funding ceased, stakeholder coordination declined, which made it difficult to sustain partnerships. Aligned with other research, Greenhalgh found sustainable program outcomes were associated with the relationships and partnerships created by the program and the ability of people to maintain them when donor funding ended (55). One program evaluation found when an

organization was no longer associated with a prominent external donor, and the

training and benefits associated with the donor, the organization's partnership

with government ended (10). Empirical data from the California Wellness

Foundation found donors hinder sustainability efforts when they push grant

recipients to operate outside of their organizational mission or expertise (68). In

conclusion, relationships and partnerships and aligning funding with an

organization's purpose and expertise are essential to ensuring program

sustainability.

For organizations to "stay in business" they often re-invent themselves

and change their mission, to align with new donor funding priorities (69).

According to the literature, if an organization's expertise is not aligned with the

type of programs they implement, sustainability is unlikely. This concept is

referred to as organizational adaptability (27). Another challenge is donor-

funded programs working outside the public health system often tend to poach

scarce human resources, paying them higher salaries, while weakening the

public health system (5,70) and chances of sustaining outcomes.

Donor objectives and intentions frequently evolve over the life course of a

project. Often donors initially fund projects, which often evolve into programs.

There are significant differences between projects and programs, which can affect

sustainability (Table 3). A project is a time-limited activity, with limited goals, while a program is a group of two or more projects with an overarching objective, focused on creating change over an extended time period. Projects focus on delivering outputs (i.e. number of health workers trained), while programs deliver outcomes. The management of projects requires a focus on efficiency to accomplish project-related activities and goals, while program management involves a broader view, concentrated on delivering outcomes. Achieving sustainable outcomes is more likely if donors understand the difference between funding and managing a project versus a program.

Table 3: Difference Between a Project and Program	
Project	Time bound (temporary)
	Delivery of a product or outputs
	Usually one goal or objective
	Delivery of product on time and within budget
Program	Group of 2 or more projects with an overarching objective
	Create change or benefit for an organization
	Alignment of organization's vision and project objectives
	Deliver outcomes
	Deliver value
Source: Weaver, 2010 (71)	

Summary: Sustainability Factors

According to the literature reviewed there are 19 factors associated with sustaining programs and program benefits (Appendix 2). In total, there were three organizational, three organizational/program, nine program and four enabling environment/contextual factors of sustainability. The lack of enabling environment/contextual factors demonstrates a scarcity of research in this area. **The majority of the literature reviewed suggests that sustainability is related to: local and organizational capacity, resources, linkages, motivation, leadership, M&E and ability of program to adapt to context**. Though there is some congruence on the factors of sustainability, they are described as broad categories with little detail of how each factor should be used or measured.

Our review made a distinction between the literature focused on the continuation of health programs versus the continuation of program outcomes. We found no clear differences in the literature. One distinct factor highlighted by Thomas and Zahn (59) and Lennox. et al (35) was organizational fit, or the alignment of the program goals and the organization's ability and expertise to implement the program. This factor is directly linked to quality of program inputs, noted by Rogers and Coates (26), which influences perceived value. Linked to these factors was motivation. Motivation is related to the motivation

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by the program implementers and buy-in or motivation of the local entity to continue to participate in the program.

Sustainability Factors Used in this Study

The review of factors that lead to sustainability assisted the principal investigator (PI) to choose the sustainability factors used for this study. This study investigated eight sustainability factors (Table 4). Since the study focuses on program sustainability, the sustainability factors concentrated on the PEPFAR funded HIV program and health facility characteristics. Perceived value was included as part of local ownership and communication as part of partnerships. The literature is ambiguous regarding the difference between organizational capacity, staff skills, staff motivation and organizational management; subsequently two sub-domains were created, health worker motivation and health worker skills/capacity.

The sustainability factors used in this study were frequently cited in the literature. For programs to be effective (**program evaluation/effectiveness/perceived value**) they need to respond to local needs, to ensure **local ownership** and sustained **motivation** by program beneficiaries and program staff. Program leaders need to **communicate** effectively internally and externally with their stakeholders to sustain their **partnerships**.

Organizations require the internal resources and support to manage a program

effectively (**staff skills/capacities**). While sustainability should be planned for

during the course of the program, an **exit strategy** should be formalized and

gradually implemented during the last few years of the program. Overall,

leadership (**program champion**) has the ability to influence the other factors

listed in Table 2. According to Tabak "leadership is critical to building

organizational readiness for change" (72). Organizations and their programs

operate within a larger health system, which is influenced by the political and

the social **environment.**

	Category	Domain	Sub-Domain	Definition	Target Group	Data Collection
	Table 4: Sustainability Factors Used in this Study					
1	**Org./Prog./ Health System**	**Leadership**	Program Champion	An individual (NGO, health workers, beneficiaries, health system) who is trusted and respected by staff and administrators, and who can inspire and maintain support for the program objectives, and negotiate solutions to problems.	NGO, health worker, beneficiaries, health system	NGO and Health Facility interview
			Experience	Leader involved with the design and implementation of the program/health services.	NGO, health worker,	NGO and Health Facility Interview
2	**Prog.**	**Motivation**		• NGO staff/ Health workers are motivated to provide high quality health care services. • Program beneficiaries are motivated to seek health services.	NGO, health worker, beneficiaries, health system	NGO and Health Facility Interview
3	**Prog.**	**Skills/ Capabilities**		• Degree to which NGO/program able to train and provide needed skills to health workers. • Degree to which health workers have skills and capacity (e.g.self esteem) to effectively carry out job responsibilities. • Program beneficiaries have ability to use services. • Health system has ability to absorb program activities.	NGO, health worker, beneficiaries, health system	NGO and Health Facility interview
4	**Prog.**	**Program Resources/ Activities**		Degree to which program resources and activities are transferred or adopted at the health facility.	health system	NGO and Health Facility interview; document review

5	**Prog.**	**Local Ownership**	Perceived Value	Extent to which program responds and meets the needs of health system and beneficiaries of the program. Health facility and local government are involved with program design, plans and implementation. Program is integrated into health facility governance structures.	health worker, beneficiaries, health system	NGO and Health Facility interview;
6	**Prog.**	**Exit strategy**		An exit plan/strategy which allows those involved with the program to operate independently prior to program ending. The strategy should include timelines, responsibilities of post-program activities, and benchmarks for achieving milestones.	NGO	
7	**Enabling Enviro.**	**Partnerships/ Linkages**	Communication	The extent to which program is able to establish cooperation and collaboration among local stakeholders that can bring different perspectives, skills, and resources to bear on the program and ensure transition of these resources post-program.	health worker, beneficiaries, health system	NGO and Health Facility interview;
8	**Enabling Enviro.**	**Supportive Environment**		Health issue (HIV) remains a government priority. Economic, donor and political climate remains committed to HIV. Support (and capacity) of the entity taking ownership of program.	health system	Health facility and NGO interview; Document review

Conclusion

The literature is clear; sustainability is a distinct discipline still in its infancy of conceptualization. Sustainability research requires more theory-based research, specifically on the contextual factors and expanded descriptions of sustainability factors. Greenhalgh et al.(55) succinctly state, program sustainability is likely to occur when "soft" human elements (i.e. leadership, power dynamics) and "hard" technological or procedural elements (i.e. funding and IT systems) are aligned. While I agree with Greenhalgh et al.'s statement, the purpose of this dissertation was to look at the organizational, programmatic and contextual factors or "soft" elements, with the assumption some of the "hard "elements would continue.

The sustainability definition used in this study focuses on adaptation of the program to the context to ensure health outcomes are sustained. The sustainability factors are based in the sustainability literature. The eight sustainability factors examined include: one organizational/program factor (leadership), five program factors (local ownership, program resources/activities, health worker motivation, health worker skills/capacity and exit strategy) and two factors related to the context (partnerships and supportive environment) (Table 4).

Chapter 3: Background

Study Context

Development Assistance for Health Trends

Since 2013 funding for development assistance for health (DAH) has plateaued at $38 billion per year (Figure 2) with future commitments quickly diminishing (73). According to recent statistics from 2012/13, Sub-Saharan Africa received the largest percentage of global DAH, at 46% of total DAH (73). Whereas, in 1960 a LMIC on average received aid from two countries, in 2008 the average jumped to an average of 28 countries (74). Private funding sources have become a major player within the DAH community, accounting for a quarter of all DAH from 2010-2015. DAH has resulted in increased life expectancy of adults and decreased under-5 mortality (75).
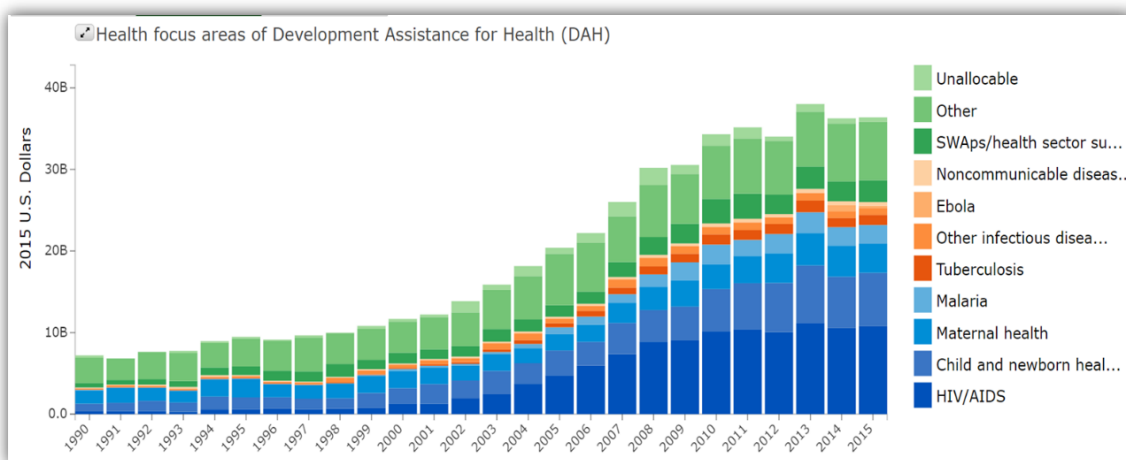
Figure 3: Development Assistance for Health Trends from 1990-2015
Source: http://vizhub.healthdata.org/fgh/

In 2012/13, 32% of all global DAH funding was directed at HIV/AIDS

(76).[1] (Figure 2). HIV funding has increased annually by 7% from $1.2 billion in

2002 to $8.6 billion in 2014 (1) (Figure 3). The United States (U.S.) has

consistently been the largest HIV/AIDS donor, totaling two thirds (66.7%) of

global HIV contributions in 2015 (Figure 3) (1). This statistic includes bilateral aid

and contributions to the Global Fund. Following the U.S. are the United

Kingdom, France, Germany and the Netherlands. In total, these five countries

account for 80% of all HIV contributions since 2006 (Figure 4).

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[1] This does not include the funding for HIV/AIDS spent by LMIC countries themselves.
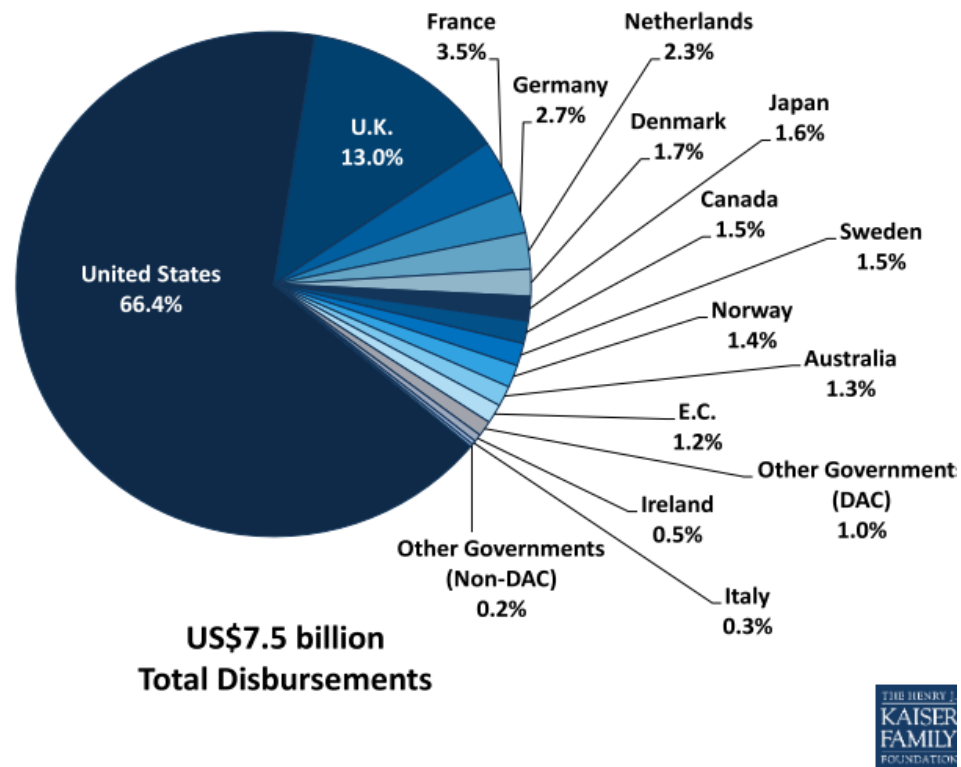
Figure 4: International HIV Assistance as a Share of Total Government Disbursements (2015) (1)

This surge of HIV funding is partially due to the creation of PEPFAR by the United States government and new donors such as the Bill and Melinda Gates Foundation and Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), which created their own public/private partnerships, multi-lateral and bilateral agreements with host countries. PEPFAR is the largest global health initiative dedicated to a single disease (HIV), and therefore an ideal program to study the determinants of sustainability.

Development Assistance for Health: External Donor Priorities

Over the past 20 years DAH donors have expanded their goals, from solely focusing on improving health status and changing individual behaviors, to, in addition ensuring their investments are long-lasting (31,58,77,78). Donors require their grantees to reach more beneficiaries and sustain their investments within local systems (79), with little guidance on how to achieve these goals.

Often, the donor solution to achieve the above objectives has been to increase funding and focus efforts on capacity building, by providing training and resources to strengthen local managerial, technical, and funding capacity (80). Donors rely on capacity building efforts as a way to decrease long-term dependence on external donors. The role capacity building plays to ensure long term health outcomes are sustained is unknown (80). The donor assumption is capacity building initiatives will lead to "country ownership." DAH donors have relied on "country ownership" as a way to sustain their investments when they withdraw and reduce their support and funding. Country ownership is an ambiguous term, though the literature on this topic includes themes such as, **commitment of resources** by government, or civil society to take over the **responsibility** and **sustainability** of donor-funded programs and resources, which requires **financing, leadership, decision-making and accountability** at a

local level (81).

External Donor Challenges

Donor policies play an important role in defining sustainability since donors set the funding priorities and rules of engagement with their grant recipients. Though sustainability is important to donors, it often is not the final decision-making factor for funding allocation. Some donors have started to change their grant making structures to improve program sustainability by: planning for sustainability early, setting clear goals (78) tapering funding (68) and using an exit strategy (82). In many cases, donor motives for investing in health are not based on altruism or need (73,77) and often center on self-interest (i.e. national security, foreign policy or trade interests) or simply distributing funds, to avoid losing them (77,83,84).

> **Table 5: Benefits of External Donor Funding**
> - Reduce mortality and save lives
> - Positive health impact (93,165)
> - Reduce infant mortality (166)
> - Improve international relations (167)
> - Promote economic growth (168,169)

Donors continue to make funding decisions based on an organization's capacity to report to the donor for administrative reasons (12,85), rather than their local expertise, program plans or capacity to implement or sustain programs (12) . This is partially due to lines of accountability. DAH funds

are generally taxpayer funds, which make donors accountable to taxpayers, not
to grant recipients (86). Therefore, the priority of donors is to disperse funds
responsibly, rather than achieve sustained outcomes (77). Yang et al. (12)
suggest a shift of donor priorities is required from a focus on sustaining
organizations to sustaining health outcomes, which Yang et al. suggest is the
"lynchpin to dissolving ineffective aid."(12).

However, though there are many benefits (Table 5), donors often create
unintentional challenges for grant recipients. These challenges are outlined in
Table 6, which are also critiques of PEPFAR funding. Considering the distinction
between a project and a program (see Factors Hindering Sustainability),
PEPFAR's work may have started as a time-bound project but over time with
new strategies and goals became a program with the purpose of producing
outcomes over an extended period.

Table 6: Challenges Created by External Donor Funding
- Senior health officials from host countries spend extra time and resources reporting to donors, but also find themselves negotiating domestic health priorities based on external donor priorities (77).   - External donor-funded programs poach local health workers from the public system (70,83).   - Much of DAH funding is channeled through NGOs, which bypass public health systems, instead strengthening health care services provided by NGOs, instead of the public system (88).   - For organizations to "stay in business" they shift their organizational mandate to align themselves with new donor priorities (27,89).

PEPFAR

Background

Since 2003, PEPFAR has been the United States' most ambitious initiative to combat the global burden of HIV/AIDS and tuberculosis (TB). PEPFAR is the single largest contributor to global HIV/AIDS efforts (90). From 2004 to 2016 PEPFAR invested $72.7 billion globally for HIV and TB, including contributions to the Global Fund (91). Independent research reports PEPFAR has increased the number of people receiving HIV treatment (92), and been directly related to a 10.5 % decrease in HIV-related mortality compared to non-PEPFAR supported countries (93).

PEPFAR funding is appropriated by the U.S. Congress and is distributed to several government agencies including: U.S. Department of Defense, State Department, Centers for Disease Control and Prevention (CDC), Peace Corps, U.S. Agency for International Development (Figure 5) (94). Each host country where PEFPAR operates has a PEPFAR Country Coordinator who leads the PEPFAR interagency team. The majority of PEPFAR funds are directed to USAID and CDC, which contract local NGOs, parastatals, universities, unions and local government (i.e. prime partners) to carry out PEPFAR initiatives. Many local NGOs sub-contract to various other organizations. As of the end of 2013 PEPFAR
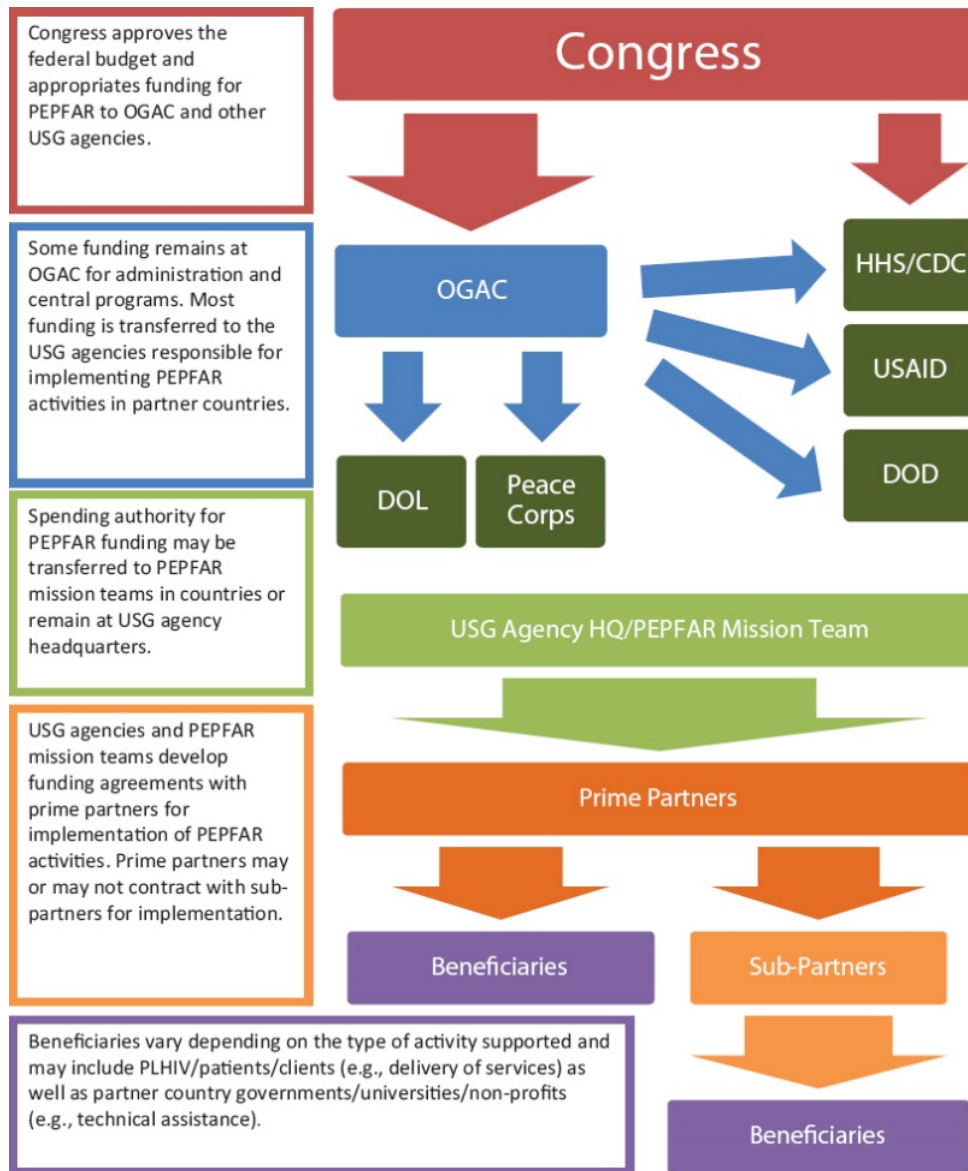
Figure 5: PEPFAR Funding Flow

Note: CDC: Centers for Disease Control; OGAC: Office of the U.S. Global AIDS Coordinator; HHS: Health and Human Services; USAID: United States Agency For International Development; DOD: Department of Defense; USG: United States Government; DOL: Department of Labor
Source:(90)

in South Africa had partnered with 120 prime partners (16).

PEPFAR has evolved through three strategic phases (Figure 6).

Established under President George W. Bush, in 2003, PEPFAR's initial goal was

an emergency response to scale up access to HIV care and HIV/AIDS treatment

in 15 focus countries (95). In 2008, under the Obama administration PEPFAR II

was authorized for an additional five years with a $48 billion budget, to focus on

the setting up of sustainability programs. PEPFAR II focused on shared financial

responsibility, accountability and sustaining health outcomes in partnership with

host country governments (95). Joint strategic road maps, called Partnership

Frameworks, were agreed upon with host country governments to coordinate

HIV efforts and leverage financial contributions from host countries and other

donors (50). A key strategy for sustaining essential HIV services was to transition

the financing of PEPFAR programs to host country governments when possible.

PEPFAR III was authorized in 2013, which extended the U.S.'s global HIV

commitment until 2020. PEPFAR III focuses on the United Nations Program on

HIV/AIDS (UNAIDS) 90-90-90 goals to ensure, 90% of people with HIV are

diagnosed, 90% of them are on ART, and 90% of them are virally suppressed by

2020 (96). The shift has been to epidemic control where the incidence of new

infections is below the total of number of deaths related to HIV.

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

PEPFAR: Emergency funds   PEPFAR II: Sustainability   PEPFAR III: Sustainable control of epidemic

Figure 6: PEPFAR Strategic Phases

PEPFAR's Blueprint 3.0 outlines PEPFAR III goals, which include

sustainability (96). PEPFAR's definition of sustainability is " *When we and partner*

countries have scaled up interventions and reached epidemic control, the services,

systems, financing and policies required to maintain that control are readily

available"(96)*.* Essentially the aim of the sustainability strategy was to hand over

the national PEPFAR program to local government. It is the responsibility of the

local government to decide which programs to sustain (45). PEPFAR created a

monitoring tool called the PEPFAR Sustainability Index and Dashboard, which

include 15 different indicators. These indicators fall under the broad headings of:

governance, leadership, partnerships, finance, local service delivery and

epidemiological data (97). Epidemiological refers to the focus of PEPFAR III,

when the number of new HIV infections falls below the number of deaths related

to HIV. These indicators are monitored at a national level.

Though PEPFAR achieved their main aim of reducing morbidity and

mortality caused by HIV (93) it is still unclear if PEPFAR was able to strengthen

local health systems (98,99). One of the main criticisms of PEPFAR is its vertical

(i.e. single disease program) approach and the building of parallel health system

in PEPFAR focused countries (100). Some research has shown that vertical

programs can improve health outcomes (101,102). Although the impact of

vertical programs is often not as effective as developing local policy or

improving the local health system (103). Other authors have argued that vertical

programs displace funds from other more significant disease burdens (104,105),

increases the brain drain from the public system to donor NGOs who tend to pay

higher salaries (105) and produce very few additional "spillover" positive health

effects (106).

In the mid-1990's, the WHO called on donors to replace vertical funding

with a sector wide approach (SWAp), where local governments would

coordinate, plan, monitor and budget all health funding together with donors,

creating a "common fund"(107). In theory, this would be more cost effective,

increase sustainability and reduce duplication (108). Donors would fund sections

of a national health strategy, which to a donor is not attractive, as it gives up

some of their power and may not be consistent with taxpayer expectations of

accountability.

History of PEPFAR in South Africa

South Africa is home to the largest concentration of people in the world living with HIV/AIDS. Due to the high burden of HIV/AIDS, South Africa was one of the initial PEPFAR focus countries. In 2004, when PEPFAR began working in South Africa, the HIV prevalence among adults was 20% (109) and a death sentence due to the lack of access to free care and treatment. At the time, HIV/AIDS in South Africa was a political issue. The President of South Africa (Thabo Mbeki) and his Minister of Health (Manto Tshabalala-Msimang) denied that HIV caused AIDS, refusing to provide HIV treatment to South Africans (109) and work with PEPFAR (109). President Mbeki believed HIV was invented by the West, so "greedy pharmaceutical companies could sell toxic drugs to poor Africans." It is estimated 3.8 million person-years of life were lost under President Mbeki's administration due to lack of access to treatment (109).

In 2001, the Treatment Action Campaign (TAC) a local South African advocacy NGO, along with Medecins Sans Frontieres (MSF) by-passed the Ministry of Health and started providing free HIV treatment in Khayelitsha, an informal settlement outside of Cape Town (16). In 2002, the TAC successfully took the South African government (SAG) to court to ensure HIV positive pregnant woman had access to ARVs (110) to prevent mother-to-child

transmission of HIV (PMTCT). Working around the Minister of Health, a task

team made up of Cabinet, Treasury, clinicians and civil society with support

from PEPFAR, declared HIV was linked to AIDS and urged the NDoH to expand

the PMTCT program, while quietly establishing ART guidelines (111). The efforts

of this team led to the establishment of the first public ART program in 2004.

Due to the South African government's denial of HIV/AIDS, PEPFAR

bypassed the SAG to avoid delays and to ensure a rapid HIV response. Initial

PEPFAR funds were emergency funds spent on ARV treatment, contracting

mainly U.S. organizations based in South Africa (i.e. Population Services

International, Pathfinder International, Family Health International) and private

doctors (112) to roll out HIV treatment outside of the public health system (109).

As time progressed during the direct service phase (Figure 7), PEPFAR NGOs

employed health workers to work within the state health system to strengthen

HIV services.
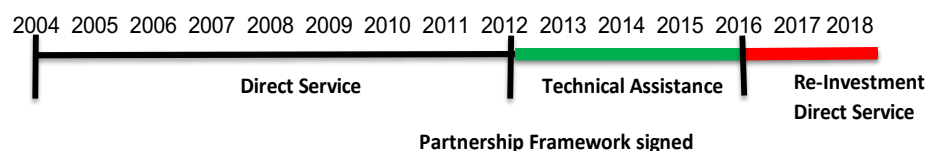
Figure 7: PEPFAR Phases in South Africa

In 2008, Mbeki stepped down as President of South Africa. In May 2009

President Jacob Zuma and his Minister of Health, Aaron Motsoaledi assumed

office (111), quickly adopted World Health Organization (WHO) treatment

guidelines, boosted the SAG HIV budget by R1.7 million, focused on the gender

dynamics of the epidemic and launched an ambitious testing campaign which

reached 14.7 million South Africans in one year (113).

Under the new Zuma administration, PEPFAR strengthened their

relationship with the SAG. In 2012 a Partnership Framework (PF) was signed

between the USG and SAG, which outlined the transition of PEPFAR resources

to the SAG and the USGs strategic shift from direct service (i.e. ARV roll out,

ARV's and placing staff in SAG health facilities) to a focus on health systems

strengthening, technical assistance and sustaining health outcomes (19,114). This

sustainability phase coincided with new South African ARV guidelines, which

allowed nurses to distribute HIV treatment at a primary health care level (19).

Thereafter, PEPFAR focused on:

- training nurses to administer ART (NIMART)
- medical male circumcision programs
- support of orphans and vulnerable children
- strengthening laboratory services
- pediatric care and support
- information management and
- the prevention and treatment of HIV and tuberculosis (TB) programs.

A new U.S Global AIDS Coordinator, Ambassador-at-large Debra Brix,

was appointed in 2014, drastically changing the direction of PEPFAR strategy. In

2015, PEPFAR discontinued work nationally, focusing their geographic footprint on 27 priority districts, which accounted for 82% of the HIV epidemic in South Africa (115). During the transition period PEPFAR realized the main challenge to achieving the 90-90-90 goals was the deficit of local human resources, therefore in 2016 there was a re-investment in direct service support (116). In 2018, a formalized strategy called the Treatment Surge Funding, focusing on the first 90 (people who know their HIV status) provided additional funding and resources towards direct service support, which included additional human resources.

PEPFAR NGOs in South Africa

Every year PEPFAR publishes an overarching strategic plan and goals for the year called the Country Operational Plan (COP). PEPFAR supported countries at a national level submitting a country specific COP that outlines how country targets and budgets will feed into PEPFAR's overall annual targets. PEPFAR funded NGOs are contracted to provide services or produce goods that are aligned with the COP and report back to the U.S. government. The NGOs that win the award are guaranteed annual funding, usually for a total of five years. Under these agreements the NGO has to legally adhere to PEPFAR rules, regulations regarding how they procure and provide HIV services (117).

Over time the type of organizations and institutions PEPFAR partners

with has evolved. During the initial emergency phase, PEPFAR partnered with

large U.S. based NGOs (e.g., ICAP, Columbia University, Family Health

International etc.). Their directive was to roll out HIV treatment and care to as

many HIV patients as possible. They provided services via private doctors and

from NGO offices. In 2008, when Mbeki stepped down and PEPFAR moved into

PEPFAR II (focused on sustainability and partnership) PEFPAR South Africa

shifted to partner with local South African organizations. By 2009, the PEPFAR

South Africa program was channeling 75% of their funding via local NGOs

(Figure 8) (118). Their mandate was to assist with capacity building and health

systems strengthening initiatives by working inside the local health system. Since

2009, PEPFAR continues to prioritize contracting local entities to implement

PEPFAR's mandate.
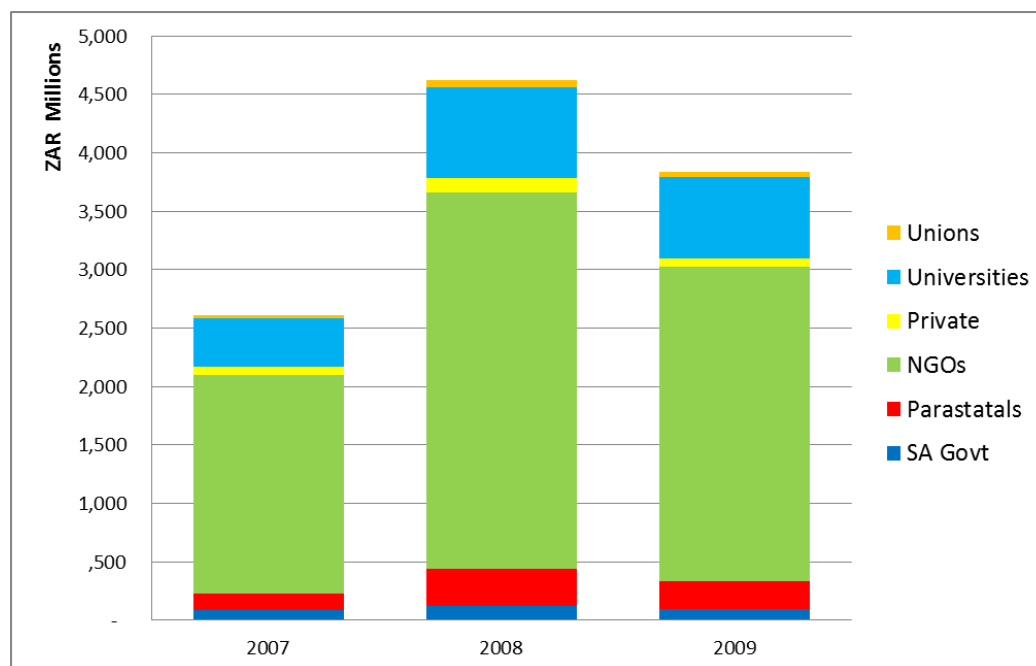
Figure 8: PEPFAR Partners in South Africa by Institution Type (2007-2009)
Source: Centre for Economic Governance and HIV in Africa, 2012 (118)

PEPFAR Funding in South Africa

Unlike many LMICs, South Africa has the financial capacity to fund its

own national HIV response. Correspondingly, the SAG has been the main

financial contributor to HIV efforts in South Africa (Figure 3). During President

Mbeki's term (2007/08 to 2008/09), PEPFAR and SAG HIV investments in South

Africa were comparable (Figure 10). SAG contributions focused on PMTCT and

prevention initiatives, while PEPFAR supported universal HIV treatment.

Towards the end of Mbeki's term, in preparation for expanding HIV efforts, the

PEPFAR budget in South Africa increased by 80%. In 2010/11, domestic spending

for HIV increased exponentially, while PEPFAR funding started to plateau and

discussions emerged regarding the transition of PEPFAR investments to the SAG (Figure 6).

To allow SAG to take greater financial responsibility for the HIV epidemic, the USG/SAG Partnership Framework outlined a funding trajectory where PEPFAR funding would decrease by 48% (to $250 million) by 2017. This plan did not develop, as PEPFAR's budget increased by 71%, from $259 million in 2015, to $443 million in 2016 (Figure 9). This change followed the appointment in 2014 of a new U.S. Global AIDS Coordinator, Ambassador-at-large Debra Brix. PEPFAR South Africa also received DREAMS funding which injected an additional $66 million for HIV prevention efforts directed at young women (119). In 2018 to increase the number of people on ART an additional $483 million was provided on top of base funding for direct service support, via the Treatment Surge funding,.
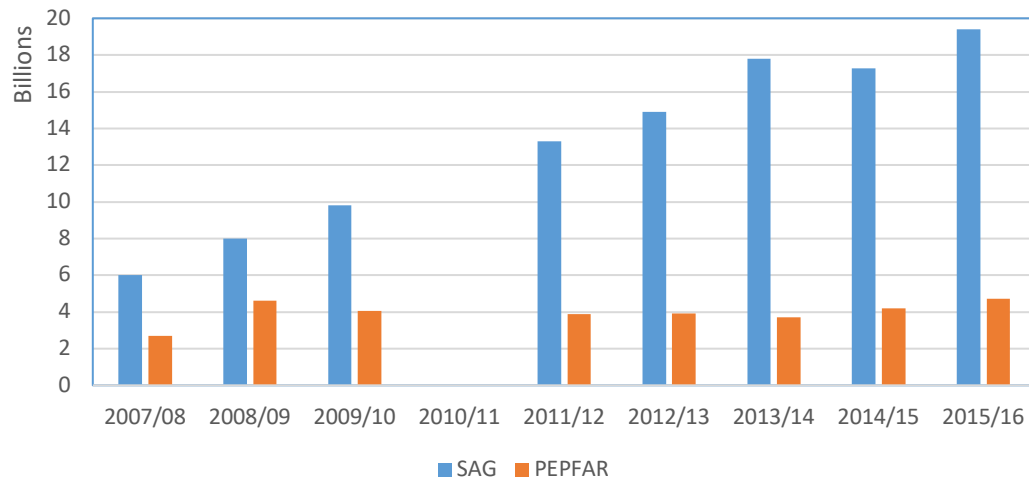
**Figure 9: PEPFAR and SAG Expenditure HIV and TB
2007-2015 (ZAR)***

Source:
2007-2010: South African Consolidated HIV and TB Spending Assessment 2007/8-2009/10
2011-2014: South African HIV and TB Investment Case, Reference Report
2014-2016: Consolidated HIV and TB Spending Assessment 2014/15-2016/17

The SAG, PEPFAR and Global Fund to Fight AIDS Tuberculosis and

Malaria (GFATM) are the three main HIV/AIDS funders in South Africa. The

SAG continues to contribute the largest proportion of funds to HIV/AIDS efforts;

more than 76% (R21.8 billion) of all contributions in 2016/17 (120). The GFATM

invests the least (3% in 2016/17) of the three donors, but has plans to continue to

invest in the South African HIV epidemic.[2] The USG continues to be the largest

external donor, contributing 21% of the annual HIV funds in South Africa

(2016/17) (121). It is important to note, in addition to PEPFAR funds, the WCGH

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[2] Expenditure data from 2010/11 have not been analyzed.

received their own Global Fund grant from 2013-2016 for a total of $138 million
(USD) (122).

PEPFAR Achievements in South Africa

By 2018, due to increases in domestic funding, assistance from PEPFAR
and various other donors (e.g. Global Fund, Clinton Foundation, UN agencies,
European Commission), 34 million people were able to access ARV treatment in
South Africa (Table 7). In 2019, 42% of adults who require HIV treatment are
receiving treatment (111). The decline of the PMTCT rate (which in 2015 was at a
low of 1.4%) (123), the scale-up of viral load testing (120), training nurses to
initiate ART (NIMART) and the medical male circumcision program were
partially due to PEPFAR support. In 2010, PEPFAR supported a nationwide
testing campaign, which tested 20 million people for HIV in one year (16). To
ensure there was a continuous supply of ARVs after the testing campaign,
PEPFAR invested $120 million on purchasing ARVs to supplement SAG's stock.
PEPFAR also encouraged SAG to adopt the revised (2009) WHO guidelines to
start patients on treatment early (at a CD4 count of 350 rather than 200) (113).
From 2004-2018 (14 years) PEPFAR, in partnership with the SAG tested and
counseled 108 million individuals for HIV, circumcised 3.8 million men and
served 4.4 million orphans and reached 1.4 million key populations (i.e. high

risk) with HIV prevention services (Table 7).

PEPFAR has also been influential in strengthening the South African multi-sectoral HIV response by working with various local government departments (i.e. Department of Social Development, Basic Education, Higher Education and Training, Correctional Services, National Treasury, South African Police Service etc.) (124). PEPFAR, along with other donors, strengthened the South African National AIDS Council (SANAC) by providing support for research, administrative assistance and coordination. SANAC is a state/civil society organization established by Cabinet and lead by the Deputy President. It is responsible for coordinating HIV efforts among civil society, donors and government and developing the National Strategic Plan for HIV/AIDS (NSP) every five years. SANAC has been heralded for being innovative; for including concrete HIV targets in the NSP and being inclusive of all South African HIV stakeholders, including people infected and affected by HIV.

Table 7: Cumulative PEPFAR Achievements in South Africa 2004-2018	
Number of adults and children receiving ART	34,088,216
Individuals tested and counseled for HIV	108,231,091
HIV+ pregnant women who received ARVs	3,134,376
Key Populations reached with preventative interventions: key populations (2010-2018)	1,409,933
Individuals received Voluntary Medical Male Circumcision (2010-2018)	3,842,395
Source: https://data.pepfar.gov/additionalData and https://data.pepfar.gov/dashboards	

PEPFAR Transition in South Africa

In 2012, in line with PEPFAR's new sustainability phase and as agreed to in the Partnership Framework (PF) - the USG/SAG agreement that outlined the transition of PEPFAR resources from USG to the SAG - the USG began to transfer PEPFAR investments to the SAG. The PF was a non-binding agreement which outlined how PEPFAR would support South Africa's NSP and transition PEPFAR resources to the SAG (16). The goal of the transition was to transfer the management and funding of PEPFAR finances, staff, M&E and procurement systems to provincial government. The transition process was an opportunity to increase transparency between governments. The process necessitated joint costing exercises of HIV programs and working closely with PEPFAR partners to

move staff and HIV patients from the care of private doctors, and NGOs supported by PEPFAR, to government health facilities. Both governments, in principle, agreed that patients transitioned from PEPFAR to government health facilities would continue to receive critical ART services without interruption (124). PEPFAR Provincial Liaisons (PPL) were placed in the provinces to coordinate and accelerate the transition process at a local level.

Authors of transition literature from South Africa found that at national level there was lack of leadership, which hindered the transition process (16). Though South Africa had a Partnership Framework Implementation Plan, the Centre for Strategic and International Studies found that there was a lack of clear guidance and communication around the pace of the budget decrease (113) which created frustration among local government officials. One of the main lessons learned was the transition focused solely on care and treatment and there was no plan for other PEPFAR funded activities (i.e. prevention). The other challenge was that civil society was not part of the transition planning process (16), and there have been reports of a decline in the capacity of the provincial health system to absorb PEPFAR patients (6).

Literature on the impact of the PEPFAR transition in South Africa found varying outcomes. While Lince-Deroche et al. (125) looked at HIV service

delivery post PEPFAR in three clinics in Johannesburg and found no reduction in

service delivery post PEPFAR, Cloete et al. (19) found 20% loss to follow up of

patients transferred from private to government health facilities. Katz et al.'s

qualitative study found patients who were transferred to the public system were

frustrated due to long queues (i.e. lines) and missed work opportunities,

decreased quality of care, highlighting disrespectful staff "low quality

communication" and lack of holistic care. These outcomes align with Katz's work

on uptake of HIV treatment, which found ART eligible patients may not return

to public health facilities due to many perceived barriers (126).

PEPFAR in the Western Cape

The Western Cape is one of the nine South African provinces, consisting of

one urban and five rural districts. It has two overlapping health authorities

(Provincial Department of Health and the City of Cape Town) and a relatively

strong and efficient health system. It has some of the best health outcomes in

South Africa (127–129). Compared to other provinces, the Western Cape also has

the lowest HIV prevalence at 7.8% (2012) among adults (15-49 years old), while

KwaZulu-Natal has the highest prevalence of 27.9% in South Africa (130).

Though the Western Cape has a low HIV prevalence, it has a high tuberculosis

incidence at 900 per 100,000 in 2012 (131).

From 2007-2010 it is estimated PEPFAR spent 4% of its budget in the Western Cape (118). PEPFAR NGOs strengthened and set up the HIV program in the Western Cape, specifically in the rural areas which had little access to HIV treatment prior to PEPFAR funding. PEPFAR activities included testing, referrals, M&E systems, NIMART training and mentoring, and strengthening data systems and data analysis trainings. Though training around HIV was offered by government, PEPFAR provided added staff training and NIMART mentoring opportunities. PEPFAR also set up a referral network between the health facility and community, which included community resources and staff dedicated to HIV and TB. PEPFAR also helped support an integrated ART monitoring system that was piloted in the Western Cape and later adopted at a national level. The system allowed health facilities with no internet access to collect data on standardized templates and feed into a centralized health management system. PEPFAR also funded HIV/AIDS and TB research, which helped inform the response to the HIV epidemic, locally and globally.

As noted (pg. 51) the Treatment Surge Funding which focused PEPFAR efforts on 27 priority districts drastically changed PEPFAR's footprint in the Western Cape. The only priority district in the Western Cape was the Metro District, which continues to receive direct service support from PEPFAR.

Western Cape PEPFAR Transition

The Western Cape transition story is distinct. The Western Cape formalized the human resource transfer of PEPFAR posts; there was strong provincial leadership and few ARV patients to transition from private to public care. Partially due to the availability of resources and strong leadership to make critical decisions and provide important guidance, the Western Cape Department of Health took the initiative to introduce the PEPFAR transition process earlier than other provinces (132). Over the course of two years (2011-2012) a memorandum of understanding was developed, a detailed database was created, staff cadres and salaries were aligned to government staffing norms and policies, hospitals and districts were consulted. This process resulted in 40% (n=78) of PEPFAR clinical and administrative posts being absorbed by government or 13% of all the Western Cape PEPFAR posts (132). The absorption of posts was phased, with the PEPFAR NGOs "keeping" the post until the local government budget allowed for the absorption of the post. Importantly, the transition was focused on posts and not human resources. Therefore, when local government took over the PEPFAR post the person in the post had to re-apply for their post if they wanted to keep their job.

At the time of the Western Cape PEPFAR transition, local government

was in the process of re-defining their community health worker (CHW) policy

including their scope of work. Some CHWs in the Western Cape were employed

via NGOs with local government contracts and others were employed directly by

donor funded NGOs. PEPFAR and other external donors had given CHWs many

different names (e.g. tracer, linkage officer, community mobilizer) and roles and

responsibilities and placed them in the health system. Provincial government

was frustrated by the non-standardized role of the CHW and in 2011 started

developing a new CHW policy, which is the main reason local government did

not absorb 418 CHW PEPFAR posts (132).

Research on PEPFAR's renewed investment in direct service support in

2016, found PEPFAR had underestimated the quantity and type of additional

human resources required to reach the 90-90-90 goals (119). PEPFAR overlooked

the vital role of CHWs and tracers in keeping HIV patients on treatment and

PEPFAR is currently providing more funding for community staff.

Transition of PEPFAR Programs

Recently, additional research has emerged on the PEPFAR transition and

sustainability of PEPFAR outcomes. This year (2019) two important studies from

Uganda (7) and Nigeria (5) have been published on the outcomes of the PEPFAR

transition. Both papers used statistical analyses and showed decreased access to

HIV care and quality of care. The pre-post evaluation in Nigeria found post transition a decrease in the access to laboratory services which affected viral load testing (92%-64%; p=0.02), staff shortages due to lack of incentives to retain staff (80%-20%; p<0.01), tracing systems for HIV patients (100%-44%; p<0.01) and community testing services (84%-64%; p<0.01) (5). The decreased quality of care is aligned with the results from a qualitative study from South Africa, which highlighted decreased psychosocial support, poor communication with health care providers and disrespectful treatment of patients after the PEPFAR transition (6).

Research has found one of the reasons program goals are not attained is due to poor policy implementation. Research by Gilson, Schneider & Orgill (133) found policy implementation hinges on the buy-in of front line workers aligning resources and organizational structures to implement the policy. In light of the 2016 PEPFAR strategy change away from transition, back to direct service, Kavanagh and Dubula-Majola (119) found two years (2018) after the policy change, the policy had not been implemented. The authors explain the reason was due to a failure to shift funding and resources by local PEPFAR and government officials. Work by Ocampo (134) found there is more motivation to take ownership of donor funded programs when local officials consider the

support beneficial. Therefore, it takes buy-in and motivation from local government and donor officials to implement and sustain policy changes, such as a PEPFAR transition.

Retention in Care in South Africa

This study used retention in care (RIC) as the main outcome to measure sustainability of the PEPFAR program. RIC and mortality are key indicators that demonstrate the long term sustainability of the ART program (135). Additionally, RIC is key to achieving the global 90-90-90 U.N goals: 90% of all people living with HIV will know their HIV status, 90% of people with diagnosed HIV infection will receive sustained ART and 90% of all people receiving ART are virally suppressed. RIC is currently used as the main indicator to achieve the second 90: 90% of people with diagnosed HIV infection will receive sustained ART. In December 2014, the Government of South Africa committed to achieving the UNAIDS 90-90-90 targets by 2022.

A systematic review of HIV treatment programs in sub-Saharan Africa before 2007 estimated an average RIC between 62% (136) and 76% between 2007-2009 at 24 month follow up (137). A follow-up paper by the same authors (Rosen and Fox) estimated RIC from 2008-2013 in South Africa at an average of 75% at 24 months post ART initiation (138). Sub-Saharan Africa average RIC mirrors

global RIC rates (135). Local DHIS data, report a slightly lower national RIC

(Table 8). The Thembisa model, which uses demographic and HIV data to model

the HIV epidemic in South Africa, reported a national RIC rate of 57%, with the

Western Cape RIC at 56% in 2015 (139). The District Health Information Software

(DHIS) reported similar statistics (National 58.9% and 58.8% Western Cape

2017/18) (Table 8) (140). This equates to 230,931 people (2016/2017) (127) on HIV

treatment in the Western Cape and 4.1 million nationally (2017/2018) (140). Table

8 shows a snapshot of (2016/2017) Western Cape HIV RIC by district.

Table 8: Western Cape HIV Statistics by District		
	HIV Prevalence* 2016/2017	**RIC ** 2017/2018**
West Coast	4.5%	51.9%
Eden	6.4%	57.4%
Cape Winelands	5.6%	58.6%
Metro	7.5%	58.3%
Central Karoo	2.2%	73.1%
Overberg	4.4%	80.3%

*DHIS2016/2017
**DHIS 2017/2018 – this is facility-based data,
which could be an underestimate of true RIC

Recent research using laboratory data from South Africa's National Health

Laboratory Service showed that health facility RIC underestimates RIC in the

national ART treatment program. Estimating six-year RIC of patients initiating

ARV's using facility specific RIC data versus tracking patients across different clinics over the course of their HIV care/treatment significantly underestimated retention in South Africa's national ART program 29.1% (95% CI: 28.7%–29.5%) versus 63.3% (95% CI: 62.9%–63.7%), respectively after allowing for transfers (141). Currently there are no mechanisms to track patients when they self-transfer between health facilities, which happens frequently (141). Therefore, the initiating clinic records record patients as lost to follow-up even though they transfer to another facility. When the authors stratified their results by province, they showed the Western Cape had the highest overall RIC of 74.2% at six years (Table 9). Close to 54% of patients retained in HIV care in the Western Cape moved (either formal or silent transfers) between facilities (141).

Table 9: RIC at Six Years of National Cohort Data							
	Eastern Cape	Free State	Gauteng	Limpopo	Mpumalanga	Northern Cape	North West	Western Cape
RIC	65.6%	65.3%	60.1%	56.3%	53.2%	64.7%	64.3%	74.2%

Source: Fox, MP et al. (141)

The data used for this study are from Tier.net. Tier.net is a three–tiered electronic patient management system specifically for HIV data. It was developed by University of Cape Town and the SAG and rolled out at a national scale in 2011 (142). The primary purpose of Tier.net is to manage the HIV

program at a facility level. Some examples of the data the system captures includes patient demographics, laboratory data, pre-ART information, defaulter lists, linkage to care and missed appointments. Reports from Tier.net are produced monthly and quarterly for health facilities and local government to assess the progress of the national HIV program (143).

Conclusion

Though the PEPFAR program in South Africa has weathered various leaders and strategic changes, PEPFAR has reduced the impact of HIV/AIDS epidemic in South Africa. HIV patients can access ART at no cost in South Africa. Many lessons can be learned specifically from the Western Cape, which used a proactive approach led by local government to systematically plan for the absorption of 78 PEPFAR posts. With a strong and stable health system, taking a deeper look at the PEPFAR program in the Western Cape will give us our best-case scenario for what it takes to sustain HIV outcomes. External donors and local governments have an ethical responsibility to learn from the Western Cape experience and coordinate efforts to ensure HIV patients continue to have access, receive high quality care and stay on lifelong HIV treatment.

Chapter 4: Study Methodology

<u>**Overview**</u>

There is very little research assessing the sustainability of long-term global health programs after funding for these programs is reduced or removed. The majority of the research on sustainability focuses on small stand-alone programs, with little analysis of sustaining programs integrated within a health system (144). Due to this lack of evidence public health practitioners do not have the tools necessary to make informed decisions on how to use limited financial resources effectively and integrate sustainability into program plans (13,67). As such, this dissertation evaluated the PEPFAR program in the Western Cape of South Africa to help identify potential factors associated with sustainable performance.

<u>**Aim**</u>

The aim of this research was to identify factors associated with sustained ART retention in care rates among a set of health facilities after the end of PEPFAR support for direct service provision of HIV treatment to create a: (1) checklist and (2) a set of indicators that donors, organizations, governments and philanthropists can utilize to plan for programmatic sustainability

Study Objectives

Objective 1: Analyze ART retention rates from 2007–2012 (PEPFAR direct service) and 2012–2017 (post PEPFAR direct service) relative to health facility and NGO association, to classify health facilities into sustainability categories (poor or sustained/improved performance).

- How did ART retention change between when PEPFAR was operational and when direct support was discontinued?
- Did health facility HIV RIC improve or deteriorate when PEPFAR funding was discontinued?
- Which NGOs were associated with the best and worst performing health facilities?

Objective 2: Describe the features of PEPFAR support from 2007–2012 in relationship to the health facility, the NGO partner and the related programmatic and enabling environment from a sample of 22 of these health facilities.

- What were the similarities and differences between PEPFAR NGOs and the context in which they were working?
- How were the factors of sustainability implemented by PEPFAR NGOs and health facilities?

Objective 3: Identify health facility, NGO, programmatic and enabling environmental factors associated with sustained or improved HIV retention rates in Western Cape health care facilities three years (2013–2015) post PEPFAR 2012 funding for HIV treatment services.

- What are the main characteristics of the development programs which lead to sustainable health outcomes?

<u>Public Health Significance</u>

The lack of consensus around the conceptualization of sustainability has left the field with little knowledge regarding the essential processes and systems needed to maintain programs and program outcomes (31) (see Problem Statement). There are no standardized indicators to measure sustainability. Most

of the sustainability research has focused on small stand-alone programs, with little analysis of sustaining programs situated within a complex health system (27). To our knowledge this is the first study which attempts to develop a list of program sustainability factors which is situated within the lens of large donor transitions. Program sustainability is left up to local governments to decide on the future of donor-funded investments (45). Additionally there is no transition literature which explores transition from a local provincial perspective.

This dissertation used the PEPFAR program in the Western Cape, South Africa to understand the factors associated with sustainable performance. Specifically, the study identified factors associated with PEPFAR NGOs, programs and health facilities that have sustained outcomes. The product of this study was a set of sustainability factors and transition guidance to assist donors, philanthropists and government when planning for program sustainability

<u>Study Design</u>

A mixed-methods approach was used to identify factors associated with sustained ART retention rates. ART retention in care (RIC) was the primary outcome of interest analyzed during two separate time periods, (1)PEPFAR direct service (2007 to 2012) and (2) post PEPFAR direct service (2012 to 2015) time periods (Figure 10). PEPFAR funding for health systems strengthening

continued post 2012, however in 2016 PEPFAR started to move back to targeted

direct service support. This study focused on predictors of RIC, which was used

to measure sustainability during the direct service support time period 2007-

2012.

| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |

PEPFAR
begins SA

PEPFAR Direct Service

Post PEPFAR Direct
Service

Study Period Starts

Study Period Ends

Figure 10: Study Timeline
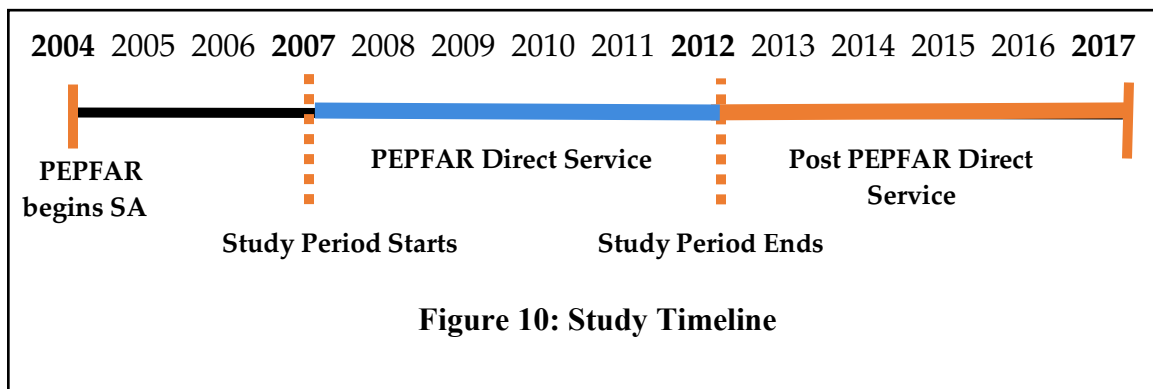
For the quantitative part of the study, Tier.net data was collected on

various health facility characteristics and health facilities were ranked by their

post PEPFAR performance. Trends of RIC over time (2007-2015) were graphically

displayed using simple proportions, while linear regression was used to estimate

the risk difference in RIC during and post 2012 PEPFAR funding (Figure 11). A

sub-sample of facilities were selected to conduct in-depth interviews with health

facility and NGO managers and government officials. The qualitative data was

analysed using grounded theory using a thematic analysis. The combined

qualitative and quantitative analysis results were used to determine the factors of

sustainability.
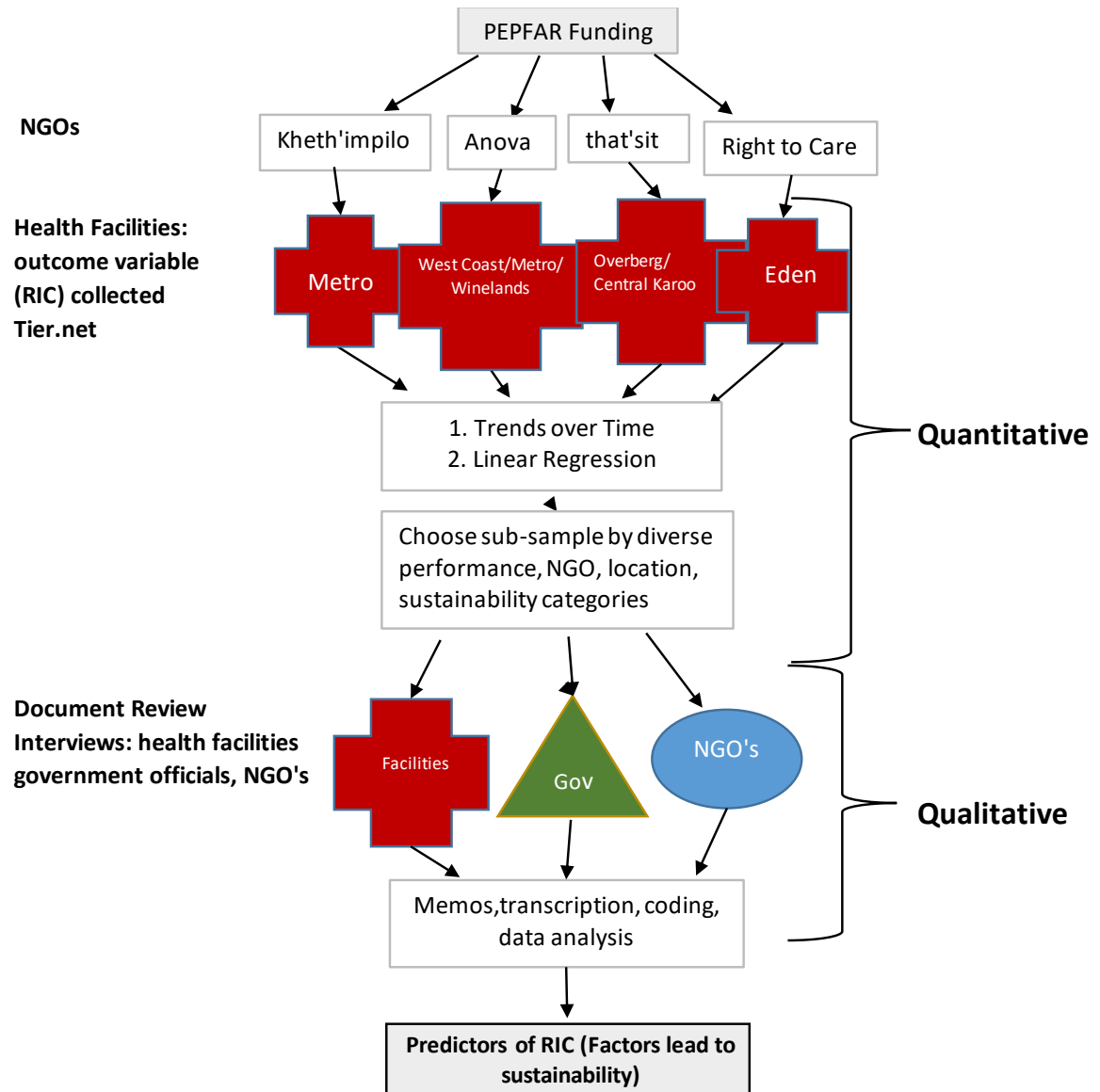
Figure 11: Study Analytic Framework

This research received an exemption from Boston University Medical Campus Institutional Review Board in June 5, 2018 under the Human Research Protection Program since this study was <u>not</u> collecting personal information (Protocol Number: H-37238). On June 22, 2018, ethical clearance was attained from the Biomedical Science Research Ethics Committee at the University of the Western Cape in South Africa. Subsequently, permission to work in public health facilities was obtained from the City of Cape Town on September 21, 2018 and from the Western Cape Provincial Health Research Committee on a facility by facility basis from November 12, 2018 to February 15, 2019. Permission to use Tier.net data for this study was obtained from the Western Cape Government Health (WCGH) on August 21, 2018.

Study Population and Setting

Study Sample

NGOs

This study examined health facilities supported by four local PEPFAR treatment NGOs from 2007-2012: (1) Kheth'impilo (KI), (2) Anova Health Institute (Anova), (3) Right to Care, (4) TB, HIV/AIDS, Treatment Support and Integrated Therapy (that'sit). These NGOs were selected because they were the

main HIV treatment NGOs working in the Western Cape that received PEPFAR funding to support comprehensive HIV/AIDS care and treatment services from 2007 to 2012. Right to Care's timelines were slightly later, from 2009 to 2015 (Figure 6). that'sit, Right to Care and Kheth'impilo received extension funds to close out projects and phase out direct service support from 2013 to 2015. Anova and Kheth'impilo were awarded new PEPFAR grants to support the Western Cape from 2013 to 2017 in the Metro and Winelands (Table 11). Each of the NGOs worked in a specific geographic region (Figure 11). Anova and Keth'impilo both worked in the Metro District in many of the same health facilities, which is the reason this combination is a distinct NGO category in this study.

The four HIV treatment NGOs worked in the Western Cape to support the provision of comprehensive HIV treatment services. This was specifically to scale-up, support and expand access to HIV-services. This included HIV testing and counselling, treatment, PMTCT, combination prevention and screening and treatment of TB (Table 10). In addition to provision of HIV and TB services, each NGO had a specific area of expertise. Kheth'impilo, runs community-based adherence support, pharmacist and NIMART training. Anova's areas of expertise included innovative programs for men who have sex with men (MSM) and

transgender persons, paediatric treatment, supply chain management and mental health expertise. Right to Care has been at the forefront in developing mhealth tools (medication adherence app, paperless clinics, and electronic medical records). that'sit was an HIV program administered by the South African Medical Research Council, which was a sub-partner to the Foundation for Professional Development. that'sit was instrumental in running mobile clinics serving rural areas.

Table 10: PEPFAR Treatment NGO Activities in Western Cape 2007-2012					
	Activities	**NGOs**			
		Anova	Kheth' impilo	Right to Care	that'sit
Direct support	Placed HR in public health system:	x	x	x	x
	HIV Testing and counselling	x	x		x
	treat and care ART clients	x	x	x	x
	assist with M&E	x	x	x	x
	referrals/linkage to care	x	x	x	x
	nutritional education				x
	medical male circumcision			x	
	pharmacy		x	x	
	Purchased GeneXpert for diagnosis and treatment of TB			x	
Training/ Mentoring	Pharmacy assistants/learners		x	x	x
	Pediatric care and treatment	x			
	PMTCT: new policy guidelines, strengthen referral system	x	x		x
	MSM Sensitization	x			
	Mentored nurses to roll out of ART (NIMART)		x		
	Integration of TB/HIV services	x	x		x
	Leadership	x			x
	Community workers: basic HIV/Adherence and STI's	x		x	x
	HIV M&E system (Tier.net)	x	x		x
	ART drug management system (iDart)		x		
	Infection control				x
Community	Established ART community adherence/psychosocial support program		x		
	Established/supported chronic dispensing units	x	x		
	Established mobile clinics (rural communities, schools)				x

	District	Direct Service						Health Systems Strengthening					
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kheth'impilo	Metro	x	x	x	x	x	x	**Extension** x	x	x			
Kheth'impilo	Metro							**New Grant** x	x	x	x	x	
that'sit	Eden	x	x	x	x	x	x	**Extension** x	x	x			
Right to Care	Overberg; Central Karoo			x	x	x	x	x	x	**Extension** x			
Anova	Winelands; Metro; West Coast	x	x	x	x	x	x						
Anova	Winelands							**New Grant** x	x	x	x	x	
Anova	Metro (Only Men who have Sex with Men (MSM) funding)							**New Grant** x	x	x	x	x	**Extension** x

Table 11: Western Cape NGO PEPFAR Timeline of Grants

Health Facilities Supported by PEPFAR NGOs

The four NGOs under study supported 100 primary health care facilities with PEPFAR funds between 2007 and 2012. Anova worked in approximately 47% of the health facilities under study, mainly in the Cape Winelands and Metro districts while Right to Care and Kheth'impilo each supported about 10% of health facilities throughout the rest of the province (Figure 12). Approximately 65% of the Western Cape population lives in the City of Cape Town (145); therefore it is likely Kheth'impilo supported facilities with larger client volumes compared to the other PEPFAR NGOs working in the Western Cape. Table 12 demonstrates Anova supported a larger proportion of tertiary hospitals, while Right to Care and that'sit worked at a primary health care (PHC) level. The majority of the participating NGOs supported work in PHC facilities (Table 12).

Table 12: PEPFAR Supported Western Cape Health Facilities 2007-2012					
Health Facility Type	**Anova**	**that'sit**	**Kheth' impilo**	**Right to Care**	**Total**
Central Hospital	4 (13.3%)				**4**
District Hospital	9 (30%)	1 (3.2%)		5 (41.7%)	**15**
TB Hospital	2 (6.7%)		1 (3.3%)		**3**
DoH Primary Health Care Facility	25 (83.3%)	30 (96.8%)	21 (70%)	7 (58.3%)	**83**
City CPT Primary Health Care Facility	3 (10%)		7 (23.3%)		**10**
Joint Gov. Clinic	2 (6.7%)		1 (3.3%)		**3**
Total	**30 (29.1%)**	**31 (30.1%)**	**30 (29.1%)**	**12 (11.7%)**	**103**

*The total is more than 100 because some of NGOs worked in the same facilities.
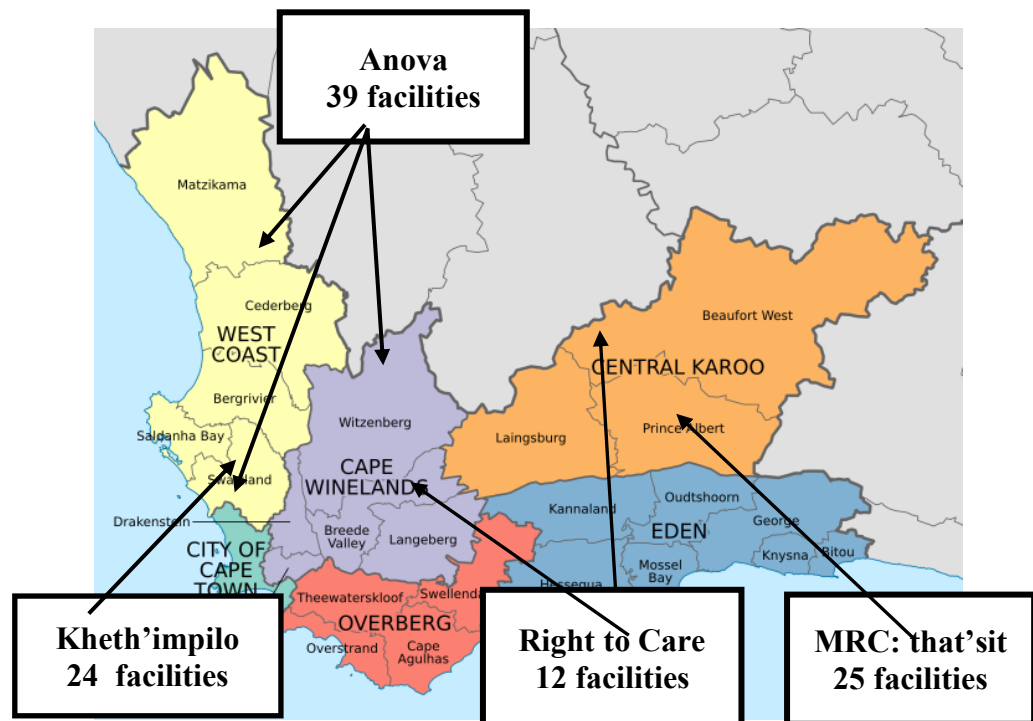
Figure 12: Western Cape PEPFAR Treatment NGOs 2007-2012

Quantitative Methodology

The primary aim of the quantitative section of this study was to identify

the health facility, NGO and enabling environmental factors that influenced RIC

among PHC facilities that were supported with PEPFAR funds for direct service

from 2007–2012 in South Africa's Western Cape. The secondary aim was to

characterize health facilities by their rates of RIC to select a sub-sample of health

facilities to be included in the qualitative sample. The aim of the sub-sample was

not to select a representative sample, but to select a wide range of health facilities

to understand various conditions where sustainability thrived and failed.

Though PEPFAR strategy's changed over time (refer to Chapter 3:

Background), PEPFAR in South Africa intended to terminate direct service

support in 2012/2013. Our study used this planned direct service end date as the

break point of our analysis. We refer to the during direct service (2007-2012) as,

"PEPFAR direct service" and after direct service period (2013-2015) as "post

PEPFAR direct service."

Data Collection

Each of the four NGO participating in the study provided a list of health

facilities they supported in the Western Cape from 2007 to 2012. The facility list

was part of the data request submitted to the WCGH for RIC data aggregated by

health facility. The data for this study was from Tier.net. Raw RIC data per

health facility was provided to the PI per annual ART cohort. A cohort, defined

by the WCGH, as the number of new HIV patients (including formal and silent

inward transfers) initiating ART treatment at a facility in a specific year (January-

December). Cohort follow up data from 12 and 24 months was analyzed. The

data is not cumulative. As such, the 2015 cohort data for this study captures

clients until the end of 2017. Cohort data post 2015 was not available due to the

delay in data capturing by the WCGH.

Study Sample

To decrease confounding, only primary health care (PHC) level facilities including clinics, community day centers and community health centers were included in the study. The 2003 WCGH strategic plan (called HealthCare 2010) prioritized the down referral of stable HIV patients to PHC facilities (146). In early 2008, 60% of HIV patients in the Western Cape were being initiated on ART in tertiary care and managed at a PHC level (147). This study excluded tertiary and district hospitals due to the history of the PEPFAR program ,which began in tertiary facilities and offered patients access to HIV specialists. Because of these differences, we only included facilities from a PHC level.

Twelve health facilities started initiating HIV patients from 2012 onward, which means there was little PEPFAR direct service data to compare to post PEPFAR direct service data; therefore they were excluded from the study sample. Children (age <15) were excluded from the sample, leaving sixty-one health facilities that met the study inclusion criteria for the quantitative analysis (Figure 12). Thirty-nine facilities were excluded from the study, leaving a total of 61 facilities in the final quantitative study sample (Figure 13).

100 Western Cape Primary Health Care Facilities Supported by 4 PEPFAR NGOs From 2007-2012

Quantitative Analysis

21 hospitals

1 facility data not available

1 mobile unit

4 facilities no longer exist

12 clinics little PEFPAR direct service data → 39 facilities excluded

61 facilities Included in Whole Sample

Qualitative Analysis

Request submitted to WCGH and CoCT to interview **29** health facility managers → **6** health facilities not approved or did not respond to request

23 health facilities approved → **1** health facility manger declined interview request

Interviews conducted **22** health facilities, **8** gov. officials, **5** NGO managers

8 Follow-up interviews conducted

43 total interviews conducted

Figure 13: Study Sample

Study Variables

Thirteen variables were used to describe and categorize each health facility included in the study sample. The complete definition of these variables can be found in Appendix 2. The main outcome indicator was the proportion of patients retained in care for each health facility from 2007 to 2015. The study definition for RIC was: patients on first line treatment + second line treatment + third line treatment + patients who stopped ART, divided by (total number of patients on treatment – total transferred out) (Table 13). To analyze and calculate RIC in care among adults (age >15), the total number of ART clients on first, second, and third line treatment, those who had stopped treatment, and total number of clients on treatment at the beginning of the cohort were captured. "Total on treatment" includes the HIV clients who transferred into the health facility, via a formal or silent transfer. Silent transfers were considered new ART initiates, in the absence of a patient tracking system. Mortality dropped out of the RIC calculation. A decision was made based on a sensitivity analysis that an alternative RIC definition would not significantly change the outcome.

Table 13: Outcome Variable	
Outcome	**Definition per health facility**
Proportion of HIV-infected adults retained on ART per month	First line + Second line + Third Line + Clients stopped ART / (Total on treatment – Total transferred out)
First Line: Number of clients on first line ART regime beginning of cohort **Second Line:** Number of clients on second line ART regime beginning of cohort **Third Line:** Number of clients on third line ART regime beginning of cohort **Clients who stopped treatment:** Clients who are taking a formal break from treatment usually with medical advice **Total on Treatment:** Total number of clients on HIV treatment at the beginning of cohort **Transfer Out:** Clients on ART who formally left the health facility (unknown if they receiving care at a different facility)	

To characterize facility performance, RIC was calculated across the nine year time period (2007 to 2015) and PEPFAR direct service and post PEPFAR direct service transition for each health facility. The overall RIC categories (i.e. high >60% and low <59.9%) were based on the median (60%), and were used to choose the qualitative sample. Post-transition RIC categories were high >56% and low <=55.9% and used for the quantitative analysis. We conducted a very simple sensitivity analysis where we shifted the cut off to 55% and 65% to assess the impact on chosen RIC categories.

We also calculated a <u>sustainability score</u> for each facility based on the difference between during PEPFAR direct service (2007 to 2012) RIC and post-

PEPFAR direct service (2013 to 2015) RIC. Sustainability was therefore defined as change in RIC and categorized into: Poor: < -5.0%; Sustained -4.9% to 4.9% and Improved >5.0%. Poor performance meant ART retention declined between the two time periods (PEPFAR direct service and post PEPFAR direct service). Sustained/ Improved performance means ART retention stayed the same or increased over time.

The number of HIV clients on treatment at the beginning of each cohort period were used to calculate the ART patient volume for each health facility. The NGO finance variable categorizations (Low: < R35,000; Medium: R35,000-R100,000; High: R100,000+) were based on the total amount of funds budgeted or spent by each participating NGO during the five years they received PEPFAR funds for direct service. These estimates do not include PEPFAR's extension funds, which were significantly smaller amounts of funding for NGOs to close out their projects.

The stability of human resource at a facility level was an additional variable considered, however it is not collected centrally by the WCGH. We therefore created a variable that looked at the PEPFAR transition, defined as the number of heath facility posts, funded by PEPFAR and absorbed by the WCGH between 2012 and 2013. In the Western Cape the human resource transition was

a formalized process led by the WCGH with input from the health facilities.

Existing posts and number of HIV clients in care per health facility were

scrutinized to determine if the post was essential for service delivery. The focus

of the transition was on the post, which means the person who occupied the post

had to re-apply for their job. The validity of the human resource data was

triangulated with NGO close-out reports and with the qualitative data collected

for this study. For example, each health facility manager interviewed was asked

to recall the number of posts that were transitioned from PEPFAR.

To adjust for the 2010 policy change in CD4 count eligibility for ART

initiation from 200 to 350 cells/mm^3 we created a binary variable for pre and post

2010. See the list of all policies in Appendix 8. The policy analysis variable was

used in the linear regression to analyze if the policy had an impact on RIC

performance.

Data Analysis

Descriptive Analysis

Clinic and NGO features were characterized with simple descriptive

statistics (N=61). We ranked health facilities by the lowest to highest average RIC

at 24 months from 2007 to 2015 (Table 5). Health facilities were also ranked by

sustainability categories and analyzed. Bivariate analyses were conducted for the

whole sample (N=61) and sub-set (n=22) to describe the outcome variable (RIC) for each health facility at 12 and 24 months stratified by: 1) geographic location (district and sub-district); 2) government ownership; 3) PEPFAR NGO support; 4) sustainability categories; and 5) financial support.

We graphed health facility data to assess trends in 12 and 24 month RIC between 2007 and 2015 (Supplementary 1 and 2). Line graphs were used to display the RIC, average mortality, loss to follow-up (defined as clients who have not visited the health facility for more than 90 days), total clients starting treatment at the start of the cohort and end of the cohort (24 months) over the 9 year time period. These graphs were created for the overall sample (N=61), each PEPFAR NGO and for each health facility in our qualitative sample (n=22). The main purpose of the graphs for each facility was to provide a visual depiction of facility outcomes to discuss in the qualitative interviews. To improve the analysis of the graphs, the policy data was used to triangulate the trend data. The additional data helped explain deviations in the trend line. The health facilities were categorized by trends and descriptive characteristics analyzed.

The qualitative and quantitative analysis included an analysis of the top performing health facilities which included the best performing (high RIC) post PEPFAR 2012 and the high sustainability health facilities. The quantitative

characteristics included health facilities with: 1 high RIC (n=28), 2. the top ten facilities with the highest RIC, 3. Facilities with "improved" sustainability (n=5) and high RIC and sustained sustainability. These groupings were analyzed independently and together.

Statistical Analysis

RIC for each health facility supported by Anova, that'sit and Kheth'impilo was calculated at 12 and 24 months for two time periods 2007 to 2012 (during PEPFAR direct service) and 2013 to 2015 (post PEPFAR direct service). As Right to Care became active two years later, the average RIC cut off was 2009 to 2012 (PEPFAR direct service) and 2013 to 2015 (post PEPFAR direct service).

Two separate analyses were undertaken. Using the whole sample (N=61), crude and adjusted risk differences were calculated to estimate the association between type of government ownership (either CoCT or WCGH), PEPFAR NGO, volume of ART cohort, human resource transition and RIC at 12 and 24 months on ART. We used linear regression to assess the predictors of 12- and 24-month RIC across the sample (N=61). The linear regression during PEPFAR and post PEPFAR direct service were specific to each health facility based on the supporting NGOs PEPFAR grant timelines. The starting point of direct service

support for all the health facilities was 2007, except for the five facilities

supported by Right to Care that started in 2009. The end point of direct service

support was 2012 for all the health facilities. We present the estimated risk

differences and corresponding 95% confidence intervals. SAS 9.4 and Excel 2016

were used to analyze the data. Associations were determined by an analysis of

the estimate and the confidence intervals.

Qualitative Methodology

Data Collection

To achieve Objective 2, (Describe the NGO, health facility, programmatic

and enabling environmental features of PEPFAR support) in-depth interviews

were conducted with 22 health facility or operational managers and 13 key

informants (8 government officials and 5 NGO program managers[3]). Data was

collected across a five-month period (October 28, 2018 to April 3, 2019), which

was broken up into four trips to the Western Cape. A second round of interviews

was conducted with eight existing study participants (Figure 12)

Study Sample

With assistance from the NGO program directors, purposive sampling

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[3] Two directors from the same NGO were interviewed

was used to select the qualitative sub-sample (Table 16). The purpose of the

sample was <u>not</u> to select a representative sample, but a broad distribution of

health facilities to understand differences in the sustainability of RIC. The

WCGH gave permission to collect data from 23 facilities. One health facility

declined participation in the study, therefore a total of 22 health facilities were

included in the qualitative sample (Figure 12).

The qualitative sample was selected based on characteristics analyzed in

the quantitative sample (Figure 12). There were six facility characteristics and

outcomes used to select the qualitative sub-sample. A summary of the broad

distribution of characteristics is shown in Table 15 and Appendix 4).

It was important to select a mix of health facilities based in **rural and**

urban areas, to understand if contextual factors, such as differences in distances

between health facilities affected sustainability. An equal mix from the four

PEPFAR NGOs, allowed the study to look at various NGO characteristics, which

included different levels of funding, different training approaches, various levels

of engagement with local government and program management styles. To

understand the effect of facility caseload, **ART patient volume** (Low: ≤ 700;

Medium: ≥ 700.9 and High: >3,000) were considered. **Government ownership**

(CoCT in the Metro and WCGH across the province) of health facilities was used

to look at differences in clinic management and institutional culture.

While working with a provincial data manager, it was brought to the PI's

attention, there were two additional categories that were initially unknown to the

PI. These were "combined ownership" or facilities that were jointly run by CoCT

and WCGH under the government ownership factor. Additionally, there were

some health facilities that were supported by Kheth'impilo and Anova at the

same time, therefore a category was created for these facilities

(Kheth'impilo/Anova) (Table 14).

Selection of the sub-sample was also based on RIC performance and

sustainability. In terms of outcomes, the general performance of the facility was

determined by an overall RIC proportion from 2007-2012 (Low:<59.9% and

high: >60%) and sustainability was determined by the difference between RIC

PEPFAR and post PEPFAR direct service funding (Poor: < -5.0%; Sustained: -

4.9% to 4.9%; Improved: >5.0%) as per the quantitative sample. Table 15 shows

the sustainability categories of the final qualitative health facility sample.

Table 14: Summary of Qualitative Sample by Health Facility Characteristics and Outcomes						
Facility Characteristics				**Facility Outcomes**		
Geography	Urban	9 (40.9%)		Overall RIC (2007-2015)	Low	12 (54.5%)
	Rural	13 (59%)			High	10 (45.5%
ART Patient Volume	Low	8 (36.4%)		Sustainability	Poor	14 (63.6%)
	Medium	6 (27.3%)			Sustained	7 (31.8%)
	High	8 (36.4%)			Improved	1 (4.5%)
Government ownership	CoCT	6 (27.3%)				
	WCGH	15 (68.2%)				
	Combined	1 (4.5%)				
NGO Support	Anova	5 (22.7%)				
	Right to Care	4 (18.2%)				
	Kheth'impilo	5 (22.7%)				
	that'sit	5 (22.7%)				
	Kheth'impilo/ Anova	3 (13.6%)				

ART Volume	Low RIC	Sustainability	Avg. Transfer	Avg. Mortality	Owner	High RIC	Sustain ability	Avg. Transfer	Avg. Mortality	Owner
						Table 15: Qualitative Sample (n=22)				
					Anova					
Medium	Nkqubela Clinic (58%)	Poor (-7.2%)	3.8%	2.5%	WCGH	Wellington CDC (63.2%)	Sustained (2.8%)	9%	4.6%	WCGH
	Masiphumelele Clinic (38.7%)	Improved (6.4%)	2.6%	2.5%	CoCT	Mbekweni CDC (61.2%)	Poor (-9.4%)	3.6%	2.7%	WCGH
	De Doorns Clinic (43.3%)	Sustained (3.5%)	3.1%	0.8%	WCGH					
					Right to Care					
Low	Stanford Clinic (57.1%)	Sustained (3.5%)	4.3%	3.9%	WCGH	Prince Albert Clinic (75.9%)	Sustained (2.1%)	1.3%	9.3%	WCGH
	Gansbaai Clinic (53.8%)	Sustained (-1.3%)	5.3%	2.6%	WCGH					
	Kleinmond Clinic (59.8%)	Poor (-9.7%)	4.6%	3.8%	WCGH					
					that'sit					
Low	Parkdene Clinic (43%)	Poor (-10.5%)	2.1%	4.5%	WCGH	Sedgefield Clinic (69.1%)	Sustained (-1.9%)	4.0%	2.1%	WCGH
	Hornlee Clinic (56.8%)	Poor (-10.6%)	1.2%	3.2%	WCGH					
	Rosemoor Clinic (51.5%)	Poor (-20.2%)	2.9%	4.5%	WCGH					

Medium						Kwanokuthula CDC (63.5%)	Poor (-7.5%)	5.9%	2.8%	WCGH
Kheth'impilo										
High	Retreat CHC (55.9%)	Poor (-9.3%)	2.9%	3.3%	WCGH	Wallacedene Clinic (67.9%)	Poor (-15%)	3.1%	2.8%	CoCT
	Mfuleni CDC (59.3%)	Poor (-6.6%)	2.3%	1.5%	WCGH	Mzamomhle Clinic (62.2%)	Poor (-6.5%)	3.0%	2.9%	CoCT
						Bloekombos Clinic (66.5%)	Poor (-7.9%)	2.4%	0.8%	CoCT
Anova/Kheth'impilo										
High	Albow Gardens CDC (58.3%)	Sustained (1.7%)	1.6%	1.0%	Combined	Ikhwezi CDC (64.5%)	Poor (-12.9%)	2.9%	1.1%	CoCT
						Delft South Clinic (64.5%)	Poor (-7.7%)	2.1%	2.5%	CoCT

Study Site Enrollment

Study enrollment of the health facilities began with an email and later a follow-up telephone call to the clinic to locate the facility or operational manager who worked during the time of interest (2007-2012). Locating this person was a challenge and not a straightforward process. Sometimes the current health facility manager had the correct contact details of the appropriate person, who had moved to another facility, while other times it took numerous phone calls and emails to find the potential interviewee. In some districts contact with the district manager or primary health care manager was required to gain further permission to contact the health facility and to locate the right person. Once the appropriate person was located, a date and time convenient for the study participant was agreed upon to conduct the interview. In some cases the essential interviewee had left government, was on sick leave and one had passed away. In these situations, a nurse was interviewed who worked at the facility during the time of interest.

The study enrollment of the NGOs followed a similar enrollment process. The process began with an introductory meeting with the four executive directors of the NGOs who agreed to participate in the study. Thereafter, the NGO program manager from each facility was contacted for an interview.

Before the interview, the interviewer presented each participant with an information sheet, which explained the study objectives, risks and benefits of participation, how interview responses would be kept confidential and the contact details of the study team. Participants were told they could withdraw from the study at any time without providing a reason. Participation was voluntary. Thereafter written informed consent was obtained from each participant regarding their participation in the study and being voice recorded. To ensure confidentiality, all of the study data and confidential government documents were kept in a locked file on the PI's laptop. Data was accessed only by the researcher and her study assistants and numeric codes were assigned to the health facilities to ensure confidentiality.

In-Depth Interviews

To guide the semi-structured in-depth interviews, interview guides and information sheets were developed (Appendix 6). Interview guides were piloted with two health facility managers in KwaZulu-Natal. Interviews were conducted in English, although some participants struggled to explain themselves in English and at times responded in Afrikaans. The majority of the interviews were conducted in the health facility, though one interview was conducted in a car and one was at a café. The health facility/operational manager or nurse who

worked during the time of interest, was asked about their educational and employment background; to recall events and details of the PEPFAR program from 2007-2012; challenges; and give insight into how PEPFAR programs were implemented on a day-to-day basis.

Key informant interviews (KIIs) were conducted with eight local government officials and five NGO program managers. A combination of purposive and snowball sampling was used to find appropriate KIIs, who were personally involved with PEPFAR programming. District and provincial government officials were interviewed to gain a better understanding of the enabling environmental/contextual factors (e.g. policies, campaigns, initiatives and the political environment). NGO program managers were asked about program activities, how program decisions were made, and program challenges and successes. Additional descriptive data was collected during the interviews regarding health facility, program manager and NGO characteristics (Table 17), which was used to complement the analysis. Understanding a facility managers past employment, years worked in PEPFAR supported facility and education of the health facility leader could explain facility health outcomes.

The interviews focused on the seven sustainability domains frequently cited in the literature (Table 4). The factors that lead to sustainable program

outcomes are unknown, therefore various open-ended questions and prompts were used to understand predictor variable themes, but were not limited to these themes. The predictor variables are presented in Table 4 and descriptive variables are outlined in Table 16. The descriptive variables chosen for this study are based on variables commonly used in the literature and based on the characteristics of health facilities and PEPFAR programs. Some examples of covariates include: health facility and client demographics, human resources capacity, amount of funding dedicated to the program and facility manager 's educational background.

The domains are grouped into three categories: organizational, programmatic and enabling environment. The organizational factors highlight the internal working of the NGOs and health facilities, which may lead to sustainability. Leadership, within the NGO and health facility (i.e. organization) were explored in this study. The programmatic factors are characteristics of the PEPFAR funded program which possibly lead to sustainability. Aspects of the program investigated included: health worker motivation, health worker skills/capabilities, program resources and activities. The enabling environmental factors are concerned with aspects of the context, such as partnerships and a supportive environment (e.g. political, donor and economic climate, government

policies and priorities) which may have influenced sustainability.

During each interview notes were taken and immediately after each interview memos were used to document my reflections, observations and ideas on themes. The memos and notes were later analyzed along with the interview transcriptions. Saturation was reached when new themes no longer emerged from the data.

To gain clarity and feedback on the initial interviews a second round of follow-up interviews were conducted via telephone and email with: three health facility managers, two provincial government officials and three NGO managers. All of the follow-up interviews were with existing study participants. These interviews were used to probe participants about specific themes that emerged from the data, clarify government policies and why decisions were made at the time. The health facility managers from high and low performing facilities were probed to understand their opinion about their performance and sustainability scores. Government officials were asked more about leadership training and the impact of high patient/health care provider ratios.

Document Review

Current and historical government policy documents, NGO strategic reports and evaluations were collected from PEPFAR NGOs and government

officials to gain an in-depth understanding of the context and conditions of

sustainability (Appendix 8). The review enhanced the analysis of the quantitative

and qualitative data. HIV policy documents gave us a better understanding of

the policy environment, clarifying policy timelines and a reason for possible

fluctuations of RIC. These documents served as an additional proxy to measure

health facility performance over time. The NGO documents provided

background information to develop the qualitative interview guide.

	Category	Data Source	Domain	Indicator	Data Collection	Measurement
				Table 16: Descriptive Variables		
1	**Org.**	**Health Facility**	Health facility staffing levels	D1.0 Number of staff transitioned from PEPFAR to SAG	Health facility interview	Number
			Health facility leadership	D 1.1 Facility Manager: ➢ Education	Health facility interview	Open Question
				➢ Years of working in health facility	Health facility interview	Number
			Type of facility	D1.2: Type of facility (i.e. clinic, hospital)	WCGH Data	Categorical
				D1.3: Geographic context (rural, urban, peri-urban)	WCGH Data	Categorical
2	**Org./Prog**	**NGO**	Funding	D2.0: Donor: CDC or USAID	NGO Interview and Document review	Number
				D2.1: Amount of PEPFAR funds invested in project	Document review	Open question
				D2.2: Receive additional grants to work in same districts	Document review; NGO Interview	Yes/No
			Program activities	D2.3: Description of PEPFAR program activities	Document review	Open Question

			Human Resources	D2.4 Number of human resources dedicated to project	NGO Interview	Number
3.	**Enviro.**		Policies	D3.0: Domestic HIV Policy Changes	Document review	Open question

Data Analysis

The interviews were transcribed, coded and themes were identified using grounded theory using a thematic analysis. Thematic analysis allows for theories to emerge from the data without trying to fit "preconceived ideas and theories" into the data, grounding the analysis in the data. This inductive process allows for the observation of repeated patterns to allow for theories to emerge organically from the data. The sustainability factors guided the themes to be analyzed, but the analysis allowed for additional themes to emerge. The analyses used a flexible analytic approach which allows the investigator to move back and forth between the data and analysis to connect emerging themes (148,149).

Grounded theory analytic tools such as open and axial coding and memos were used to analyze the transcripts. Coding is the process of "categorizing segments of data with a short name that simultaneously summarizes and accounts for each piece of data" (149). Memos were used to capture the interviewer's thoughts, observations and comparisons between interviews. Interview memos and audio recordings were triangulated with the document review, quantitative data and literature review to thematically analyze the data. The goal was to create descriptive codes, which accurately described sustainability and were grounded in the data.

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Data collection and data analysis were conducted simultaneously. This iterative process allowed for reflection and the opportunity to probe study participants around emerging themes and gaps in our knowledge. During this process we continued to revert to the main research questions: 1) What was sustained from PEPFAR funding? and 2) What are the factors which lead to the sustainability of the outcomes?

The document review, quantitative data and descriptive data was used to characterize each interview to gain a comprehensive view of each study participant. We were able to differentiate by characteristics used in the quantitative analysis (e.g., government ownership, PEPFAR NGO support, geographic location, sustainability and RIC categories, human resources and motivation, leadership). We analyzed the data looking for similarities and differences. The document review helped to understand the challenges and HIV policy changes during PEPFAR and post PEPFAR direct service time period while the descriptive data gave us more insight into the background and experience of the interview participants.

Three masters students from Boston University School of Public Health assisted with the transcription of interviews and creation of the codebook (Appendix 6). The Director of Research at the Department of Psychiatry at

Boston University assisted our team along the way by offering mini-workshops, during which we had the opportunity to discuss specific codes and how they fit into the larger sustainability phenomenon. A professional transcription service was used for interviews which required translation services. Translations were validated by native Afrikaans speakers. Interviews were hand coded during the development of the codebook, however Nvivo 12 Pro was used thereafter (150). Codes were checked for consistency and an inter-rater reliability was greater than 80% during the creation of the codebook and 98% during the open coding process. To ensure the interviews were transcribed accurately and to increase quality, I reviewed each transcription while simultaneously listening to the audio recording.

A codebook was created (Appendix 6) to ensure the open coding process was standardized. Each research assistant coded three transcriptions (1 NGO; 1 government official; 1 health facility). An inter-coder reliability was calculated between each team member to ensure reliability of the data. Subsequently, there were multiple meetings to discuss the meaning and definition of each code. This was an iterative process, which concluded when a full set of codes and definitions were developed.

Open coding was employed to analyze segments of the data, create

focused codes and highlight quotable text. Axial coding was used to relate the codes to sub-codes, synthesize codes and eliminate unnecessary codes. This process allowed us to synthesize the codes into a broader range of themes. To visually understand sustainability a list of outcomes that were sustained from the PEPFAR direct service era were used as the center of a spider diagram. The arms of the spider diagram were categorized into conditions, actions/interactions and consequences to understand how each code relates to each other. Commonalities and outlier responses were identified and coded.

A second level of thematic analysis entailed using the quantitative data, to stratify the data by health facilities which were able to sustain and improve their RIC and had high RIC rates. The transcripts from these health facilities were analyzed separately from the rest of the qualitative sample. These themes were listed and compared to the overall themes in the qualitative sample to understand if there was a different experience among these facilities.

To increase the validity of the codes and themes, one Boston University research student assisted with the open and axial coding and development of themes. She and I coded on our own transcripts and intermittently discussed themes and codes, to ensure the codes were emerging from the data. This process was invaluable to me as it helped focus the codes on answering the research

question and theme development.

To ensure confidentiality qualitative data and confidential government documents were stored in a locked file on the PI's laptop. Data were accessed only by the researcher and transcription team and numeric codes were assigned to each interview and transcription to safeguard confidentiality.

Validity and Reliability

Multiple data sources (Tier.net and NGO, health facility and government) and various data collection methods (key informant interviews, document review) were used to triangulate the data in order to ensure the credibility of the data and results. Additionally, collecting the insights from various people (government officials, NGO and health facility leadership) allowed the researcher to deepen her understanding of the sustainability constructs. A thorough literature review had been undertaken to ensure an understanding of the sustainability definitions to guarantee construct validity. To enhance the validity of the KIIs, the data collection instruments were piloted in a different province (KwaZulu-Natal) within facilities that received PEPFAR support. The Tier.net data for the KwaZulu-Natal interview were analyzed to pilot the analysis for objective 1.

To improve the validity or "trustworthiness" of the qualitative data

(besides triangulation as mentioned above), reflexivity, documentation of deviant cases, and theoretical sampling were used. The deviant cases or health facilities that were categorized as "poor performing" and not able to sustain ART retention rates were investigated to understand the factors, which hindered sustainability. Theoretical sampling or sampling a range of different settings or contexts minimized variability in the data, increasing the generalizability of the data (151).

To ensure reliability, throughout the course of data collection and the analysis the researcher documented the research decisions and activities undertaken. Furthermore, confounding factors were thoroughly analyzed and documented. Interview guides were used to conduct the KIIs, which helped ensure the same themes were probed across the interviews.

A mixed method approach was used for this study to investigate the conditions and factors that led to sustainable program outcomes. The difference of RIC during and post PEFPAR direct service was used to quantitatively define sustainability at a facility level. A broad qualitative sub-sample of facilities were chosen based on RIC sustainability, RIC performance, ART volume, government ownership, NGO support and geography to gain an understanding of the wide variety of conditions that produces sustainability. The qualitative data grounded

the research in the views of study participants.

Chapter 5: Quantitative Results

Characteristics of the Study Sample

The overall RIC of the study sample was exactly aligned to the RIC referenced by the Thembisa model at 56%. The post PEPFAR direct service RIC for the study sample was 55.3% across all of the facilities. The majority of the health facilities included in the study sample were WCGH owned (77%) located at high volume health facilities (54%), (>2,500 total ART clients) and located in the Metro District (50.8%) (Table 17). Most health facilities were supported by Kheth'impilo (24.6%) or Anova (37.7%) (Table 17). The total number of patients who started in each ART cohort from 2007-2015 was highest in the Metro, ranging from 463 to 9,760 per health facility. Notably, many of the rural district facilities also had high ART volumes, ranging from 174 to 5,652 patients per health facility. From 2007-20015 the highest total number of patients who started ART was 9,760 (Crossroads Clinics, Metro District) and lowest 174 (Prince Albert Clinic, Central Karoo District). The average mortality rate of the study sample was 2.2%.

Twenty-nine health facilities (47.5%) in the study sample were able to retain PEPFAR posts. The majority of these health facilities (75.9%; n=22) retained 1-2 PEPFAR staff. 79.3% of these posts were supported by Anova or

Kheth'impilo or a combination of the two NGOs (Table 18). 82.8% of the health facilities where PEPFAR staff were retained had ART volume which was medium to high.

Difference between Study Sample and Sub-Sample

Since we aimed to select a very broad sub-sample, the sub-sample characteristics are very different from the study sample, which is what we expected to observe. The study sample consisted of more facilities with poor sustainability results, were located in the Metro district at higher volume facilities and were managed by CoCT.

The qualitative sub-sample consisted of 22 health facilities, 59% of the sub-sample facilities were able to transition a post. 54.5% of the sub-sample had a low RIC and 40.9% of the health facilities were based in the Metro district. 31.8% of the sample were able to sustain their RIC.

Table 17: Study Sample Frequency (N=61)	
Variable	N (%)
RIC Post PEPFAR (24 months)	
Low (<55.9%)	32 (52.5%)
High (>56.0%)	29 (47.5%)
Facility Type	
Clinic	33 (54.1%)
Community Health Center	7 (11.5%)
Community Day Center	21 (34.4%)
Geographic Area	
Urban	31 (50.8%)
Rural	30 (49.2%)
PEPFAR NGO	
Anova	23 (37.7%)
Anova/KI	7 (11.5%)
Kheth'impilo	15 (24.6%)
Right to Care	5 (8.2%)
that'sit	11 (18%)
Government Ownership	
CoCT	12 (19.7%)
Combined	2 (3.3%)
WCGH	47 (77%)
Volume of ART Cohort	
Low	14 (23%)
Medium	19 (31.2%)
High	28 (46%)
District	
Cape Winelands	12 (19.7%)
Central Karoo	1 (1.6%)
Eden	11 (18%)
Metro	31 (50.8%)
Overberg	4 (6.6%)
West Coast	2 (3.3%)
Human Resource Transition*	
1-2 Posts	22 (75.9%)
3-4 Posts	4 (13.8%)
5+ Posts	3 (10.3%)
*Per health facility N=29	

Trends of RIC over Time

The RIC data across the 9-year study period (2007–2015) was analyzed

across the study sample and for each individual NGO. The trend data shows

over time (2007-2015) ART cohorts gradually increase in size (Figure 13), though

in 2015 there is a dramatic increase of the number of HIV clients on treatment. At

24 months the clients remaining on HIV treatment at a particular facility is

approximately half of those who started ART. RIC at 24 months during PEPFAR

direct support (61.4%) compared to post PEPFAR (54.8%) decreased by 6.6%. The

mortality rate remained consistent at 2-3% over the years.

Notably, across the study sample we observe a decrease in RIC around

2012/2013 and an increase in RIC in 2014/2015 (Figure 14; Appendix 9).

However, we would need more follow-up data to determine if the increase was

not just an artifact of the data.
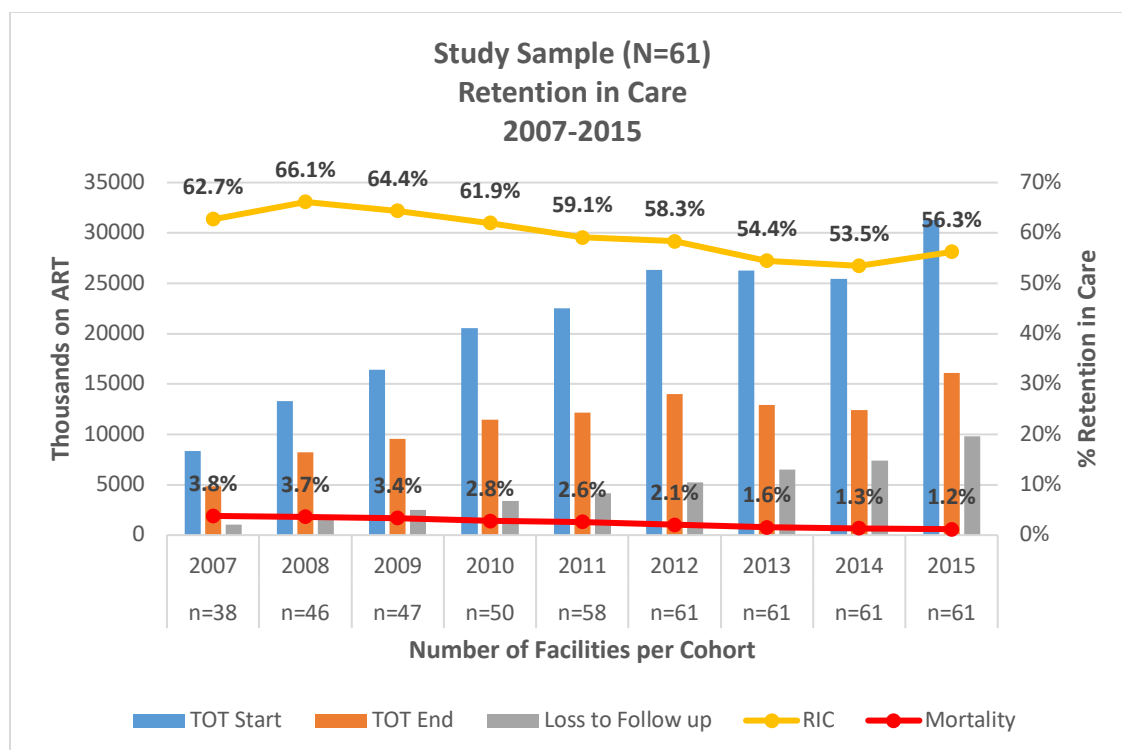
Figure 14: RIC Over Time of Study Sample 2007-2015 (N=61)

RIC Trends by PEPFAR NGO

RIC for each NGO decreased post PEPFAR direct service (Table 18). The

graphs for each NGO show that Anova, that'sit, Right to Care and

Anova/Kheth'impilo follow the study sample trend, a RIC decrease in 2012/2013

followed by a rebound in RIC in the later years. (Appendix 9). The only

exception was Kheth'impilo, whose RIC decreases in 2012/2013, but between

2014 and 2015 plateaus at 57.9% (Appendix 9).

As observed in Table 18, health facilities supported by Right to Care

(59.9%; 95% CI 57.9%-61.8%) and Kheth'impilo (58.7 %; 95% CI 58.0%-59.4%) had

a higher post PEPFAR direct service RIC at 24 months compared to the other NGOs. The lowest RIC decrease post PEPFAR direct service was among health facilities supported by Anova/Kheth'impilo (4.3% points). Important to note was Anova and Kheth'impilo were supporting facilities with large numbers of ART clients (Total over study years — Anova: 84,610 and Kheth'impilo: 47,215) (Table 18). that'sit RIC pre and post PEPFAR direct service RIC decreased by the largest percentage points (12.3%) compared to the other NGOs (Table 18).

The NGOs supporting health facilities in the rural areas, with fewer ART patients, generally had a higher RIC prior to the PEPFAR transition, compared to the NGOs supporting urban health facilities with higher patient volumes (Table 18). This could be explained by their low ART patient volumes, which made it easier to manage patients. Kheth'impilo was the one exception, as they were located in urban areas and even with high ART patient volumes, they were able to retain a high RIC throughout the transition.

Table 18: RIC PEPFAR Trends by NGO at 24 Months

NGO (n= total facilities supported)	NGO Years Operational	Total Clients on ART	RIC PEPFAR Direct Service (95%CI)	RIC Post PEPFAR Direct Service (95%CI)	% Point Difference RIC	Overall RIC (2007-2015)
Anova (n= 23)	2007- 2012	84,610	58.6% (58.1%-59.1%)	51.8% (51.2%-52.3%)	6.8%	55.7% (55.4%-56.1%)
Anova/Kheth'impilo (n=7)	2007- 2012	39,752	60.0% (59.4%-60.7%)	55.7% (55.0%-56.5%)	4.3%	58.1% (57.6%-58.6%)
that'sit (n=11)	2007- 2012	13,202	65.8% (64.6%-66.9%)	53.5% (52.2%-54.8%)	12.3%	60.4% (59.5%-61.2%)
Right to Care (n=5)	2009-2015	5,528	69.8% (68.0%-71.6%)	59.9% (57.9%-61.8%)	9.9%	64.9% (63.6%-66.2%)
Kheth'impilo (n=15)	2007- 2012	47,251	65.6% (65.0%-66.2%)	58.7% (58.0%-59.4%)	6.9%	62.6% (62.1%-63.0%)

High Retention in Care (or High Performance)

RIC Performance Over Time

Overall, 52.5% (n=32) of the study sample observed high RIC. Across the study sample years (2007-2015) the overall RIC at 12 months was 64.6% (95% CI 64.6%-65.1%) and 58.6% (95% CI 58.3%-58.8%) at 24 months across all the health facilities. When RIC data was analyzed by PEPFAR NGOs across the nine years, RIC at 24 months ranged from 55.7% (95% CI 55.4%-56.1%) with Anova support, to 64.9% (95% CI 63.6%-66.4%) with Right to Care support (Table 18).

There was a decrease in RIC post PEPFAR direct service support. RIC pre PEPFAR transition at 24 months was 61.5% (95% CI 61.1%-61.7%), decreasing to 54.7% (95% CI 54.4%-55.1%) post PEPFAR direct service. Post PEPFAR direct service the lowest RIC at 24 months was 37.3% (95% CI 35.2%-39.5%) at Mitchells Plain CHC (Metro District) (Table 20b), while the highest RIC was 76.4% (95% CI 68.0%-83.5%) at Prince Albert Clinic (Central Karoo District) (Table 20a).

ART Patient Volume

The majority of the health facilities with high RIC (>56%) had high (n=16; 55.2%), and medium (n=8; 27.6%) ART patient volumes. Of the top 20 highest performing facilities, 85% were among medium/high volume facilities.

Human Resource Transition and NGO Support

58.6% (n=17) of health facilities with high RIC post PEPFAR direct service (n=29) were able to transition posts to local government. Of the high RIC facilities that transitioned posts (n=17), nine (53%) were able to transition two or more posts per facility. Kheth'impilo was able to transition the highest rate of posts, on average 1.87 posts were transitioned to local government. Additionally, Kheth'impilo supported six health facilities that transitioned two or more posts per health facility (Table 19).

Table 19: Human Resources Transitioned by NGO	
NGO **(n= total facilities** **supported)**	**# of Posts** **Transitioned to** **Government**
Anova (n= 23)	12
Anova/Kheth'impilo (n=7)	4
that'sit (n=11)	7
Right to Care (n=5)	4
Kheth'impilo (n=15)	28

NGO Support

Kheth'impilo supported the highest proportion of high RIC facilities

(n=11; 73.3%) and second highest were Anova/Kheth'impilo facilities (n=5:71.4%).

The lowest performance was by Anova alone, where 66.7% (n=16) of their

facilities scored a low RIC.

Kheth'impilo supported 60% of the top 10 highest performing facilities

post PEPFAR. Kheth'impilo was also an NGO with the largest PEPFAR budgets.

Moreover, of the top 10 highest performing facilities 70% (n=7) were among

facilities with high HIV patient volumes.

Government Ownership

The RIC performance of health facilities owned by CoCT was very high

compared to WCGH facilities. Although the majority of facilities with high RIC

were owned by the WCGH (n=16), 91.7% (n=11) of all CoCT facilities included in

the study sample produced high RIC rates (Table 20a). Therefore, CoCT health

facilities were higher performing, than facilities owned by the WCGH.

Table 20a: Characteristics of High Performing Primary Health Care Facilities (RIC at 24 Months)

	Highest RIC Post PEPFAR	PEPFAR RIC	Post PEPFAR RIC	Overall RIC (2007-2015)	District	ART Volume	NGO Support	Government Ownership	NGO Finances	HR Transit-ion
1	Prince Albert Clinic	74.30%	76.40%	75.90%	Central Karoo	Low (222)	Right to Care	WCGH	Medium	0
2	Sedgefield Clinic	69.90%	68.00%	69.10%	Eden	Low (652)	that'sit	WCGH	Low	2
3	Lady Michaelis CDC	59.70%	66.10%	62.10%	Metro	Medium (2,563)	Kheth'impilo	WCGH	High	0
4	Wellington CDC	62.00%	64.80%	63.20%	Cape Winelands	Medium (1,714)	Anova	WCGH	Medium	1
5	Heideveld CDC	65.30%	63.50%	64.70%	Metro	Medium (2,762)	Kheth'impilo	WCGH	High	0
6	Nyanga CDC	69.00%	63.40%	66.60%	Metro	High (4,934)	Anova	WCGH	Medium	0
7	Bloekombos Clinic	70.40%	62.50%	66.50%	Metro	High (4,318)	Kheth'impilo	CoCT	High	3
8	Vuyani Clinic	75.30%	61.70%	66.50%	Metro	Medium (2,023)	Kheth'impilo	CoCT	High	4
9	Hout Bay Main Road Clinic	63.60%	61.30%	62.60%	Metro	High (3,106)	Kheth'impilo	WCGH	High	0
10	Eerste River Clinic	97.30%	61.10%	67.40%	Metro	Low (463)	Kheth'impilo	CoCT	High	1

Table 20b: Characteristics of Low Performing Primary Health Care Facilities (RIC at 24 Months)

	Lowest RIC Post PEPFAR	During PEPFAR RIC	Post PEPFAR RIC	Overall RIC (2007-2015)	District	ART Volume	NGO Support	Government Ownership	NGO Finances	HR Transi -tion
61	Mitchells' Plain CHC	73.90%	37.30%	58.90%	Metro	High (5,470)	Anova	WCGH	Medium	0
60	Guguletu CHC	22.60%	38.70%	28.80%	Metro	High (8,642)	Anova	WCGH	Medium	0
59	Parkdene Clinic	50.60%	40.20%	43.00%	Eden	Low (303)	that'sit	WCGH	Low	0
58	Masiphumelele Clinic	36.40%	42.80%	38.70%	Metro	High (2,529)	Anova	CoCT	Medium	1
57	Moorreesburg Clinic	49.30%	43.80%	45.90%	West Coast	Low (202)	Anova	WCGH	Medium	0
56	Rosemoor Clinic	65.10%	44.90%	51.10%	Eden	Low (285)	that'sit	WCGH	Low	1
55	De Doorns Clinic	41.60%	45.10%	43.30%	Cape Winelands	High (2,607)	Anova	WCGH	Medium	1
54	Pacaltsdorp Clinic	64.80%	46.10%	49.70%	Eden	Low (309)	that'sit	WCGH	Low	1
53	Piketberg Clinic	47.80%	47.20%	47.50%	West Coast	Medium (837)	Anova	WCGH	Medium	1
52	Worcester CDC	55.60%	47.70%	53.00%	Cape Winelands	High (3,766)	Anova	WCGH	Medium	1

Table 21: Characteristics of Retention in Care at 24 Months Post PEPFAR Direct Service			
	Low RIC (<55.9%)	High RIC (>56.0%)	Total
Total Health Facilities	**32 (52.5%)**	**29 (47.5%)**	**61**
Sustainability			
Poor	25 (61.0%)	16 (39.0%)	41
Sustained	5 (33.3%)	10 (66.7%)	15
Improved	2 (40%)	3 (60%)	5
Gov. Ownership			
CoCT	1 (8.3%)	11 (91.7%)	12
WCGH	31 (66.0%)	16 (34.0%)	47
Combined		2 (100%)	2
ART Volume*			
Low	9 (64.3%)	5 (35.7%)	14
Medium	11 (57.9%)	8 (42.1%)	19
High	12 (42.9%)	16 (57.1%)	28
PEPFAR NGO			
Anova	16 (66.7%)	7 (29.1%)	24
Anova/Kheth'impilo	2 (28.6%)	5 (71.4%)	7
Kheth'Impilo	4 (26.7%)	11 (73.3%)	15
that'sit	8 (72.7%)	3 (27.3%)	11
Right to Care	2 (40%)	3 (60%)	5
Geographic Area			
Urban	11 (35.5%)	20 (64.5%)	31
Rural	21 (70%)	9 (30%)	30
HR Transition**	n=12	n=17	
1-2 Posts	12 (%)	10 (%)	22
3-4 Posts	0	4 (100%)	4
5+ Posts	0	3 (100%)	3
District			
Cape Winelands	9 (75%)	3 (25%)	12
Central Karoo	0	1 (100%)	1
Eden	8 (72.7%)	3 (27.2%)	11
Metro	11 (35.5%)	20 (64.5%)	31
Overberg	2 (50%)	2 (50%)	4
West Coast	2 (100%)	0	2
*Sum of the total number of people who started on ART per cohort year (2007-2015) ** 29 health facilities were able to absorb PEPFAR Posts.29 used at denominator.			

Sustained Retention in Care

The majority of the study sample was not able to sustain RIC post

PEPFAR (n=41; 67.2%). 24.6% (n=15) of the study sample were able to sustain RIC

post PEPFAR and 8.2% (n=5) improved their RIC rates. Sustainability of RIC (i.e.

difference between RIC during and post PEPFAR direct service) ranged from -

36.6% (Mitchell's Plain CHC), to Gugulethu CHC, at 16.1% at 24 months post

PEPFAR direct service (Appendix 5). Almost half (45%) of the health facilities

that showed sustainable performance were located in rural areas (Table 21).

High RIC and Sustained RIC

Health facilities with high performance post PEPFAR (i.e. high RIC) had

not sustained their earlier performance (55.2%; high RIC/Poor sustainability

n=16) (Table 21). However, our results below show some facilities with high

performance during direct PEPFAR support also showed high sustainability

(improved and sustained).

ART Patient Volume

Contrary to the high performance results, poor sustainability was

observed among the high volume facilities. The majority of high/medium

volume facilities (n=32; 78%), scored poorly with regard to sustainability,

therefore low volume facilities showed better results with regard to

sustainability. This result implies there is no relationship between sustained performance and high ART patient volume.

Human Resource Transition and NGO Support

A third (36.4%) of all health facilities that transitioned 1-2 posts scored high sustainability (sustained or improved), and the facilities (n= 7; 33.3%) that transferred more than two posts showed poor sustainability (Table 22). A possible explanation of the low sustainability, was that facilities that transferred > 2 posts were medium/high volume facilities, which could indicate more silent transfers, thus lower sustainability scores.

NGO Support

60% of Right to Care (n=3) facilities and 57.2% (n=4) of Anova/Kheth'impilo facilities observed high sustainability post PEPFAR. Of all four NGOs, that'sit (81.8% of that'sit facilities) observed the poorest sustainability scores (Table 22).

Government Ownership

WCGH health facilities showed better sustainability scores than CoCT managed facilities. Of the 20 facilities that scored consistent or improved sustainability 85% (n=17) were WCGH owned. CoCT was able to show high performance (i.e. high RIC) but was not able to sustain their high performance.

High RIC and Sustained RIC Facilities

The following analysis are results of the top performing facilities, those

with consistent or improved sustainability and high RIC (n=13) (Table 23). 69.2%

of the top facilities were supported by Kheth'impilo, Anova/Kheth'impilo and

Anova. Additionally 53.8% were located in the Metro. The majority of the

facilities had medium/high ART volumes (n=9; 69.2 %). Interestingly only 30.7%

(n=4) facilities were able to transition posts.

Although performance and sustainability were not associated with each

other we found different results when analyzing the top performing facilities.

65% (n=13) of the facilities with consistent or improved sustainability post

PEPFAR (n=20) showed high performance or high RIC post PEPFAR. It is

important to note that Anova and Kheth'impilo received medium/high levels of

PEPFAR funding, therefore the better financially resourced NGOs observed

higher and more sustainable performance.

Table 22: Characteristics of Sustained RIC Post PEPFAR at 24 Months (N=61)				
	Poor (%)	Sustained (%)	Improved (%)	Grand Total
Total	n=41 (67.2%)	n=15 (24.6%)	n=5 (8.2%)	n=61
RIC at 24 Months Post PEPFAR				
Low	25 (78.1%)	5 (15.6%)	2 (6.3%)	32
High	16 (55.2%)	10 (34.5%)	3 (10.3%)	29
Gov. Ownership				
CoCT	10 (83.3%)		2 (%)	12
Combined	1 (50%)	1 (50%)		2
WCGH	30 (63.8%)	14 (29.8%)	3 (6.4%)	47
ART Volume*				
Low	9 (64.3%)	4 (28.6%)	1 (7.1%)	14
Medium	11 (57.9%)	6 (31.6%)	2 (10.5%)	19
High	21 (75%)	5 (17.9%)	2 (7.1%)	28
PEPFAR NGO				
Anova	17 (74%)	4 (17.4%)	2 (8.7%)	23
Anova/ Kheth'impilo	3 (42.9%)	3 (42.9%)	1 (14.3%)	7
Kheth'impilo	10 (66.7%)	4 (26.7%)	1 (6.7%)	15
Right to Care	2 (40%)	3 (60%)		5
that'sit	9 (81.8%)	1 (9.1%)	1 (9.1%)	11
HR Transition**	n=21	n=6	n=2	N=29
1-2 Posts	14 (63.6%)	6 (27.3%)	2 (9.1%)	22
3-4 Posts	4 (100%)			4
5+ Posts	3 (100%)			3
District				
Cape Winelands	9 (75%)	3 (25%)		12
Central Karoo	1 (50%)	1 (50%)		2
Eden	9 (81.8%)	1 (9%)	1 (9%)	11
Metro	20 (64.5%)	7 (22.6%)	4 (12.9%)	31
Overberg	2 (50%)	2 (50%)		4
West Coast		1 (100%)		1

*Sum of the total number of people who started on ART per cohort year (2007-2015)

** 29 health facilities were able to absorb PEPFAR Posts. 29 used at denominator.

Table 23: High RIC and Improved and Sustained Sustainability

	Clinic Name	Post-PEPFAR RIC 24 Months	District	ART Volume	NGO Support	Government Owner	NGO Finance	HR transi-tion
				Improved				
1	Lady Michaelis CDC	66.1%	Metro	High	Kheth'impilo	WCGH	High	1
2	Langa Clinic	58.6%	Metro	Medium	Anova/ Kheth'impilo	WCGH	High	0
3	Conville CDC	56.8%	Eden	Low	That'sit	WCGH	Low	0
				Sustained				
4	Du Noon CDC	58.7%	Metro	High	Anova/ Kheth'impilo	WCGH	High	0
5	Albow Gardens CDC	59.4%	Metro	High	Anova/ Kheth'impilo	Com-bined	High	0
6	Inzame Zabantu CDC	60.2%	Metro	High	Kheth'impilo	WCGH	High	0
7	Hout Bay Main Road Clinic	61.3%	Metro	High	Kheth'impilo	WCGH	High	0
8	Heideveld CDC	63.5%	Metro	Medium	Kheth'impilo	WCGH	High	0
9	Stanford Clinic	58.2%	Overberg	Low	Right to Care	WCGH	Low	0
10	Dalvale Clinic	60.3%	Cape Winelands	Medium	Anova	WCGH	Medium	1
11	Wellington CDC	64.8%	Cape Winelands	Medium	Anova	WCGH	Medium	1
12	Sedgefield Clinic	68%	Eden	Low	that'sit	WCGH	Low	2
13	Prince Albert Clinic	76.4%	Central Karoo	Low	Right to Care	WCGH	Low	0

Linear Regression

Adjusted linear regression models show no difference in RIC during PEPFAR and post PEPFAR direct service at 12 months. The adjusted model for the whole sample (N=61) showed no difference in RIC at 12 (Risk Difference (RD): 0.2%; 95% confidence interval (CI): -3.3, 3.8%) and 24 months (RD: 0.3%; 95% CI: -2.8, 3.4%) (Table 24).

There appears to be a 6-8% increase in RIC at 12 months for health facilities jointly run by CoCT or combined compared to WCGH (Table 24). The adjusted analysis also shows, compared to Anova alone the strongest predictor of high RIC post PEPFAR direct service was support from: 1. Right to Care (24 months - RD 8.7%; 95% CI 1.4, 16.1%), and 2. that'sit (24 months - RD 6.2%; 95% CI 2.3, 11.0%).

Table 24: Predictors of Sustained Retention in Care for full sample (N=61)

Variable	12 month crude (95% CI)	12 month adjusted (95% CI)	24 month crude (95% CI)	24 month adjusted (95% CI)
PEPFAR direct service	0.002 (-0.011, 0.015)	0.012 (0.028,-0.005)	-0.010 (-0.22, 0.002)	-0.008 (-0.022, 0.007)
Post PEPFAR direct service	0.002 (-0.028, 0.033)	**0.002 (-0.033, 0.038)**	0.003 (-0.024, 0.030)	**0.003 (-0.028, 0.034)**
WHO 2010 Policy Change				
<=2010	Reference	Reference	Reference	Reference
>2010	-0.040 (-0.086, 0.005)	-0.039 (-0.085, 0.006)	-0.018 (-0.059, 0.022)	-0.018 (-0.056, 0.022)
Government				
WCGH	Reference	Reference	Reference	Reference
CoCT	0.108 (0.041, 0.174)	0.060 (-0.046, 0.166)	0.078 (0.012, 0.144)	0.046 (-0.067, 0.158)
Combined	0.090 (0.036, 0.143)	0.079 (-0.015, 0.173)	0.032 (-0.003, 0.067)	0.045 (-0.029, 0.120)
PEPFAR NGO				
Anova	Reference	Reference	Reference	Reference
Anova/Kheth'impilo	0.054 (-0.027, 0.136)	-0.006 (-0.092, -0.080)	0.037 (-0.022, 0.095)	0.006 (-0.069, 0.081)
Kheth'impilo	0.069 (-0.009, 0.0147)	0.038 (-0.045, 0.120)	0.080 (0.023, 0.138)	0.061 (-0.006, 0.126)
Right to Care	0.063 (-0.028,0.154)	0.063 (-0.027, 0.154)	0.087 (0.015, 0.159)	**0.087 (0.014, 0.161)**
that'sit	0.020 (-0.054, 0.094)	0.042 (-0.033, 0.116)	0.048 (-0.009, 0.105)	**0.062 (0.023, 0.110)**
Volume				
Rank 0 (0-174)	Reference	Reference	Reference	Reference
Rank 1 (174-2570.5)	-0.002 (-0.074, 0.070)	0.023 (-0.059, 0.105)	-0.006 (-0.061, 0.050)	0.030 (-0.027, 0.086)
Rank 2 (2570.5-4967)	-0.046 (-0.125, 0.033)	-0.027 (0.115, -0.061)	-0.055 (-0.125, 0.015)	-0.030 (-0.105, 0.045)
Rank 3 (4967-7363.5)	0.094 (0.030, 0.158)	0.073 (-0.002, 0.147)	0.047 (-0.013, 0.106)	0.040 (-0.020, 0.101)
Rank 4 (7363.5-9760)	0.009 (-0.091, 0.108)	0.025 (-0.073, 0.124)	-0.026 (-0.102, 0.050)	0.003 (-0.066, 0.072)
HR Transition (continuous)	0.027 (0.012, 0.042)	0.008 (-0.016, 0.032)	0.023 (0.011, 0.035)	0.006 (-0.015, 0.027)

Bolded: Significant result based on estimate and confidence intervals

Quantitative Summary of Results

From 2007-2015 ART cohorts gradually increased in size (Figure 13), while there was a dramatic increase in 2015. Approximately half of the cohorts that started on ART were no longer recorded on ART at 24 months. The graphs of the study sample and the majority of the individual NGOs revealed a decrease of RIC around 2012/2013 and an increase around 2014/2015.

In conclusion, high performance is associated with health facilities with the following characteristics: medium/high ART volumes, able to transition posts, supported by Kheth'impilo and managed by the CoCT. High sustainability was linked to Anova/Kheth'impilo and Right to Care, low volume facilities and WCGH ownership. High performing facilities had trouble maintaining their performance post PEPFAR. Facilities supported by a combination of Anova/Kheth'impilo showed highest performance and sustainability.

The linear regression showed no difference in RIC during PEPFAR and post PEPFAR direct service. The linear regression showed the strongest predictors of high performance were high ART volume, support from Right to Care (at both 12 and 24 months), and Kheth'impilo and that'sit at 24 months.

Chapter 6: Qualitative Results

<u>Introduction</u>

The qualitative results section provides a description of the study participants, describes data collection, and outlines the factors that likely led to the sustainability of HIV program outcomes. The sustainability factors were categorized by the main entity responsible (i.e. donor, grantee or a combination of the two) for the factor. The final section of this chapter discusses five aspects of the PEPFAR program that were sustained six years post PEPFAR direct service support and links them to the sustainability factors highlighted at the beginning of the chapter.

This chapter includes an analysis of the highest performing health facilities (i.e. high RIC/high sustainability) which we refer to as "high performance/ high sustainability facilities." This analysis was conducted to understand "what works" among the top performing facilities. The quotes used in this section are specific to the twelve high performance/ high sustainability facilities (Table 26). For the purposes of this chapter a representative sub-set sample was not desired, as we wanted a broad sample representing a wide range of facilities to understand the conditions that produced sustainability.

Description of Study Participants

In total, 43 in-depth interviews were conducted for this study. Thirty-five were in-depth, face-to-face interviews, primarily with health facility managers from 20 primary health care facilities and 2 staff nurses (Table 25). Fourteen key informant interviews were conducted with eight government officials and five NGO program managers (Two participants were interviewed from one NGO.). A second set of interviews was conducted with eight existing study participants via email and the telephone. These interviews were used to probe participants about specific themes that emerged from the data, clarify government policies and why decisions were made at the time. Health facility managers from the best performing facilities were interviewed to understand the reason for these outcomes.

The interviews were conducted over the course of four visits to the Western Cape: 1) October 9 - November 01, 2018; 2) December 10 - 3, 2018; 3) February 18 - 22, 2019; and 4) April 1 - 3, 2019. On average two health facilities were visited per day and interviews lasted 30-60 minutes each.

On average facility managers interviewed had been working for the government for 23 years and at the health facility of interest for an average of 13 years. We found long-standing health facility managers did not necessarily

produce the best facility outcomes. However, we found the better managers

would be moved to other health facilities to start up the ART program.

Table 25: In-Depth Interviews	
5	**NGO**
	4 x NGO Program Directors 1 x NGO Provincial Assistant Manager
22	**Health Facility**
	20 x Health Facility Manager or Operational Manager (6 CoCT and 14 WCGH) 2 x Staff Nurses (1 CoCT and 1 WCGH)
8	**Government**
	6 x Provincial Government Officials (2 CoCT and 4 WCGH) 2 x District Government Officials (2 CoCT)
Total First Interviews: 35	
Second Interviews	
3	NGO
2	Provincial Government (1 CoCT and 1 WCGH)
3	Health Facility Managers
Second Interviews Total: 8	
Grand Total: 43	

	Clinic Name	Post PEPFAR RIC	District	ART Volume	NGO Support	Government Owner	NGO Finances	HR Transition
	Table 26: High RIC and High Post PEPFAR Sustainability of Qualitative Sample (n=8)							
1	Prince Albert Clinic*	76.4%	Central Karoo	Low	Right to Care	WCGH	Medium	0
2	Sedgefield Clinic*	68.0%	Eden	Low	that'sit	WCGH	Low	2
3	Wellington CDC*	64.8%	Winelands	Medium	Anova	WCGH	Medium	1
4	Albow Gardens CDC*	59.4%	Metro	High	Anova/ Kheth'impilo	Combined	High	0
5	Stanford Clinic *	58.2%	Overberg	Low	Right to Care	WCGH	Medium	0
6	Gansbaai Clinic							
7	De Doorns Clinic							
8	Masiphumlele Clinic							

Document Review

Current and historical government policy documents, NGO strategic reports and evaluations were collected from PEPFAR NGOs and government officials to gain an in-depth understanding of the background and history of NGOs and policies (Appendix 7). The NGO documents allowed us to develop a comprehensive interview guide, letting the PI probe participants about specific NGO activities. The NGO reports also allowed us to verify NGO activities, challenges and important transition details.

Sustainability Factors

The qualitative analysis of 43 interviews revealed nine factors that led to sustained program outcomes. The nine sustainability factors were organized into two categories (donor and grantee) or a combination of these categories based on who was primarily responsible for the sustainability factor (Figure 15). Each sustainability factor below highlights the entity responsible (i.e donor or grantee, or a combination of the two) for the factor.
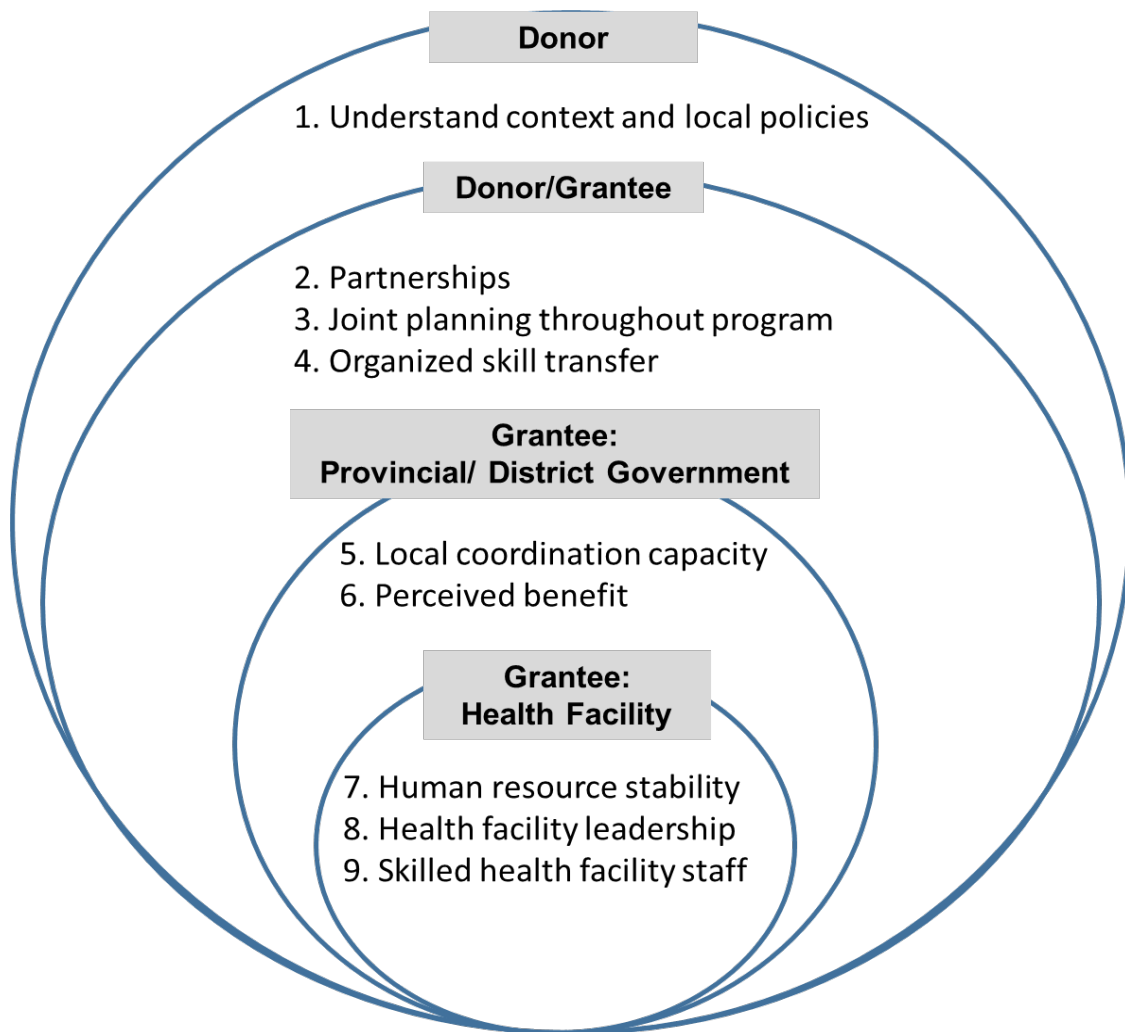
Figure 15: Stakeholder Responsible for Sustainability Factors

Donor Sustainability Factors

1. Understand Context and Local Policies
Stakeholder Responsible: Donor

Part of the donor's responsibility was to fill local gaps. Understanding the local Western Cape context, HIV epidemic and local policies were key to aligning donor interventions to the context and increasing the likelihood of sustained program outcomes. One NGO program director explained in further detail: *"…you need to spend a lot of money to understand context, you need to understand, are the people ready for change, what, where are people in this thing, what, what makes them tick?" (PEPFAR NGO Manager, Rural).* The PEPFAR NGO needed to understand the context and PEPFAR needed to be flexible with funding so there is " *local freedom to actually adapt and manipulate programs."*

> *"What was not helpful was that I got the feeling that they came up with fixed ideas about what should be done and how it should be done. And ah those ideas might have been very good for other places but they didn't apply—maybe they didn't apply in South Africa, but they certainly didn't apply in Cape Town." (Provincial Government Official, Urban).*

Some participants felt the Western Cape had the skills and knowledge to use PEPFAR funds to their full potential.

> *"…but really, and I think the places that it (PEPFAR funding) was more successful…….might be the Western Cape and maybe some of the clinics where you had, where you have skills and people with the skill to take the intervention and adapt it." (NGO Program Manager, Rural)*

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There were a few examples of health facility managers who felt accommodating PEPFAR NGOs was an administrative burden. This was specifically a challenge with regard to patient records (i.e. patient folder), capturing data and referrals. The flow of patient records and referrals between PEPFAR and the health facility became cumbersome due to PEPFAR focus on recording solely HIV data.

> *"But then if you, if she (PEPFAR staff) captures the patient, then she will focus on HIV. Then put the folder there. Not the other things (health services). Then the other clerks will be mad because this was not written, this was not done but the patient was there. But you need to manage it and then, at least separate your clerks in such a way that and also, we had to devise like uh shelves where they must put folders that are related to whatever (HIV)." (Health Facility Manager, Urban)*

NGOs with Bases in the Western Cape

The participating NGOs that performed better and sustained outcomes had their main offices in the Western Cape and had been working in the Western Cape for many years and had long-term relationships with government, which meant they had a good understanding of the local context.

Because there are many universities in the Western Cape and ongoing donor funding for HIV research, local government (grantee) had a plethora of information on the Western Cape HIV and TB epidemics (i.e., local context). This information was used by the grantee (local government) and NGOs to inform

their activities. To this day, this academic HIV expertise continues to support the

Western Cape health system, as those same academics and HIV experts continue

to participate on various WCGH advisory boards and forums, assisting with HIV

policy creation and HIV treatment decisions. While having HIV research based

in the province was not necessarily a sustainability factor, it assisted the donor

and grantee in understanding the context.

> *"I can remember…. all those guys, research minds, there were infectious diseases specialists, um…. But they also had a clinical and academic portfolio. They um, it was only so many of them to go around and so I think when the PEPFAR partners came in, and the PEPFAR partners, a lot of them linked with these academics on many, many levels…And funded them, exactly! And though that funding, have to expand these academics so that they could come back and put more sort of expertise back into the system through training, through mentorship, through courses and whatever else and various, and of course um, inputs into policy. I think that was significant, you know." (Provincial Government Official, Urban)*

Donor/Grantee Sustainability Factors

2. Partnerships
Stakeholder Responsible: Donor/Grantee

While relationships are related to partnerships, partnerships for this study

were distinctive, situated at a higher level between NGO and government. One

of the main factors, which led to sustained infrastructure, resources and

improved donor coordination was due to donor/grantee partnerships. As with

relationships, ongoing partnerships build trust and respect.

Infrastructure/Resource Partnerships

The donor and grantee were committed to providing resources toward a common goal—controlling the HIV epidemic. This commitment played out in a number of ways. In some instances, the PEPFAR NGO built a pharmacy and the local government created pharmacy posts to manage the pharmacy. In another example, a medical cart was funded by the PEPFAR NGO and commodities were stocked by local government. These partnerships were also due to proactive facility managers who understood the needs of the health facility and were self-confident enough to ask the donor for what was needed (see health facility leadership). Respondents also mentioned PEPFAR NGOs were able to procure commodities (i.e. lactose meters, blood pressure monitors, computers) quicker than government.

> *"I know it was not so difficult to get things (PEPFAR direct service) but now (post PEPFAR) it's difficult. You need to write a motivation first to get a table or chair and say there is an underspending."(NGO Program Director, Rural)*

Some partnerships existed across PEPFAR NGOs. One NGO restored an old mobile clinic, previously used by another PEPFAR NGO that was no longer in operation due to lack of funding. The ability to pool resources among NGOs

shows a willingness and dedication to work toward the same goal.

Post PEPFAR Direct Service Employment Opportunities

Due to partnerships created with PEPFAR funds, NGOs and employees were offered employment opportunities post PEPFAR direct service. HIV expertise was sustained in some of the rural areas post PEPFAR, due to district governments partnerships with formerly PEPFAR funded NGO partners whom they trusted and valued for their HIV expertise. Local government understood their service delivery gaps and continued to need PEPFAR expertise post PEPFAR direct service support. For example, post PEPFAR WCGH in the rural Western Cape hired a medical doctor and a former PEPFAR funded NGO. Valued and trusted by WCGH for their expertise, the doctor provided NIMART mentorship and the NGO clinic management trainings. This allowed the PEPFAR NGO to re-hire staff they had to let go when the PEPFAR funding ended, sustaining HIV expertise in the district. Since the withdrawal of direct service, the formerly PEPFAR-funded NGO has been contracted by local government and been able to triple the size of their projects. They currently have over 400 employees.

Donor has Skills and Respects Grantees Needs

One government official spoke about NGOs that were not able to deliver

on their promises. Their experience with some NGOs was they took the time to meet with local government to discuss program plans but were not able to produce outcomes for various reasons. One NGO did not have the skills and expertise required to implement their PEPFAR funded plans. Another NGO met with local government to try to align with local needs, but the NGO implemented their own plans, which had little to do with the local service delivery gaps. The NGO may be able to secure PEPFAR funding, but local government officials felt it was important they had the skills and were willing to listen, respect and collaborate with local government to fill health system gaps. These NGO characteristics were key to sustaining partnerships and HIV outcomes.

> *"I think at that time those three partners, if I recall one of them seemed as though they really (thought) this wasn't their core function. They were in over their heads, you know. The other one meant well, was prepared to turn the world upside down and do well and just really couldn't, you know struggled. It was a struggle. And the third one I think was a really strong NGO that was listening to us but was still doing things their way but, you know, there was that 50/50 kind of thing, you know." (Provincial Government Official , Urban)*

3. Joint Planning Throughout Program
Stakeholder Responsible: Donor/Grantee

Locally Led Planning Process

Many government officials felt they could have had a greater sustained

impact if they had been able to plan and understand PEPFAR's long-term

strategy when PEPFAR started working in the Western Cape.

> *"Things went wrong from the very start. We were never clear on the
> number of direct servicers there were and how long they would be in
> place." (Provincial Government Official, Urban)*

Study participants were clear this planning should have been led by local

government (grantee). As noted below, engagement with the donor (PEPFAR

NGOs) was not always forthcoming or necessarily an easy process.

> *"They (the PEPFAR NGO) would come and tell us most of the time what
> they were already doing, and what they would continue doing." (Provincial
> Government Official, Urban)*

Western Cape provincial and district government found the lack of

transparency and formal engagement with PEPFAR officials from USAID and

CDC at a higher level (government to government) challenging. The WCGH felt

the South African National Department of Health (NDoH), which communicated

with USAID and CDC in Pretoria, did not fully understand Western Cape health

needs. Western Cape government officials felt they had to "…*grab the opportunity*

to try to interact (with PEPFAR) around whatever we could." Western Cape

government officials felt they lacked ownership of what was happening in their

province.

> *"We would go up to National and we would go for Global Fund meetings and….we would sometimes hear about "I'm a PEPFAR partner doing things here, doing things there", …So that's where we would hear bits and pieces but there wasn't, I don't recall any formal engagement or formal documentation that said "here's your document, that says for the following financial year, these are the people that you have." You know, even something like that would have been adequate but I don't recall something like that either." (Provincial Government Official, Urban)*

Currently, due to established relationships, increased transparency with

Western Cape NGOs, strengthened donor coordination systems and grantee's

improved understanding of their needs, the local government feels they are able

to specify exactly what they require from donors. As the quote below illustrates,

local government has asked new donor funds to fill local gaps. Though the

process of allocating where and how donor-funds are spent, requires more time,

which is almost a *"facility by facility"* exercise, the government official believed in

the long-run detailed planning would have a greater impact.

> *"So again when (NGO name) come to us and said they've got actually money for direct service delivery for ART initiation, we putting a lot of pressure on them to say 'no.' Rather, that part of it must be strengthening our system, cause we've got the ability to start people on ART and keep them on ART. What we need is we need you to help with the NIMART training, of which we don't have enough trainers. So it, this is, there is,*

you know it's taking a lot of conversation and I think, so, my own opinion is the nuanced version of direct service delivery is better, it allows for more flexibility."

"…it takes a lot longer to actually get it right, cause there's the to'ing and fro'ing and making sure everybody's on the same page in terms of exactly what they gonna do and how it's gonna be received and you've almost got to do it by facility by facility, it takes much longer than a kind of blanket.(strategy). " (Provincial Government Official, Urban)

Facility Level Planning

At a health facility level, the PEPFAR NGO and health facility manager planned well together, especially among health facilities whose managers took ownership of PEPFAR staff (see Combined Results). PEPFAR staff were integrated into government meetings, and many facility managers were confident and able to communicate their needs and challenges with the PEPFAR NGOs.

"Yeah, in the facility you [donor staff] are just part of the staff, there's no segregation at the meeting, we're all [Clinic Name] staff." (Health Facility Manager, Urban)

Grantee's Knowledge of Their Own Need

The other side of the planning was local provincial government knowledge of their own needs. As noted above local government felt the NDoH did not understand their needs. While the WCGH knew their needs, a formal internal comprehensive list had not been created until it was required for a

Western Cape PEPFAR coordination meeting. This information was significant to

coordinating PEPFAR resources. Study participants mentioned they were

grateful for PEPFAR's data analysis and feedback of their own health facility,

district data and data analysis training they acquired from PEPFAR. They

reported this helped them understand their own health facility needs and gaps.

Additionally by supplementing the human resources focused on data, health

facilities were able to access data in real time, instead of having to wait for

monthly or quarterly reports.

> *"Ja, statistics are very helpful, it was helpful because working in (clinic name) as an operational manager you are not just a manager you need to go and work clinically. Practically and if you do not have the time then they assisted there. I need the statistics of this and this and this, how many patients and then they will provide." (Health Facility Manager, Rural)*

> *"Although my job [laughing] has stayed the same title from 2007 till now, the nature of it has and that, and that has changed so much over the different years so yeah, so facilitation and relationship and trying to match what we think our needs are with what's on offer from the donor, from the donor agencies, that's …to do that know the (City of Cape Town) needs more clearly or they becoming clearer as time goes on as well and we've got a better structured relationship." (Provincial Government Official, Urban)*

4. Organized Skill Transfer
Stakeholder Responsible: Donor/Grantee

The main PEPFAR activity local government wanted to sustain was the

skills transfer to local health workers. As noted earlier, the Western Cape

formalized the human resource transition process, in which 78 formerly PEPFAR

funded posts became supplementary government posts. At a facility level, the

skills transfer was the responsibility of each health facility and the PEPFAR

NGO.

> *"I think, look, before it was never just about people coming in and doing the work for us. There was that transferring of skills. There was an ongoing process. There were relationships being built, when the mentors or whatever you call them, from the different NGOs would come in, they would not just focus on their teams. They would look at, they would work with the (local government) team." (Provincial Government Official, Urban)*

This study found the transfer of skills was not always well planned and

implemented. A facility manager mentioned that PEPFAR staff in his clinic

submitted government reports on behalf the clinic. This resulted in local health

facility staff lacking reporting skills and they struggled to quickly learn how to

produce these reports when the PEPFAR support left the facility. The facility

manager stated,

> *"The Foundation was in charge because it was a research at first. But then they continued. You see, reporting…. They continued doing data but you see the operational things like seeing patients was done by us (facility staff)." (Health Facility Manager, Urban)*

> *" You see, that resulted in a program like staying into the support person for a long time, and then with that then you end up not sure whether is this your program or is this…(our program)." (Health Facility Manager, Urban)*

Innovative Skills Transfer Solutions

Pro-active NGOs and facility managers developed innovative solutions to ensure PEPFAR skills were retained within the public health system. One PEPFAR NGO knew their CHWs would not be absorbed by the government, so they offered to train them as phlebotomists, to secure future employment opportunities. Moreover, one health facility manager ensured six months before the PEPFAR staff member left they mentored and trained a local staff member in their job responsibilities. To expand ART provision one facility manager who did not have NIMART trained nurses, moved her staff to PEPFAR supported health facilities to be trained in NIMART, later transferring them back to her own facility.

> " …we wanted to ensure that every site in Mitchell's Plain is an ART site. We took some of that resources (staff), which we said, you know (HIV), fine, you know how the program runs, we are taking you and we are placing you there and putting a new staff member there so that (they could be trained by PEPFAR). Where no one is now…. So that's how we managed to roll out the (ART) program without any, any additional resources." (District Government Official, Urban)

Post PEPFAR when former PEPFAR employees and NGOs were later employed by WCGH, a transfer of skills happened, which led to more NIMART nurses being certified. A former PEPFAR NGO doctor employed post PEPFAR by the WCGH was able to mentor and certify more NIMART nurses because the

nurses had been well trained by another PEPFAR NGO. When referring to

signing off new NIMART nurses the NGO manager stated:

> *"And in the first year it was actually reasonably easy because there were a number of girls working in the clinics that had actually at the end of the day …..is they were girls that had been on courses that **PEPFAR** ran. So those, those staff I found were easier to mentor and just make sure they had the practical application of the theory and that they were competent to actually be signed off as NIMART nurses…….."*
> *"Subsequent to that I signed off[4] very few people and they (government) approached me about that towards the end and said, just before I left you know, you are not signing people off anymore and I said "to be quite honest I am not signing anybody off because nobody is competent and the problem is they are not getting any formal training," (PEPFAR NGO Manager, Rural)*

Grantee Sustainability Factors: Local Government

5. Local Coordination Capacity
Stakeholder Responsible: Grantee (District and Provincial Government)

Local system capacity for this study was characterized as the ability of

local government (grantee) to coordinate donor funds effectively to sustain the

HIV program. Over the years the Western Cape external donor coordination

system has improved, partially due to experience working with donors and due

to the fact government understands their needs better (see Joint Planning

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[4] Signed off means the doctor certified the nurse was NIMART trained and able to distribute and manage ARV's

Throughout Program). Study participants noted, local district and HIV, AIDS STI and TB (HAST) Managers have taken more ownership of external donor funding, management skills have improved, and officials have learned about the extra work donor funding requires to be a success and more likely sustained.

> *"(Donor coordination) evolved, partly because the partner has been there for long time. We know them so some of the relationships are there already. We, we found trouble when the funding goes from one to the next, I don't think the funders realize how long it takes to establish a relationship [laughing] and trust. (Provincial Government Official, Urban)*

Interestingly, a government official noted it is easier for the donor to implement a vertical program because they can quickly inject resources into a system without overburdening the existing human resources with more responsibilities. This HIV expertise was sustained within the health system.

> *"I think PEPFAR's contribution was really to initiate the sites and to do it with a big bang approach. That helped us. Because we struggled to put programs in place and other things. Even what we can see now is that when our programs start off, start slowly, and then it finds its own momentum. And then it runs. But it's because we, we starting it with all of our existing staff having to take on more responsibilities." (District Government Official, Urban)*

Evolution of Grantee Donor Coordination Systems

Prior to 2010, there was very little coordination between local government and PEPFAR NGOs. At that time the majority of the Western Cape PEPFAR agreements and the majority of the interactions with PEPFAR NGOs happened

at a provincial level. A government official indicated the goal was for these

interactions to happen closer to the health facility, though the challenge was

district and HAST managers were dealing with a growing HIV epidemic, with

little time to concentrate on donor funding. There were also concerns around

trust between these managers and the donor.

> *"…also very difficult and there was a lot of trust issues that were happening about, you know, you want to come and work in our facilities but you want all our numbers that we work hard for and you want to report on those."* (Provincial Government Official, Urban)

In 2010, PEPFAR funded a Western Cape PEPFAR Liaison to coordinate

efforts at a provincial level. As one provincial government official noted, this was

"our saving grace." Prior to the appointment of the Western Cape PEPFAR Liaison

the official said they *"struggled to put in mechanisms to coordinate donor funds."*

With the appointment of the Provincial Liaison the provincial official started

getting a handle on the vastness of PEPFAR funds, created systems/forums to

assist with donor coordination, increasing transparency. Thereafter, provincial

officials were able to encourage middle level managers to coordinate PEPFAR

activities at their level.

> *"I think once we became more aware of it (PEPFAR efforts) we then purposely engaged the district managers and there was nine at the time. …….and I remember it was a purposeful engagement to try and get them to, you know, to sort of take hold of these (PEPFAR) partners whom*

they did not know anything about." (Provincial Government Official, Urban)

Government officials also noted facility manager's leadership skills have improved due to increased management trainings, plus changes in the WCGH selection and hiring practices. The majority of WCGH and CoCT facility managers are nurses, and became facility managers as a promotion, therefore, not all of them wanted to be or were good in management positions. Since 2012, the WCGH have changed hiring strategy and hired facility managers with more management skills. Due to these changes, local government officials found they have to do less "hand holding," with their facility managers. One district official mentioned facility managers are now able to highlight gaps and needs at a facility level.

> *"You know so those are the exceptional reports and what is very interesting, man, is that in the beginning we had exceptional reports like thick. (laughing) It has gone down completely! And not only that, the facility managers are now coming to us and say but there is a problem on Premise (data system) you need to sort it out because it is affecting our stats which is super because… at their level they can see (there is a problem)." (District Government Official, Urban)*
> **Exceptional reports are inquiries by district managers as to why specific follow up services were not given*

Since 2010, the development of a local donor coordination system has improved. The Western Cape set up a forum where everyone from the facility to

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provincial level officials were briefed on new donor funding plans and had the opportunity to give input before they were finalized. These systems created more transparency between the donor and grantee, and there were fewer challenges with regard to roles and responsibilities.

> *" Actually (for) everybody (to) know and people have had opportunity to input and say we want, I think, I think was probably always the intention (have input from all levels) at the beginning, but the degree to which it was institutionalized just hadn't evolved."(Provincial Government Official, Urban)*

Lessons Learned from PEPFAR

Local government officials stated their experience with PEPFAR taught them what to request from donors to effectively coordinate donor-funding outcomes. They realized at all levels of government the coordination of external funds required extra time and energy outside of their "day-to-day" work, *"to be a success the extra work was necessary." "It's not easy, it doesn't come natural. You've got to work at it."* Health facility managers said they needed to include PEPAR staff in weekly multi-disciplinary meetings and regular meetings with NGO managers at least once per month to discuss challenges and delegate roles and responsibilities.

> *"So then you've got to make yourself available to those, all funders that are out there. Which is difficult. It is a whole nother job. But if you don't do do—then, you're not gonna have… you won't succeed. You cannot leave*

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those partners who are—you end up being the glue. I tried to be the glue that got the partners together. You've got to be the one that coordinates that showing the results, getting the information from everybody and putting it together in a presentation....(District Government Official, Urban)

Over time the local government learned they needed what they called

"glue" or a person to coordinate external funding from a provincial level.

Currently provincial government officials have asked new external donors, to

fund a person to coordinate efforts from a provincial level. These lessons learned

have prepared and strengthened internal government systems to manage

external donor funds.

"I think now for all the dollars that have been spent, a little bit more of the 'glue' and glue that was placed within our structures at coordinating them would have, would have really…I think the return from the beginning… would have been much bigger…to make sure the resources are being deployed correctly, managed correctly."(Provincial Government Official, Urban)

6. Perceived Value
Stakeholder Responsible: Grantee (District and Provincial Government)

In 2010, while PEPFAR was providing direct service support in the

Western Cape, there was a move to provide comprehensive health services at a

PHC level (128). This meant that every PHC facility would be required to offer a

range of curative and preventative health services and there would be no HIV or

TB specific PHC facilities. Additionally, in 2013 there was a CoCT policy enacted,

mandating that all PHC facilities provide comprehensive services (Key informant interview with local government official, October 31, 2018; unreferenced). Integration can be defined in many ways, but was interpreted by most study participants as each health care provider at a primary health care level having the necessary skills to provide a client with comprehensive health services.

When the local government changed strategies, tension was created between the donor (PEPFAR), which offered a vertical HIV program and the local comprehensive health service strategy. We noticed there was more motivation by local staff to take ownership of the PEPFAR program when they felt the program was beneficial to them, therefore perceived value by the grantee was likely a factor that led to sustainability.

> *"And so we tried to, after it was this well established, after the first or second year, we wanted to… our concern was always that it must be integrated, but it was very difficult with the staff because it wasn't our staff, it was like we didn't only have authority over them. That's how it felt, even though they would argue that, that the staff was in our facility. Yet you are almost at dual reporting. And we didn't understand very well what needed to happen. So how do you integrate from the staff? Because most of our patients, sixty, about sixty-five percent of patients were co-infected with TB HIV. And it meant that our TB program still ran parallel to our ART program."(District Government Official, Urban)*

<u>Grantee Sustainability Factors: Health Facility</u>

7. Human Resource Stability
Stakeholder Responsible: Grantee (Health Facility)

This qualitative analysis showed human resource stability to be one of the main themes which had an impact on HIV program outcomes. PEPFAR's strategic change (moving from direct service support to health systems strengthening) meant there was a loss of PEPFAR staff, skills, expertise and motivation that resulted in variable health facility outcomes.

Stability of PEPFAR Supported Health Facility Staff

While some study participants spoke about the consistency and stability of PEPFAR-funded health facility staff, others said PEPFAR facility staff were frequently *"chopped and changed."* Study participants reported this inconsistency destabilized the team dynamic at health facilities, which had an impact on the morale of the local staff left behind and health facility outcomes. A local government official described the difficulty of the shifting of PEPFAR funded facility staff during the direct service support.

> *"I mean they (name of PEPFAR NGO) really support us well, very well but they chop and change their staff all the time….which makes it very difficult because you just get a relationship with one (PEPFAR funded health facility employee) person going and you know trying to work with*

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them so that we do the same type of thing and not duplicating and then it is a new person in the job so ja…" (District Government Official, Urban)

"It does (staff instability), it does have an impact on service delivery because remember it takes, it takes at least four to six months for them (new staff) to accustomize to the way the City's policies work (Facility Manager, Urban)

One government official mentioned, when additional (donor funded) staff were placed into the health system, existing staff tended to become "*lazy*," letting PEPFAR staff take over some of their workload. Later, when PEPFAR staff were pulled out of health facilities, existing staff felt there was too much work.

*"From a service delivery perspective they felt this huge gap and all these people (PEPFAR staff) are leaving and they're going to be in major trouble…… It honestly depends on the level of insight that the person that is looking at it has into the actual service delivery. But the bottom line is when you **create this expectation and when you place staff there to support the bigger team and when you pull them out, that staff take a huge strain, whether it is real or whether it is perceived.**"(Provincial Government Official, Urban)*

Without probing, a government official spontaneously said they witnessed a decrease in health facility outcomes when there was human resource instability when PEPFAR changed strategies to health systems strengthening support.

"It's not that I've read any evidence on this but just what we pick up in the system. You see that slump (in the data) and you see people pick it up and pull it together and move forward."….."when you pull it (donor funding) out you will see a dip, but at some point the team that stays behind develops a sense of resilience."(Provincial Health Official, Urban).

Some health facilities were able to recover from this dip while others were not. The qualitative data explains how health facilities, mostly in urban areas (i.e. Metro) were able to recover from this dip in part because they had enough staff. Their HIV teams essentially stayed the same whereas smaller health facilities in the rural areas, had to integrate their PEPFAR funded HIV teams into other health services, since there were fewer staff. Therefore, health facilities that were able to recover from the PEPFAR transition had larger patient volumes and were likely less integrated with regard to service delivery.

> *Respondent: "The only thing that you must be mindful of is that even when your team develops some sense of resilience and they pull it together, they pull it up, you've got to look at what happens at the rest of the system in terms of other system changes that could then prevent us from seeing that resilience play itself out, like for example, when we start making conscious decisions to say we can't have a dedicated team in infectious diseases looking at only infectious diseases…Now, that is possible at low burden facilities but it is not possible in high burden facilities. So you go into a high burden facility you still find a dedicated infectious diseases team and that makes sense.*
> *Interviewer: Right because there's too many people, yeah.*
> *Respondent: Yeah, go into a small facility and you see something it is a bit more integrated. And then there's degrees of integration happening. So I suppose where you maybe see a shift, a complete shift from a silo approach to an integrated approach, there you might not see that resilience pick up that you expect to see afterwards." (Provincial Health Official, Urban).*

This official went on to explain a decline in sustainable performance was positively linked to the loss of CHWs focused solely on HIV. When direct service support was withdrawn, the Western Cape health system lost 418 CHWs, who

were not absorbed by the local government. Additionally, due to Western Cape

policy changes, existing CHWs became generalists (see Chapter 7: Discussion)

and HIV became one of their many priorities. The loss of CHWs meant a decline

in RIC performance. Additionally a dedicated HIV team, including data and

administrative staff likely led to sustainable program outcomes.

> *"I think that our biggest thing that we are feeling (decrease in RIC) was the link, the tight link with the community health workers in the facility and the dedicated data capturers that only focused on their data sets. That to me is the biggest problem. Then we moved as a Department, because of our financial constraints we moved to a generic info clerk, who had to do the data for the whole facility…" (Provincial Health Official, Urban).*

Patient/Provider Relationships

Study participants spoke about the importance of trust and respect created

between health care provider and HIV patient. HIV patients tend to build a

relationship with a specific health care provider whom they feel comfortable

with, who is familiar with their treatment history and understands their social

circumstances. If the patient's preferred health care provider leaves the health

facility, patients feel less motivated to visit the health facility for treatment,

affecting ART retention outcomes. As noted above (see Stability of PEPFAR

Support Health Facility Staff) a high turnover of PEPFAR facility staff meant

patient provider relationships became destabilized, negatively affecting health

outcomes. One NGO Manager mentioned a health care provider needed to be competent in *"people centeredness"* so the patient understands HIV, their relationship with HIV and the provider *"responds to their (patient) needs." So even if you (the patient) hate, even if you hate the clinic, you still know, okay that clinic can help me."(PEPFAR NGO Manager, Rural)*

> **Respondent***: "You need to invest a lot in people because …uh like people centeredness, people need to have a voice, so you need to say, what do you think? What is your voice?... so you need to give people a voice. I want to be on these ARVs…I don't want to be, I need to understand it. You need to somehow um, have a relationship with them.... but if they have a relationship with the people giving it out,…if they (health workers) respond to their needs.*
> **Interviewer:** *How do you make sure of that though? Sorry, to keep that relationship with the health workers?*
> **Respondent:** *Yeah, I think competence (of the health worker) is important. People see through people. They don't need to be, they don't need to be that friendly, although that helps, but you know there's, I think the whole thing is if you know people, don't fake it….I think part of the success of the ARV program is that we've invested a lot through PEPFAR and in training people, you know staff and patients." (PEPFAR NGO Manager, Rural)*

Health care providers seemed to care deeply for their patients, going to great lengths to ensure their patients continued to take their HIV treatment. Health facility managers indicated understanding their patients' lives was key to be able to tailor HIV treatment regimens to work within their lifestyles.

> *"We say don't drink tablets if you drink alcohol, it doesn't work that way, sorry. So what I'm telling them now is drink your tablets two, three hours before you have a drink or drink it in the morning, have a party tonight, and*

I think it's working a little bit better." (Health Facility, Staff Nurse, Rural)

From a logistical standpoint, "knowing" your patients' nicknames was also important to be able to trace them easily in the community if they missed their appointment.

> *"So you need to know your patients. Because if you don't know them, how are you going to know you have to trace them. So you have to get on that level and to have to know their nicknames....Because some of them will be called Jonathan on their card, but in the location they are called something like Winnie." (Health Facility, Staff Nurse, Rural area)*

The stability of health facility staff positively influences patient/provider relationships and helps sustain outcomes. To increase the likelihood of sustainable outcomes, donors should not introduce lots of new human resources to the health system that will later be withdrawn.

8. Health Facility Leadership
Stakeholder Responsible: Grantee (Health Facility)

Leadership was a factor, which cut across all of the sustainability factors and exists at a donor and grantee (provincial and district government and health facility) level. The more effective a health facility manager and staff are, the better the health service is run, more trust is created and it is more likely patients will return for treatment, thus sustaining RIC levels. To ensure HIV outcomes

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were sustained, facility managers needed to manage PEPFAR staff and resources as well as local government staff. It was the responsibility of the facility manager to understand the needs of the facility, coordinate and motivate PEPFAR and government staff, manage community referrals effectively, problem solve, manage the budget, hire and fire staff and ensure facility reports were accurate and submitted on time. Table 27 is a compilation of characteristics from study participants of the profile of an effective health facility manager.

Table 27: Summary of the Characteristics of an Effective Health Facility Managers		
Individual Attributes	**Management of Staff**	**Management of Health Facility**
Good communication with donor, staff and district staff	**Ability to motivate or incentivize staff**	Organized patient folders
Sets and understands the roles of each facility worker	Cares about staff well being	Understands the needs of health facility
Personal motivation to improve health facility	**Took ownership of donor supported staff**	Knows the data of the health facility
Ability to adapt	Use PEPFAR staff effectively	
Time management skills	**Able to create a strong team**	
Able to manage stress	Holds regular staff meetings	
Eagerness to take on challenges	Ensure staff have the training and skills they need to fulfill job responsibilities	
Empathy for HIV patients		
Plan for the future		

A district manager said effective health facility managers are more communicative about their needs, they personally knew their staff, are good with time management and know the statistics of the health facility.

"A manager that listens to staff and, and, and look always at how can they, what can they, what their contribution to improving, whether it's the patient flow, whether it's the health information, the systems in the facility. And, I also think it's about time management. I find that some, some of the facility managers that, that do much better than others, um, you don't need to ask them for where is the statistics or… You know they put (them) in order. They've done those things. So they not running around looking, looking, um… for it. And then also, uh, for me, it's a manager that, um, so we rely a lot on managers to, to report. So, whether it is this table is broken or, or we, there is no drugs at the stores, you know? And I do find that the managers that is always communicating with us (district government) about, this or that or that, those are facilities that are…outcomes are much better." (District Government Official, Urban)

Effective health facility managers care for the wellbeing of their staff and help their staff to manage their own stress.

"Just debrief at [Inaudible] because yeah, they do need that, they work very difficult circumstances…. Because you need to give something back to staff and you cannot always do it in money." (NGO Manager, Rural)

"It is a person's, personalities contribute towards that (improved outcomes). Um, how people manage stress and what's in their control. Because, I could, I know I will be faced with very little staff today, but its not only today. So what is my planning with that to happen? …..And that her confidence in addressing those issues and managing those difficult situations and learning from it. I find that helps." (District Government Official, Urban)

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Capable health facility managers were good at <u>effectively using PEPFAR staff to fill service delivery gaps</u> to produce sustained health facility outcomes. One facility manager intentionally rotated staff, so each health care provider gained various skills and were capable of filling in for absent staff.

> *So what I do is that we try to keep them and I also rotate my staff. For instance, if you work in ARV's, you won't work ARV's for more than a year. You will move, so if, if we're short staffed or there's a lot of (patients)…..I must be able to pull you out and put you in, anywhere so I rotate my staff and then everybody, it's everybody's duty." (Health Facility Manager, Urban)*

Another health facility mentioned that managers need to be able to <u>adapt</u> to many challenges, including re-configuring their services when staff are absent to ensure the health services continue to run. Good managers can foresee potential challenges and try to <u>plan for the future</u> before the challenges become a problem<u>.</u>

> *"So now you think, okay well let me use the agency nurse, she can give immunizations you know maybe that's …or let her weigh baby that's, she's not gonna kill the baby by that and let me withdraw that person that's got primary health care, although she's not NIMART trained, at least she will, can quickly pick it up when she's got a doctor right next to her. So you know that is the kind of things as a manager that you have to play with and <u>adapt</u> to work out how am I going to keep the service running." (Health Facility Manager, Urban)*

> *"I think it's frustrating because I can see that it's going to happen and the bosses don't yet and they say no, we'll see when it happens and then it*

happens and they'll be like 'oh you said that' and i'll say 'yes I told you and now we are sitting with the problem." (Health Facility Manager, Urban)

Leadership: High performance/ High sustainability Facilities

The characteristics among high performance/ high sustainability facilities showed the factors that are most critical to sustainability. The analysis of these five facilities showed leadership was key to high performance and sustainability. These management qualities specifically included: 1. Takes ownership of donor-funded staff, 2. Set clear roles and responsibilities of donor staff, 3. Teamwork 4. Motivation and 5. Empathy for patients. These characteristics are highlighted in Table 26.

Ownership of PEPFAR Staff

Some facility managers became frustrated with PEPFAR supported staff who were allocated to a health facility with no scope of work from the donor. Therefore, part of the role of the health facility manager included taking ownership of donor staff to ensure they are used effectively. High performing/high sustainability health facility managers did not wait for PEPFAR NGOs to define their staff members' roles, they placed PEPFAR NGO staff into gaps, integrated them into staff meetings and fired those who were too challenging. One health facility manager was not afraid to tell the supporting

PEPFAR NGO if a staff member was not working out.

> *"For the first month, so you (PEPFAR staff) will be buddied with someone, so any questions and if I'm (health facility manager) not available, you will ask that person and when, when we, and then after like two months I will actually feedback to the NGO and saying that this, that and the other. And I'm one of the few managers who said I don't want them being here anymore (Health Facility Manager, Urban)*

To this end, some facility managers trained PEPFAR staff in skills outside

of HIV, so they could provide a comprehensive health service and <u>fill in gaps</u>

when other staff were absent from work.

> *"And it also improved your other services because although they were only employed for ARVs, I trained them in IMCI. Yeah so and that, that was one of the things I always did with the (PEPFAR) NGOs is that the person that's employed with us but remember I'm going to train them in the capacity of them, so that every patient, they will see to all the other needs of the patient (Health Facility Manager, Urban)*

Set Clear Roles and Responsibilities

To sustain program outcomes it was necessary to designate clear roles and

responsibilities at a health facility level (also see health facility leadership). This

relates to donor funded staff roles and the roles of local non-PEPFAR funded

staff. Facility managers from high performing facilities took this role very

seriously. One facility manager learned a new reporting software to be able to

assist data capturers when they ran into problems. Another facility manager

went into the community to follow up with defaulting HIV patients, while

another manager mentioned knowing each staff member's strengths and

weaknesses so they could help them *"work smart, so you don't work hard."*

Additionally, another manager said she had worked in the same health facility

for many years and understood the challenges her staff faced.

> *"I am a systems person so I believe if there is a system, then you work smart, you don't work hard, so then, so then I, I start because what works for you won't work for another professional nurse so I will sit with them and look at personalities, okay you're this type of person so then try this system and give them two or three systems to try working." (Health Facility Manager, Urban)*
>
> *"Then in a clinic where you do not have that (clear roles) then there is a tendency for things to fall back and then you, you end up doing yesterday's work." (Health Facility Manager, Urban)*

Teamwork

Facility Managers who put their clients first, also tended to be empathic

towards their staff, creating a strong team dynamic. They understood the

demand on health workers to work harder, attend to more patients with

diminishing resources. The theme of overburdened health workers due to an

increasing number of patients and endless amounts of paperwork was

repeatedly highlighted in this study.

> *"I tried to include if I can, you know, if you go in a function….Everyone must go, we are part of, we are a team together, I really tried to get them,*

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that staff meetings was a nightmare….but I wanted them all to be there. yeah yeah yeah but no one must feel that they are not, they are not as important as the other one.' (Health Facility Manager, Urban)

Motivation/Incentivize

Managers of high performing health facilities were very motivated and incentivized and motivated their staff. Though WCGH annually gives awards to high performing staff and health facilities, some facility managers did not think this was enough. High performing facilities prioritized team building events, de-stressing and clear communication, incentivized staff and allowed staff to speak freely about their challenges. One facility manager would cook food for the staff when they had a difficult month. This group of health facility managers understood the importance of creating a healthy work environment to ensure their clients were provided with high quality service to produce sustainable program outcomes.

> *"I always believe that if the staff [emphasis] are happy you get more out of them, than when they are not, so when you go into a facility, you look at first your staffing issues before you actually look at the patient issues, 'cause patient issues can always sort but once you sorted your staffing problems and when they are seen as problems, you can sort that out and they are willing sort out your patient issues for you."(Health Facility Manager, Urban)*

Part of health facility leadership included encouraging staff to understand the "bigger picture," or internalizing how each of their jobs contributes to the

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improvement of the health of the community.

> *"Remember the reason why we are here, we need to have an insight, we are here to improve the community's health status. So you can't just now do anything as if we are doing them any favor."(Health Facility Manager, Urban)*

One facility manager mentioned over the years she has learned to use data

as a motivation tool. She repeats her vision and strategy over and over, which

she says encourages staff to raise their standards and start to believe in the bigger

picture.

> *"Information, if it's just numbers, it's like nothing, but if the numbers turned into something with meaning, oh that means whatever. Suddenly they know, oh, this is what we should be doing. Or this is better than that— why? And they start questioning, and they start trying to find out, and seeing is there any best practice? Things they can copy from one or other. Yeah, so you know by saying it out loud, and repeating it again and again. You almost like, impressing them. You kind of make them, you let them know that's where we want to go. That's our vision. That's what we want. So creating, developing that vision" (District Government Official, Urban)*

Empathy for Patients

Health facility staff mentioned that what kept them motivated to continue

to work hard were their clients. Providing a high-quality health service was

important to health facility managers from high performing facilities, *"I have a*

motto, um, my thing is for people to walk into the clinic and get the service that I would

want to get." (Health Facility Manager, Urban) Facility staff built close relationships

with clients. One facility manager mentioned, *"They (the patients) are like family to

us."* A nurse from a high performing clinic went on to describe her interactions

with one of her patients.

> *"I cry with them. I cry if they die I cry with them. If they are sick, I fight*
> *with them. I fight with them about them. [Laughter]. We had one patient, I*
> *was on leave, and she sent me a Whatsapp. Sister, Neyefi is dood. O Here.*
> *[Sister, Neyefi is dead. Oh God.] His poor wife had to console* me!"*(Heath*
> *Facility, Staff Nurse, Rural)*

Extra Resources and Support

Many of the top performing health facilities were provided with

additional PEPFAR NGO support, including equipment (e.g. lactose meters,

scales, computers) and infrastructure (e.g. extra counselling rooms, gardens).

Some of these health facilities were research sites for HPTN 071, Population

Effects of Antiretroviral Therapy to Reduce HIV Transmission (PopART), a

community randomized control trial looking at the effect of universal test-and-

treat on HIV incidence (152). The study provided health facilities with additional

staff to increase HIV testing and treatment initiation. These health facilities

received support from various PEPFAR funded research organizations,

additional to the consistent ongoing intensive support from the NGOs that

participated in this study. The majority of these high performance/high

sustainability facilities were provided with multiple PEPFAR posts, some

including doctors and NIMART trained nurses. The participating PEPFAR

NGOs provided facilities with high and sustained performance with extra social

support, including nutritional support (food parcels, building gardens,

distributing vegetable seeds etc.) Christmas parties for HIV positive kids, food

and tents for community outreach days, social workers. This extra support likely

improved RIC and the sustainability of RIC.

> *" But look, bottom line is, there is more that can be done with resources and hands on deck. Definitely!" (Provincial Government Official, Urban)*

9. Skilled Health Facility Staff
Stakeholder Responsible: Grantee (Health Facility)

Skilled health facility staff was a sustainability factor and PEPFAR

sustainability outcome, which led to a sustained HIV program. This factor refers

to a combination of the highly skilled extra human resources PEPFAR added to

the health system, the well-trained dedicated local staff and the significance of

administrative staff. This study also found training local staff who are likely to

stay in one geographic area was another key factor to sustaining a strong HIV

program.

Extra Human Resources

One of the main components of PEPFAR support was the addition of well-trained extra staff added to the public health system. PEPFAR NGOs supplemented the Western Cape health system with 609 motivated, skilled individuals ranging from CHWs to specialist doctors solely focused on HIV and TB. At the time, the health system was overwhelmed with HIV patients and local staff lacked the knowledge and skills to treat them. In the Central Karoo there was one nurse with "some knowledge of HIV." This group of health workers were welcomed with open arms. The aim of these health workers was to transfer skills (see Skills Transfer) and relieve the work pressure on local health workers to manage the HIV burden.

> *"But when they (PEPFAR) left it felt for me as if everything is falling apart because the workload ... you tried to do what ... but we found how much they meant to us ... how much help they gave us." (Health Facility, Manager, Rural)*

Skilled and Motivated PEPFAR Staff

Sustaining the HIV program did not exclusively involve the provision of extra human resources, but also the skills and motivation the PEPFAR-funded staff brought to the local health system. They also filled health system knowledge gaps (i.e., NIMART, HIV treatment knowledge, quality improvement, research skills) (see Donor skills and funds aligned to need and policy). They reported the

PEPFAR NGOs were "*personally committed*" to ensuring their staff were competent.

> "*Kheth'impilo for instance….they, they took responsibility for them (nurses) and ensured that they improved their ART knowledge and got on with it, whereas here, we employ 30,000 people and 10,000 nurses and they (PEPFAR NGOs) kinda took personal responsibility or making sure those people they employed, became proficient and competent in what they had to do.*" (Provincial Government Official, Urban)

One government official spoke about the character and commitment of PEPFAR staff adding a "*diverse dimension*" to the local health system. They noted PEPFAR staff offered a diversity in their thinking and skills, due to different educational and employment backgrounds, which the government system was not able to attract. The PEPFAR staff injected motivation and trained local staff in technical and clinical skills. Local staff were able to sustain the skills they learned from PEPFAR staff.

> "*The NGOs, I mean, have,…access to to um.. to employing people that is more difficult through a standard state system, so we would get people who trained elsewhere, who'd been registered as practitioners elsewhere, and perhaps it was difficult for them to come through the standard system of employment. ..… Also they were there because they really wanted to be (there). Yeah so motivation was high, their diversity and perhaps some of the background range of skills was different… umm… so I think we benefited* (Provincial Government Official, Urban)

Importance of Administrative Staff

Government officials noted having a sufficient number of well-trained administrative staff (i.e. clerks, data capturers) was equally as important as the clinical staff component to sustaining health outcomes. Health facility outcomes and success hinged on the ability of administrative staff to capture data timely and accurately. According to one government official, in 2011/2012 there was a push to make all data capturers and information clerks (i.e. administrative staff) comprehensive, able to work across all programs, instead of one program. To this end administrative staff were rotated to various programs in the health facility. They quickly found the rotation was too quick (every 3 months), as staff required a longer time to learn all the aspects of their job responsibilities. At this time, government officials observed a dip in health facility outcomes across the province, demonstrating the importance of skills and stability in administrative staff.

> *"And the clerks continue to be the break point, the bottle neck, the clerks….Because they don't capture the data, they don't have the data it's not completed . (So if) they do a bad job of what they capture. So the data we're analyzing, its rubbish. Because it's based on what they did, or didn't do and that's a horrible thing because now you're gonna tell the people that worked so hard that they actually didn't." (District Government Official, Urban)*

Retention of Specific Staff

Study participants reported training health workers who leave the geographic area as a challenge to sustaining HIV skills and outcomes. We found health facility management to be very stable, as the average length of time they have worked for government was 23 years. Lower level health cadres seem to less transient. One PEPFAR NGO stopped training doctors when they realized they were more transient, focusing their training solely on nurses and facility managers, who tend to stay in one area. This seemed to be the reality specifically in rural areas, where people tend to have fewer alternative employment options.

> *"Ya, so you know that if you train a nurse the nurse will take over and that is actually really what we found is that the nurses were much more stable so it was much better to spend the time and effort training them and at the end of the day. (HIV) is still it is very much a nurse driven program (anyway)." (NGO Program Director)*

Sustained PEPFAR Outcomes

The nine sustainability factors mentioned above, each had an impact on the sustainability of five PEPFAR program outcomes. The following section outlines how PEPFAR's legacy has continued to sustain itself in the Western Cape.

This study found there were five main outcomes of the PEPFAR program sustained six years post PEPFAR (2013–2018): 1) skilled health facility staff, 2) HIV expertise, (i.e. academics, HIV experts) 3) strong HIV program, 4) infrastructure/resources and 5) donor coordination system. These outcomes are referred to as, "PEPFAR sustained outcome" in 15-18 figures.

Below are a series of logic models for each of the outcomes, describing the conditions and actions by the donor and grantee that led to the PEPFAR and health system sustained outcomes. One sustainability factor, skilled health facility staff, was both a sustainability factor and a donor sustained outcome. Two sustainability factors (i.e. joint planning throughout the program, understand context and local policies) were instrumental in the sustainability of all five PEPFAR sustained outcomes.

Skilled Health Facility Staff

The public health system in South Africa was not prepared for the HIV epidemic, which intensified quickly. In 2004, when PEPFAR started working in South Africa, staff required technical skills and knowledge around HIV treatment regimens to manage HIV. Study participants reported PEPFAR's most important contribution was the provision of extra health workers and training local staff in technical HIV knowledge, management and research skills. In the

Western Cape, PEPFAR provided 609 staff to the existing government

establishment, with the eventual transition of 12.8% (n=78) of these staff. The

WCGH was able to **jointly plan** with PEPFAR for the **formal organized** transfer

of these 78 PEPFAR posts to full time permanent WCGH and CoCT posts (Figure

16). The posts which were transitioned to the grantee, were often at high

performing health facilities (see Chapter 5: Quantitative Results) working with

NGOs that had a main office in the Western Cape and a long-term relationship

with local government. These NGOs **understood local Western Cape policy and**

the context. Local staff gained not only additional HIV skills, but also found

health workers gained more self-confidence and were able to make more

informed decisions based on health facility data, which continued to inform the

health system after the transition.

SKILLED HEALTH FACILITY STAFF
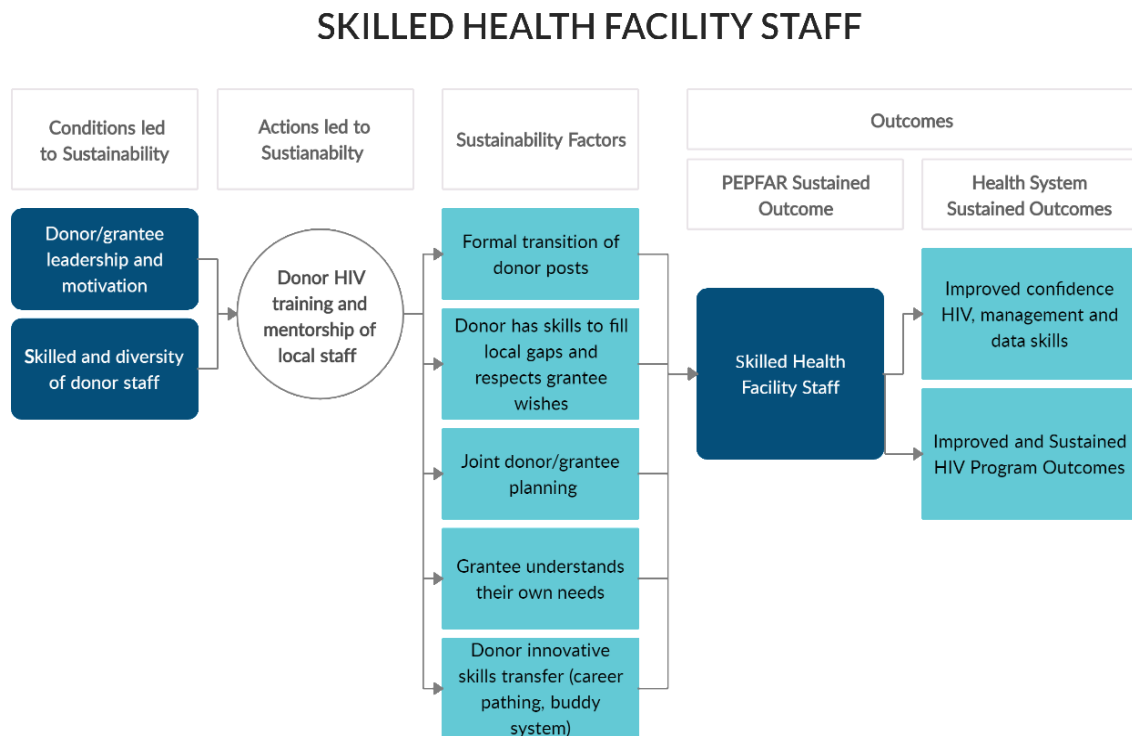
Figure 16: Skilled Health Facility Staff

HIV Expertise

Some **partnerships** created with PEPFAR funds continue today (Figure 17). In 2004, when PEPFAR started working in South Africa, there were many HIV knowledge gaps. PEPFAR was able to fill some of these gaps. Since there are four large universities located in the Western Cape, there was an abundance of HIV experts and researchers based in the province. Due to the relationships created between the PEPFAR NGOs and HIV experts, many of the experts were invited and continue to advise government on HIV policy and treatment guidelines to strengthen the HIV program. This partnership was partially

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established because the **donor (HIV experts) had the skills** to fill gaps and

respected local government processes and decisions. These activities produced

and continue to inform the donor and grantee on the **context** of Western Cape

HIV epidemic.

Aside from the PEPFAR transitioned posts, local government hired some

of the NGO HIV experts formerly funded by PEPFAR. At a health facility level,

some of the NGO partners reported they continue to receive phone calls from

health facilities with questions about difficult HIV cases. HIV experts continue to

be available in the Western Cape due to strong partnerships created with the

PEPFAR funding.

HIV EXPERTISE

Conditions	Actions	Sustainability Factor	Outcomes

Strong donor- grantee relationships/ partnerships

Donor (NGO) communicated with local gov. (grantee)

Donor funded research used to improve HIV services

Joint (donor/ grantee) planning

Donor Partnerships

Donor understands context and local policies

Donor has skills and respected grantee's decisions

PEPFAR Sustainability Outcome

Health System Sustained Outcomes

HIV Expertise

HIV experts continue to sit on grantee advisory boards

Sustained and improed HIV outcomes

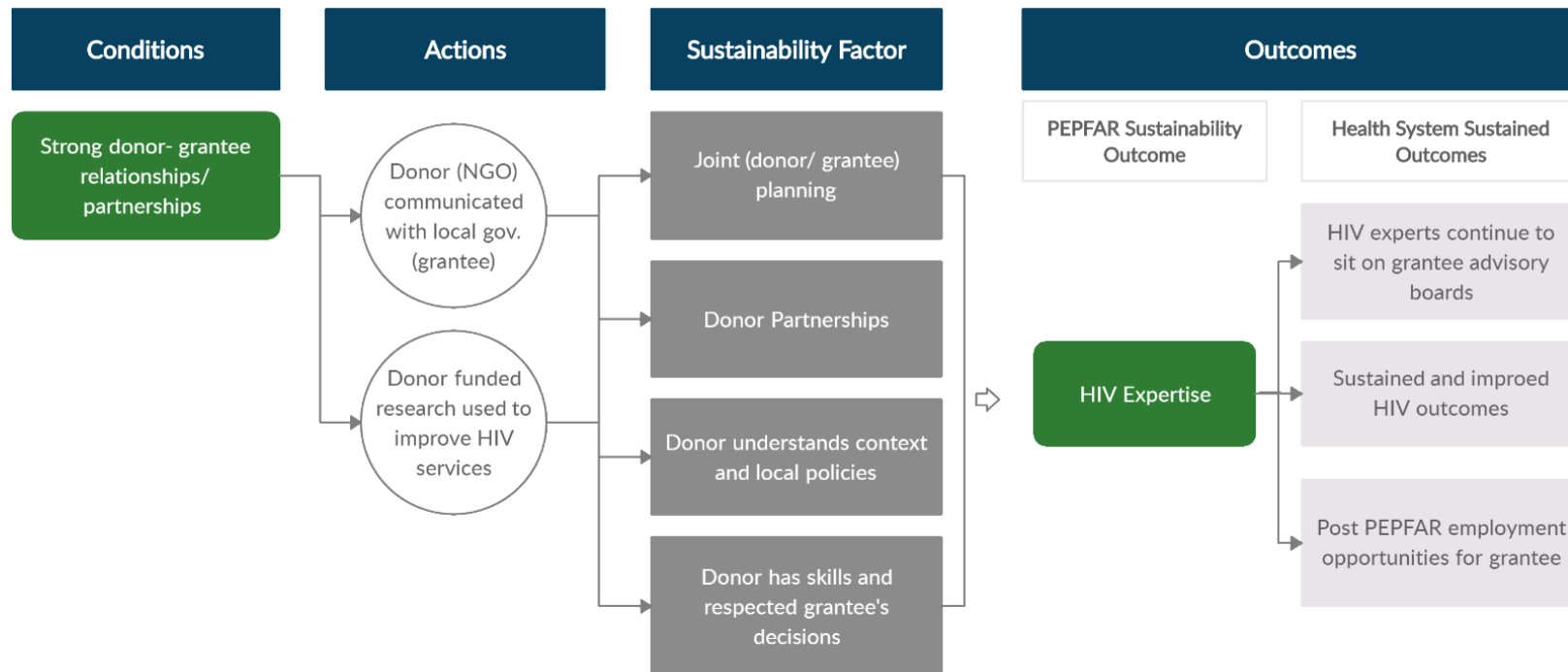Post PEPFAR employment opportunities for grantee

Figure 17: HIV Expertise

HIV Program

Access to ART was not freely available in South Africa until 2004 (111),

therefore a health worker's role was to treat HIV patients symptoms and try to

keep them alive. In many parts of the Western Cape, PEPFAR started the HIV

program. The HIV program was sustained due to **human resource stability,**

skilled health facilty staff, health facility leadership, strong local donor

coordination capacity, and joint donor/grantee planning (Figure 18).

Additionally there are various NGOs (i.e. Kheth'impilo) that have a **base in the**

Western Cape, strong ties to government officials and understand the local

context and health system needs. The HIV program relies on these trusted

partnerships to help sustain HIV program outcomes. The Western Cape HIV

progam also existed within a province that was politically and financially stable.

Without these PEPFAR program components the strong HIV program as it

operates today would not exist.
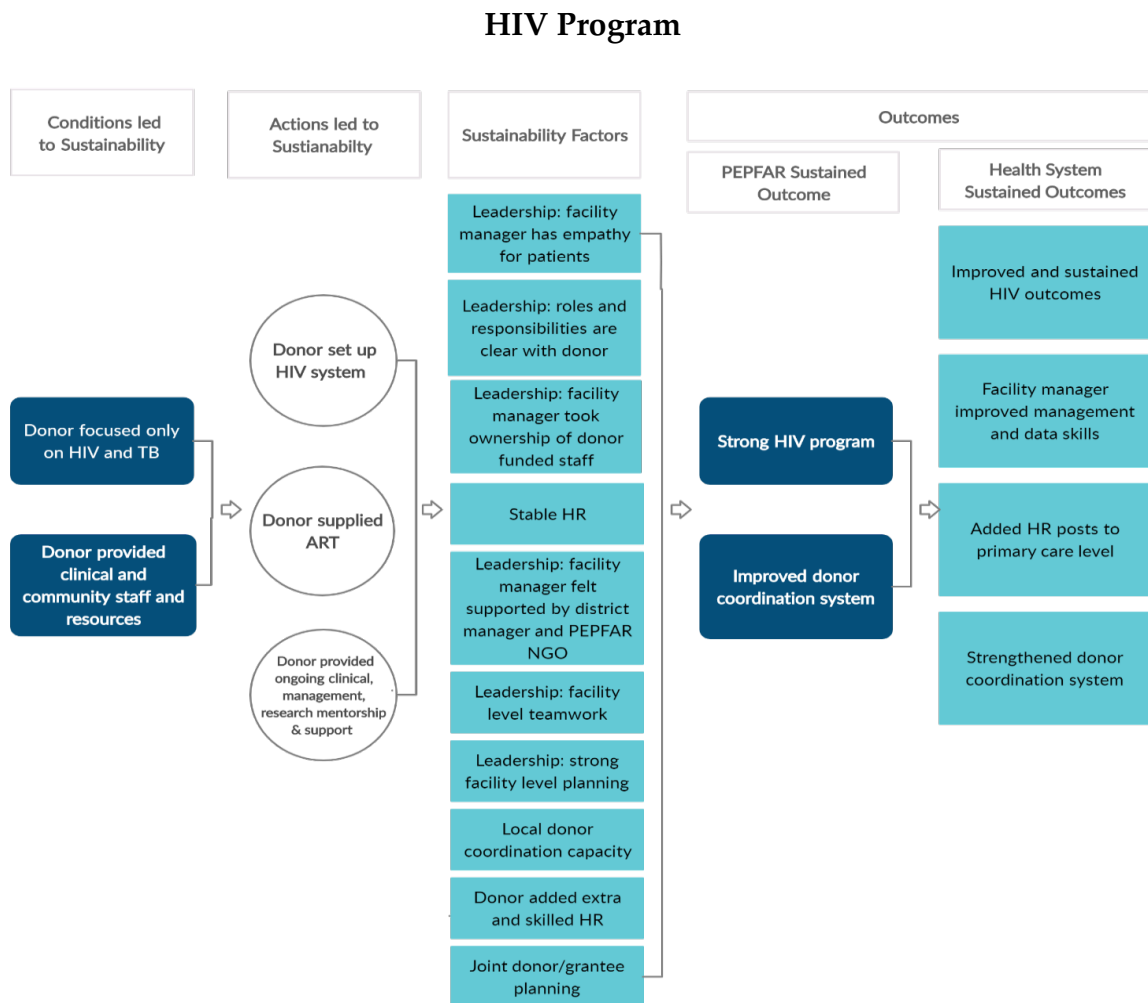
HIV Program

Figure 18: HIV Program

Infrastructure and Resources

PEPFAR was responsible for some of the infrastructure and resources that continue to exist today due to **strong partnerships** and **health facility leadership** (Figure 19**).** Though some of the food gardens PEPFAR funded have not been kept up, the physical spaces, such as health facilty extensions and pharamacies continue to be used today. This study found some of these consultataion spaces

are no longer used only for HIV, but they are used and appreciated by health

facilty staff due to the increase in patient numbers.
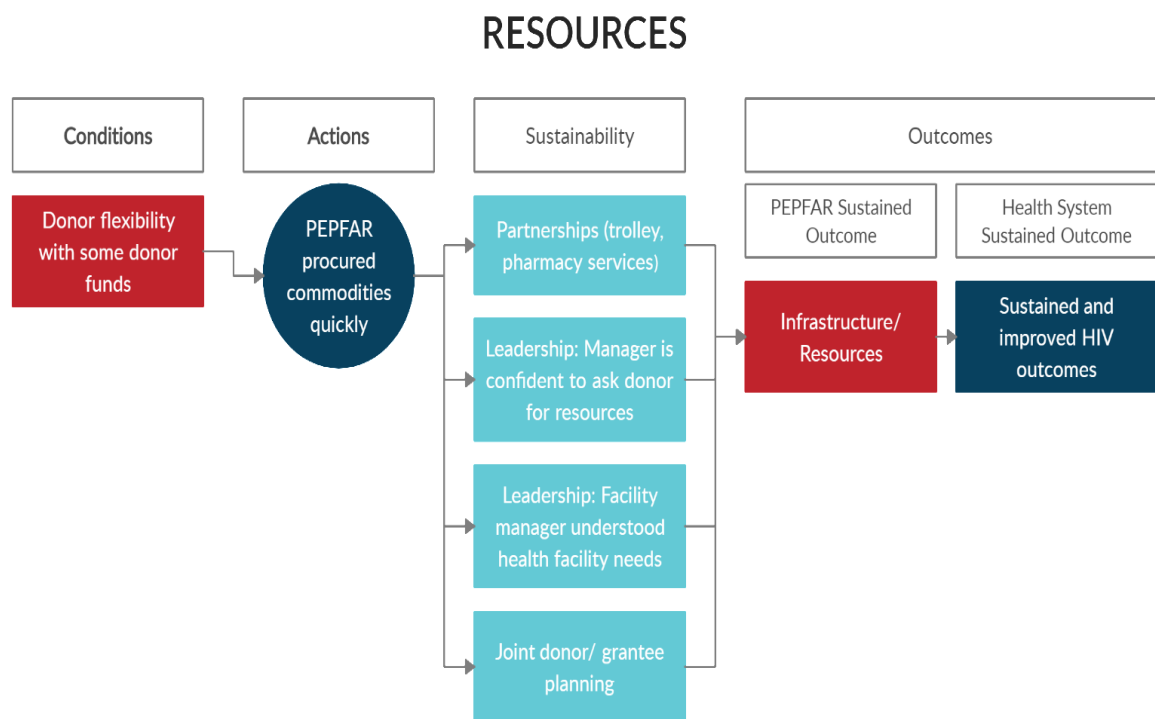
Figure 19: Infrastructure and Resources

Qualitative Summary of Results

Our results show sustainability of HIV programs outcomes was a result of

the donor and grantee working together. All of the sustainability factors outlined

in this chapter are related to strong leaders, both the donor and grantee and their

ability to plan and work together. There were five main PEPFAR program

outcomes that were sustained six years post PEPFAR direct service: skilled

health facility staff, strong HIV program, HIV expertise, infrastructure/resources

and strong donor coordination system. These outcomes continue to strengthen

the health system today.

Part of the reason for a RIC dip in 2012/2013 (the immediate period after

direct support ended) was likely from human resource instability, due to the loss

of HIV specific clinical, administrative and community staff and the move by the

local government to comprehensive service delivery. Health facilities had to re-

configure their staff to offer comprehensive care. Larger health facilities were

able to recover from these strategy shifts because they could sustain their vertical

staff, while HIV teams in smaller health facilities in rural areas needed to

integrate them into the other programs due to staffing shortages. These

difficulties led to a continued RIC decline among some health facilities.

Our qualitative results suggest the following lessons for the sustainability

of future programs. The donor and grantee need to **plan together throughout**

the life of the program, at every level of government (health facility, district and

provincial level). The main goal of the donor should be to **fill needed gaps** and

let government **(grantee) lead the planning process**. To ensure the planning

process is authentic the donor (NGO) needs to have the **skills to fill gaps and**

respect the grantee's wishes. Additionally, it helps if the grantee (local

government) **understands their needs**, has an established **donor coordination system** and the grantee values the program, which leads to increased motivation and energy to coordinate the donor program.   When a donor (NGO) has a base in the province they tend to understand the **context and local policy** which helps align the intervention to the context, build a **long-term relationship** with the grantee and helps build **trust** likely leading to more sustainable outcomes. These relationships and trust led to **post donor funding opportunities**. Funding for a **liaison at a provincial level** to coordinate activities was highlighted as a key to successfully coordinating activities.

The qualitative data shows the most important PEPFAR outcome the grantee wanted to sustain was the **transfer of skills**. In the Western Cape (unlike some other areas of South Africa), PEPFAR was able to plan and formalize the transition of human resource posts from PEPFAR to local government. The retention of these posts and the relationships created led to more HIV skills and **skilled staff** being retained in the local health system. The grantee found investing in lower level cadre of health facility staff (i.e. nurses) was more sustainable, because they were less likely to leave the area. Additionally, this **human resource stability** was key to a positive relationship between the patient and their health care provider, which sustained RIC. Sustainability was the result

of dedication and the extra time of health facility leaders invested in coordinating donor funded activities at a facility level. A strong health facility manager needs to have a number of characteristics including: time management, organizational skills, client oriented, good communication with donor and local staff, ability to motivate staff, plans for the future and ability to manage stress.

Chapter 7: Discussion

<u>**Overview**</u>

As more HIV donors begin transitioning large donor funded programs to local governments, defining and understanding sustainability, specifically program sustainability, has become more of a priority. The donor community has equated sustainability with financial capacity. Though consistent financial support is a key component of sustainability, we would argue along with others (45,105,109) this definition needs refinement. It is important to understand program sustainability to ensure that scarce resources are effectively used. Also, there is a moral imperative to sustain programs that are effective.

The research on sustainability is broad, and the quality of the research methods used is generally poor. There is no clear agreement on a definition, little analysis on sustaining programs in a complex health system, and only a handful of lessons learned about large donor transitions. This study used a robust mixed-methods methodology to develop a list of program sustainability factors to inform donor-funded programs. Though the focus of this study is on the non-financial characteristics of sustainability, local grantees need to fund the majority of their own health program to sustain outcomes. The SAG had the financial means to fund 77% of the HIV program in 2015 (114). Additionally, this study is

unique because it investigated sustainability at a provincial level, while the

existing transition literature (e.g., such as Avahan) is focused on national donor

programs.

Mixed Methods

The aim of this research was to identify factors associated with sustained

ART retention among a set of health facilities post PEPFAR support for direct

service. A mixed-methods approach was used to examine 61 health facilities

supported by four local PEPFAR treatment NGOs from 2007 to 2012. RIC was

used to measure health facility performance. Sustainability was measured by

comparing RIC during PEPFAR direct service 2007 to 2012, to RIC in the post

PEPFAR period 2012 to 2015. Using the quantitative sample (N=61), crude and

adjusted risk differences were calculated to estimate the association between

type of government ownership (either CoCT or WCGH), PEPFAR NGO, ART

treatment 2012 policy change, volume of ART clinic, human resource transition

and our outcome of RIC at 12 and 24 months on ART.

The goal of the qualitative study sample selection was to choose a broad

range of facilities from various geographic areas, government ownership, clinic

size, NGO support and levels of RIC at 12 and 24 months. The goal was to

understand different contexts where performance and sustainability thrive, not

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to select a representative sample.

The main strength of our study was the use of quantitative and qualitative data, or a mixed-method approach. This dual methodology let us explore the interaction of factors we would not have found if we used a single methodology. Mixed-methods has been shown to "… compensate for inherent method weaknesses, on inherent method strengths, and offset inevitable method biases" (153).

Our qualitative sample, was selected from the quantitative analysis, which allowed us to choose from a broad range of health facilities with varying levels of performance. The data collection and analysis phase of the study was iterative, allowing the researcher to move between the quantitative and qualitative data. The quantitative data allowed us to identify factors that led to sustainability, which let us probe different topics in our qualitative interviews to gain a deeper understanding of the context where sustainability occurred. The creation of the graphs of RIC over time by health facility, gave us a starting point in our interviews to gain a better understanding of the context behind the numbers. For example, one health facility manager explained that the decrease in RIC was due to a staff member who had a drinking problem and was not accurately capturing data.

PEPFAR Transition was a Process

Our study results show in 2012/2013 there was no clear PEPFAR transition process in the Western Cape, South Africa. Though the transition was announced and agreed to at a national level and the Western Cape transferred PEPFAR posts through the end of 2013, we found the implementation of national policy at ground level was a gradual process. Results by Kavanagh and Dubula-Majola (119) who investigated the re-investment in direct service by PEPFAR in 2016 found: there was a lag between policy making and policy implementation at ground level. As Gilson noted, local officials have the influence and power over the use of local resources, which influence policy implementation (124).

Participating NGO's received extension funds though 2015, which were used to phase out direct service activities. PEPFAR staff contracts and research grants, did not necessarily end with PEPFAR's 2012 policy shift from direct service to a health systems strengthening focus. As noted earlier (Chapter 3), in 2015, there was a shift in PEPFAR's policy to move from transition, to a re-investment in direct service support to reach the 90-90-90 HIV treatment targets. The policy was focused on placing donor-sponsored staff back into health facilities in priority districts. In the Western Cape, the priority district was the Metro district. Therefore, by the time facilities had transitioned out of direct

service in the Metro district in 2016, they were already starting to receive new

PEPFAR funds for direct service. This could explain why the Metro District

performed well with regard to sustainability. Overlapping contradictory

PEPFAR strategies could explain why our linear regression results showed no

difference in RIC during and post PEPFAR direct service . This aligns with the

interrupted time series analysis by Lince-Deroche et.al. (Chapter 3), that showed

no reduction in service delivery post PEPFAR direct service (2014-2016) in the

City of Johannesburg, also a priority district.

<u>Discussion of Quantitative Results</u>

The quantitative results showed that there was no single factor that led to

sustainability, though in some specific circumstances when the data was

disaggregated there was some impact of a combination of factors on

sustainability.

RIC over time

An analysis of RIC data over time per NGO and for the study sample

showed a decline in RIC around 2012/2013 (Figure 13 and Appendix 9), and a

rebound in the RIC around 2014/2015. We found all the NGO's were aligned

with this trend except Kheth'impilo. Kheth'impilo RIC plateaued between 2014

and 2015.

Our qualitative data aligns with our quantitative data, as a government official witnessed a decrease in HIV outcomes in the local data system when PEPFAR's strategy moved from direct service to technical assistance in 2012/2013. One explanation could be the decline of PEPFAR's direct service support, although another alternative explanation could be attributed to the 2010 change in HIV treatment policy, which increased the CD4 eligibility threshold for ART from 200 to 350 cells/mm^3. Research from Cape Town, South Africa, showed that loss to follow up and risk of virological failure increase when the ratio of patient per health worker increased (154). Therefore, the RIC decrease we found in 2012/2013 could be explained by fewer human resources, an increased number of patients in the health system and increased strain on health work force. Additionally, the global HIV strategy on an AIDS-Free generation focused on increasing access to HIV treatment, rather than retention.

Our qualitative data highlight another possible explanation for the disparities in RIC between facilities of different sizes. Larger health facilities could allow former PEPFAR trained staff to continue to work in the HIV program post PEPFAR or were able to sustain PEPFAR's vertical approach. In smaller health facilities, PEPFAR trained staff were integrated into other health services since there were fewer staff (see Chapter 6).

Another explanation for the RIC decrease in 2012/2013 is that facilities lost HIV specific CHWs, tracers and data capturers who were key for high performance and sustaining HIV outcomes, specifically RIC. The Western Cape did not prioritize the absorption of PEPFAR trained community posts, which meant in 2012/2013 the province lost 418 community posts that were PEPFAR supported. This finding is consistent with Kavanagh's (16) report on the South African transition. Due to PEPFAR's transition strategy health facilities lost a close tie with the community, and HIV RIC and prevention efforts fell off the priority list. If government had made the decision to transition more staff in smaller health facilities and prioritize community staff in the transition, they may have been more likely to sustain RIC in smaller health facilities. As an urban health worker commented:

> *"That's why I am saying to you that I think that our biggest thing that we are feeling was the link, the tight link with the community health workers in the facility and the dedicated data capturers that only focused on their (HIV) data sets. That to me is the biggest problem. Then we moved as a department, because of our financial constraints we moved to a generic info clerk, who had to do the data for the whole facility and lot of…*
> *Then information management gets integrated, community health workers had to do homebased care and everything else that goes with it and not focus on this only, and so things like adherence support fall off the table….Because you are going to go and wash patients and clean them and do their dressings and do their wounds and give them personal care, that your prevention falls off the table and your adherence support falls off the table and with data*

management, all of that is gone, basically." (Provincial Government Official, Urban)

Donors need to integrate future funds into existing health structures for health outcomes to be sustainable. Our results align with Oberth and Whiteside (45) and Katz et al. (109) and Mussa et al. (105), who argue that donors need to change their funding strategy, to provide donor support within "an integrated primary health care model."

High Performance and Poor Sustainability Results

An analysis of the whole sample showed high performance (i.e. high RIC) is not associated with sustainability, which means that high performing facilities were not able to maintain or improve post PEPFAR. Although when we looked at the facilities with high sustainability (consistent or improved sustainability post PEPFAR), 65% of the facilities also showed high performance (i.e. high RIC). Additionally, these health facilities were supported with extra PEPFAR resources (i.e., additional human resources, extra social activities) and with non-PEPFAR support (i.e. PopART research or the support from other NGOs). These nuanced results suggest sustainability was not necessarily associated with high performance, except among the highest performing facilities where there was additional support.

Health facilities that showed high performance tended to be facilities with large ART patient volumes, were located in the Metro district and able to retain a high number of PEPFAR posts. However, these facilities showed poor sustainability results. These results reflect Fox et al.'s results which found higher volume facilities produced high RIC (141). There are two explanations to clarify this study result. Recent evidence by Fox et al. (141), using national laboratory data, showed that RIC data recorded at individual facility level is an underestimate of actual RIC. This was mainly due to "silent transfers", where patients leave a facility and show up as a new HIV patient at another facility. The inability of the health system to track patients through the national ART program means they are then recorded as a loss to follow up and the sustainability of RIC suffers at the initiating health facility.

The apparent decline in RIC could also be due to the nature of the ART program in the Western Cape and policy changes over time. The initial focus of the HIV program was to treat HIV patients in tertiary and large PHC facilities in urban areas, where there were health workers with HIV expertise (Key informant interview with government official, December 12, 2019; unreferenced). Over time, as the HIV program grew, and HIV facilities became crowded the 2003 Western Cape HIV strategy (i.e. Healthcare 2010) prioritized moving HIV

patients to PHC facilities to allow them to access ART closer to their homes (146).

Furthermore, the PEPFAR program initially worked in urban areas, later moving

to rural areas, since they initially worked in tertiary care, later moving to PHC

level. Of the health facilities that showed high sustainability results post PEPFAR

direct service, approximately half (n=9; 45%) were located in rural areas. This is

likely due to less crowded health facilities, fewer silent transfers and vast

distances between health facilities and the later start of the PEPFAR program in

rural facilities.

In terms of government ownership, CoCT produced higher performing

(or high RIC) facilities compared to WCGH owned facilities. However, WCGH

facilities had high sustainability results. Both of these results were seen among

medium/high ART volume facilities. One explanation could be aligned with the

previous conclusion that CoCT facilities were located in the Metro, had large

ART volumes and more "silent transfers" which limited their ability to sustain

results.

The previous explanation regarding silent transfers could explain these

results or we can deduce that RIC performance (high RIC) was too high to

sustain over the long run. Research on the re-investment in direct service

highlights that even with extra donor-funded staff there has been little

improvement towards 90-90-90 goals, partially because the health system is struggling to manage high patient volumes (155). As patient volumes increased over the years, the staff complement plateaued, which means that staff had larger workloads, (154,156) which made maintaining high performance a challenge. Our results suggest that additional human resources are associated with higher performance among larger facilities but had no effect on sustainability.

Losing patients due to transfer of ART patients to other facilities could explain why high performing, large health facilities in the Metro displayed low sustainability results. Extra human resources helped the performance of health facilities, but did not influence sustainability outcomes, probably because the patient to provider ratio is too high and health facility staff are working to their capacity.

NGO Support

Overall, Kheth'impilo supported facilities with high performance. A combination of Anova and Kheth'impilo support led to facilities with the highest performance and sustainability results (i.e. high RIC/high sustainability). Important to highlight is that Kheth'impilo and Anova were supporting facilities with high patient volumes. Even with high patient volumes, Kheth'impilo achieved consistent RIC during and post PEPFAR direct service. On average

Kheth'impilo was able to transition 1.87 posts per facility to local government. In terms of raw numbers, Kheth'impilo was able to retain the largest number of PEFPAR posts (n=28), which likely facilitated their high performance. Anova and Kheth'impilo also received medium/high levels of PEPFAR funding, therefore the better financially resourced NGO's observed higher and more sustainable performance.

The qualitative data showed that established NGO's which had a history of working in the Western Cape, supported facilities with higher performance (high RIC). Anova and Kheth'impilo had been working in Western Cape for many years, understood the health system gaps, had long-standing relationships and gained the trust of local officials, producing high sustainability results. Qualitative data highlighted the fact that stable staff and the consistency of patient/provider relationships were important to sustaining RIC. It is important that patients felt trusted and understood by the health facility staff, so they return for HIV treatment. If donors flood the local health system with staff, only to withdraw them, this will result in less sustainable outcomes.

Retention in Care

Our study results and the work by Fox et al. (141) suggest that facility reported RIC is not an accurate indicator to measure the overall performance and

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sustainability of the ART program. The second 90 of the 90-90-90 goals (90% of those who know their status are on ART) relies on RIC, but RIC alone is not an adequate indicator of a success. As highlighted earlier (Fox et al. (141)), the lack of the ability to track patients in the health system diminishes RIC estimates at a facility level, due to large numbers of silent transfers. For RIC to be high, the system needs to keep loss to follow-up at a minimum. Having fewer CHWs, due to the local government's lack of prioritization of CHWs, may have made maintaining high RIC a challenge.

Qualitative Discussion

In general, study participants spoke very highly and were appreciative of the PEPFAR program. Study participants valued the extra human resources, extra support (e.g. food and supplies at community outreach days, Christmas parties for kids, vegetable gardens) and training, especially NIMART training, and mentoring and data analysis. This was particularly evident in the rural areas, where there were few HIV services before the PEPFAR direct service phase. Additionally, the investment in research to directly inform PEPFAR activities was highlighted as another aspect of the PEPFAR program that was appreciated. I was very surprised to encounter this reaction, due to my experience working as the PEPFAR Provincial Liaison for the Western Cape, where I encountered the

opposite reaction toward PEPFAR.

> *"I suppose the two biggest (legacies) that they (PEPFAR) left behind was our ability to start the service, in a very short period of time. And, the assistance with training. I think that was very helpful. And also, I, I suppose that they also trained us a bit. What does it mean, how do we manage a program. Some of those meetings. Um, and I, I do think that, that there were very particularly skilled in M&E with the program… Yeah, yeah, so we benefited from that."(District Government Manager, Urban)*

In addition to human resource and patient/provider stability and investing in established NGO's, investing in a lower level cadre of health facility staff (i.e. nurses) was more sustainable, because they were less likely to leave the geographic area. Sustainability was also more likely when there were established donor coordination systems, allowing the donor and grantee to plan together throughout the life of the program, at every level of government (health facility, district and provincial level). Joint planning between local government and the donor leads to partnerships, and a better understanding of the local context and policies. This ensures, during a transition, the prioritization of sustained skilled staff and a formal organized skill transfer. An established donor coordinating system along with a liaison person at a provincial level was also highlighted as a key to successfully sustaining donor-supported outcomes.

Our study found perceived benefits by the local health system (i.e. grantee) was likely a factor that led to sustainability. Work by Ocampo (134)

found when there is a buy-in or demand for the service, there are champions that will ensure the program is sustainable. In other words, there was more motivation to take ownership of donor funded programs when local officials consider the support beneficial.

The leadership ability of health facility managers was a sustainability factor among the facilities with high RIC and high sustainability. Facility managers at these facilities took ownership of PEPFAR staff and resources. The health facility manager was able to set clear roles and responsibilities with local and donor funded staff, creating strong teams that were highly motivated. These leaders were exceptional, learning every staff member's job responsibilities so they could assist if there were challenges. Sustainability was the direct result of the leadership, dedication and the extra time the health facility managers invested in coordinating donor-funded activities at a facility level.

While the literature highlights the importance of leadership, our study specifies the qualities which a leader should display. Long tenure does not equate with leadership. Although we found health facility managers stayed in their position for an average of 13 years, and on average have worked for local government for 23 years, it does not mean they were necessarily strong health facility leaders. The quantitative data showed the best performing facilities were

not among facilities with leaders who had been facility managers for the longest period of time.

A strong health facility manager needs to have a number of characteristics including:

- time management,
- organizational skills,
- good communication skills
- empathy for patients

A strong leader at the lowest donor/grantee interface (i.e. health facility), plus retention of HIV specific community staff and data capturers, investing in NGO's with an established presence in the geographic area, perceived benefit and established donor coordination systems were key to ensuring health outcomes were sustained post donor funding.

Lessons Learned from the Western Cape PEPFAR Transition

Our results add some useful new insights to the current broad transition and sustainability literature. The planning and transition of donor funding activities should be led at a provincial level. Congruent with the Avahan studies, the institutionalization of specific donor program components--mainly budgets, reporting systems and staff structures--are important from the beginning of the program. Standardizing salaries, work hours and compensation packages made it easier for PEPFAR funded posts to be transitioned. NGO's that had experience

in the region and ties with government and understood these program

components had more posts retained in the health facilities they supported. Since

budgets are unpredictable, the establishment of a regular joint forum where

donors and local funding organizations can give updates and plan together is

extremely important. This forum should also ensure that there is a formalized

skills transfer. Donors should take more care when pulling resources from

smaller clinics as they do not have as much capacity to sustain program

outcomes.

The transition literature highlights the need for improved communication

regarding budget timelines to give local government time to plan (16). If there

was more time to plan for the transition, local government would have likely had

more time to assess and think of alternative solutions to absorbing more donor

supported activities and likely more CHWs.

Limitations

The main limitation of our work is the reliability of our qualitative results,

since they were limited by recall bias. Since the PEPFAR transition was

announced six years ago, due to the retrospective nature of this study,

participants may have forgotten details or have different opinions and views

about PEPFAR and sustainability compared to during the transition time period.

The data used for this study were aggregated RIC at a facility level. As outlined on page 207, research by Fox et al. (141) concluded RIC at a facility level is an underestimate of the true estimate of RIC at a patient level. Therefore, the accuracy of the data is one of the main limitations to the study results.

While we knew the Cape Town Metro was one of PEPFAR's priority districts for direct services, we were surprised to learn that many health facilities in rural areas continued to receive PEPFAR-funded support until relatively recently. This continued support may have had a positive effect on sustainability since the transition out of PEPFAR was a long process.

The researcher must acknowledge her role in shaping the research process and results (151). The principle investigator of this study formerly worked for PEPFAR in the Western Cape and had a working relationship with some of the study participants prior to undertaking this research. This could have led to research bias due to the personal relationship between study participant and researcher, or it could lead to increased trust by the respondents and an increased likelihood of uncovering the "truth" in the data.

Chapter 8: Conclusion

While our regression models showed no difference in RIC estimates across the study facilities pre-and post-direct service, our graphed, descriptive results showed a dip in RIC among the majority of the study facilities in 2012/2013. The RIC decrease was likely due to PEPFAR's move from direct service to technical assistance; the decrease in the numbers of CHWs and a change in HIV treatment eligibility guidelines. Important to note in terms of context is when ART eligibility expanded in 2010, newly eligible HIV patients strained the existing overburdened health work force, who were focused on ART initiation at the time. Though these results are not encouraging, no doubt PEPFAR had an impact on the HIV epidemic in the Western Cape. PEPFAR is different from many donor-programs offering development assistance for health. Aside from the large funding envelope, it offered a complete package of community, clinical and data support staff focused solely on HIV and TB. PEPFAR was able to:

- provide mobile health services to rural areas
- set up health services for specific high-risk populations, such as youth and men
- provide specialized services such as NIMART training and mentorship.
- build and strengthen the HIV program and data systems,
- provide extra human resources and HIV clinical expertise
- provide funding for HIV and TB research

- fill gaps with innovative solutions government "*could not even imagine.*"

We found no consistent relationship between RIC performance and sustainability. High performance was associated with the retention of PEPFAR staff among medium/large volume ART facilities owned by the CoCT located in the Metro district. Overall, Kheth'impilo was able to produce high performance in high volume health facilities throughout the study period. Kheth'impilo also had the highest PEPFAR budgets of the participating NGOs and was able to retain PEPFAR human resources, which are likely factors, which led to high performance.

An analysis of the highest and most sustainable performance showed leadership was a key sustainability factor. Strong, capable and empathetic leaders at the lowest level of donor/grantee interaction is key to performance and sustainability. Leaders who showed higher performance were motivated, good at motivating staff, able to take on the ownership of donor-funded staff and resources, and set clear roles and responsibilities for every staff member. These facilities were also supported by PEPFAR partners (Anova, Kheth'impilo or a combination of the two) with high PEPFAR budgets. Both Kheth'impilo and Anova had established offices in the Western Cape, long standing relationships

with government, a deep understanding of government priorities, policies and the context, which could explain their high performance and sustainability. These health facilities were also supported with extra PEPFAR resources and support from other NGOs.

Sustainability requires joint planning by the donor and grantee throughout the life of the program. Donors need to respect the skills and capabilities of local government and let local government lead the transition process. Additionally, joint planning assisted donors understanding of the context and local policies. The existence of a donor coordination system at a local level assists with clear communication around transition between various levels of government and the donor. Local government also needs to understand their comprehensive needs to ensure that donors understand the gaps to be filled. During this planning phase donors need to understand that human resource stability is linked to increased sustainability results. Investing in lower level health cadres, such as nurses, data, administrative staff and CHWs is important for sustainability as they are less transient and important to sustaining skills. Provincial level liaison officers who are placed in the provincial health office are especially important to coordinate transition efforts. Additionally, if the local government perceived the program as beneficial there is more motivation to

make donor funding successful and outcomes more sustainable.

The Western Cape PEPFAR program was able to transfer and sustain skilled health facility workers via the formal transition, sustain HIV expertise, maintain infrastructure and ensure a strong HIV program. In part, this was due to the strong and stable leadership in the province, formalized skill transfer, and an abundance of HIV research on the Western Cape. Though not the focus of this study, the ability of the local government to finance the majority of the HIV program budget was one of the key sustainability components. While research and HIV expertise were not initially defined as sustainability factors, the deep understanding if the Western Cape HIV epidemic and support in policy forums by HIV experts, played a significant role in building a strong HIV program.

It is important to acknowledge the importance of the HIV context in South Africa during the study period. This study period coincides with a time of change in South Africa, when the political support for ART access increased, national HIV budgets increased substantially and when task-shifting and ART treatment guidelines became more receptive to placing more patients on treatment. These positive changes at a local level supported PEPFAR program's goals, and the sustainability of the HIV program.

In conclusion, this study was unable to identify a single predictor of

sustainability. This was not surprising as sustainability is complex, dependent on the context, and relies on various processes and outcomes. This study suggests additional health facility staff and CHWs should be employed in the health system to ensure the sustainability of RIC at the facility level. If South Africa is going to make progress towards the global 90-90-90 HIV goals, donors and local governments need to strategically plan for sustainability from the beginning of the program, while integrating external investments within local health programs and structures. Our study findings have been set within the transition literature to create a transition plan focusing on program sustainability (see Chapter 9: Policy Recommendations).

Chapter 9: Policy Recommendations

The results of this sustainability study provide concrete guidance for donors, NGO's, philanthropists and local governments that can be integrated into program plans to maximize the sustainability of program outcomes. This study used a robust mixed-methods methodology to develop a list of program sustainability factors to inform donor-funded programs. These policy recommendations set the sustainability factors within the context of transition to provide further guidance for donor transitions.

The factors associated with sustainability focus on people (e.g. health facility leadership, skilled staff, stable HR), relationships (partnerships, planning,) and systems (donor coordination). With more local governments taking over the financing of their HIV programs we suggest, as others have (44,45,47) that a new model of donor funding is required. The lesson for future donors is the need to integrate their programs into existing local health structures for program outcomes to be sustainable.

This study found the following factors led to sustainable outcomes within the HIV program in the Western Cape:

- Sufficient and stable resources (i.e., financial human resources, technical expertise, equipment, physical space)

- Investment in organizations that have a footprint in the region who understood the local context and have strong relationships with government
- Strong leadership at a health facility level.
- Though vertical programs have been criticized for creating parallel health systems, we found that the vertical PEPFAR support was not necessarily a barrier to sustained outcomes in the control of a priority disease.
- Disease specific staff (i.e. clinical, administrative, community)
- Joint planning and formalized skill transfer: Local government has an established coordinating system in place. This also gives donors a better understanding of the local context.

Practically this means that local government can place donor-funded vertical program staff into the health system, but ensure HIV testing referrals and lab services are integrated in the public health system. The manager at the donor/grantee interface needs to take ownership of the donor program to ensure the donor support is streamlined and efficient for facility staff and patients. Donors and local government need to jointly create a sustainability plan or phase out plan for every donor-funded activity. It is important to note that not every program activity needs to be sustained. The key question to ask is, *Is the sustainability of the outcomes relevant to the objectives of the intervention or activity?* (58). Donors need to be especially careful about phasing out resources in smaller health facilities that will struggle to maintain program outcomes. Strong leaders at the lowest level of the grantee (i.e. health facility), plus retention of community health workers, administrators and data capturers were key to ensuring that

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positive health outcomes were not lost post donor funding.

There are some contextual factors that likely assisted sustainability. This study was based in a province that is politically and financially stable. Additionally PEPFAR funded an abundance of HIV research, which assisted the grantee and donor in understanding the HIV epidemic in the Western Cape. A better understanding of context will assist large donors when transitioning programs to local government to help ensure program gains are retained post donor funding. Our study results found the following actions and program characteristics lead to sustained outcomes post donor funding.

Donor
- ✓ Donor supports NGO's with a longstanding geographic presence and relationship with government.
- ✓ Skilled and motivated donor-funded staff
- ✓ Has skills to fill grantee gaps
- ✓ Respects grantees needs and wishes

Grantee
- ✓ Strong leaders at every level of government, especially at the lowest level of grantee/donor interface
- ✓ Understands health system needs
- ✓ Positive perception of the value of program
- ✓ Established local coordination system with leaders with strong management skills
- ✓ Stable human resources (especially health care provider)
- ✓ Managers at the lowest level of grantee/donor interface with the following skills

  Individual: Motivated, able to manage stress, time management skills,

Management: Took ownership of PEPFAR staff and set clear roles and responsibilities, created strong teams, able to motivate and incentivize staff, good communication with donor, local staff and donors, understands needs of staff, uses data to make decisions and plans for the future.

Donor/Grantee
- ✓ Early joint planning process throughout program which is grantee led
- ✓ Provincial coordinators required to coordinate donor-funded program
- ✓ Organized formal skill transfer, which should be coordinated at a provincial level
- ✓ Invest in lower level health cadres to sustain skills in geographic region
- ✓ Community health workers and data capture support

Planning for Donor Funding to Maximize Program Sustainability

The factors that led to sustainability highlighted in this study were integrated with the broader transition and sustainability literature to produce the following plan to maximize program sustainability. The sustainability plan is organized into four program stages: 1. Pre-funding, 2. Beginning of the program, 3. Mid-Term, and 4. Transition Period. The entity responsible and the level of government where activities should be implemented are indicated.

It should be noted there is a 3-10 year latency period before program outcomes are detectable in the community (157). Transition also takes a minimum of two years to implement. Additionally, not every donor-funded activity needs to be sustained, with the grantee holding ownership of the

planning process.

Actions: National Level	
Donor	Before a funding announcement is put out donors need to work with national stakeholders to understand local needs and gaps.
Grantee	National stakeholders should work with provincial government to understand local needs
Donor	Prioritize funding, local gaps and innovation.
Donor	Prioritize funding organizations that have a record of accomplishment in the geographical area.
Donor/Grantee	High level commitment

Beginning of the Program

Conditions: Provincial Level	
Donor	Respect the needs and opinions of the grantee.
Donor	Has the skills and fills the needs of the grantee.
Donor/Grantee	Recognize extra time it will take to coordinate donor funds.
Donor/Grantee	Understand the importance of human resource stability since it affects outcomes.
Donor/Grantee	Transparency of program activities and resources including budgets.
Grantee	Understands the local comprehensive needs and gaps across all programs
Grantee	Established donor coordination system which communicates with all levels of government.
Grantee	Needs local champions to keep motivation high.
Grantee	Characteristics of leader who is based at the lowest donor/grantee interface • Takes ownership of program staff and communicates clear roles and responsibilities in the • Empathy for patients and staff • Team work • Motivation/Incentivize

Continued: Beginning of the Program

Actions: Provincial Level	
Donor/ Grantee	Gather all appropriate stakeholders to coordinate donor funded program (Civil society, leaders from provincial, district, sub-district and health facility).
Donor	Donor-funded liaisons are placed in provincial offices to assist with program implementation and coordination.
Donor/ Grantee	Develop a program roadmap with clear timelines. Define and communicate overall goals, outcomes and coordination processes of donor-funded program.
Donor/ Grantee	Develop a program implementation plan with all stakeholders. Define sustainability requirements. Not every activity must be sustained. - Align donor salaries with local salaries - Cost the program - Prioritize the funding of extra resources and human resources in smaller clinics. - Consider program beneficiaries and transience of different types of staff.
Donor/ Grantee	Develop an M&E plan for the program Align donor program indicators and staffing structures with local system.

Mid-Term

Actions: Provincial Level	
Donor/ Grantee	All stakeholders discuss policy, budget, program, donor, local contextual changes and challenges facing the program
Donor/ Grantee	Look for ways to create partnerships between government and/NGO, and between NGOs.
Donor/ Grantee	Continuation of coordination meetings with grantee at lowest grantee/donor interface • NGO and health facility • Donor-funded staff and local staff • Provincial level

Transition Period (Final 2-5 Years into Program)

National Level Actions	
Donor/Grantee	Official transition plan developed. • High level plan • Implementation plan

Provincial Level Actions	
Donor/ Grantee	Grantee leads review process of program outputs and outcomes to assess program effectiveness
Donor/ Grantee	If patients are moving from NGO care to the public system, develop a tracking system to monitor progress.
Donor/ Grantee	Formalize the skills transfer, which should be coordinated at a provincial level. • Prepare the public health system to absorb donor funded activities
Donor/Grantee	Clear communication regarding budget timelines
Grantee	Local transition plan developed. Stakeholders should decide what they can realistically sustain within their budgets. • Should review all donor funded activities • Possibility to use a staggered approach to take over donor-funded resources
Donor	Provide capacity and technical assistance where needed

Appendices

Appendix 1: Literature Search Terms

Appendix 2: Literature Review Predictors of Sustainability

Appendix 3: Predictor Variable Definitions

Appendix 4: RIC Characteristics of Sample

Appendix 5: Characteristics of High and Low Performing Primary Health Care Facilities Post PEPFAR

Appendix 6: Interview Guides, Information Sheets and Consent Forms
- **Appendix 6a. Information Sheet For Health Facility Managers or Operational Managers**
- **Appendix 6b: Information Sheet for NGO Program Manager**
- **Appendix 6c: Information Sheet for Government Officials**
- **Appendix 6d: Consent Form for All Interviews**
- **Appendix 6e: Health Facility Interview Guide**
- **Appendix 6f: NGO Interview Guide**
- **Appendix 6g: Government Interview Guide**

Appendix 7: Codebook

Appendix 8: Document Review/Policy Analysis
- **Appendix 8a: Document Review**
- **Appendix 8b: Policy Analysis**

Appendix 9: Trends of Study by NGO
- **Appendix 9a: Right to Care: Study Sample**
- **Appendix 9b: Anova: Study Sample**
- **Appendix 9c: that'sit: Study Sample**
- **Appendix 9d: Kheth'impilo: Study Sample**

Supplementary Documents

Appendix S1: RIC of Study Sub-Set by Health Facility

Appendix S2: RIC of Sub-Study by NGO
- **S2a: Right to Care: Sub-Sample**
- **S2b: Anova: Sub-Sample**
- **S2c: that'sit: Sub-Sample**
- **S2d: Kheth'impilo: Sub-Sample**

Appendix S3: Predictors of Retention in Care Non-Qualitative sample (n=39)

Appendix 1: Literature Search Terms	
Database	**Search terms**
PubMed (includes Medline)	(("Health Facilities"[Mesh]) AND "Developing Countries" [Mesh])) AND "sustainability of health programs" OR "continu* of programs" OR "sustainable programs" OR sustainability of health outcomes OR sustain* HIV/AIDS outcomes OR clinical performance OR sustain organizations OR maintenance or routinization NGO* AND non-governmental organization* OR non governmental organizations OR Outcome assessment OR Performance developing countries OR Africa"[Mesh]
Web of Science (Science Citation Index and Social Science Citation Index) Includes Medline	TS=(NGO* OR non-governmental organization* OR non-governmental organizations) AND TS=Developing Countries AND TS=(Outcome Assessment OR performance)
Embase	'non governmental organization'/exp OR 'non governmental organization' OR ngo AND 'developing country' AND 'sustainability' AND '

Appendix 2: Literature Review Sustainability Factors									
Predictors of Program and Program Outcome Sustainability									
Category	Domain	Examples of measures	Program Tools			Program Research		Outcome Tools	Outcome Research	Total Cited
Organiza-tional	Organiza-tional Capacity	Strong administrative structures	PSAT			Whelan	IHI	Thomas and Zahn		6
		Organization norms regarding change (risk taking, openness, innovativeness)				Lennox et al		Sarriot	Rogers and Coates	
		Intervention matches goals and skills of organization								
Organiza-tional	Organiza-tional Management	Roles and responsibilities are defined in a policy and procedures manual.	FHI	MSH	MODE					3
Organiza-tional	Strategic Planning	Strategic plans exist	FHI	PSAT	MODE	Whelan		Sarriot	California Wellness Foundation	7
		Well-aligned (i.e., links between activities and resources and achievement of organizational goals are explicit and logical) strategic plan and disseminated to staff				Lennox et al				

Category	Subtheme	Description								Count
Organizational/ Program	Leadership	Involved with implementation of project; Cultivate and empower new leaders; Successfully fundraise	MODE	PSI	NHS	Lennox et al	Whelan	Thomas and Zahn	California Wellness Foundation	11
			PSAT	FHI			IHI		Rogers and Coates	
Organizational/ Program	Communication	Dialogue process of negotiation	MODE	PSAT	MSH	Lennox et al	Pluye	Sarriot	Ozawa	7
		Program leadership team communicates effectively with staff								
		Organization communicates effectively with external stakeholders								
Organizational/ Program	Organizational Fit	A written organizational mission exists and known by staff	MSH	FHI	NHS	Lennox et al	Pluye			10
		Alignment of program objectives with organizational mission	MODE			O'loughlin	IHI	Thomas and Zahn		
							Stirman et al.			
Program	Funding Stability	Diversified funding	CLASS	FHI	PSAT	Pluye	Fleiszer	Thomas and Zahn	Walsh	16
		Long-term revenue-generating strategy	MSH	MODE	PSI	Whelan	Gruen et al.	Sarriot	Rogers and Coates	
						Stirman et al.	LaPelle, et al.			

Program	Human Resource Stability	Stability of HR	FHI	MSH		Lennox et al	O'loughlin		California Wellness Foundation	7
						IHI	Stirman et al.			
Program	Staff Skills	Staff have skills to perform duties of job; Needs based training to enhance staff skills and leadership abilities			NHS	Lennox et al	IHI	Thomas and Zahn	California Wellness Foundation	5
Program	Staff Motivation	Commitment of staff to perform work duties; positive attitude			NHS	Greenhalgh		Thomas and Zahn	Kwangware	5
									Rogers and Coates	
Program	Staff involvement	Inclusion of qualified staff in program design, implementation, evaluation, and decision making	PSI	NHS	FHI	Lennox et al.				5
			CLASS	MSH						
Program	Program Adaptation	Ability of a project to adapt programming to meet changes of community needs	PSAT	PSI	NHS	Lennox et al	Whelan	Thomas and Zahn	California Wellness Foundation	13
						Stirman et al.	LaPelle, et al.			
		Program flexibility to organizational needs	MODE			Pluye	O'loughlin		Ozawa	
Program	Program Champion	Advocates for change	PSAT			Lennox et al			California Wellness Foundation	6
		Able to garner program resources				O'Loughlin	Whelan			

							IHI			
Program	**Program Evaluation**	Effectiveness of program	FHI	NHS	MSH	Lennox et al	Whelan	Thomas and Zahn		10
		Clinical indicators and targets are set and monitored on a timely basis	PSAT	PSI			IHI	Sarriot		
Program	**Exit Strategy**								Rogers and Coates	2
									Ozawa	
Enabling Environ-ment	**Environ-mental Support**	Program aligned to government policy	PSAT	World Vision		Lennox et al	Whelan	Sarriot		7
						Stirman et al.				
		Program operates within a functional health facility (Lab, IT, procurement systems) a				IHI				
Enabling Environ-ment	**Partnerships**	Stakeholders clearly identified responsibilities	FHI	PSAT		Greenhalgh	Lennox et al	Thomas and Zahn	Rogers	12
		Stakeholders involved with program design, implementation and evaluation	MSH	World Vision		Rosenberg	Whelan	Sarriot		
		Local decision makers are project collaborators	PSI							
Enabling Environ-ment	**Local Ownership**	Local government is involved with prog. plans and implementation	World Vision	FHI	MODE	Lennox et al			Ozawa	8

Category	Subcategory	Description								
		Flexible management that supports community responsiveness	MSH						California Wellness Foundation	
		Long term commitment to community							Kwangware	
Enabling Environment	Perceived Value	Extent to which the program is relevant to local needs				Lennox et al.	Greenhalgh	Thomas and Zahn	Kwangware	4

Key and Source:

Program Tools

FHI: Family Health International Sustainability Rapid Assessment

MODE: Measuring Organizational Development and Effectiveness;

MSH: Management Sciences for Health; Management and Organizational Sustainability Tool
(https://www.msh.org/resources/management-and-organizational-sustainability-tool-most)

PSAT: Program Sustainability Assessment Tool (University of Washington)*Schell, 2013 (158); Luke, 2014 (63); Calhoun, 2014 (159); Stoll, 2015 (160); Tabak, 2014 (71)*

NHS: National Health Service Sustainability Model (https://improvement.nhs.uk/resources/Sustainability-model-and-guide/)

World Vision: Drivers of Sustainability (http://www.wvi.org/development/publication/wvs-drivers-sustainability)

PSI: Program Sustainability Index; Mancini and Merek, 2004 (25); Mancini and Merek, 2004 (162)

CLASS: Clinical Assessment for Systems Strengthening (International Training and Education Center for Health (I-Tech))
http://www.classtoolkit.org/tools

Program Research

Lennox, 2018 (35)

Stirman et al. (2012).

Pluye, 2004 (32)

Whelan, 2014 (58)

Rosenberg, 2008 (163)

O'loughlin, 1998 (11)

Greenhalgh, 2012 (55)

Institute for Healthcare Improvement (IHI), 2016 (164)

<u>Outcome Tools</u>

Thomas and Zahn, 2010 (59) (http://nyshealthfoundation.org/uploads/general/sustaining-improved-outcomes-toolkit.pdf)

<u>Outcome Research</u>

California Wellness Foundation, Reflections on Sustainability — Assessing the Long-Term Impact of Three TCWF Initiatives (www.tcwf.org)

Sarriot: Child Survival Sustainability Assessment; *Sarriot, 2004* (24); *Sarriot, 2014* (53); *Sarriot, 2009* (67)

Walsh, 2012 (62)

Rogers, 2015 (26)

Ozawa, 2016 (48)

Kwangware, 2014 (61)

Appendix 3: Predictor Variable Definitions

Variable Definitions	
1. Sustainability: Difference between retention in care during PEPFAR direct service and retention post PEPFAR direct service.	**2. Total ART Volume:** Sum of the total number of clients on HIV treatment at the beginning of each cohort (2007-2015).
Poor: < -5.0%	**Low:** ≤ 700
Sustained: -4.9% to 4.9%	**Medium:** ≥ 700.9 ≤ 2999.9
Improved: ≥ 5.0% +	**High:** >3,000
3. Overall Retention in Care: Average retention in care 2007-2015.	**4. Post- PEPFAR Retention in Care**
Low: <59.9%	**Low: <=55.9%**
High: >60%	**High: >56%**
5. PEPFAR NGO Financial Support: Total budgeted or spent per PEFPAR NGO for 5 years	**6. Transferred Human Resources:** Number of human resources that were funded by PEPFAR NGOs and in 2012/13 absorbed by either WCGH or CoCT
Low: < R35,000,000	**Low:** 1-2 Posts
Medium: ≥ R35,000,000 - R999,999,999	**Medium**: 3-4 Posts
High: > R100,000,000	**High:** 5+ Posts
7. Average Mortality Rate: Average mortality rate from 2007-2015	**8. PEPFAR NGO Support:** Kheth'impilo, Anova, Right to Care, that'sit
9. Government Ownership: Western Cape Government Health (WCGH) or City of Cape Town (CoCT)	**10. Geographic Location:** Urban (Metro) vs rural (Eden, Cape Winelands, Overberg, West Coast, Central Karoo)
11. Average Transfer Rate: Average transfer out rate from 2007-2015	**12. Facility Type*:** **Clinic:** An appropriately permanently equipped facility at which a range of PHC services are provided. It is open at least eight hours a day at least four days a week

13. 2010 ART Policy Change Pre<=2010 Post >2010		**Community Day Center (CDC):** A facility that is open 8 hours a day from Monday to Friday, at which a broad range of PHC services is rendered and a Medical Officer is present
* Western Cape Department of Health. Healthcare 2030, The Road to Wellness, 2014		**Community Health Center (CHC):** A facility that is open 24 hours a day, seven days a week at which a broad range of PHC services is provided. It may offer 24 hour Emergency services and/or midwifery services

Appendix 4: RIC Characteristics of Sample at 24 Months Across All Years (2007-2015)(N=61)

	Low RIC	Sustain-ability	% Avg. Transfer	% Avg. Mortality	Owner	High RIC	Sustain-ability	Avg. Transfer	% Total Mortality	Owner
					Anova					
Low	Bergsig Clinic (57.5%)	Poor (-6.6%)	4.0%	6.1%	WCGH					
	Moorreesburg Clinic (45.9%)	Poor (-5.5%)	4.1%	3.8%	WCGH					
Medium	Groendal Clinic (58.4%)	Poor (-10.4%)	3.5%	3.3%	WCGH	Wellington CDC (63.2%)	Sustained (2.8%)	9%	4.6%	WCGH
	De Doorns Clinic (43.3%)	Sustained (3.5%)	3.1%	0.8%	WCGH	Idas Valley Clinic (64.5%)	Poor (-20.4%)	7.7%	7.0%	WCGH
	Dalvale Clinic (58.5%)	Sustained (3.8%)	3.1 %	3.2%	WCGH	Mbekweni CDC (61.2%)	Poor (-9.4%)	3.3%	2.7%	WCGH
	Nkqubela Clinic (58%)	Poor (-7.2%)	3.8%	2.5%	WCGH					
	Piketberg Clinic (47.5%)	Sustained (-0.6%)	4.0%	2.4%	WCGH					
	Masiphumelele Clinic (38.7%)	Improved (6.4%)	2.6%	2.5%	CoCT					
	Phola Park Clinic (59.4%)	Poor (-12.1%)	2.4%	5.3%	WCGH					
High	Gugulethu CHC (28.8%)	Improved (16.1%)	0.9%	2.0%	WCGH	Crossroads CHC (60.2%)	Poor (-13.4%)	2.3%	1.5%	WCGH
	Kraaifontein CHC (54.4%)	Poor (-5.1%)	6.7%	2.1%	WCGH	Dr. Ivan Tom's (68.2%)	Poor (-15.9%)	2.2%	1.4%	CoCT
	Kayamandi Clinic (54.6%)	Poor (-8.5%)	3.2%	2.8%	WCGH	TC Newman CDC (60.3%)	Poor (-15.4%)	5.2%	3.6%	WCGH

	Worcester CDC (53%)	Poor (-7.9%)	8.7%	4.9%	WCGH	Nolungile CDC (61.9%)	Poor (-8.5%)	1.0%	1.7%	Com-bined
	Mitchells Plain CHC (58.9%)	Poor (-36.6%)	1.5%	2.1%	WCGH	Michael Mapongwana CDC (60.7%)	Poor (-6.7%)	2.2%	2.1%	WCGH
						Nyanga CDC (66.6%)	Poor (-5.6%)	1.8%	4.0%	WCGH
Right to Care										
Low	Stanford Clinic (57.1%)	Sustained (3.5%)	4.3%	3.9%	WCGH	Prince Albert Clinic (75.9%)	Sustained (2.1%)	1.3%	9.3%	WCGH
	Kleinmond Clinic (59.8%)	Poor (-9.7%)	4.6%	3.8%	WCGH					
	Gansbaai Clinic (53.8%)	Sustained (-1.3%)	5.3%	2.6%	WCGH					
High						Grabouw CDC (67.3%)	Poor (-11.3%)	4.1%	3.7%	WCGH
That'sit										
Low	Parkdene Clinic (43%)	Poor (-10.5%)	2.1%	4.5%	WCGH	Sedgefield Clinic (69.1%)	Sustained (-1.9%)	4.0%	2.1%	WCGH
	Hornlee Clinic (56.8%)	Poor (-10.6%)	1.2%	3.2%	WCGH					
	Blanco Clinic (52.1%)	Poor (-13.4%)	4.2%	1.4%	WCGH					
	Conville CDC (53.8%)	Improved (6.5%)	0.8%	0.0%	WCGH					
	Rosemoor Clinic (51.5%)	Poor (-20.2%)	2.9%	4.5%	WCGH					

	Pacaltsdorp Clinic (49.7%)	Poor (-18.7%)	2.4%	4.5%	WCGH					
Medium						Kwanokuthula CDC (63.5%)	Poor (-7.5%)	5.9%	2.8%	WCGH
						Lawaaikamp Clinic (68.8%)	Poor (-31.2%)	2.6%	0.7%	WCGH
						Khayelethu Clinic (62%)	Poor (-23.3%)	2.4%	2.4%	WCGH
High	Thembalethu CDC (59.8%)	Poor (-9.8%)	2.8%	1.7%	WCGH					
Kheth'impilo										
Low						Eerste River Clinic (67.4%)	Poor (-36.2%)	1.7%	4.5%	CoCT
Medium	Gustrouw CDC (57.2%)	Poor (-8.3%)	0.8%	0.9%	WCGH	Vuyani Clinic (66.5%)	Poor (-13.6%)	1.0%	3.3%	CoCT
	Bishop Lavis CDC (53.5%)	Sustained (1.1%)	1.8%	2.0%	WCGH	Heideveld CDC (64.7%)	Sustained (-1.8%)	2.9%	2.4%	WCGH
						Wesbank Clinic (64.4%)	Poor (-12.4%)	4.3%	6.4%	CoCT
						Lady Michaelis CDC (62.1%)	Improved (6.4%)	3.4%	1.2%	WCGH
High	Retreat CHC (55.9%)	Poor (-9.3%)	2.9%	3.3%	WCGH	Wallacedene Clinic (67.9%)	Poor (-15%)	3.0%	3.1%	CoCT

	Mfuleni CDC (59.3%)	Poor (-6.6%)	2.3%	1.5%	WCGH	Inzame Zabantu CDC (61.4%)	Sustained (-1.8%)	3.3%	1.8%	WCGH
						Mzamomhle Clinic (62.2%)	Poor (-6.5%)	3.0%	2.9%	CoCT
						Bloekombos Clinic (66.5%)	Poor (-7.9%)	2.4%	0.8%	CoCT
						Weltevreden Valley Clinic (61.9%)	Poor (-14.2%)	1.6%	0.9%	CoCT
						Hout Bay Main Rd. Clinic (62.6%)	Sustained (-2.3%)	2.0%	2.2%	WCGH
Anova/Kheth'impilo										
High	Langa Clinic (54.5%)	Improved (5.8%)	2.6%	3.2%	CoCT	Ikhwezi CDC (64.5%)	Poor (-12.9%)	2.9%	1.1%	CoCT
	Vanguard CHC (50.4%)	Sustained (-3.0%)	2.9%	0.8%	WCGH	Delft South Clinic (64.5%)	Poor (-7.7%)	2.1%	2.5%	CoCT
	Delft CHC (53.1%)	Poor (-6.0%)	2.1%	1.0%	WCGH					
	Du Noon CHC (58.9%)	Sustained (-0.5%)	2.8%	0.1%	WCGH					
	Albow Gardens CDC (58.3%)	Sustained (1.7%)	1.6%	1.0%	Combined					

Appendix 5: Characteristics of High and Low Performing Primary Health Care Facilities Post PEPFAR (at 24 Months)

	Improved Sustainability	PEPFAR RIC (2007-2012)	Post PEPFAR RIC (2013-2015)	Overall RIC	Overall RIC Post PEPFAR	District	ART Volume	NGO	Owner	NGO Finance	HR
1	Guguletu CHC	22.6%	38.7%	28.8%	Low	Metro	High	Anova	WCGH	Medium	0
2	Masiphumelele Clinic	36.4%	42.8%	38.7%	Low	Metro	Medium	Anova	CoCT	Medium	1
3	Conville CDC	50.3%	56.8%	53.8%	Low	Eden	Low	that'sit	WCGH	Low	0
4	Langa Clinic	52.8%	56.5%	54.5%	Low	Metro	High	Anova/ KI	CoCT	High	1
5	Lady Michaelis CDC	59.7%	66.1%	62.1%	High	Metro	Medium	KI	WCGH	High	0
	Sustained Sustainability										
6	De Doorns Clinic	41.6%	44.1%	43.3%	Low	Winelands	Medium	Anova	WCGH	Medium	1
7	Piketberg Clinic	47.8%	47.2%	47.5%	Low	West Coast	Medium	Anova	WCGH	Medium	1
8	Vanguard CHC	52.4%	49.7%	50.4%	Low	Metro	High	Anova/ KI	WCGH	High	0
9	Bishop Lavis CDC	52.9%	54.0%	53.5%	Low	Metro	Medium	KI	WCGH	High	0
10	Gansbaai Clinic	54.7%	51.6%	53.8%	Low	Overberg	Low	Right to Care	WCGH	Medium	2
11	Stanford Clinic	54.7%	58.2%	57.1%	Low	Overberg	Low	Right to Care	WCGH	Medium	0
12	Albow Gardens CDC	57.6%	59.4%	58.3%	Low	Metro	High	Anova/ KI	Combined	High	0
13	Dalvale Clinic	56.5%	60.3%	58.5%	High	Winelands	Medium	Anova	WCGH	Medium	1

14	Du Noon CHC	59.2%	58.7%	58.9%	Low	Metro	High	Anova/ KI	WCGH	High	0
15	Inzame Zabantu CDC	62.0%	60.2%	61.4%	High	Metro	High	KI	WCGH	High	0
16	Hout Bay Main Road Clinic	63.6%	61.3%	62.6%	High	Metro	High	KI	WCGH	High	0
17	Wellington CDC	62.0%	62.9%	63.2%	High	Winelands	Medium	Anova	WCGH	Medium	1
18	Heideveld CDC	65.3%	63.5%	64.7%	High	Metro	Medium	KI	WCGH	High	0
19	Sedgefield Clinic	69.9%	68.0%	69.1%	High	Eden	Low	that'sit	WCGH	Low	2
20	Prince Albert Clinic	74.3%	67.8%	75.9%	High	Central Karoo	Low	Right to Care	WCGH	Medium	0
Poor Sustainability											
21	Parkdene Clinic	50.6%	40.2%	43.0%	Low	Eden	Low	that'sit	WCGH	Low	0
22	Moorreesburg Clinic	49.3%	43.8%	45.9%	Low	West Coast	Low	Anova	WCGH	Medium	0
23	Pacaltsdorp Clinic	64.8%	46.1%	49.7%	Low	Eden	Low	that'sit	WCGH	Low	1
24	Blanco Clinic	62.5%	49.1%	52.1%	Low	Eden	Low	that'sit	WCGH	Low	0
25	Rosemoor Clinic	65.1%	44.9%	51.1%	Low	Eden	Low	that'sit	WCGH	Low	1
26	Delft CHC	55.9%	50.0%	53.1%	Low	Metro	High	Anova/ Kheth'i mpilo	WCGH	High	1
27	Worcester CDC	55.6%	47.7%	53.0%	Low	Winelands	High	Anova	WCGH	Medium	1
28	Kayamandi Clinic	58.8%	50.3%	54.6%	Low	Winelands	High	Anova	WCGH	Medium	2
29	Kraaifontein CHC	57.0%	51.9%	54.4%	Low	Metro	High	Anova	WCGH	Medium	0
30	Retreat CHC	59.3%	50.0%	55.9%	Low	Metro	High	Kheth'i mpilo	WCGH	High	0
31	Hornlee Clinic	64.1%	53.5%	56.8%	Low	Eden	Low	that'sit	WCGH	Low	0
32	Bergsig Clinic	60.5%	59.6%	57.5%	Low	Winelands	Low	Anova	WCGH	Medium	0

33	Gustrouw CDC	62.7%	54.4%	57.2%	Low	Metro	Medium	Kheth'i mpilo	WCGH	High	1
34	Nkqubela Clinic	61.3%	54.2%	58.0%	Low	Winelands	Medium	Anova	WCGH	Medium	0
35	Groendal Clinic	63.2%	52.9%	58.4%	Low	Winelands	Medium	Anova	WCGH	Medium	0
36	Mitchells Plain CHC	73.9%	37.3%	58.9%	Low	Metro	High	Anova	WCGH	Medium	0
37	Mfuleni CDC	62.4%	55.8%	59.3%	Low	Metro	High	Kheth'i mpilo	WCGH	High	0
38	Phola Park Clinic	64.4%	52.3%	59.4%	Low	Winelands	Medium	Anova	WCGH	Medium	1
39	Thembalethu CDC	63.9%	54.0%	59.8%	Low	Eden	High	that'sit	WCGH	Low	0
40	Kleinmond Clinic	65.1%	55.4%	59.8%	Low	Overberg	Low	Right to Care	WCGH	Medium	0
41	Crossroads CDC	65.1%	51.7%	60.2%	High	Metro	High	Anova	WCGH	Medium	0
42	TC Newman CDC	64.8%	49.4%	60.3%	High	Winelands	High	Anova	WCGH	Medium	0
43	Michael Mapongwana CDC	63.3%	56.6%	60.7%	High	Metro	High	Anova	WCGH	Medium	0
44	Mbekweni CDC	65.7%	56.4%	61.2%	High	Winelands	Medium	Anova	WCGH	Medium	1
45	Weltevreden Valley Clinic	70.3%	56.1%	61.9%	High	Metro	High	Kheth'i mpilo	CoCT	High	4
46	Nolungile CDC	65.6%	57.2%	61.9%	High	Metro	High	Anova	Combined	Medium	0
47	Khayelethu Clinic	72.1%	48.7%	62.0%	High	Eden	Medium	That'sit	WCGH	Low	0
48	Mzamomhle Clinic	64.9%	58.4%	62.2%	High	Metro	High	Kheth'i mpilo	CoCT	High	6
49	Kwanokuthula CDC	65.8%	58.3%	63.5%	High	Eden	Medium	that'sit	WCGH	Low	3

50	Wesbank Clinic	72.1%	59.7%	64.4%	High	Metro	Medium	Kheth'i mpilo	CoCT	High	4
51	Idas Valley Clinic	68.8%	48.4%	64.5%	High	Cape Winelands	Medium	Anova	WCGH	Medium	1
52	Ikhwezi CDC	70.6%	57.7%	64.5%	High	Metro	High	Anova/ Kheth'i mpilo	CoCT	HIgh	1
53	Delft South Clinic	67.9%	60.3%	64.5%	High	Metro	High	Anova/ Kheth'i mpilo	CoCT	High	1
54	Bloekombos Clinic	70.4%	62.5%	66.5%	High	Metro	High	Kheth'i mpilo	CoCT	High	3
55	Vuyani Clinic	75.3%	61.7%	66.5%	High	Metro	Medium	Kheth'i mpilo	CoCT	High	4
56	Nyanga CDC	69.0%	63.4%	66.6%	High	Metro	High	Anova	WCGH	Medium	0
57	Grabouw CDC	72.3%	61.0%	67.4%	High	Overberg	High	Right to Care	WCGH	Medium	2
58	Eerste River Clinic	97.3%	61.1%	67.4%	High	Metro	Low	Kheth'i mpilo	CoCT	High	1
59	Wallacedene Clinic	74.2%	59.1%	67.9%	High	Metro	High	Kheth'i mpilo	CoCT	High	5
60	Dr Ivan Toms CDC	75.9%	60.1%	68.2%	High	Metro	High	Anova	CoCT	Medium	1
61	Lawaaikamp Clinic	82.3%	51.1%	68.8%	High	Eden	Medium	that'sit	WCGH	Low	0

6a. Information Sheet For Health Facility Managers or Operational Managers
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INFORMATION SHEET
Project Title: Life after PEPFAR: Program Sustainability among South African HIV/AIDS Programs Formerly Funded by PEPFAR

What is this study about?

This is a research is being conducted by Ms. Jessica Chiliza, a doctoral student from Boston University in the United States working with colleagues at the University of the Western Cape, Cape Town, South Africa. I am investigating the programmatic and organization factors associated with sustained health outcomes among a set of health facilities that (*NGO name*) supported after the end of PEPFAR support for HIV treatment.

I would like to interview you because you were involved with the *(NGO name)* programme from 2007-2012. I would like to discuss with you, your experiences with the *(NGO name)* programme, understand the day-to day running of the programme and your opinion of its success and sustainability of health outcomes. The purpose of the study is to produce a checklist and set of sustainability indicators to assist organizations, donors, and government when planning for sustainability.

What will I be asked to do if I agree to participate?

If you agree to participate, the interview last approximately one hour. I (the researcher) will have a set of questions that I would ask you. The questions will explore a bit of your personal background, characteristics of this health facility and ask you program specific questions about partnerships, local ownership, leadership, health worker motivation and skills etc. I will take notes during our interview and with your permission, I will audio record the interview with a tape recorder.

Would my participation in this study be kept confidential?

Every measure to protect your identity and the nature of your contribution will be kept confidential. To ensure your anonymity, a code will be used and only the researcher will be aware of your true identity. In other words, the information you share with me, will not directly be associated with you. To ensure your confidentiality, only the researcher will have access to the collected data. Any

recordings, data and confidential documents collected will be stored in a locked drawer and the electronic files will be protected with a password-protected file only known by the researcher. When we write up our results and if a research article is published, identity will be protected through the use of a pseudonym that will ensure your anonymity.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimize such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you on a personal level, but the results may help the investigator explore how to sustain the outcomes of externally funded programmes. We hope that in the future, other people may benefit from this study through improved understanding of the requirements of implementing and sustaining programme outcomes within the public health system. This would expand the body of knowledge around programme sustainability.

Do I have to be in this research and may I stop participating at any time?

Your participation is completely voluntary and you have the option to stop the interview at any time without a reason. Please only answer questions you feel comfortable answering.

What if I have questions?

This research is being conducted by **Jessica Chiliza and School of Public Health at the University of the Western Cape**. If you have any questions about the research study itself, please contact Jessica Chiliza at: 071-207-8101 and jchiliza@bu.edu or Ms. Nikki Schaay at: 084-211-5544 or Schaay@mweb.co.za**.**

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Senior Researcher, School of Public Health, University of the Western Cape

Ms. Nikki Schaay, Schaay@mweb.co.za 084-211-5544

Professor, Department of Global Health, Boston University

Prof. Richard Laing at: richardl@bu.edu +1 617 414 1445

Head of Department, School of Public Health, University of the Western Cape:

Uta Lehmann, ulehmann@uwc.ac.za 021-959-2633

Dean of Community and Health Sciences, University of the Western Cape:

Anthea Rhoda, arhoda@uwc.ac.za 021-959-2150

Appendix 6B: Information Sheet for NGO Program Manager

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2809 Fax: 27 21-959 2872
E-mail: soph-comm@uwc.ac.za

INFORMATION SHEET

Project Title: Life after PEPFAR: Program Sustainability among South African HIV/AIDS Programs Formerly Funded by PEPFAR

What is this study about?

This is a research is being conducted by Ms. Jessica Chiliza, a doctoral student from Boston University in the United States working with colleagues at the University of the Western Cape, Cape Town, South Africa. I am investigating the programmatic and organization factors associated with sustained health outcomes among a set of health facilities that (*NGO name*) supported after the end of PEPFAR support for HIV treatment.

I would like to interview you because you were involved with the PEPFAR funded *(NGOs name)* programme in the Western Cape province from 2007-2012. I would like to discuss with you, your experiences with the health facilities (*NGO name*) supported, understand your role in the programme and your opinion of its success and sustainability of health outcomes. The purpose of the study is to produce a checklist and set of sustainability indicators to assist organizations, donors, and government when planning for sustainability.

What will I be asked to do if I agree to participate?

If you agree to participate, the interview last approximately one hour. I (the researcher) will have a set of questions that I would ask you. The questions will explore a bit of your personal background, characteristics of *(NGO name)* and ask you program specific questions about partnerships, local ownership, leadership, health worker motivation and skills etc. I will take notes during our interview and with your permission, I will audio record the interview with a tape recorder.

Would my participation in this study be kept confidential?

Every measure to protect your identity and the nature of your contribution will be kept confidential. To ensure your anonymity, a code will be used and only the researcher will be aware of your true identity. To ensure your confidentiality, only the researcher will have access to the collected data. Any recordings, data and

confidential documents collected will be stored in a locked drawer and the electronic files will be protected with a password-protected file only known by the researcher. When we write up our results and if a research article is published, identity will be protected through the use of a pseudonym that will ensure your anonymity.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimize such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you on a personal level, but the results may help the investigator explore how to sustain the outcomes of externally funded programmes. We hope that in the future, other people may benefit from this study through improved understanding of the requirements of implementing and sustaining programme outcomes within the public health system. This would expand the body of knowledge around programme sustainability.

Do I have to be in this research and may I stop participating at any time?

Your participation is completely voluntary and you have the option to stop the interview at any time without a reason. Please only answer questions you feel comfortable answering.

What if I have questions? This research is being conducted by **Jessica Chiliza and School of Public Health at the University of the Western Cape**. If you have any questions about the research study itself, please contact Jessica Chiliza at: 071-207-8101 and jchiliza@bu.edu or Ms. Nikki Schaay at: 084-211-5544 or schaay@mweb.co.za. .Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Senior Researcher, School of Public Health, University of the Western Cape

Ms. Nikki Schaay, Schaay@mweb.co.za 084-211-5544

Professor, Department of Global Health, Boston University

Prof. Richard Laing at: richardl@bu.edu +1 617 414 1445

Head of Department, School of Public Health, University of the Western Cape:

Uta Lehmann, ulehmann@uwc.ac.za 021-959-2633

Dean of Community and Health Sciences, University of the Western Cape:

Anthea Rhoda, arhoda@uwc.ac.za 021-959-2150

Appendix 6c: Information Sheet for Government Officials

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa
Tel: +27 21-959 2809 Fax: 27 21-959 2872
E-mail: soph-comm@uwc.ac.za

INFORMATION SHEET

Project Title: Life after PEPFAR: Program Sustainability among South African HIV/AIDS Programs Formerly Funded by PEPFAR

What is this study about?

This is a research is being conducted by Ms. Jessica Chiliza , a doctoral student from Boston University in the United States working with colleagues at the University of the Western Cape, Cape Town, South Africa. I am investigating the programmatic and organization factors associated with sustained health outcomes among a set of health facilities that (*NGO name*) supported after the end of PEPFAR support for HIV treatment.

I would like to interview you in your role as the HAST involved with the PEPFAR funded *(NGOs name)* programme in the Western Cape province from 2007-2012. I would like to discuss with you, your experiences with the health facilities (*NGO name*) supported, understand your role in the programme and your opinion of its success and sustainability of health outcomes. The purpose of the study is to produce a checklist and set of sustainability indicators to assist organizations, donors, and government when planning for sustainability.

What will I be asked to do if I agree to participate?

If you agree to participate, the interview last approximately one hour. I (the researcher) will have a set of questions that I would ask you. The questions will explore the HIV policies and priorities of the Western Cape province from 2007-2012, ask you about your experiences working with the PEPFAR programme and about the sustainability of PEPFAR's programme outcomes. I will take notes during our interview and with your permission, I will audio record the interview with a tape recorder.

Would my participation in this study be kept confidential?

Every measure to protect your identity and the nature of your contribution will be kept confidential. To ensure your anonymity, a code will be used and only the researcher will be aware of your true identity. To ensure your confidentiality, only

the researcher will have access to the collected data. Any recordings, data and confidential documents collected will be stored in a locked drawer and the electronic files will be protected with a password-protected file only known by the researcher. When we write up our results and if a research article is published, identity will be protected through the use of a pseudonym that will ensure your anonymity.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimize such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you on a personal level, but the results may help the investigator explore how to sustain the outcomes of externally funded programmes. We hope that in the future, other people may benefit from this study through improved understanding of the requirements of implementing and sustaining programme outcomes within the public health system. This would expand the body of knowledge around programme sustainability.

Do I have to be in this research and may I stop participating at any time?

Your participation is completely voluntary and you have the option to stop the interview at any time without a reason. Please only answer questions you feel comfortable answering.

What if I have questions?

This research is being conducted by **Jessica Chiliza and School of Public Health at the University of the Western Cape**. If you have any questions about the research study itself, please contact Jessica Chiliza at: 071-207-8101 and jchiliza@bu.edu or Ms. Nikki Schaay at: 084-211-5544 or Schaay@mweb.co.za.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Senior Researcher, School of Public Health, University of the Western Cape
Ms. Nikki Schaay, Schaay@mweb.co.za 084-211-5544

Professor, Department of Global Health, Boston University
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Head of Department, School of Public Health, University of the Western Cape:
Uta Lehmann, ulehmann@uwc.ac.za 021-959-2633

Dean of Community and Health Sciences, University of the Western Cape:
Anthea Rhoda, arhoda@uwc.ac.za 021-959-2150

Appendix 6D: Consent Form for All Interviews

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2809 Fax: 27 21-959 2872

E-mail: soph-comm@uwc.ac.za

CONSENT FORM

Title of Research Project: Life after PEPFAR: Program Sustainability among

South African HIV/AIDS Programs Formerly Funded by PEPFAR

The study has been described to me in language that I understand. My questions about the study have been answered. I understand what my participation will involve and I agree to participate of my own choice and free will. I understand that my identity will not be disclosed to anyone. I understand that I may withdraw from the study at any time without giving a reason and without fear of negative consequences or loss of benefits.

___   I agree to be audiotaped during my participation in this study.

___   I do not agree to be audiotaped during my participation in this study.

Participant's name………………………..
Participant's signature……………………………….
Date………………………

Appendix 6E: Health Facility Interview Guide
Health Facility Interview Guide

For Health Facility Manager/their representative

Personal Background

1. Please tell me a little bit about yourself.

    > PROMPT*: Education? How long have you worked here? Previous employment*

2. What drew you to this position?

    > *Analysis: Leadership (Experience)*

Health Facility Characteristics

3. Please tell me a bit about the health facility.

    > PROMPT*: Services offered, size, age of facility, type of facility*

4. From 2007-2012 what were there challenges with the *(name of health facility)* (infrastructure, supply chain, IT, etc.) that may have hindered your ability to provide quality health care services?

Western Cape *(NGO Name)* Program 2007-2012

Program Description

5. Please describe the *(NGO name)* program that was operational in your facility from 2007-2012?

6. How was the program introduced into the health facility?

    > *Prompt: Were you or your staff involved with the program design?*
    >
    > > *If yes, how were you involved?*
    > >
    > > *Was there input from district/local and health facility officials?*
    > > > *Who was involved in the program design and program plans?*
    > > > (e.g. program beneficiaries/local government/health facility staff)

    > *Analysis: Local ownership (Perceived value)*

7. What changes did you observe within the health facility after (*NGO name*) program started?

> *PROMPT: Health outcomes, staff motivation*

| Analysis: Health worker motivation |

8. Can you tell me a little about program communication?

> *PROMT: With NGO staff and other stakeholders*

9. Was the program aligned with health facility governance policies and structures?

> If yes, please give an example of how the program was aligned with local structures?

| Analysis: Local ownership (Integration) |

Training

10. Did the program offer your staff training/mentoring of any kind?

> If yes, what type of training/mentoring was offered?

11. Did you find the training enhanced the quality of care provided in your health facility?

| Analysis: Health worker skill set/capacity |

Staff

12. Did you observe a difference in your staff when the *(NGOs name)* was supporting your health facility?

> *PROMPT: Motivation*

13. Did the *(NGO name)* program increase human resources to your staff establishment?

> If yes, did you find the staff helped or hindered the quality of care provided by the health facility?

| Analysis: Health worker skill set/capacity |

14. Was there someone within the *(NGO name)* or health facilities who enthusiastically advocated for the program?

    If yes, can you tell me a little bit about them?

15. In your opinion how did this person improve the program or what value did they bring?

    Analysis: Leadership (Program champion)

    Successes/Challenges

16. What value did the program bring to (*health facility name)*?

    Analysis: Local ownership (Perceived value)

17. In your opinion, did your staff and/or the health facility benefit from the program?

    If yes, in what way did you benefit?

    Analysis: Program resources/activities

18. Was there anything about the (*NGO name)* program you would have changed or modified?

    PROMPT: Challenges

19. If there were challenges or concerns regarding the programme how did you address them?

    Analysis: Supportive environment

    Post *(NGO Name)* Program

20. What did you think would happen when the program ended?

21. Were there any unexpected outcomes which you observed after the program ended?

    Analysis: Health worker motivation

22. Is there anything (*health facility name)* does differently that is a result of the (*NGO name)* program?

> *Analysis: Program resources/activities*

Partnerships

23. Were you able to build partnerships or relationships with local government officials or other civil society organizations from this program that you continue to foster?

> *PROMPT: Government meetings you continue to attend*
>
> If yes, How do these partnerships/relationships enhance the health facility or quality of care now?

> *Analysis: Partnerships (Communication)*

Closing Questions

24. Do you know of other donor or government funded HIV programs or organizations who worked in *(name of health facility)* or this district?
25. Is there anything else you would like to add?
26. Would you be willing to speak with me if I have any follow up questions?

Thank you for your time!

Appendix 6F: NGO Interview Guide

<u>**NGO Interview Guide**</u>

FOR NGO Program Manager

<u>**Personal Background**</u>

1. Please tell me a little bit about yourself.
   PROMPT: Your education? How long have you worked for (NGO name)? .
2. What drew you to this position?

<u>**NGO Background**</u>

3. Can you tell me a bit about the (*NGO name*)?
   PROMPT: When was the organization started? Why was it started?

<u>**Western Cape** *(NGO Name)* **Program 2007-2012**</u>

Program Director Role

4. Please tell me about your role within the PEPFAR program.
5. Did you have other job responsibilities aside from the PEPFAR program?
   If yes, please explain.

   Analysis: Leadership (Experience)

Program Description

6. From what I understand about the program, it was doing X and X.
   Is this correct?
   PROMPT: Is there anything you want to add?

7. How was the program introduced into the health facility?
   PROMPT: Was there input from district/local and health facility officials?
   Who was involved in the program design and program plans?
   (e.g. program beneficiaries/local government/health facility staff)

   Analysis: Local ownership (Perceived value)

   Analysis: Leadership

8. What changes did you observe within the health facility after (*NGO name*) program started?

        PROMPT: Health outcomes, staff motivation

> *Analysis: Health worker motivation*

9. Can you tell me a little about program communication?

        PROMT: With NGO staff and other stakeholders

10. Was the program aligned with health facility governance policies and structures?

        If yes, please give an example of how the program was aligned with local structures?

> *Analysis: Local ownership (Integration)*

Training

11. Did you find a skills gap at a health facility level?

        If yes, how did you fill the gap?

    Prompt: What type of training/mentorship was provided?

12. Did you find the training enhanced the quality of care provided?

        If yes, please explain.

> *Analysis: Health worker skill set/capacity*

Staff

13. Was there someone within *(NGO name)* or health facilities who enthusiastically advocated for the program?

        If yes**,** can you tell me a little bit about them?

        *PROMPT***:** In your opinion how did this person improve the program or what value did they bring to the program?

> *Analysis: Leadership (Program champion)*

Successes/Challenges

14. In your opinion what were the successes of the program?
15. What value do you think the program brought to the (*health facility name)*?
    Prompt: How did it enhance the quality of care provided?

    Analysis: Local ownership (Perceived value)

16. In your opinion, was there sufficient time to reach the program goals?
17. Were there program failures or lessons learned from the program?
    PROMPT: Where there any unexpected program outcomes or changes in the community or health facility you observed?
18. Was there anything about the (*NGO name)* program you would have changed or modified?
    PROMPT: Challenges

Post (*NGO Name)* Program

19. Was there a plan on how to exit the health facility?
    If yes, can you please explain the plan.
20. What did you think would happen when the program ended?
21. Were there any unexpected outcomes which you observed after the program ended?

    Analysis: Health worker motivation

Sustainability

22. Was sustainability a priority for the program?
    If yes, please explain how sustainability was defined and implemented?

    Analysis: Local ownership (Integration)

23. In your opinion what was sustained from the program?
    PROMPT: Outcomes, resources, infrastructure,

Closing Questions

24. Do you know of other donor or government funded HIV programs or organizations who worked in *(name of health facility)* or districts?

25. Is there anything else you would like to add?

26. Would you be willing to speak with me if I have any follow up questions?

Thank you for your time!

Appendix 6G: Government Interview Guide

Government Interview Guide

Personal Background

1. Please tell me a little bit about yourself.
   PROMPT: Your education? How long have you worked for local government.
2. What drew you to this position?

PEPFAR in the Western Cape

3. Please tell me about how you were involved with the PEFPAR program in the Western Cape?
4. What was the PEPFAR program good at in the Western Cape?
   PROMPT: Successes
5. What changes did you observe in the province after large PEPFAR investments were introduced?
6. Was there anything about the PEPFAR program you would have changed or modified?
   PROMPT: Challenges

7. How did the PEPFAR and PEFPAR partners work or interact with you in your role as the HAST director?

   Analysis: Local ownership (Perceived value)

8. Would you have changed anything with regard to their interactions with you or your unit?

   Analysis: Partnerships (Communication)

9. In your opinion did PEFPAR leave a gap in the health system when, HIV treatment funds diminished?
10. How did the PEFPAR program enhance the Western Cape HIV program?

Enabling Environment

11. Can you tell me about how the Western Cape HIV policies have changed between 2007-2017?

12. What do you believe were the main challenges with regard to HIV between 2007-2012 in the Western Cape?

> *Analysis: Supportive Environment*

Closing Questions

1. Is there anything else you would like to add?
2. Would you be willing to speak with me if I have any follow up questions?

Thank you for your time

Appendix 7: Codebook

PEPFAR Sustainability Codebook

Name	Description
Characteristics of Bad Clinic	All topics about the clinic (such as activities, structures, people, etc.) that were explicitly stated to have had, implied to have had, or can be reasonably assumed to have had a negative impact on health outcomes
Operational Characteristics	Characteristics of clinic operations, including infrastructure, service delivery, etc., that the interviewee perceived to have had, implied to have had, or can be reasonably assumed to have had a negative impact on health outcomes
Staff Characteristics	Characteristics of clinic staff and human resources that interviewee perceived to have had, implied to have had, or can be reasonably assumed to have had a negative impact on health outcomes
Characteristics of Good Clinic or Health System	All topics about the clinic (such as activities, structures, people, etc.) that were explicitly stated to have had, implied to have had, or can be reasonably assumed to have had a positive health impact
Operational Characteristics	Characteristics of clinic operations, including infrastructure, service delivery, etc., that the interviewee perceived to have had, implied to have had, or can be reasonably assumed to have had a positive impact on health outcomes
Staff Characteristics	Characteristics of clinic staff and human resources that interviewee perceived to have had, implied to have had, or can be reasonably assumed to have had a positive impact on health outcomes
Communication	Description of communication between PEPFAR NGO's (i.e., KI, Right to Care, Anova and That's It) and government staff (i.e., the interviewee) at a facility/district or provincial level.
Current Healthcare Challenges	Text which references challenges within the healthcare system that are current problems and in the interviewees current role

Name	Description
During PEPFAR Healthcare Challenges	Text which references challenges within the healthcare system that happened between 2007-2012 when PEPFAR was funding direct service activities.
Immediately Post PEPFAR Healthcare Challenges	Text which references gaps or challenges within the healthcare system that happened immediately after PEPFAR moved to health systems strengthening activities,(i.e. from 2013 onwards).
Leadership	description of how health leaders (interviewee) showed leadership (can be positive or negative leadership); i.e., the action of leading a group of people of an organization
Client Oriented Service	Discussions of efforts to deliberately put the needs of clients first
Data	how the health facility manager used data to manage the health facility
Leader understands health facility better due to better understanding of data	how understanding health data lead to health leaders' (interviewees) ability to motivate for needed resources
Donor Coordination	Description of how local government at a facility/district/provincial level managed PEPFAR supported resources, including discussions, meetings and coordination efforts.
Communication with PEPFAR at National Level	discussion of how provincial government communicated with PEPFAR officials at national level
Coordination Meetings	any gathering between workers within a facility administering care related to PEPFAR and funding organizations.
Government Systems Evolved-Government Accountability	description of how local government systems evolved to coordinate PEPFAR funds at a provincial level post PEPFAR
Management of Staff	the way study participants managed government and/or PEPFAR funded staff, including communication, support, motivation, team work, etc.
Feel supported by managers	reference to healthcare workers feeling supported by their bosses or superiors

Name	Description
Leaders motivated or taught or incentivized staff	Examples of health leaders motivating and/or teaching or flexible with staff to improve the way they do their job and build a positive work environment including team building efforts.
PEPFAR Staff	description of how leader treated PEPFAR staff differently from government staff
Team work	discussions of inter-professional team building and/or cooperation to work towards a common end goal.
Understands the bigger picture	description of how leaders motivated staff to understand why their job was important and part of a larger picture to ensure the community is healthy
Plans for the Future	Examples of how health leaders shifted and prepared for after PEPFAR funding, included how health leader budgets finances, rotates staff to ensure they can fill in for missing staff and plans for the losing PEPFAR staff to ensure the high quality of healthcare services.
Roles of staff in health facilities	description of how leaders understood all staff (gov and PEPFAR) members roles in the clinic
PEPFAR Dislikes	what interviewee did not like regarding PEPFAR support
No direct oversight of PEPFAR staff	Reference to lack of direct management of PEPFAR staff by PEPFAR NGOs at a health facility level
PEPFAR Likes	What interviewees liked regarding PEPFAR support, including operations, infrastructure, technology/data, HR support
Data analysis	References to health facilities liking the data analysis skills they learned from PEPFAR NGOs
Infrastructure	Reference to infrastructure that PEPFAR funded and interviewee liked
PEPFAR Staff	Any description of what interviewee liked about PEPFAR funded staff
Pharmacy Support	Reference to PEPFAR support in the pharmacy that interviewee liked
Training	Reference to interviewee liking the training support they received from PEPFAR NGOs
Workload relief	Reference to health facilities receiving more human resources from PEPFAR to help carry out work at a health facility level

Name	Description
Questions	Any text which you think is important but don't know which code to use
Sustainability	Description of resources/ activities /continuation of services that were PEPFAR funded and now taken over by local government including mention of local ownership.
Transition	Refers to the specific time when PEPFAR decided to move from direct service to health systems strengthening and how local government made decisions about what and how to sustain PEPFAR resources (including human resources).

Appendix 8a: Document Review

Document Source	Document
Government/PEPFAR	- HealthCare 2010, WCGH - Healthcare 2030, WCGH - Development of the health system in the Western Cape: experiences since 1994 - PEPFAR Country Operational Plan (various years)
NGO: Kheth'Impilo	- Discussion Of The Management Arrangement of PEPFAR Funded Human Resources (Feb. 2012) - DOH and City of Cape Town Absorption of Clinical and Administrative PEPFAR Posts 2012/2013 - Kheth'impilo Master Workplan
NGO: that'sit	- Annual Progress Report 2013-2014 - that'sit Close Out Report August 2006-July 2013
NGO: Right to Care	- Right to Care Close Out Report - Annual Strategic Planning Meeting 2012 (Presentation) - Site Budget COP 2012 - RFA Budget
NGO: Anova	- Anova Draft Plan 2010-2012 (Cape Winelands and West Coast)

Appendix 8b: Policy Analysis

Western Cape Policy Analysis										
Policy	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
PEPFAR provides direct service	x	x	x	x	x	x				
Strategy changes to health systems strengthening							x	x	x	x
Everyone with CD4 count <= 200 cells/mm3				x						
ARV Guidelines Change: Everyone with CD4 count **<= 350 cells/mm3**					x	x	x	x		
ART Guidelines Change: All co-infected patients (TB/HIV)							x	x	x	x
Fixed dose combination was introduced to take the place of 3 drugs used for first line regime to improve adherence and RIC							x	x	x	x
ART Guidelines Change: ART for **all pregnant/breast feeding women**							x	x	x	x
ART Guidelines Change: ART eligibility increased to CD4 < 500									x	
WCGH and CoCT start appointment system										
HIV Clubs enacted by WCGH and CoCT					x	x	x	x	x	x
Move to electronic data system		x	x	x						
National HIV Testing Campaign				x	x					

Appendix 9: Overall RIC Trends of Study Sample by NGO
RIC by NGO

9a. Right to Care: Study Sample
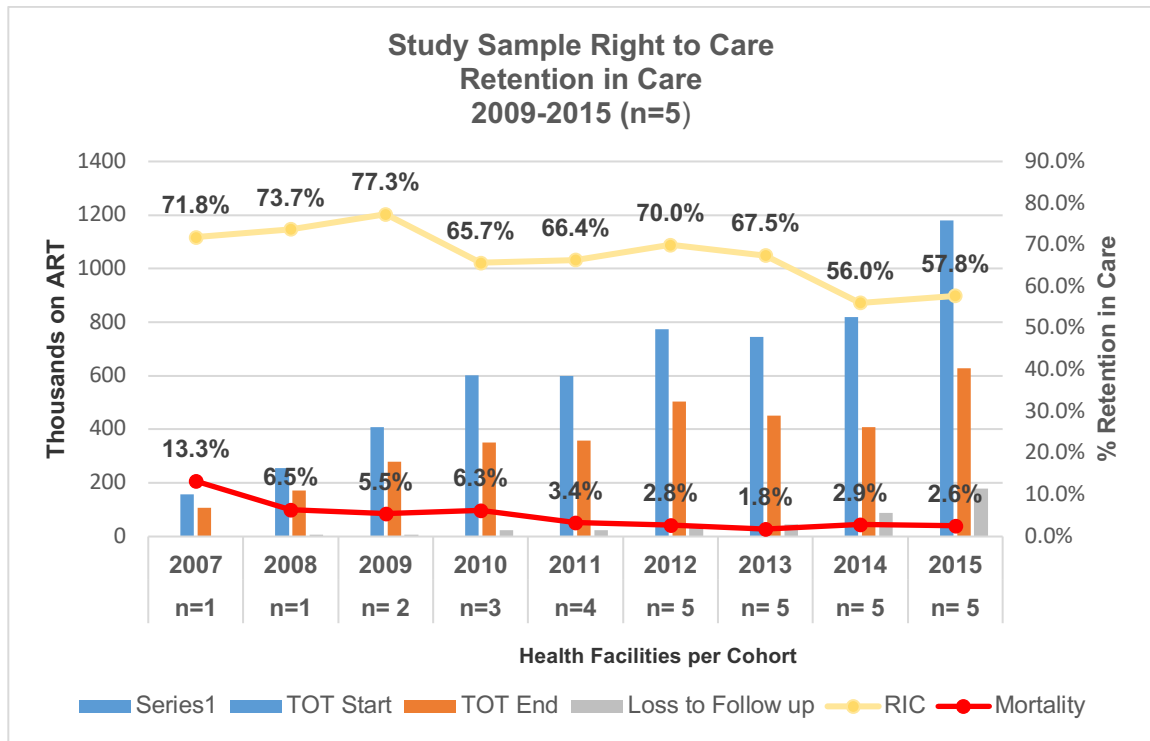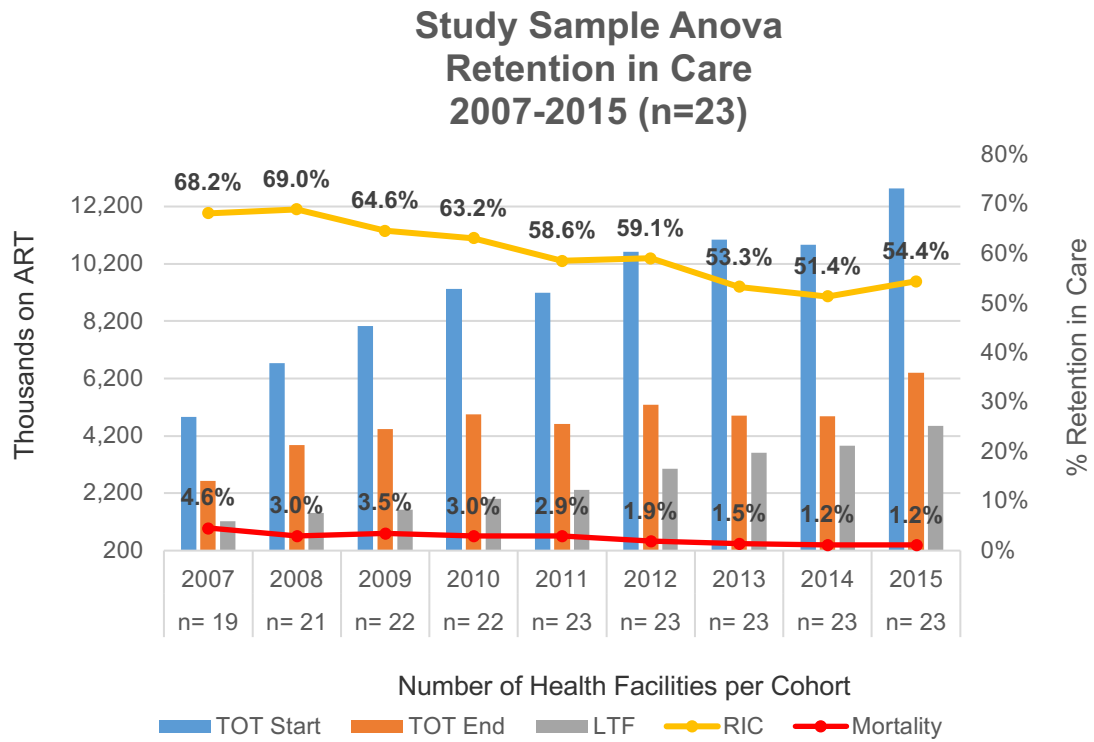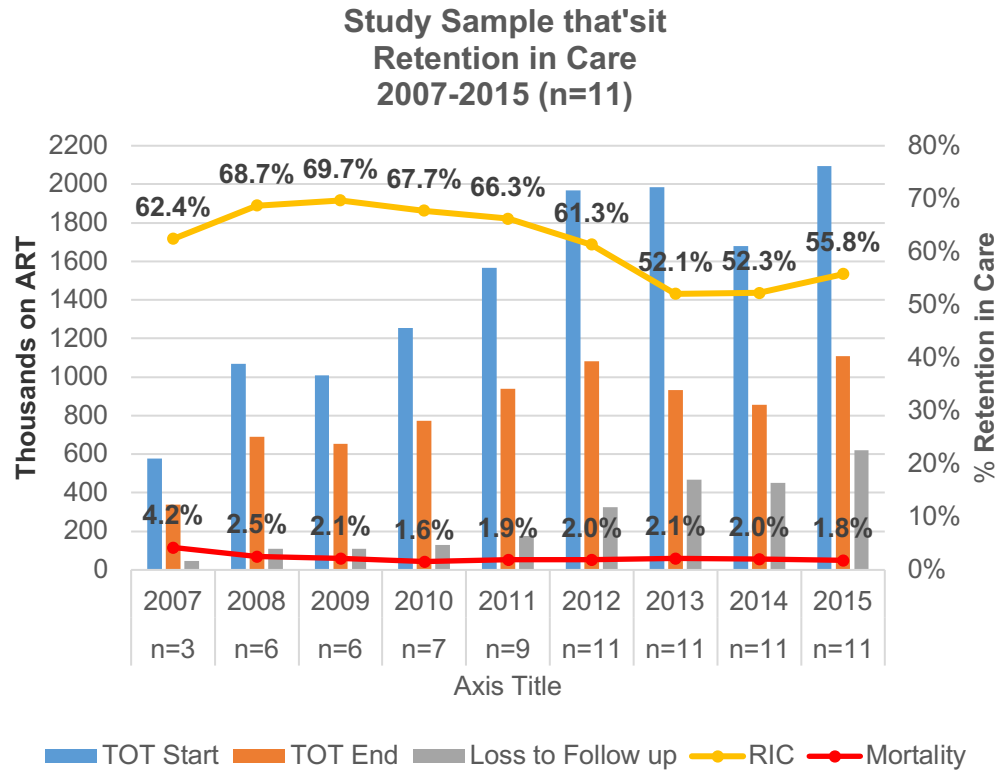
Study Sample Right to Care
Retention in Care
2009-2015 (n=5)

9b. Anova: Study Sample

Study Sample Anova
Retention in Care
2007-2015 (n=23)

9c. that'sit: Study Sample

Study Sample that'sit
Retention in Care
2007-2015 (n=11)

Legend: TOT Start, TOT End, Loss to Follow up, RIC, Mortality

9d. Kheth'impilo: Study Sample

Study Sample Kheth'impilo
Retention in Care
2007-2015 (n=15)

9e. Anova/Kheth'impilo Study Sample

Study Sample Anova/Kheth'impilo
Retention in Care
2007-2015 (n=7)

| 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| n=6 | n=6 | n=6 | n=6 | n=7 | n=7 | n=7 | n=7 | n=7 |

RIC: 70.0%, 66.5%, 67.1%, 62.8%, 54.7%, 52.3%, 53.2%, 54.9%, 58.4%

Mortality: 0.7%, 2.3%, 1.9%, 2.0%, 1.7%, 1.4%, 1.0%, 0.7%, 0.7%

Number of Health Facilities per Cohort

Legend: TOT Start | TOT End | LTF | RIC | Mortality
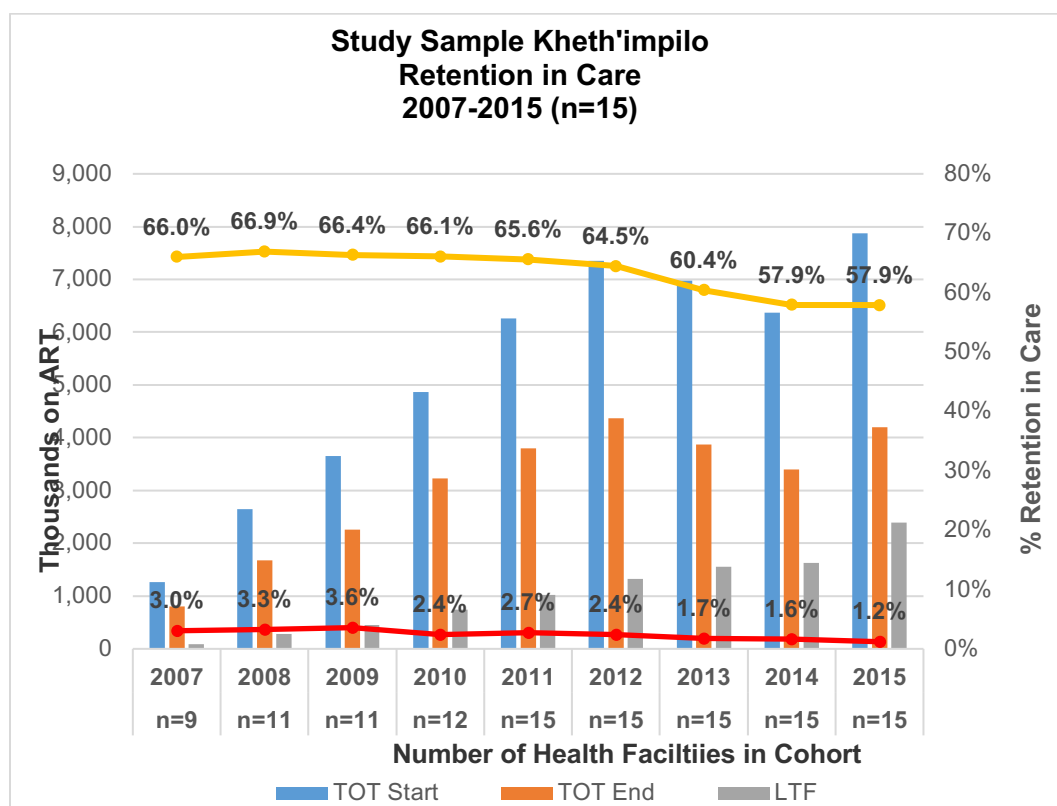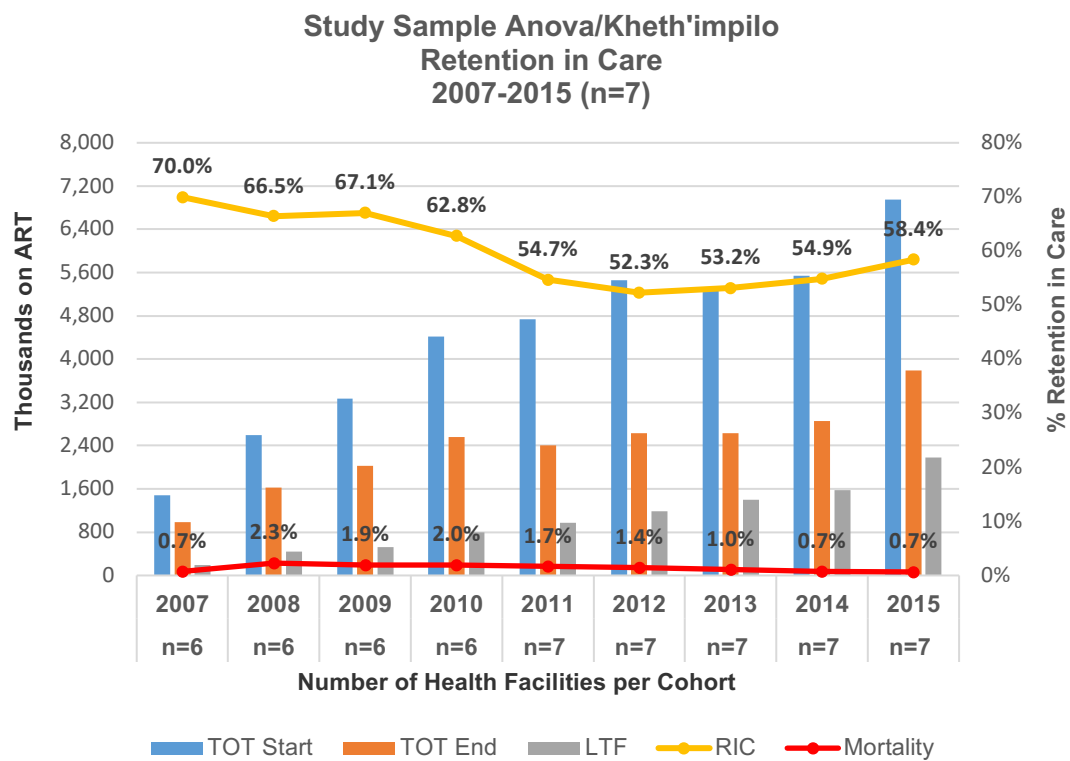
S1: RIC of Study Sub-Set by Health Facility

1. Masiphumelele Clinic
District: Metro
PEPFAR Partner: Anova
NGO Finance: Medium
Ownership: WCGH
Volume: Medium
Average RIC: Low (38.7%)
Sustainability: Improved (6.4%)
Average Transferred Out (24 months): 2.6%
Total Mortality (24 months): 2.5%
Leadership: Career Progression
Motivation: High
HR Transition: 1
Notes from Qualitative Data: 2012 PEPFAR NGO who was doing the reporting for the clinic moved out of clinic
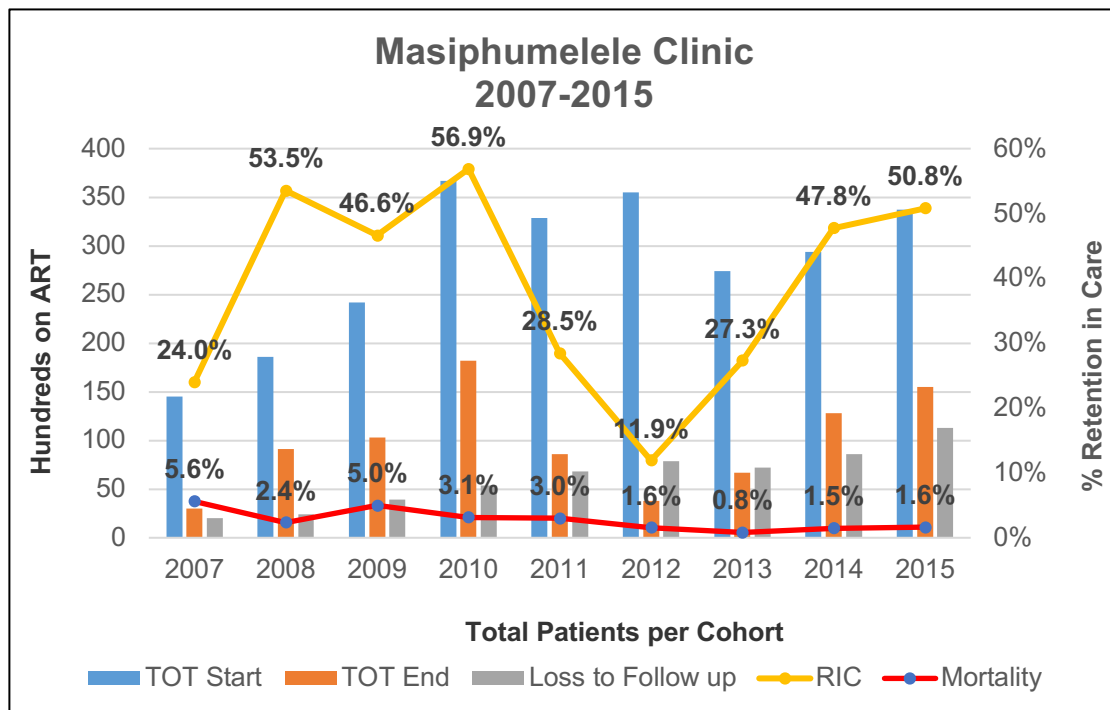
2. Wellington Clinic
District: Cape Winelands
PEPFAR Partner: Anova
NGO Finance: Medium
Ownership: WCGH
Volume: Medium
Average RIC: High (63.2%)
Sustainability: Sustained (2.8%)
Average Transferred Out (24 months): 9%
Total Mortality (24 months): 4.6%
Leadership: Career Progression
Motivation: Low
HR Transition: 1
Notes from Qualitative Data: Had a relief nurse and more training opportunities in 2012
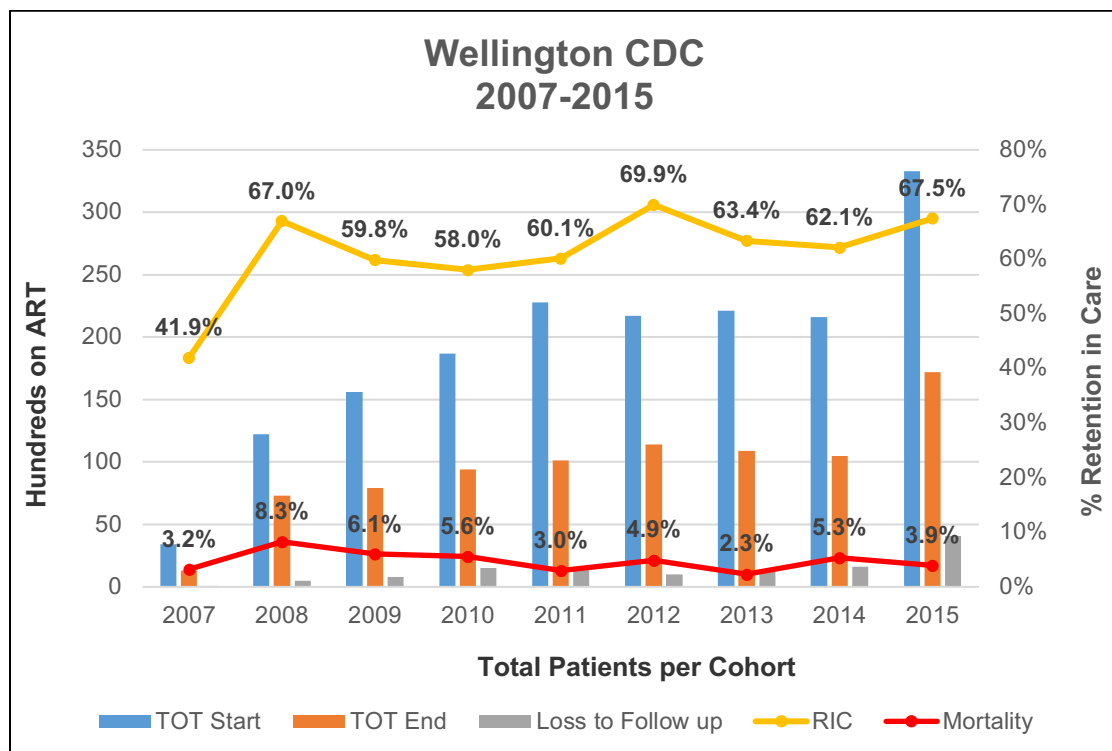
3. De Doorns Clinic
District: Cape Winelands
PEPFAR Partner: Anova
NGO Finance: Medium
Ownership: WCGH
Volume: Medium
Average RIC: Low (43.3%)
Sustainability: Sustained (3.5%)
Average Transferred Out (24 months): 3.2%
Total Mortality (24 months): 0.8%
Leadership: Career Progression
Motivation: Low
HR Transition: 1
Notes from Qualitative Data: Patients decanted to primary health care facilities in 2010

De Doorns Clinic
2007-2015
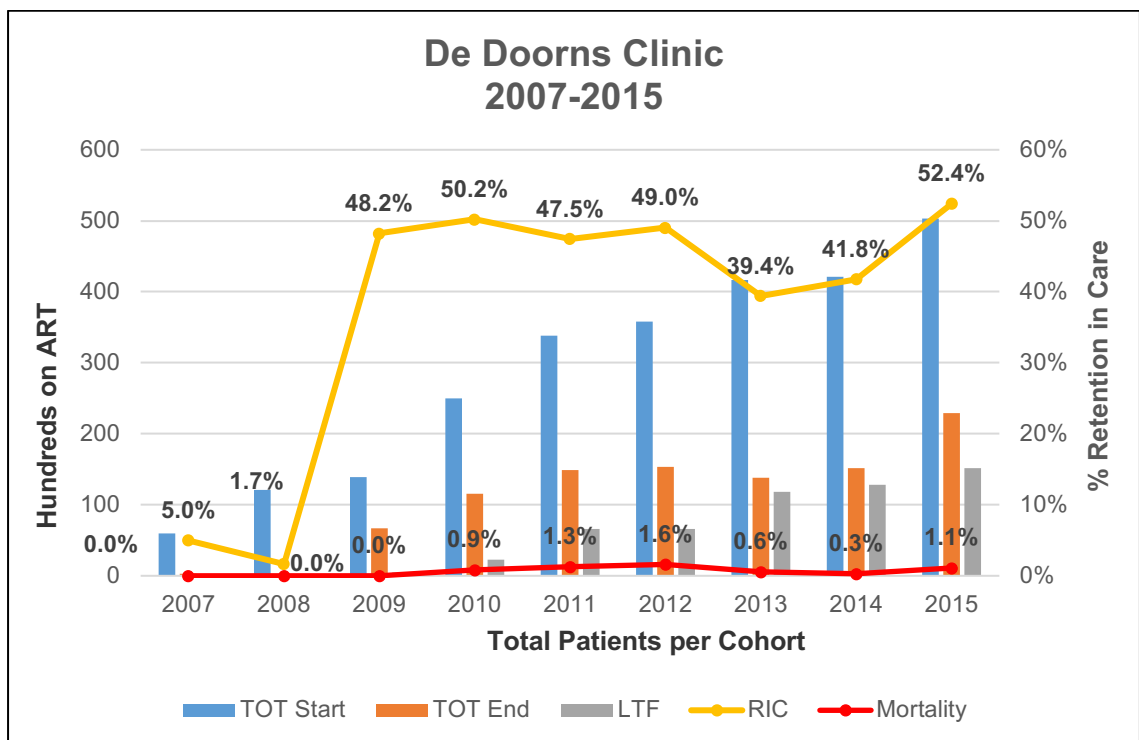
4. Hornlee Clinic
District: Eden
PEPFAR Partner: That'sit
NGO Finance: Low
Ownership: WCGH
Volume: Low
Average RIC: High (56.8%)
Sustainability: Poor (-10.6%)
Average Transferred Out (24 months): 1.2%
Total Mortality (24 months): 3.2%
Leadership: Veteran
Motivation: High
HR Transition: 0
Notes from Qualitative Data:
- 2010 ART patients moved out of Hermanus hospital to clinics
- 2015-2018 Former doctor from Right to Care contracted by WCGH to assist with NIMART mentoring in Eden
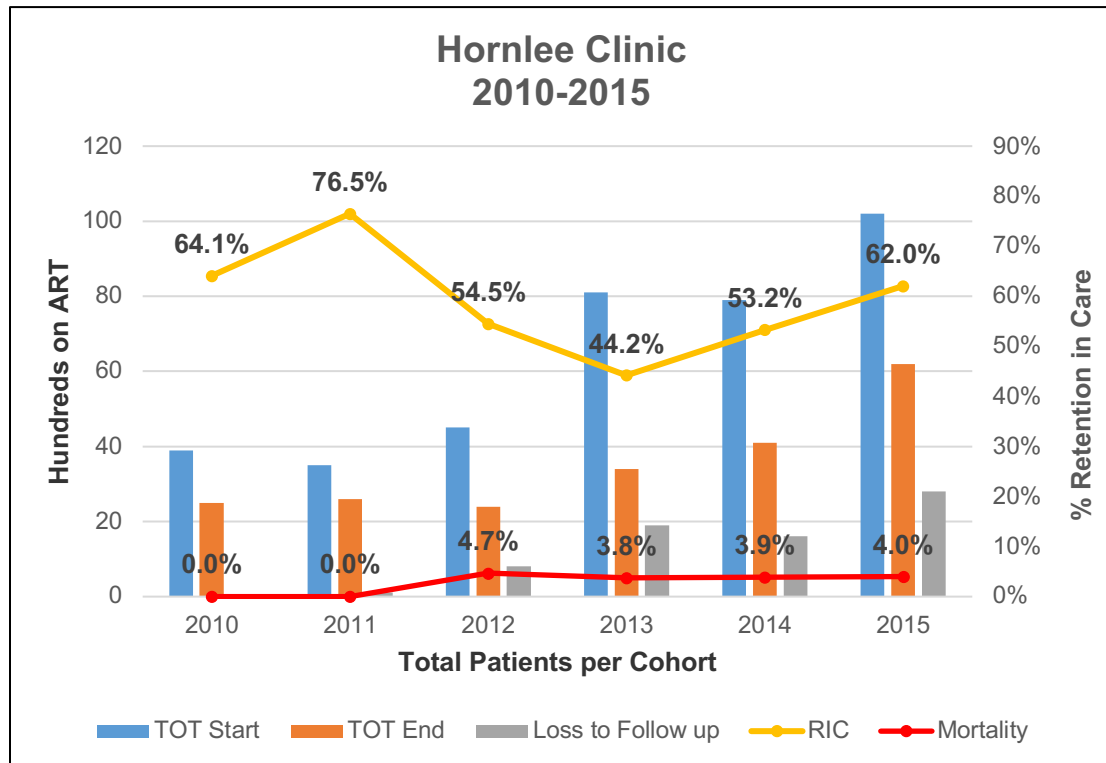
5. <u>**Sedgefield Clinic**</u>

District: Eden

PEPFAR Partner: That'sit

NGO Finance: Low

Ownership: WCGH

Volume: Low

Average RIC: High (69.1%)

Sustainability: Sustained (-1.9%)

Average Transferred Out (24 months): 4.0%

Total Mortality (24 months): 2.1%

Leadership: Veteran

Motivation: High

HR Transition: 2

Notes from Qualitative Data:

- 2010 ART patients moved out of Hermanus hospital to clinics
- 2015-2018 Former doctor from Right to Care contracted by WCGH to assist with NIMART mentoring in Eden
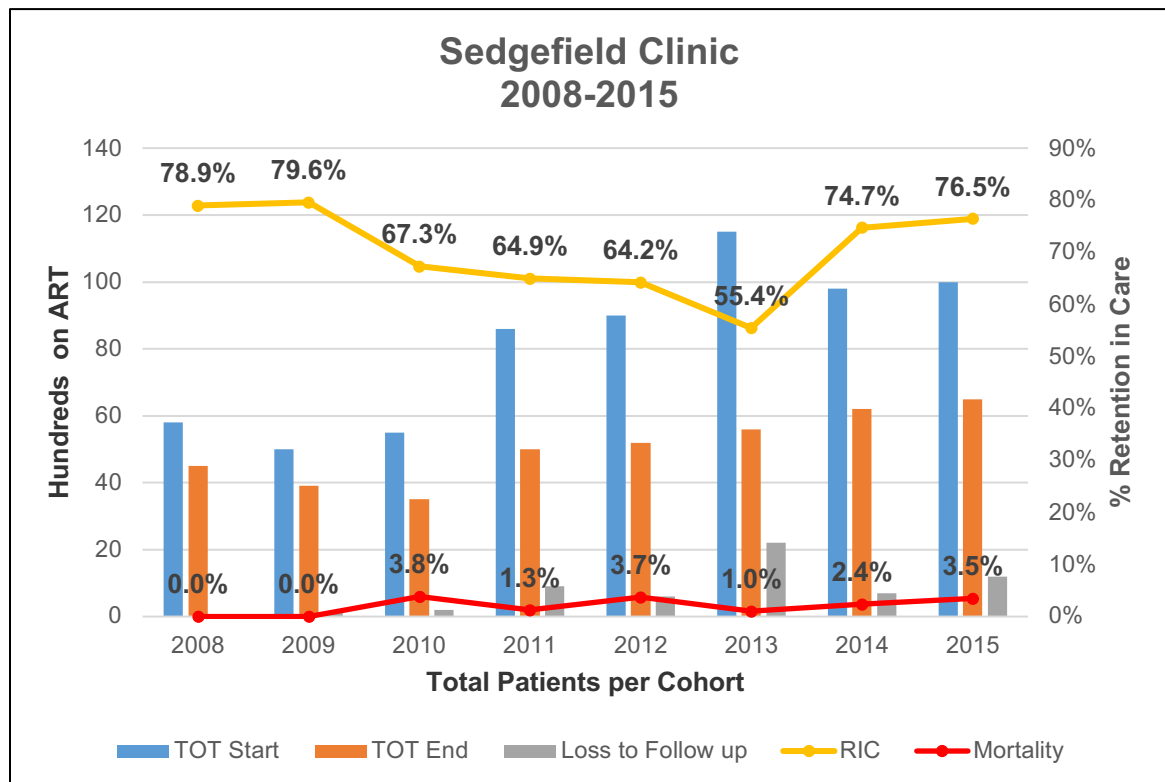
6. Kwanokuthula CDC

District: Eden
PEPFAR Partner: That'sit
NGO Finance: Low
Ownership: WCGH
Volume: Medium
Average RIC: High (63.5%)
Sustainability: Poor (-7.5%)
Average Transferred Out (24 months): 5.9 %
Total Mortality (24 months): 2.8%
Leadership: Veteran
Motivation: High
HR Transition: 3
Notes from Qualitative Data:
- 2010 ART patients moved out of Hermanus hospital to clinics
- 2015-2018 Former doctor from Right to Care contracted by WCGH to assist with NIMART mentoring in Eden
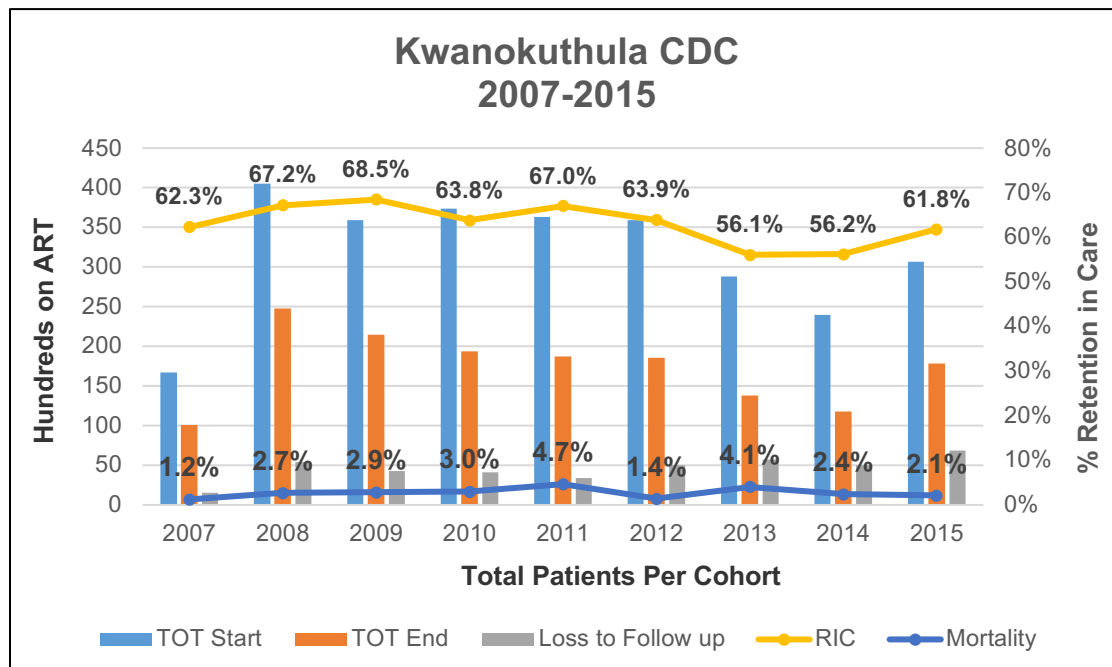
7. Rosemoor Clinic
District: Eden
PEPFAR Partner: That'sit
NGO Finance: Low
Ownership: WCGH
Volume: Low
Average RIC: Low (51.1%)
Sustainability: Poor (-20.2%)
Average Transferred Out (24 months): 2.9 %
Total Mortality (24 months): 4.5%
Leadership: Veteran
Motivation: Low
HR Transition: 1
Notes from Qualitative Data:
- 2010 ART patients moved out of Hermanus hospital to clinics
- 2015-2018 Right to Care doctor contracted by WCGH to assist with NIMART mentoring in Eden
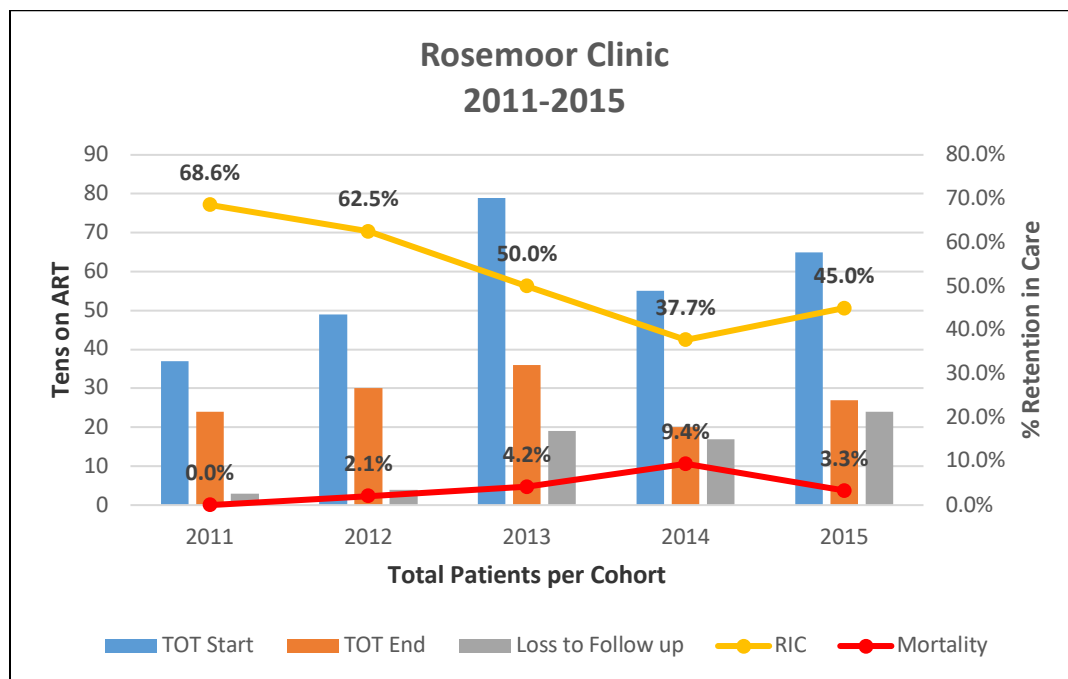
8. Albow Gardens CDC
District: Metro
PEPFAR Partner: Anova/KI
NGO Finance: High
Ownership: Combined
Volume: High
Average RIC: Low (58.3%)
Sustainability: Sustained (1.7%)
Average Transferred Out (24 months): 1.6%
Total Mortality (24 months): 1.0%
Leadership: Retiring
Motivation: Low
HR Transition: 0
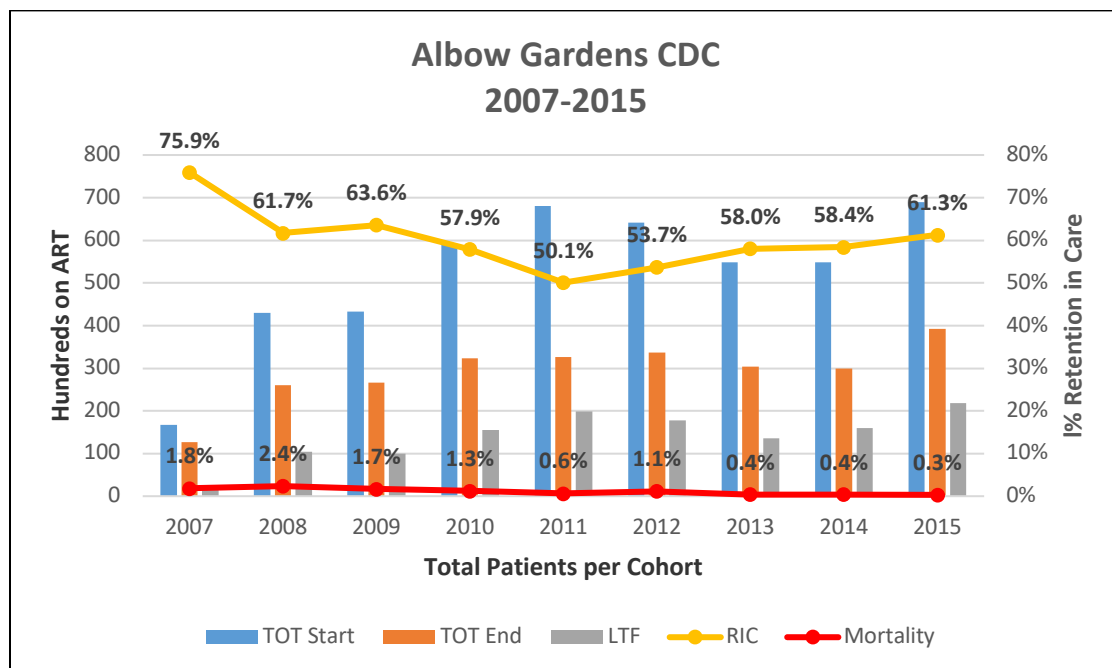
9. Ikhwezi CDC
District: Metro
PEPFAR Partner: Anova/KI
NGO Finance: High
Ownership: CoCT
Volume: High
Average RIC: High (64.5%)
Sustainability: Poor (-12.9%)
Average Transferred Out (24 months): 2.9%
Total Mortality (24 months): 1.1%
Leadership: Novice
Motivation: Low
HR Transition: 1
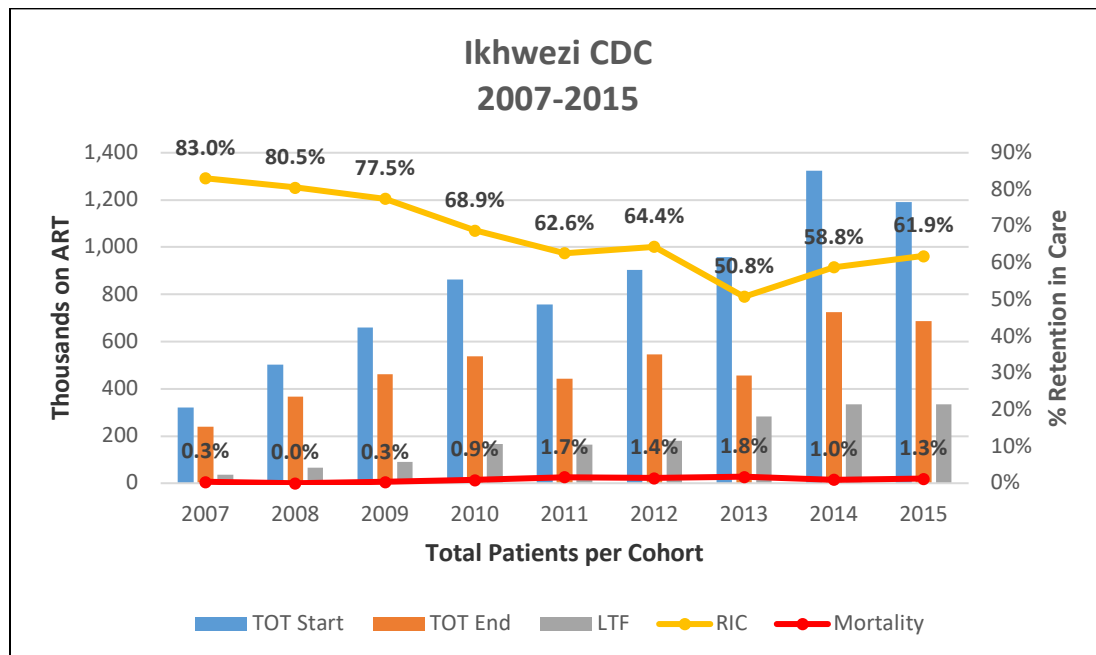
10. Mfuleni CDC

District: Metro
PEPFAR Partner: Kheth'impilo
NGO Finance: High
Ownership: WCGH
Volume: High
Average RIC: High (59.3%)
Sustainability: Poor (-6.6%)
Average Transferred Out (24 months): 2.3%
Total Mortality (24 months): 1.5%
Leadership: Career Progression
Motivation: High
HR Transition: 3
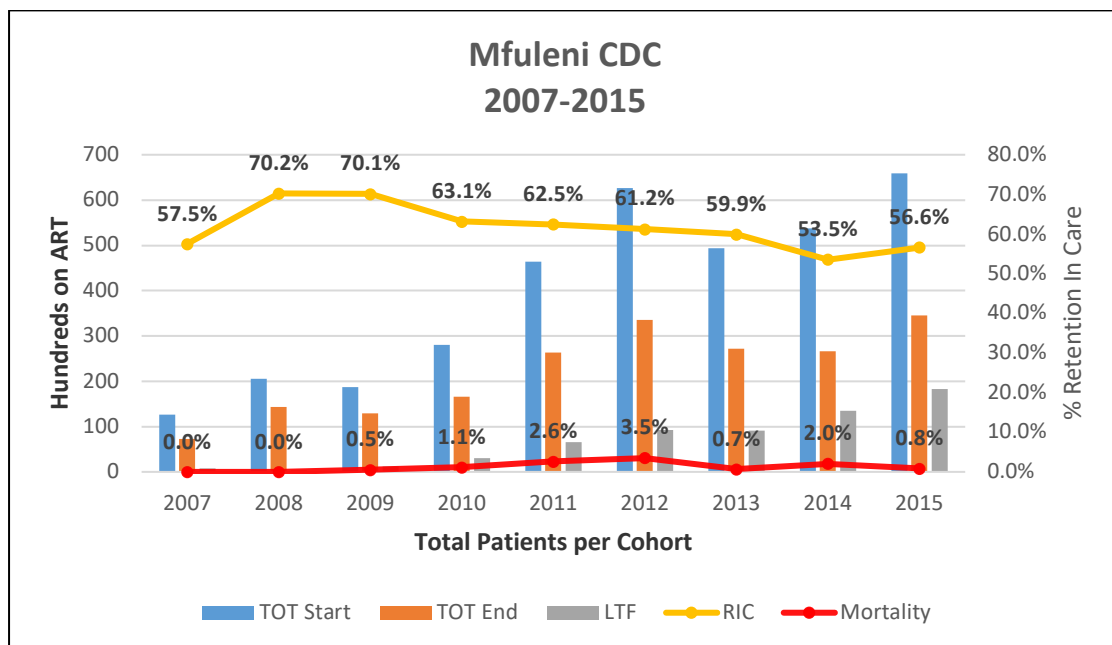
11. Wallacedene Clinic

District: Metro
PEPFAR Partner: Kheth'impilo
NGO Finance: High
Ownership: CoCT
Volume: High
Average RIC: High (67.9%)
Sustainability: Poor (-15%)
Average Transferred Out (24 months): 3%
Average Mortality (24 months): 3.1%
Leadership: Retiring
Motivation: Low
HR Transition: 5

Wallacedence Clinic 2007-2015
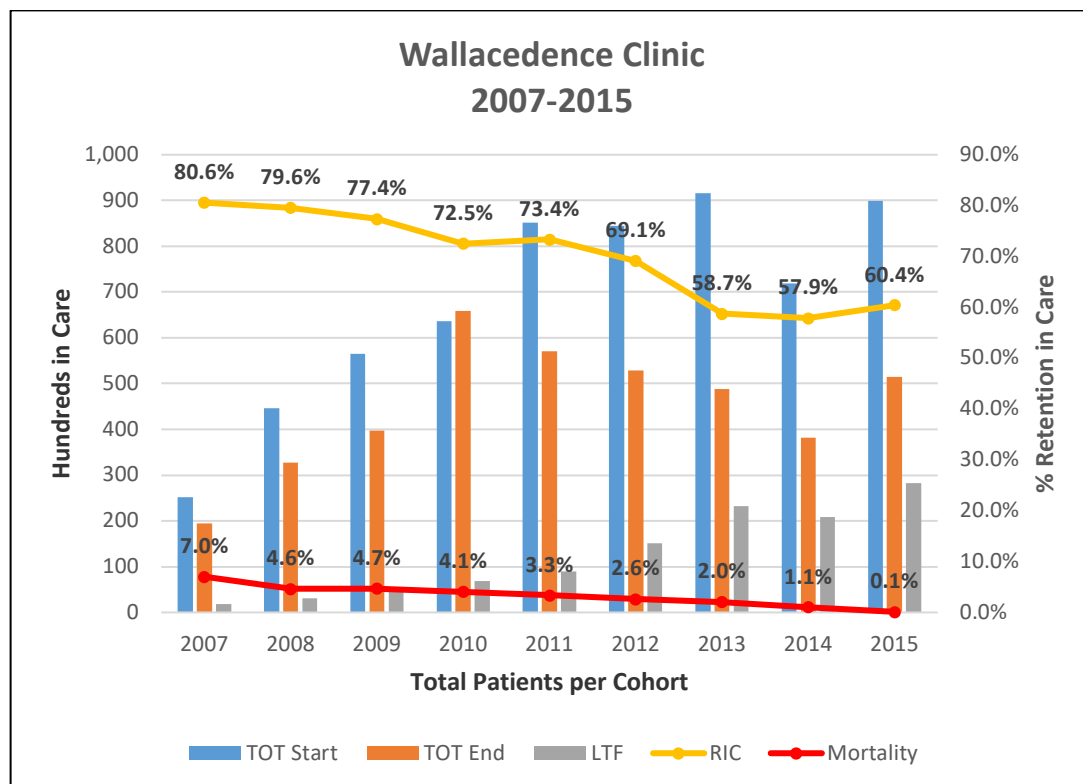
12. Gansbaai Clinic

District: Overberg
PEPFAR Partner: Right to Care
NGO Finance: Medium
Ownership: WCGH
Volume: Medium
Average RIC: High (53.8%)
Sustainability: Sustained (-1.3%)
Average Transferred Out (24 months): 5.3%
Total Mortality (24 months): 2.6%
Leadership: Veteran
Motivation: Low
HR Transition: 2
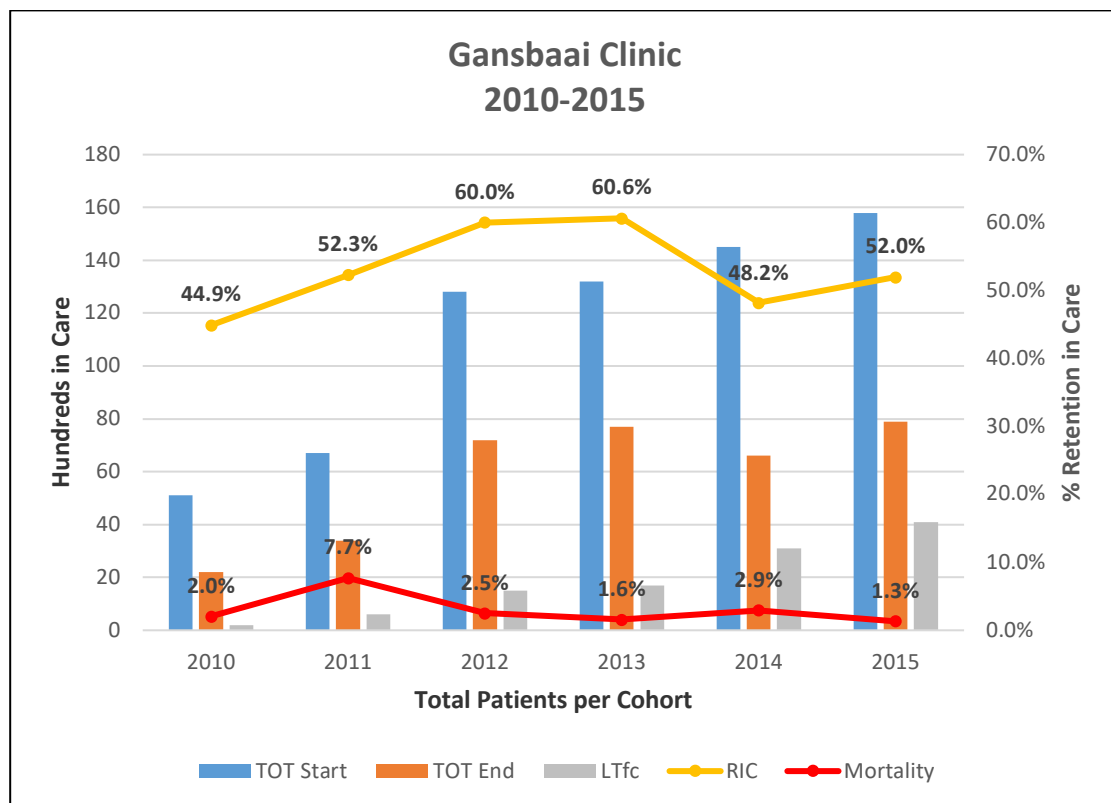
13. Stanford Clinic
District: Overberg
PEPFAR Partner: Right to Care
NGO Finance: Medium
Ownership: WCGH
Volume: Low
Average RIC: Low (57.1%)
Sustainability: Sustained (3.5%)
Average Transferred Out (24 months): 4.3%
Total Mortality (24 months): 3.9%
Leadership: Novice
Motivation: Low
HR Transition: 0
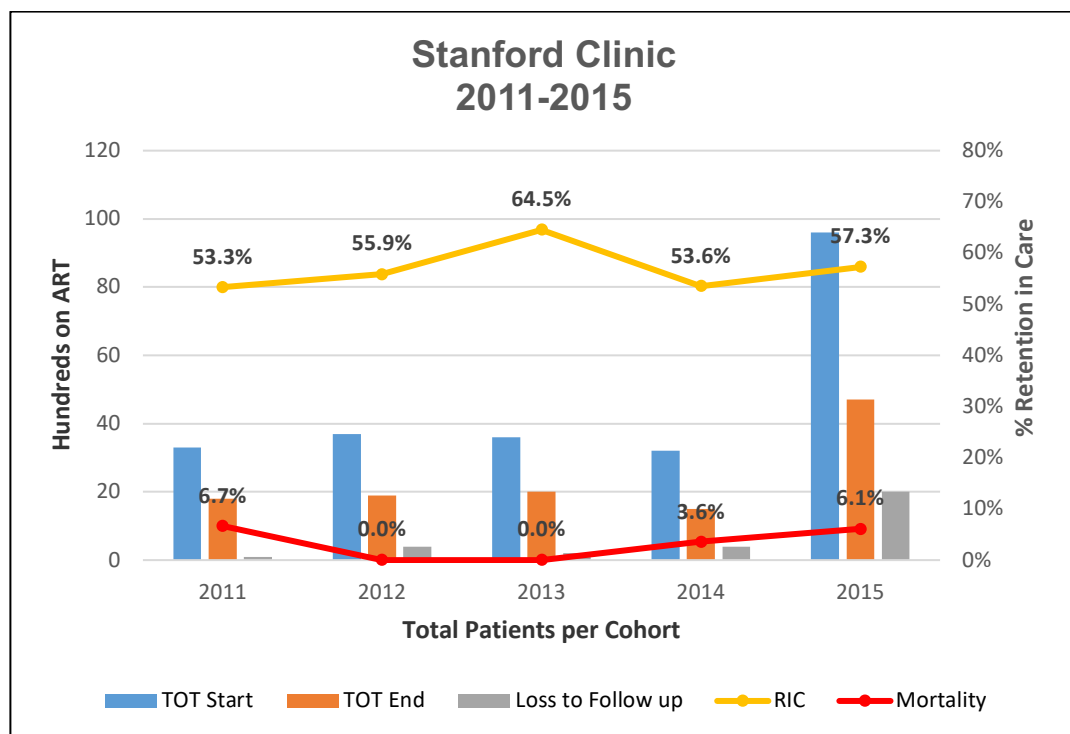
14. Mbekweni CDC
District: Cape Winelands
PEPFAR Partner: Anova
NGO Finance: Medium
Ownership: WCGH
Volume: Medium
Average RIC: High (61.2%)
Sustainability: Poor (-9.4%)
Average Transferred Out (24 months): 3.3%
Total Mortality (24 months): 2.7%
Leadership: Veteran
Motivation: Low
HR Transition: 1
Notes from Qualitative Data:
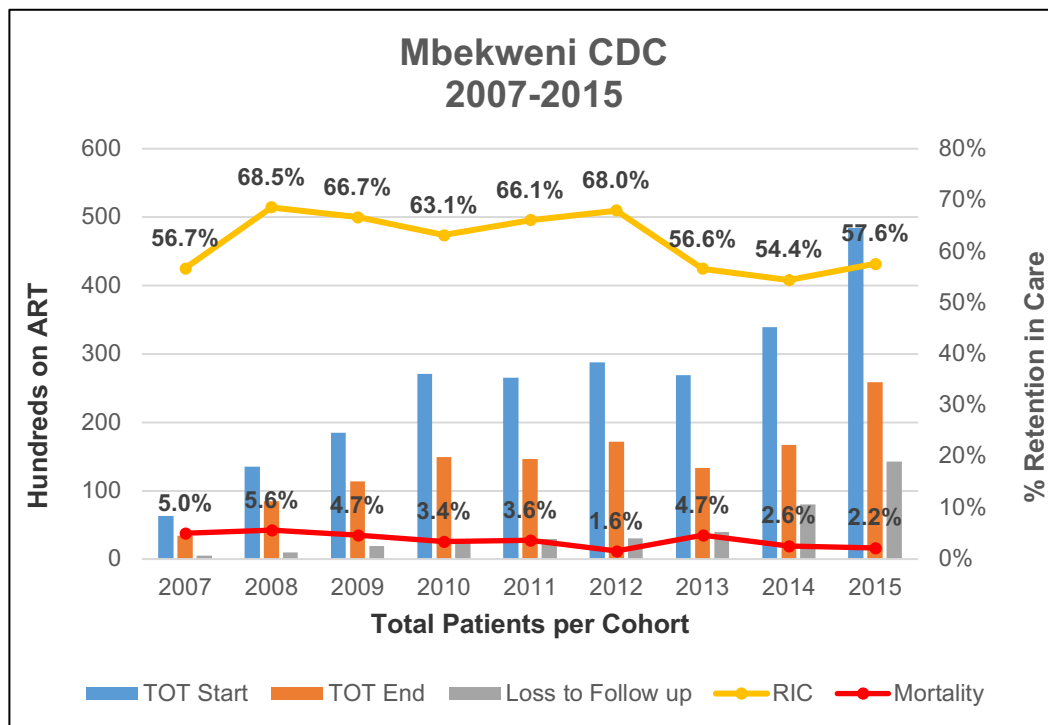
15. Nkqubela Clinic
District: Cape Winelands
PEPFAR Partner: Anova
NGO Finance: Medium
Ownership: WCGH
Volume: Medium
Average RIC: 58%
Sustainability: Poor (-7.2%)
Average Transferred Out (24 months): 3.8%
Average Mortality (24 months): 2.5%
Leadership: Veteran
Motivation: Low
HR Transition: 1
Notes from Qualitative Data: Decanted HIV patients to primary health care
facilities 2009
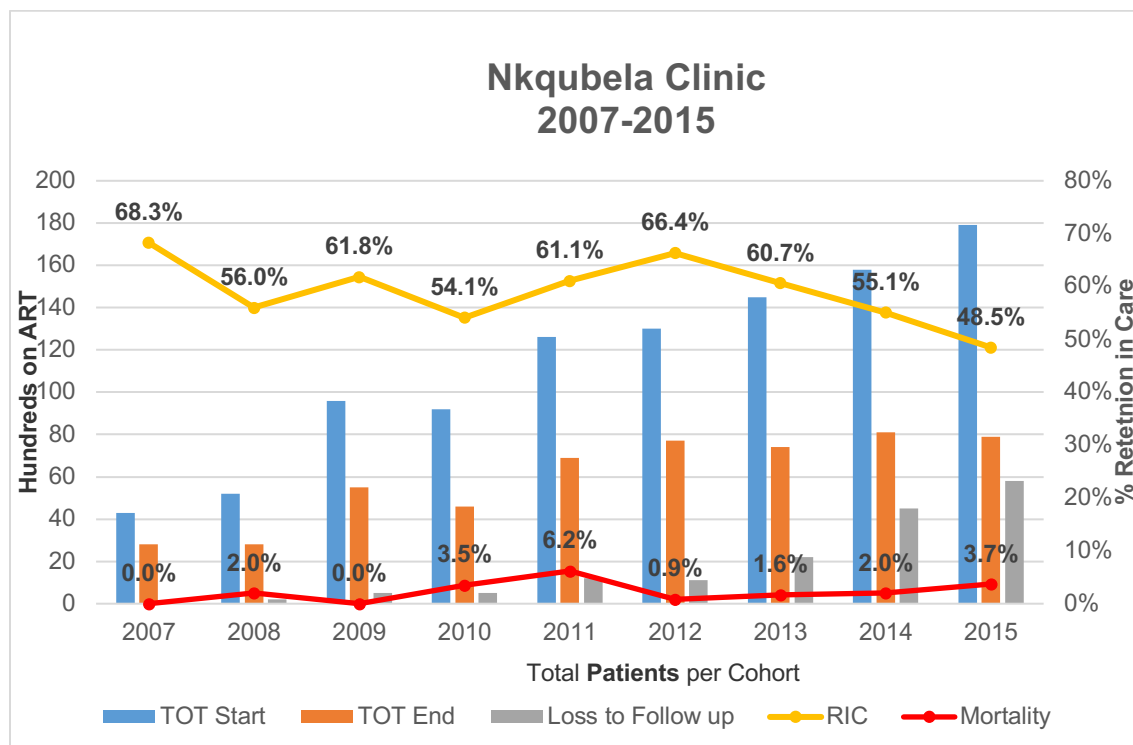
16. Parkdene Clinic
District: Eden
PEPFAR Partner: That'sit
NGO Finance: Low
Ownership: WCGH
Volume: Low
Average RIC: Low (43%)
Sustainability: Poor (-10.5%)
Average Transferred Out (24 months): 2.1%
Average Mortality (24 months): 4.5%
Leadership: Veteran
Motivation: Low
HR Transition: 0
Notes from Qualitative Data:
- 2010 ART patients moved out of Hermanus hospital to clinics
- 2015-2018 Former Right to Care doctor contracted by WCGH to assist with NIMART mentoring in Eden
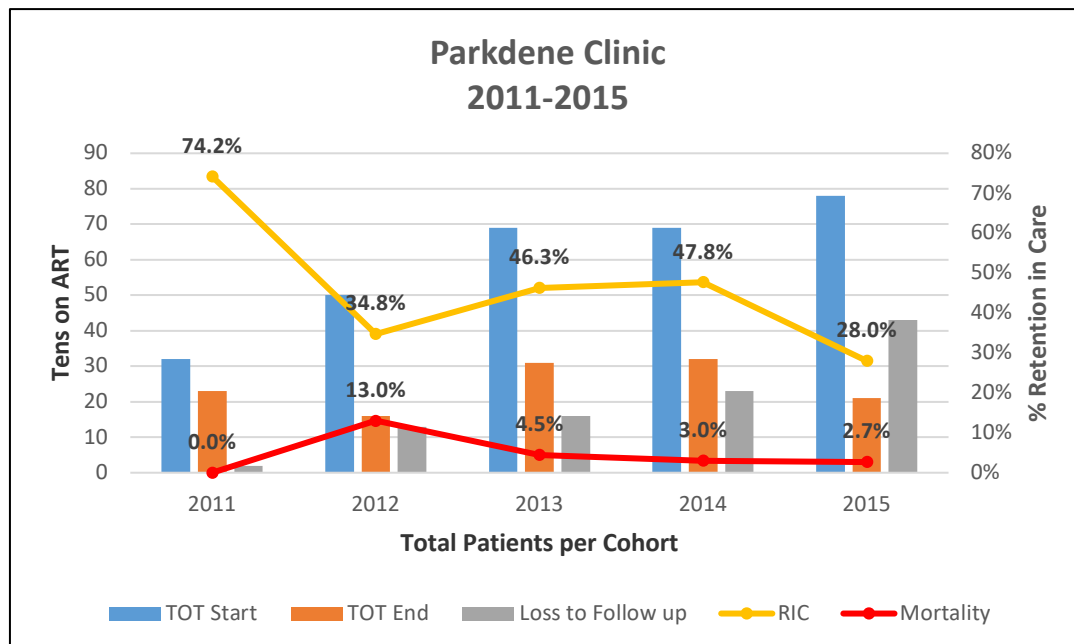
17. Delft South Clinic

District: Metro
PEPFAR Partner: Anova/KI
NGO Finance: High
Ownership: CoCT
Volume: High
Average RIC: High (64.5%)
Sustainability: Poor (-7.7%)
Average Transferred Out (24 months): 2.1%
Average Mortality (24 months): 2.5%
Leadership: Retiring
Motivation: Low
HR Transition: 0

Delft South Clinic
2007-2015
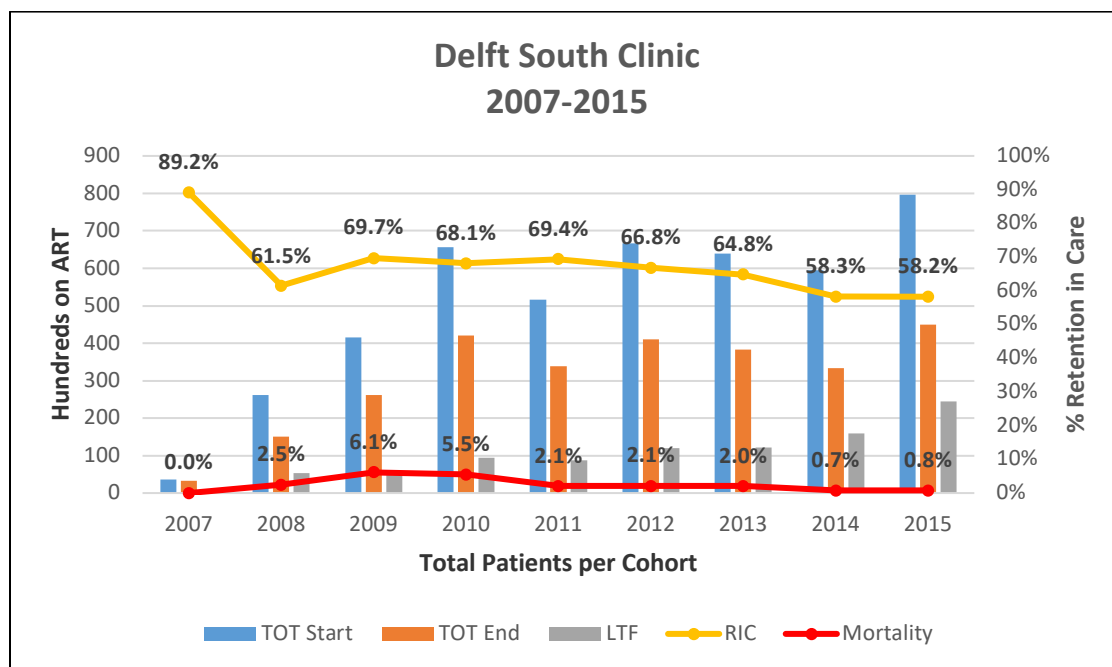
18. Retreat CHC
District: Metro
PEPFAR Partner: Kheth'impilo
NGO Finance: High
Ownership: WCGH
Volume: High
Average RIC: Low (55.9%)
Sustainability: Poor (-9.3%)
Average Transferred Out (24 months): 2.9%
Average Mortality (24 months): 3.3%
Leadership: Veteran
Motivation: Low
HR Transition: 0
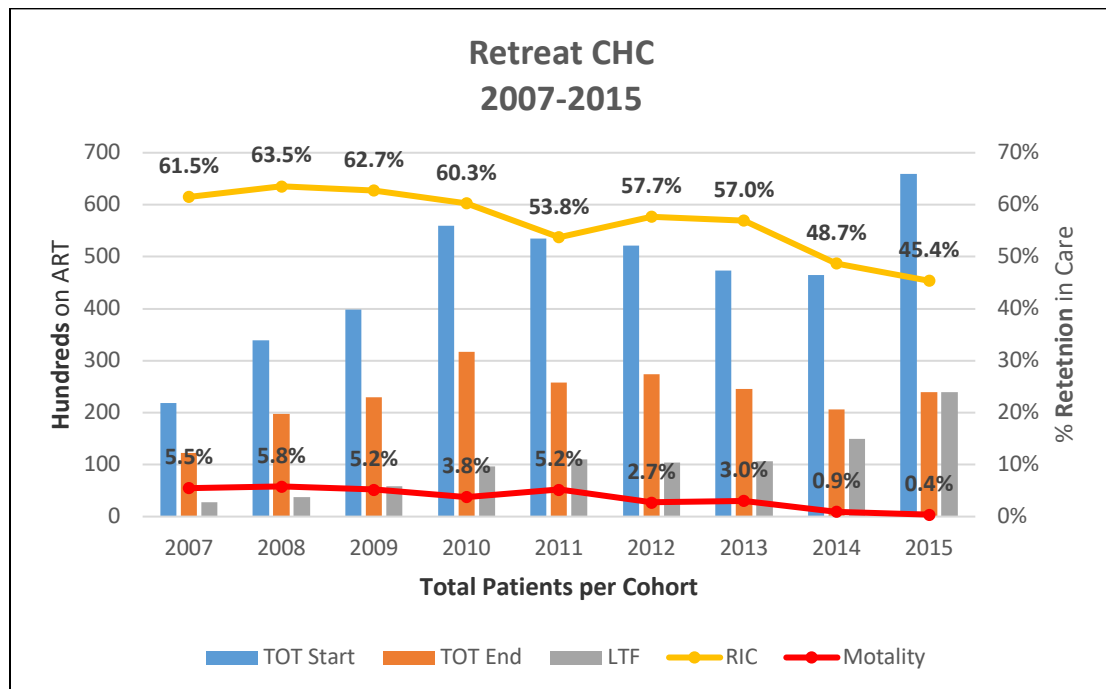
19. Bloekombos Clinic
District: Metro
PEPFAR Partner: Kheth'impilo
NGO Finance: High
Ownership: CoCT
Volume: High
Average RIC: High (66.5%)
Sustainability: Poor (-7.9%)
Average Transferred Out (24 months): 2.4%
Average Mortality (24 months): 0.8%
Leadership: Career Progression
Motivation: High
HR Transition: 3
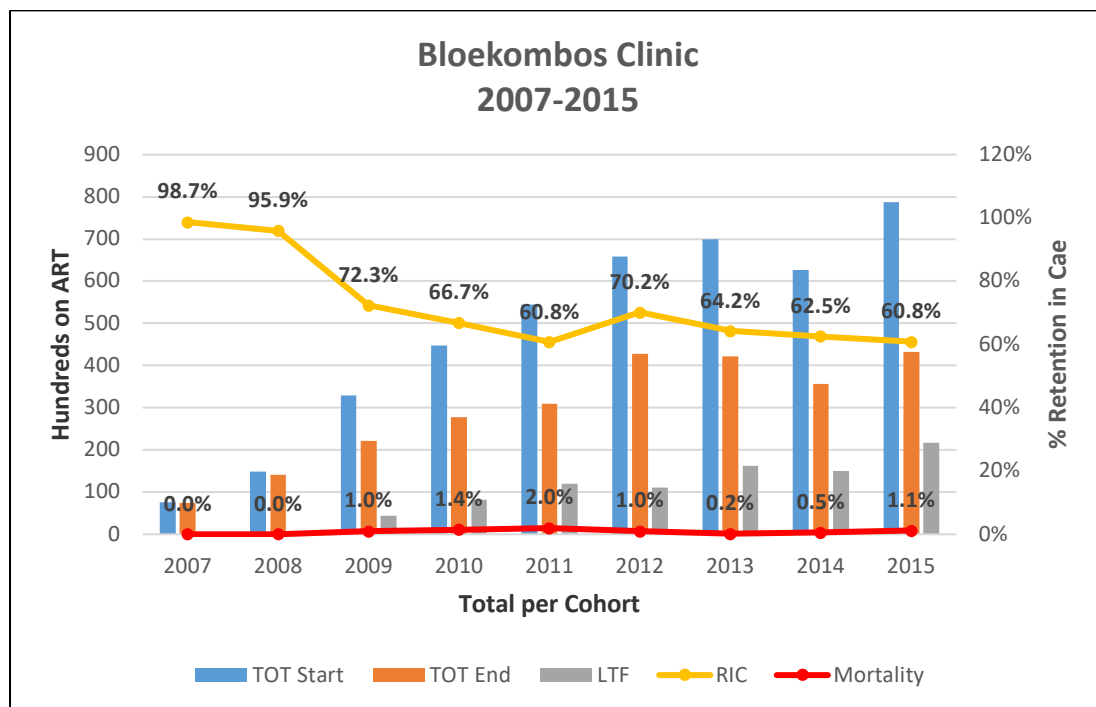
20. Mzamomhle Clinic
District: Metro
PEPFAR Partner: Kheth'impilo
NGO Finance: High
Ownership: CoCT
Volume: High
Average RIC: High (62.2%)
Sustainability: Poor (-6.5%)
Average Transferred Out (24 months): 3.0%
Average Mortality (24 months): 2.9%
Leadership: Veteran
Motivation: High
HR Transition: 6
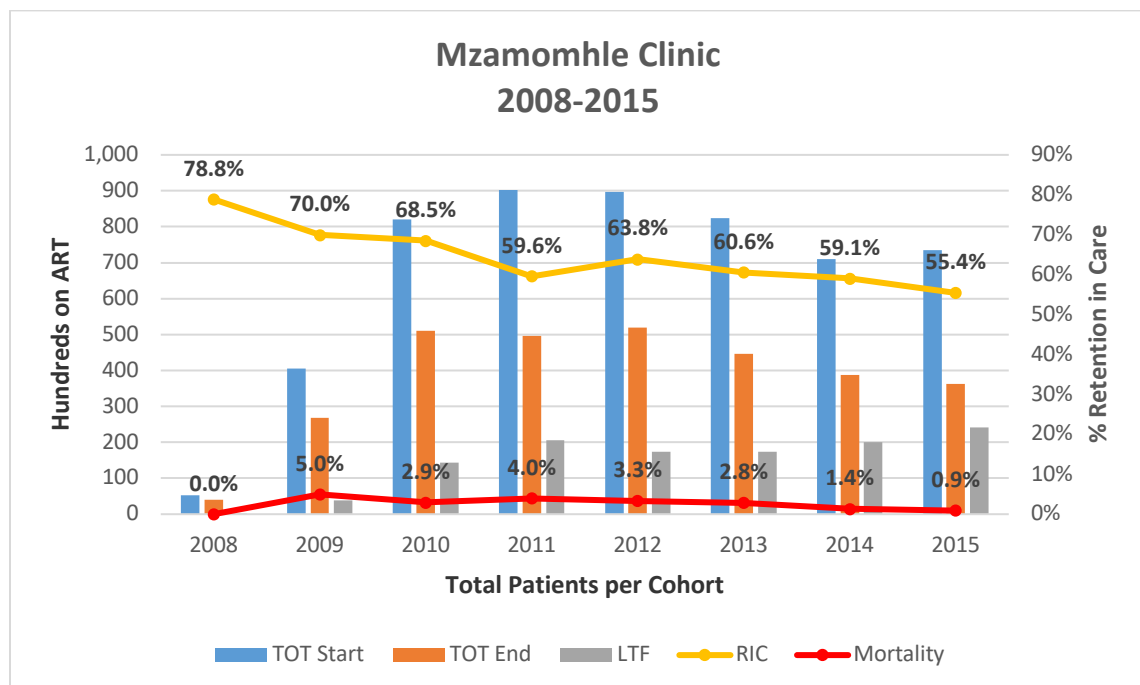
21. Prince Albert Clinic
District: Central Karoo
PEPFAR Partner: Right to Care
NGO Finance: Medium
Ownership: WCGH
Volume: Low
Average RIC: High (75.9%)
Sustainability: Sustained (2.1%)
Average Transferred Out (24 months): 1.3%
Average Mortality (24 months): 9.3%
Leadership: Retiring
Motivation: Low
HR Transition: 5
Notes from Qualitative Data:
- 2010 patients were decanted from tertiary care to primary health care facilities.
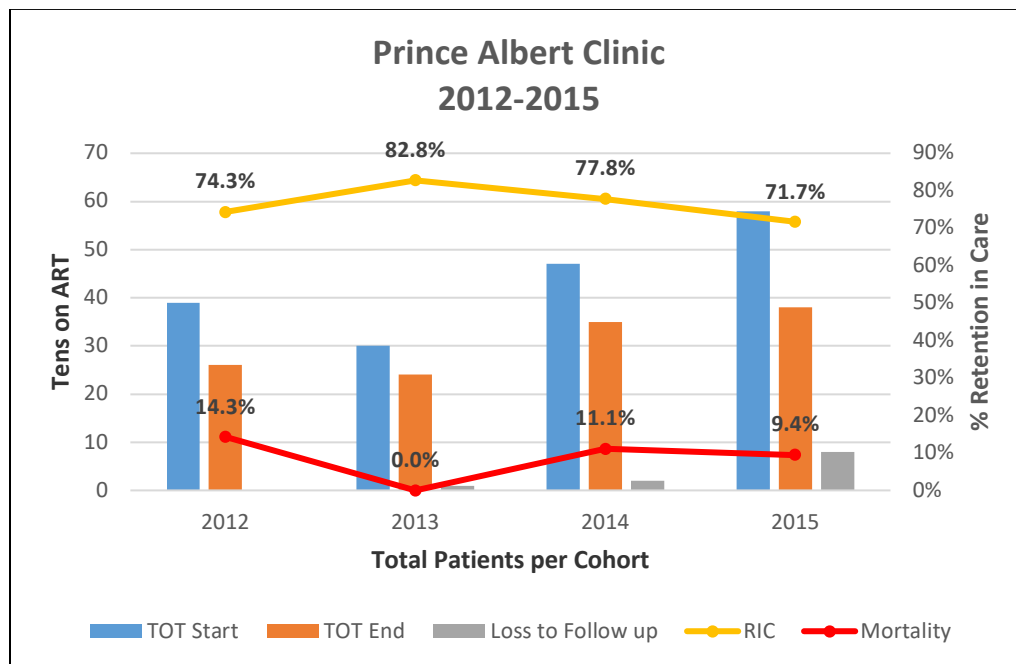
22. Kleinmond Clinic
District: Overberg
PEPFAR Partner: Right to Care
NGO Finance: Medium
Ownership: WCGH
Volume: Low
Average RIC: Low (59.8%)
Sustainability: Poor (-9.7%)
Average Transferred Out (24 months): 4.6%
Average Mortality (24 months): 4.3%
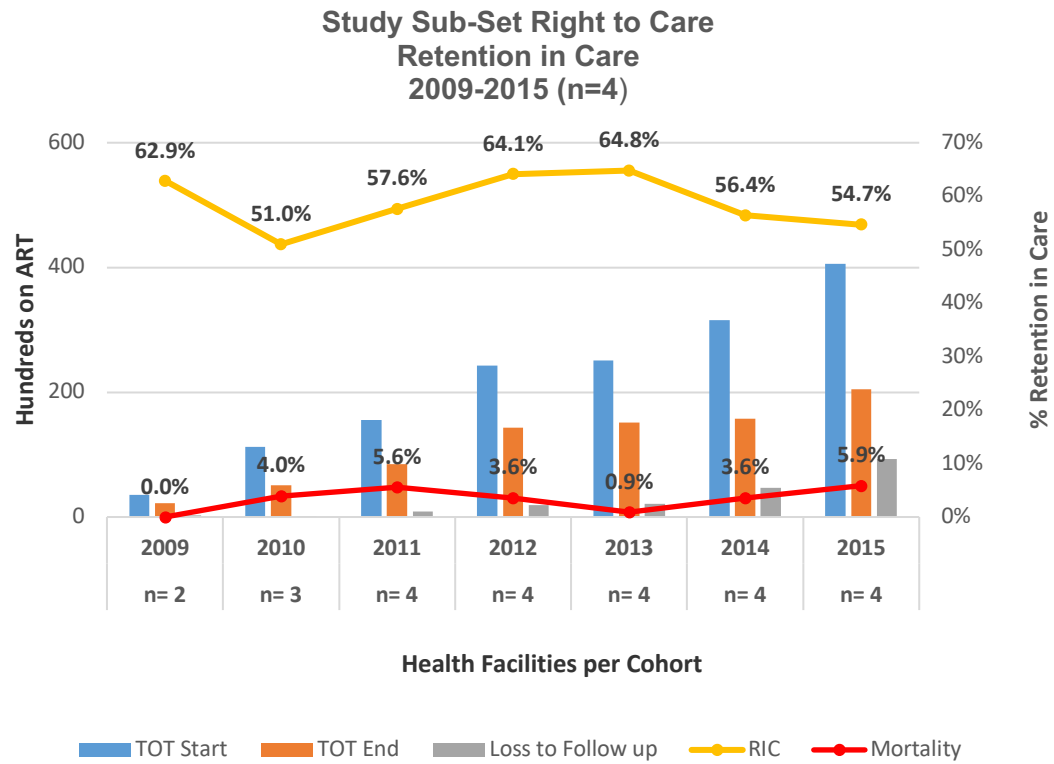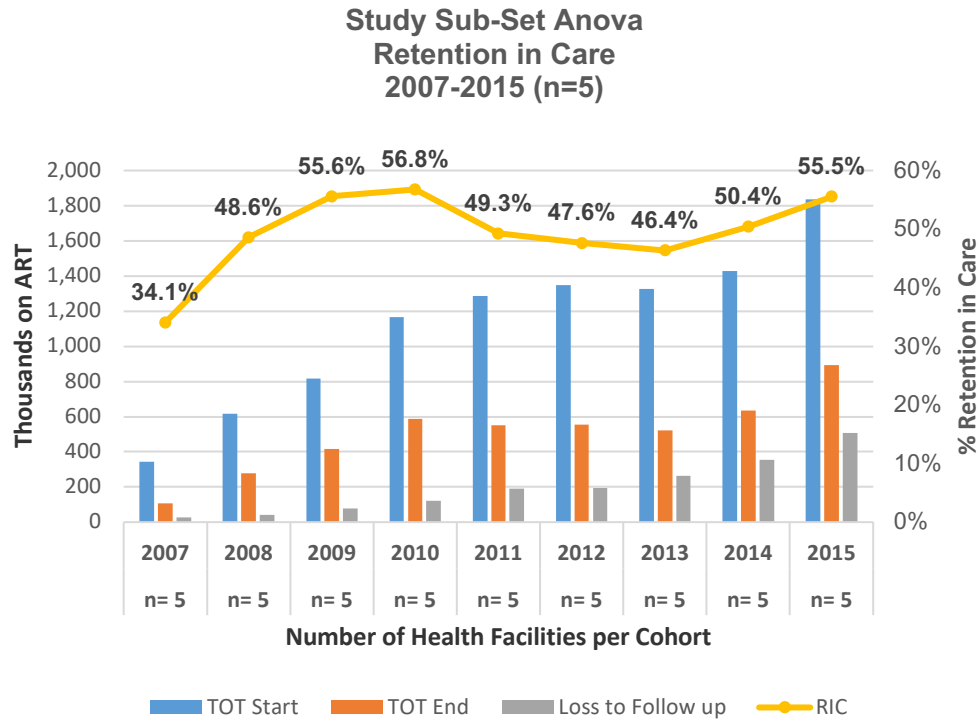**Leadership:** Veteran
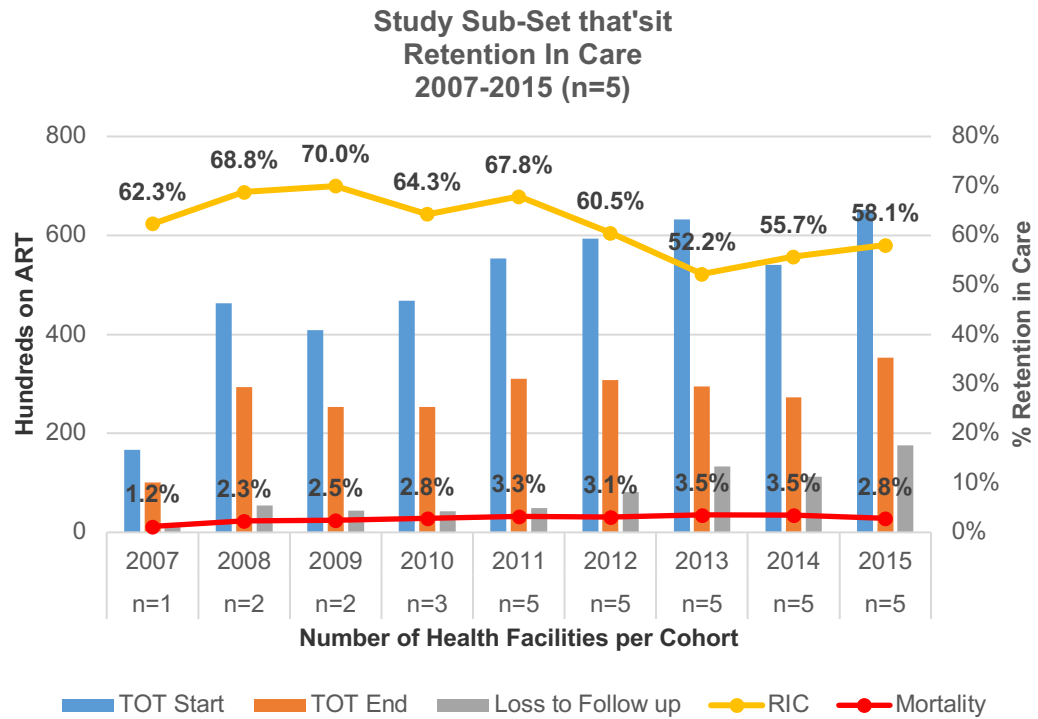**Motivation:** High
HR Transition: 0
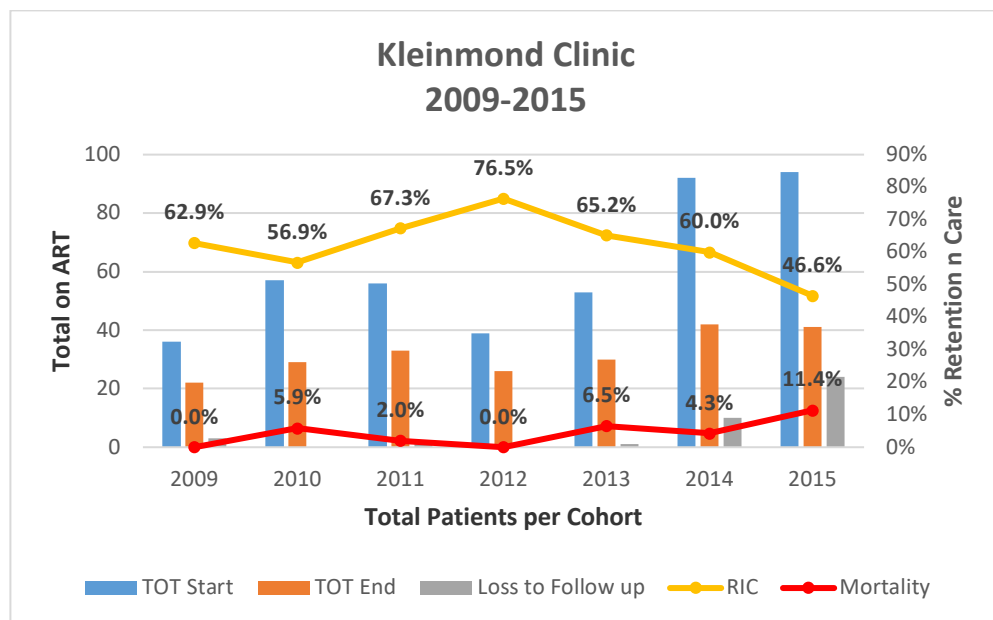
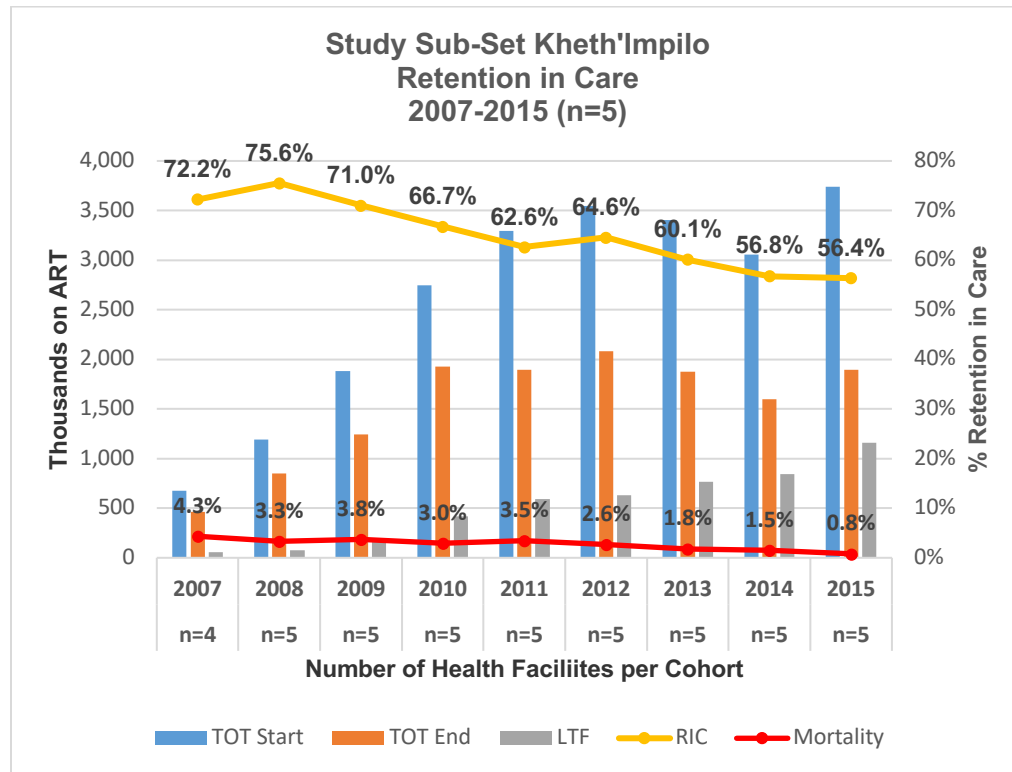# S3. RIC Trend of Sub-Set by NGO
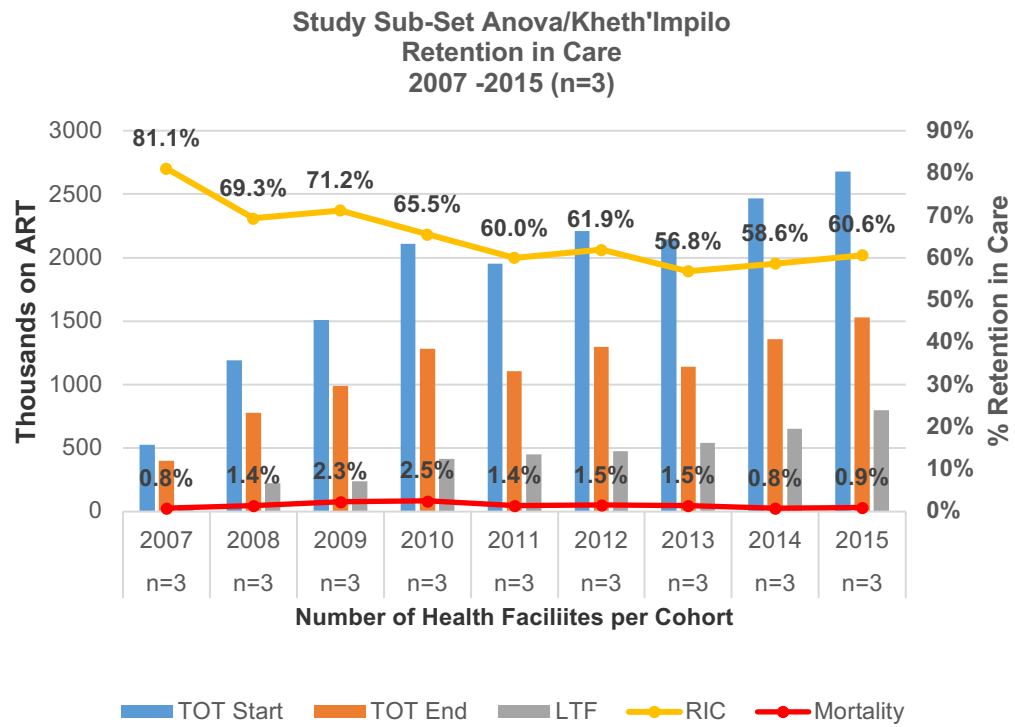
S3a: Right to Care: Study Sub-Set

Study Sub-Set Right to Care
Retention in Care
2009-2015 (n=4)

Health Facilities per Cohort

Legend: TOT Start | TOT End | Loss to Follow up | RIC | Mortality

S3b. Anova: Study Sub-Set

Study Sub-Set Anova
Retention in Care
2007-2015 (n=5)

S3c. that'sit: Study Sub-Set

Study Sub-Set that'sit
Retention In Care
2007-2015 (n=5)

S3d. Kheth'impilo: Study Sub-Set

Study Sub-Set Kheth'Impilo
Retention in Care
2007-2015 (n=5)

S3e. Anova/Kheth'impilo Sub-Sample

Study Sub-Set Anova/Kheth'Impilo
Retention in Care
2007 -2015 (n=3)

	2007 n=3	2008 n=3	2009 n=3	2010 n=3	2011 n=3	2012 n=3	2013 n=3	2014 n=3	2015 n=3
RIC	81.1%	69.3%	71.2%	65.5%	60.0%	61.9%	56.8%	58.6%	60.6%
Mortality	0.8%	1.4%	2.3%	2.5%	1.4%	1.5%	1.5%	0.8%	0.9%

Number of Health Faciliites per Cohort

— TOT Start   — TOT End   — LTF   — RIC   — Mortality

S4: Predictors of Retention in Care Non-Qualitative sample (n=39)

Variable	12 month crude (95% CI)	12 month adjusted (95% CI)	24 month crude (95% CI)	24 month adjusted (95% CI)
Pre-PEPFAR	-0.001 (-0.015, 0.013)	0.009 (-0.011,0.028)	-0.012 (-0.025, 0.002)	-0.007 (-0.021, 0.008)
Post PEPFAR	0.004 (-0.031, 0.039)	0.004 (-0.040, 0.048)	0.006 (-0.025, 0.037)	0.006 (-0.027, 0.038)
WHO 2010 Policy Change				
<=2010	Reference	Reference	Reference	Reference
>2010	-0.029 (-0.094, 0.037)	-0.032 (-0.095, 0.030)	-0.016 (-0.064, 0.033)	-0.019 (-0.064, 0.025)
Government				
WCGH	Reference	Reference	Reference	Reference
CoCT	0.143 (0.071, 0.214)	0.085 (-0.059, 0.229)	0.116 (0.041, 0.191)	0.080 (-0.037, 0.197)
Combined	0.115 (0.073, 0.157)	**0.135 (-0.008, 0.277)**	0.051 (0.021, 0.081)	**0.087 (-0.012, 0.186)**
PEPFAR NGO				
Anova	Reference	Reference	Reference	Reference
Anova/KI	-0.014 (-0.083, 0.055)	-0.036 (-0.162, 0.090)	-0.018 (-0.071, 0.034)	-0.032 (-0.134, 0.071)
KI	0.035 (-0.065, 0.134)	0.009 (-0.083, 0.100)	0.063 (-0.008, 0.135)	0.039 (-0.023, 0.100)
Right to Care	0.111 (0.049, 0.173)	0.037 (-0.074, 0.148)	0.108 (0.064, 0.153)	**0.069 (-0.013, 0.151)**
That'sit	-0.008 (-0.109, 0.093)	0.034 (-0.066, 0.133)	0.033 (-0.035, 0.101)	0.059 (-0.003, 0.122)
Volume 24 Months				
Rank 0 (0-174)	Reference	Reference	Reference	Reference
Rank 1 (174-2570.5)	0.004 (-0.107, 0.115)	0.016 (-0.077, 0.110)	0.002 (-0.079, 0.083)	0.020 (-0.040, 0.079)
Rank 2 (2570.5-4967)	-0.003 (-0.098, 0.093)	0.032 (-0.067, 0.131)	-0.013 (-0.087, 0.062)	0.023 (-0.043, 0.088)
Rank 3 (4967-7363.5)	0.117 (0.016, 0.218)	**0.096 (-0.014, 0.206)**	0.066 (-0.021, 0.153)	**0.058 (-0.024, 0.139)**
Rank 4 (7363.5-9760)	-0.012 (-0.142, 0.118)	0.017 (-0.125, 0.158)	-0.040 (-0.135, 0.054)	-0.002 (-0.096, 0.093)
HR Transition (continuous)	0.039 (0.018, 0.059)	0.014 (-0.020, 0.048)	0.032 (0.016, 0.049)	0.007 (-0.019, 0.032)

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