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Evaluation of the National Adherence Guidelines for Chronic Diseases in South Africa

PATIENT PERSPECTIVES ON DIFFERENTIATED CARE MODELS

JUNE 2017

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ACRONYMS

AC	Adherence Club
AGL	Adherence Guidelines
ART	Antiretroviral Therapy
CCMDD	Central Chronic Medication Distribution and Delivery
CDU	Central Dispensing Unit
CFIR	Consolidated Framework for Implementation Research
DMD	Decentralized Medication Delivery
EAC	Enhanced Adherence Counselling
ETR	Electronic TB Register
FTIC	Fast Track Initiation Counselling
HIV	Human Immunodeficiency Virus
IDI	In-depth Interviews
NCD	Non-communicable Disease
NDOH	National Department of Health
NGO	Non-Governmental Organizations
RPCS	Repeat Prescription Strategy
TB	Tuberculosis
TRIC	Tracing and Retention in Care
SFLA	Spaced Fast-Lane Appointments
VL	Viral Load
WBOT	Ward Based Outreach Team
VL	Viral Load
WBOT	Ward Based Outreach Team

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EXECUTIVE SUMMARY

In June of 2016, a team of researchers from South Africa's National Department of Health, the World Bank, Boston University and the Health Economics and Epidemiology Research Office began enrolling patients into an evaluation of the National Department of Health's National Adherence Guidelines (AGL) for Chronic Diseases being implemented by the National Department of Health (NDoH). The AGL is a tool for the NDoH to promote differentiated care, a client-centred approach that simplifies and adapts services across the HIV cascade while reducing unnecessary burdens on the health system.

This report describes the patient interview and focus group discussion results for the five HIV cohorts (Evaluation Protocol 2). The five cohorts are meant to evaluate five interventions within the AGL to improve adherence to HIV care: Fast track initiation counselling (FTIC), decentralized medication delivery (DMD), adherence clubs (AC), early patient tracing (TRIC) and enhanced adherence counselling (EAC). The evaluation is designed as a cluster randomized evaluation design in 24 sites (12 intervention and 12 control in 4 provinces). This report sampled patients from eight sites, one intervention and one control site from each of the four evaluation provinces.

The AGL is a tool for the NDoH to promote differentiated care, a client-centred approach that simplifies and adapts services across the HIV cascade while reducing unnecessary burdens on the health system. challenges of the DMD intervention.

Complementary to another report (on provider perspectives), this report presents the result of a mixed methods evaluation of the five interventions from the patient perspective. We enrolled 631 patients into a patient survey (315 patients who received or were registered for one of the interventions and 316 who were selected into the control group) and we conducted 24 focus groups (12 in the intervention and 12 in the control groups) that included a total of 156 participants. The report sought to answer four key questions:

1. How does patient satisfaction with care at the intervention sites compare to the control sites among HIV positive patients?
2. What are the barriers to and facilitators of ART initiation and adherence among HIV-positive patients eligible for each intervention?
3. What are the strengths and weaknesses of each intervention for HIV positive patients from the patient perspective?

4. What additional strategies do patients feel would be helpful in improving treatment adherence?

For each questions we analysed and triangulated qualitative and quantitative data. The results show that from the patient perspective, each intervention has promise and supported either ART initiation or adherence, however each could be improved. Detailed illustrative quotes are provided for each intervention according to the main themes identified. Specifically, patients had very positive feelings about ACs and decentralized medication delivery in focus group discussions, though the results for ACs were more strongly supported by the quantitative data.

ANSWERS TO THE STUDY QUESTIONS:

1. HOW DOES PATIENT SATISFACTION WITH CARE AT THE INTERVENTION SITES COMPARE TO THE CONTROL SITES AMONG HIV POSITIVE PATIENTS?

- Respondents from intervention sites generally perceived the quality of care as better or at least no different from respondents at control sites, with the AC and FTIC intervention cohorts reporting a higher level of satisfaction with care over the controls.
- Patients in ACs and enrolled in DMD reported high satisfaction with these services in terms of convenience and saving them time. These patients were able to frequent the clinic less often than patients in the control group, and there was a perception of improved quality of care amongst AC participants.

2. WHAT ARE THE BARRIERS TO AND FACILITATORS OF ART INITIATION AND ADHERENCE AMONG HIV-POSITIVE PATIENTS ELIGIBLE FOR EACH INTERVENTION?

- Patients identified a series of barriers to ART adherence, including food insecurity, medication side effects, long waiting times at the clinics, travel time to get to the clinics, as well as poor staff attitude and support. Patients also expressed concern over accidental disclosure from attending the clinic and being seen by the community health workers associated with the clinic.
- Patients identified numerous facilitators of improved adherence, including using reminders and cell phones for remembering when to take medications as well as disclosure of HIV status to those who could support them. These factors were perceived to interact, as disclosure could also lead to having someone who could serve as a reminder to take medications.

3. WHAT ARE THE STRENGTHS AND WEAKNESSES OF EACH INTERVENTION FOR HIV POSITIVE PATIENTS FROM THE PATIENT PERSPECTIVE?

- Patients at intervention sites reported that they received more counselling than at control sites and also reported more use of desk aids and materials at those sessions. However, staff attitude and the time at the clinic for these sessions was seen as a big deterrent and a risk to potentially losing these higher risk patients from care.

- Patients expressed concern that reasons for blood tests and test results may not always be well discussed at the clinic, and failure to give results to patients can lead to a perception that these laboratory tests and monitoring are not important.

Interventions for HIV treatment initiation:

- Patients receiving FTIC reported feeling more supported by the additional counselling sessions that are held after initiation and indicated that this helped with adherence. However, poor staff attitude and service at clinics particularly around the time of initiation can pose a threat to patient adherence.

Interventions for patients stable on HIV treatment and adherent:

- Having the option to pick up more months of medication at more convenient locations is seen by patients as a key strength of interventions and one that may improve adherence. It is important to ensure that issues of staffing and medication delivery are resolved.
- Patients perceive missing laboratory results as an issue, they are aware when staff do not have results in hand and do not appreciate when tests have to be repeated unnecessarily.

Interventions for patients failing treatment or who missed visits:

- Patients often do not seem to be aware that they are being traced, particularly when traced after early missed appointments. However for the most part patients saw tracing as being beneficial for retention in care and encouraged greater involvement of community health workers and community groups.

4. WHAT ADDITIONAL STRATEGIES DO PATIENTS FEEL WOULD BE HELPFUL IN IMPROVING TREATMENT ADHERENCE?

- FTIC participants noted that increased support from community health workers would be helpful for adherence. Receiving calls and tracing from this cadre is appreciated.
- Being able to have blood draws done at ACs or the pharmacies with DMD pick up points was considered a key improvement to these interventions.
- Additional training for counsellors (to ensure that they are equipped to provide effective counselling and ongoing support) so that patients continue to feel motivated and supported was raised.

Adherence to HIV treatment is a complex process that isn't well understood. Numerous studies have evaluated barriers to treatment adherence, but few have done so in the context of an evaluation of targeted interventions to improve adherence. The results of this mixed method study shed substantial light on the results of the overall impact evaluation. By collecting both qualitative and quantitative data, we were able to observe the general trends in barriers to and facilitators of adherence within the population of the study but also get detailed information on participants' experiences with the clinics and the interventions. As follow-up continues, we will be able to link this data with follow up data to create a complete picture of participants' experiences and the reasons for the successes and failures of any of the interventions.

KEY MESSAGES AND RECOMMENDATIONS:

- **Before AGL introduction in a clinic, it is important to address some of the perceived clinic-level barriers to adherence, ensuring site readiness and sufficient resources so that providers feel engaged and empowered to implement the interventions and address the issues of staff attitudes towards their patients.**
- **The counselling sessions after treatment initiation are important to patients, and counsellors should be guided by the specific job aids and by the patients' individual needs for information, as well as the general principles of good patient communication.**
- **Patients experiencing adherence problems and receiving EAC should feel helped by this additional support, with staff showing an understanding for the circumstances of patients who struggle to adhere. Chastising patients for not being adherent risks to demotivate them.**
- **It is important to promote the continued implementation of ACs alongside implementation of DMD, ensuring that facilities are sufficiently resourced to run these clubs. Some patients perceive the eligibility for ACs and DMD as an incentive to become stable on treatment, and the program can promote this aspect of graduating to efficient schemes of drug refill.**
- **While some patients prefer the option to visit a DMD pick-up point other patients benefited from the additional support provided by the clubs. During scale up it is essential that patients are given the option as to which repeat prescription collection strategy they prefer in order to maximise their retention in these programs.**
- **Issues around DMD implementation need to be resolved, scripting and staffing issues at pick-up points must be addressed to prevent patients becoming disheartened with this intervention, risking patient adherence and potentially returning to and causing further congestion at the facilities.**
- **In addition, it is important to collect accurate data on patients to be able to provide strong patient care. In particular we found data on tracing of patients to be limited as no standard register or approaches existed to track who had been traced. Implementing a standard register could help with better tracing of patients and improved retention.**
- **The study demonstrates the importance of staff orientation and training on the AGL interventions to maximise these powerful interventions and patient perception of quality care.**

1 INTRODUCTION

For antiretroviral therapy (ART) for HIV and treatment for other chronic diseases to be effective, patients must remain in care for long periods of time, initiate treatment as early as allowed under prevailing guidelines, consistently achieve high levels of adherence to their treatment regimen and, as a result, exhibit stable monitoring test results and/or treatment completion. In the case of HIV, treatment is lifelong and requires consistent, nearly complete adherence to sustain an undetectable viral load. Numerous studies and reviews[1–4], as well as the South African National Department of Health's (NDOH) own data[5], have indicated that retention in care and adherence to ART in South Africa are sub-optimal and pose a serious threat to the long-term success of the national HIV response.

1.1 INTERVENTION TO BE EVALUATED

To address the retention and adherence to HIV challenge, in 2014 the South Africa NDOH developed the "National Adherence Guidelines for Chronic Diseases (HIV, TB and NCDs)"[1]. The guidelines address the provision of a minimum package of interventions to increase linkage to care, retention in care, and adherence to treatment. They reflect a differentiated care approach which aims to enhance the quality of the patient's experience as well as reduce the burden on the health system so that health system resources can be reallocated to those patients most in need. The minimum package interventions are listed in Table 1.1, five of which are being evaluated under this study, with a focus on HIV.

Table 1.1 National Adherence Guidelines minimum package of interventions

APPROACH	INTERVENTION
Education and counselling	▪ Fast track initiation counseling* ▪ Enhanced adherence counseling for unstable patients* ▪ Child disclosure counseling for children living with HIV
Repeat prescription collection strategies	▪ Adherence clubs* ▪ Spaced and fast lane appointment systems ▪ Decentralised medication delivery*
Patient tracing	▪ Early tracing of all missed appointments*
Integrated HIV, TB, NCD care	▪ Integrated consultation and counselling

Note: * = Indicates interventions included in this evaluation
Source: Authors

[1] National Department of Health, South Africa. Adherence Guidelines for HIV, TB and NCDs. https://www.nacosa.org.za/wp-content/uploads/2016/11/Integrated-Adherence-Guidelines-NDOH.pdf. Guidelines Standard Operating Procedures found at http://www.differentiatedcare.org/Portals/0/adam/Content/_YiT3_-qmECUkmkpQvZAIA/File/SOP%20A5%20booklet%2020-05-2016.pdf.

Before launching nationwide scale-up of the Adherence Guidelines, the NDOH selected 12 clinics (primary health care clinics and community health centres) for early implementation of the minimum package for HIV patients. These sites were intended to generate information to refine the guidelines, gain experience in implementation, and project budgetary needs. The early implementation sites were also intended to generate data on the effectiveness of the interventions and on how to best tailor and target them. These early-learning sites, therefore, provided a platform upon which to build a rigorous evaluation strategy.

1.2 OVERVIEW OF THE EVALUATION STRATEGY

The overall strategy to evaluate the National Adherence Guidelines has been designed as a mixed methods matched cluster-randomised study with 12 early learning (intervention) sites implementing the minimum package of interventions during the early-learning phase of national roll-out, and 12 delayed implementation (control) sites which should only implement the minimum package interventions later during the national roll-out. All implementation of the interventions is being done by NDOH in South Africa.

The effectiveness of interventions, once taken to scale, becomes highly dependent on the effectiveness of the implementation, typically grounded in organizational behaviour and conformity theory. The field of implementation sciences is evolving rapidly as researchers and policy makers recognize the need to understand not only how well the intervention works, but also how to best deliver or implement the intervention at scale. Figure 1.1 illustrates the importance of understanding both the effectiveness of interventions and the implementation of interventions to ensure overall program effectiveness. This theoretical framework guides our approach of evaluating the National Adherence Guidelines.

The effectiveness of interventions, once taken to scale, becomes highly dependent on the effectiveness of the implementation, typically grounded in organizational behaviour and conformity theory.

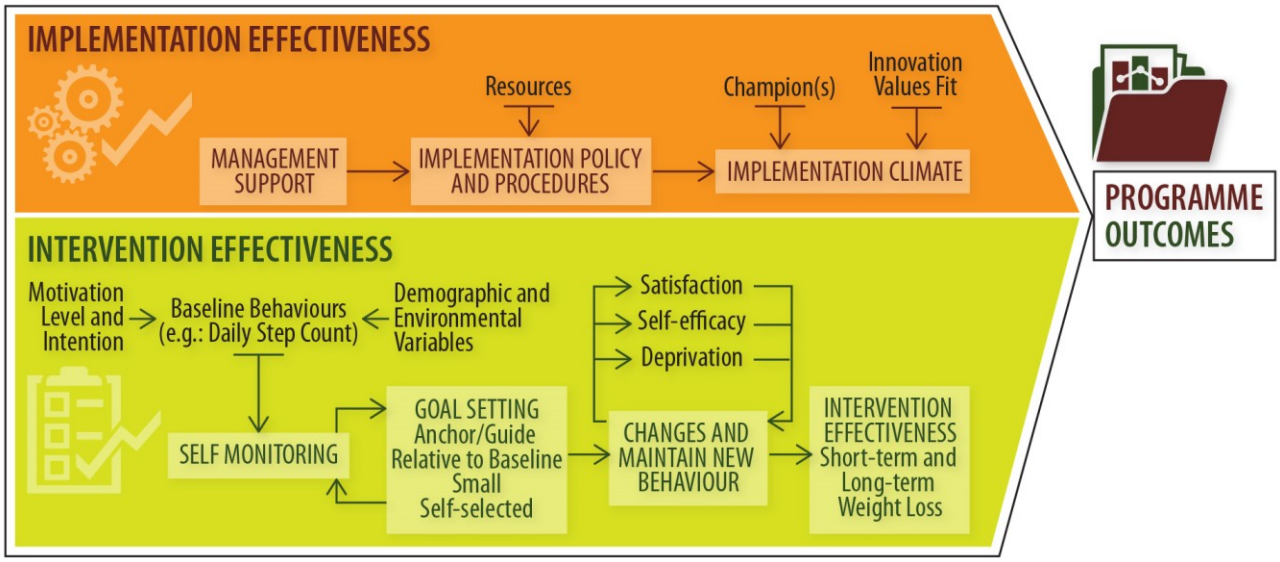
The evaluation strategy includes two parallel and complementary studies. First, we are estimating the effectiveness of the National Adherence Guidelines on patient outcomes in a study entitled “Evaluation of the National Department of Health's National Adherence Guidelines for Chronic Diseases in South Africa Using Routinely Collected Data” (approved by Boston University IRB BUIRB H-34074 and University of Witwatersrand Human Research Ethics Committee Wits Protocol M150537). This “effectiveness evaluation” (lower panel of Figure 1.1) is a matched, cluster-randomized design in 24 clinics, 12 of which received early implementation of the minimum package and 12 with delayed implementation serving as control sites. Clinics were matched on clinic characteristics: total remaining on ART, clinic size, setting, location and viral suppression. This study uses routinely collected data at sites to understand how the minimum package changes patient outcomes.

Second, we seek to understand the implementation process in a study entitled “Process Evaluation of the National Department of Health’s Adherence Guidelines for Chronic Diseases in South Africa”

(BUIRB H34197 and Wits Protocol M150652). Using data not routinely collected from a selection of sites within the cluster randomized design, we can assess why the interventions worked or did not work, for whom they worked, and what conditions are associated with greater or lesser effectiveness. This "implementation evaluation" (upper panel of Figure 1.1) uses data collected from patients and providers to understand the implementation process, intervention acceptability, patient preferences and views of the intervention.

The individual adherence interventions included in the minimum package require different implementation activities and produce different outputs and outcomes in the patient population, but they seek to converge to improve adherence and health outcomes of the patient population at large (Appendix 1, program logic model). Therefore, findings from the intervention effectiveness evaluation and the implementation evaluation can be triangulated to understand overall programmatic effectiveness of the National Adherence Guidelines and generate recommendations for improvement as the NDOH continues to roll out the National Adherence Guidelines.

Figure 1.1 Theoretical framework to assess program success through intervention and implementation effectiveness



Source: Damschroder L (2012) The role and selection of theoretical frameworks in implementation research.

1.3 IMPLEMENTATION EVALUATION AIM

The overall aim of this component of the evaluation is to understand key aspects of the implementation of the National Adherence Guidelines from the perspective of the patients and providers and, in the longer term, to explore how these components relate to the effectiveness of each minimum package intervention on patient outcomes. The evaluation will describe and assess which interventions are actively taken up by the evaluation sites, the processes by which the interventions in the minimum package are being implemented, patients' acceptance of the interventions, patients' perceptions of the quality of care associated with the interventions, and providers' perspectives on the experience of implementing the interventions at the site.

The objectives of this implementation evaluation are:

- to assess the degree to which each individual intervention in the minimum package was correctly implemented in accordance with national guidelines
- to understand the implementation strategy at each clinic and to compare the types of strategies used between intervention and control sites to improve treatment adherence
- to assess the impact of each of the minimum package interventions on perceived quality of care and identify factors that influence patients' acceptance of each intervention and assess the impact of perceived quality of care on treatment outcomes
- to assess factors that influence acceptability of each intervention to providers

1.4 PURPOSE OF THIS REPORT

The purpose of this report is to assess the impact of each of the minimum package interventions on perceived quality of care and identify factors that influence patients' acceptability of the interventions. In this report, we describe the patient–level findings from the qualitative focus group discussions and quantitative patient questionnaires at intervention and control sites. Findings presented here are intended to inform the NDOH as it continues to plan for national rollout of the minimum package. Lessons learned from this study are intended to help NDOH improve targeting of resources, staff training, communications materials, data systems, and other critical elements of the implementation of new national guidelines.

The purpose of this report is to assess the impact of each of the minimum package interventions on perceived quality of care and identify factors that influence patients' acceptability of the interventions.

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2 IMPLEMENTATION EVALUATION DESIGN AND METHODS

2.1 IMPLEMENTATION EVALUTION QUESTIONS

The four evaluation questions answered in this report include:

1. How does patient satisfaction with care at intervention sites compare to that at comparison sites among HIV-positive patients?
2. What are the barriers to and facilitators of ART initiation and adherence for HIV-positive patients eligible for each intervention?
3. What are the strengths and weaknesses of each intervention for HIV positive patients from the perspective of patients?
4. What additional strategies do patients feel would be helpful in improving treatment adherence?

2.2 IMPLEMENTATION EVALUATION FRAMEWORK

To answer the evaluation questions, we used a mixed-methods approach, guided by the Consolidated Framework for Implementation Research (CFIR) (Table 2.1). CFIR broadly assesses the key implementation domains of: 1) intervention characteristics (quality, adaptability, complexity); 2) outer setting (patient needs, setting, policies); 3) inner setting (organizational priority, implementation climate, leadership engagement); 4) individual provider characteristics (knowledge about interventions, self-efficacy, identification with organization); and 5) process (planning, engaging, executing and evaluating).

To answer the evaluation questions, we used a mixed-methods approach, guided by the Consolidated Framework for Implementation Research (CFIR).

Table 2.1 Themes for the evaluation of the Implementation of the Minimum Package under the Consolidated Framework for Implementation Research (CFIR)

CFIR DOMAIN	PATIENT INTERVIEW THEMES	FGD PATIENT THEMES
1. Intervention characteristics	▪ Mix of interventions ▪ Quality and acceptability ▪ Relative Advantage ▪ Complexity ▪ Adaptability	▪ Mix of interventions ▪ Complexity ▪ Quality and acceptability
2. Outer setting	▪ Patient needs and resources ▪ External policies	▪ Patient needs and resources ▪ Barriers and facilitators to adherence
3. Inner setting	▪ Organizational structure and support ▪ Implementation climate ▪ Relative priority ▪ Barriers and facilitators to implementation ▪ Impact on organization	▪ Patient satisfaction with organization ▪ Appropriateness of available adherence services ▪ Ways to improve
4. Individual provider characteristics	▪ Knowledge and beliefs about interventions ▪ Self-efficacy ▪ Impact on provider	▪ Patient satisfaction with provider ▪ Ways to improve
5. Process	▪ Implementation planning ▪ Implementation leaders and champions ▪ Improvement	▪ Awareness of options ▪ Perception of implementation ▪ Ways to improve

Source: Authors

2.3 IMPLEMENTATION EVALUATION DESIGN

Embedded within the effectiveness evaluation, the implementation evaluation used a cross-sectional design and a mixed-methods approach to collect data from a sub-sample of four intervention and four control sites. This approach has several strengths. First, it allows for triangulating findings from various data sources. Second, the control group allows us to differentiate the challenges posed by the minimum package implementation from those that are already faced by clinics. Third, because the implementation evaluation is embedded within the effectiveness evaluation, at the end of the study we will be able to relate implementation data to patient outcome data and observe changes over time.

2.4 IMPLEMENTATION EVALUATION DATA COLLECTION METHODS

Using mixed-methods, data were collected over a period of four months from November 2016 through February 2017 from two main sources:

1. **Quantitative HIV Patient Survey:** We conducted a quantitative survey among of a sample of patients in each of the five intervention groups at four intervention sites and among those eligible for each intervention at four control sites, in order to assess patient satisfaction with care.
2. **Focus Group Discussions (FGD) with HIV Patients:** We conducted three different FGD types at each site among different patient populations: i) patients who had recently initiated treatment; ii) patients who were stable on treatment 3–6 months after initiation; and iii) patients who were unstable on treatment 3–6 months after initiation or who had missed a visit by more than 5 days. Focus group discussions were designed to elicit patient perspectives on: i) the quality and acceptability of the interventions; ii) barriers and facilitators of patient adherence including the interventions; iii) satisfaction and appropriateness of adherence services; and iv) ways to improve the interventions.

2.5 STUDY POPULATION AND SAMPLING

The eight sites included were a subsample of the 24 effectiveness evaluation sites. We purposively selected with NDOH one pair of intervention and control sites from each of the four provinces for a total of eight sites.

2.5.1 Inclusion and Exclusion Criteria

The quantitative patient survey and focus group discussions enrolled patients who either received or were registered to receive one of the five interventions at intervention sites, or who were eligible for the intervention at control sites.

Patients were eligible to participate in the FGD or Patient Survey if they met the following criteria:

- Patient at an included intervention or control site
- ≥ 18 years old
- Met the eligibility criteria for one of the five interventions in the effectiveness evaluation
- Attended the clinic for a visit as part of the effectiveness evaluation (intervention sites) within a specific time frame depending on the intervention (or control) cohort:
  - Fast track ART initiation counselling: 3 months after ART eligibility or receiving FTIC
  - Adherence clubs: 3–6 months after club eligibility or being enrolled in an adherence club
  - Decentralized medication delivery: 3–6 months after delivery eligibility or being registered for DMD
  - Enhanced adherence counselling: 3–6 months after counselling eligibility (i.e., unsuppressed viral load)
  - Early patient tracing: after returning to care

Patients were excluded from participating in the FGD or Patient Survey if they:

- Did not reside in the facility catchment area
- Intended to transfer care to a different facility within 12 months
- Were pregnant and eligible for PMTCT
- Were unwilling to provide informed consent

2.5.2 Quantitative Patient Survey: Sampling Strategy

Patients were consented and enrolled in a quantitative cross-sectional survey. To ensure patients could have been exposed to the interventions, we recruited patients eligible for each intervention at intervention sites and those who would be eligible for each of the minimum package interventions at the control sites in roughly equal numbers (see sample size section below for details) between 3 and 6 months after becoming eligible for the intervention or after they had returned to care for those patients who had missed visits. Lists of eligible patients with expected clinic visits were produced by the research team from the TIER.Net electronic patient register and these lists were then used to identify these patients at the clinic, club or medicine pick-up point. The study staff would then assess and check the eligibility of those patients and if eligible begin the recruitment and consent process. All patients went through a full informed consent process.

All patients went through a full informed consent process.

2.5.3 FGDs with Patients: Sampling Strategy

We identified FGD participants by reviewing records from the larger evaluation to identify patients eligible for each intervention. Study staff approached participants at their next clinic, club or medicine pick-up visit, gave them a brief introduction to the study and asked if they would be interested in participating. Those wishing to participate were confirmed for eligibility and asked to return to the clinic or other convenient location at the time of the focus group discussion. Patients were recruited consecutively, as they arrived at the study site and met the eligibility criteria and all went through a full informed consent process.

2.6 DATA COLLECTION, MANAGEMENT AND STORAGE

2.6.1 Quantitative Patient Survey

Survey data were captured on encrypted tablets. Electronic data files were stored on secure, protected drives with access limited to relevant study staff. These data were then linked to electronic medical record data collected on the TIER.Net system and relevant baseline variables (e.g. baseline CD4 count, ART initiation dates, dates of birth, viral load results) were imported into the final data set.

2.6.2 FGDs with Patients

Two researchers certified in human subjects protection and trained in qualitative methods administered the focus group discussions at each site: one facilitated the discussion and the other took detailed notes. Each focus group was scheduled for a convenient time at the clinic or other convenient location and was conducted in a space that was accessible, neutral, safe and secure. Upon arrival informed consent was obtained, documented and basic participant demographics were captured. FGDs were audio recorded, translated and transcribed verbatim. Paper copies of qualitative transcripts and notes were kept in a locked cabinet. Electronic transcripts are kept in a password-protected file and all identifying information is excluded from the qualitative datasets.

2.7 SAMPLE SIZE

The total target sample for human subjects for the process evaluation was projected to be a maximum of 1,088. The patient survey needed to include a minimum of 375 participants (at least 70 per HIV cohort) and no more than 800 patients. The sample size for the FGDs was a maximum of 240 (maximum 10 persons per group x 3 FGD per site x 8 sites). We expected this would be practical yet sufficient to reach data saturation or predictability (key metrics for ceasing qualitative data collection).

The patient survey needed to include a minimum of 375 participants (at least 70 per HIV cohort) and no more than 800 patients.

2.8 DATA ANALYSIS AND INTERPRETATION

All quantitative analyses were conducted in STATA v14. (Stata Corp). Quantitative analytics yielded descriptive statistics for this report and are presented by intervention and control. Because the survey data were meant to be descriptive, formal tests were not conducted. Socio-economic and demographic characteristics of the patient population interviewed and self-reported adherence to treatment are presented using frequencies and proportions of answers given on the patient questionnaire.

All qualitative data were analysed in NVivo 11© (Doncaster, Australia). Coding themes were identified *a priori* according to the evaluation questions and the CFIR Framework (described above). Additional themes were included as they emerged. Three researchers coded all of the qualitative data (FGD transcripts). We assessed intercoder agreement by calculating a Kappa coefficient and refined the coding as necessary until agreement reached good correlation (>0.5). We then analysed themes by intervention type and by intervention and control. Quantitative and qualitative findings were then triangulated to answer each of the evaluation questions.

3 FINDINGS

This section first presents a description of the sample, followed by the results for each of the evaluation questions.

3.1 CHARACTERISTICS OF THE STUDY CLINICS

Patient and provider data were collected from eight clinics, a sub-sample of four matched pairs from the overall impact evaluation study sample, one pair in each district. Table 3.1 presents the eight selected sites by district and province and the intervention allocation at these sites. As seen in Table 3.1, due to competing priorities at the National level and separate targets to decongest stable patients out of health facilities, DOH's DMD implementation happened outside the confines of randomization. The result of this was DMD implementation at some control sites and absence of DMD at some intervention sites. To account for this, in the process evaluation we need to be cognizant of where DMD implementation has occurred (as noted in the last column of Table 3.1). Those sites that were implementing DMD at the time of cohort enrollment are listed below as "DMD int at enrollment". However, it should also be noted that one site was not implementing DMD at the time of enrollment for the effectiveness evaluation but has since started implementing DMD (indicated below as the DMD control site with an *). As such it is possible that even at DMD control sites some patients may have noted that they are in fact collecting their medicines at a DMD pick-up-point. Furthermore, given the high targets that were set for DMD at the national level, certain sites decided to take patients out of AC cohorts and move them to DMD instead (e.g., Tlhabane and Thokozani) resulting in additional complications for the evaluation at intervention sites implementing both AC and DMD.

Table 3.1 Matched pairs of health facilities in the process evaluation, site allocation and Decentralized Medication Delivery (DMD) implementation

PROVINCE	SITE NAME	SITE ALLOCATION	DMD IMPLEMENTATION
Gauteng, Ekurhuleni SD S2	Motsamai	Intervention	DMD int at enrollment
	Tamaho	Control	DMD int at enrollment
Limpopo, Mopani	Tzaneen	Intervention	DMD Control
	Nkowankowa CHC	Control	DMD Control
North West, Bojanala	Tlhabane	Intervention	DMD int at enrollment
	Bafokeng	Control	DMD int at enrollment
KwaZulu Natal, King Cetshwayo	King Dinizulu	Intervention	DMD int at enrollment
	Nkwalini	Control	DMD Control*

Source: Authors
Notes: DMD int at enrollment: DMD intervention at time of HIV cohort enrollment for effectiveness evaluation; DMD control: DMD control at time of HIV cohort enrollment; *DMD control at time of enrollment but started implementing DMD after HIV cohort enrollment.

3.2 CHARACTERISTICS OF THE STUDY SAMPLE

Table 3.2 reflects the sample size achieved for the evaluation, by data collection method.

Table 3.2 Target and Actual Sample Size for Implementation Evaluation

		INTERVENTION	CONTROL	TOTAL
Patient Survey		315	316	631
FGDs with patients (Max 10 per group)	Number of FGDs	12	12	24
	Number of participants	82	74	156

Source: Authors.

3.3 CHARACTERISTICS OF PATIENTS INTERVIEWED

Table 3.3 below shows the characteristics of the 631 patients who were interviewed. We note that because in the control sites we could not know who, among those eligible for a repeat prescription strategy (RPCS) would have chosen AC or DMD, these patients are grouped together under the RPCS heading. The sample was about two-thirds female (69.6%), few were married (64% never married) and most likely to be between the ages of 30-39 (36.9%) or 40-49 (26.9%) as is typically seen within HIV care and treatment programs. Nearly all were South African (91.6%) and half (50%) lived in informal settlements.

Intervention and control arms were roughly balanced with respect to age and gender, though there were somewhat more females among the intervention arm participants. We also observed some differences in living conditions between groups with more intervention arm patients living in formal settlements than in the control group. However, unemployment rates were very similar between groups at between 46 and 47%.

Table 3.3 Demographic Characteristics of Patient Interview sample

	CONTROL N=316		INTERVENTION N=315		TOTAL N=631	
Characteristic	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Cohort						
Fast Track Initiation Counseling (FTIC)	58	18.4	55	17.5	113	17.9
Adherence Clubs (AC)	–	–	84	26.7	84	13.3
Decentralized Medication Delivery (DMD)	–	–	62	19.7	62	9.8
Repeat Prescription Strategy Eligible (RPCS)	134	42.4	–	–	134	21.2
Enhanced Adherence Counselling (EAC)	49	15.5	44	14.0	93	14.7
Tracing (TRIC)	75	23.7	70	22.2	145	23.0
Age *(n=602)*						
18–29	51	16.6	54	18.3	105	17.4
30–39	121	39.4	101	34.2	222	36.9
40–49	82	26.7	80	27.1	162	26.9
50+	53	17.3	60	20.3	113	18.8

Table 3.3 Demographic Characteristics of Patient Interview sample (continued)

	CONTROL		INTERVENTION		TOTAL	
Characteristic	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Gender *(n=631)*						
Female	206	65.2	233	74.0	439	69.6
Male	110	34.8	82	26.0	192	30.4
Marital status *(n = 630)*						
Never married	206	65.2	197	62.7	403	64.0
Married	76	24.1	72	22.9	148	23.5
Divorced	9	2.8	15	4.8	24	3.8
Separated	4	1.3	11	3.5	15	2.4
Widowed	21	6.6	19	6.1	40	6.3
Nationality *(n=631)*						
South Africa	290	91.8	288	91.4	578	91.6
Lesotho	8	2.5	12	3.8	20	3.2
Mozambique	6	1.9	2	0.6	8	1.3
Zimbabwe	10	3.2	11	3.5	21	3.3
Other African country	2	0.6	2	0.6	4	0.6
Settlement type *(n=572)*	301		271		572	
Formal	70	23.3	111	41.0	181	31.6
Informal	194	64.5	92	33.9	286	50.0
Location*	39	13.0	46	17.0	85	14.9
Township*	13	4.3	79	29.2	92	16.1
Education/Highest grade *(n=627)*	314		313			
No schooling	21	6.7	14	4.5	35	5.6
<Grade 5	34	10.8	26	8.3	59	9.4
Grade 6–7	32	10.2	27	8.6	59	9.4
Grade 8–10	91	29.0	73	23.3	161	25.7
Grade 11–12	87	27.7	109	34.8	188	30.0
> Grade 12	49	15.6	76	24.3	125	19.9
Employment *(n=631)*						
Unemployed	145	45.9	148	47.0	293	46.4
Employed part time	53	16.8	48	15.2	101	16.0
Employed full time	99	31.3	104	33.0	203	32.2
Unable to work/Retired	10	3.2	6	1.9	16	2.5
Other	9	2.8	9	2.9	18	2.9

Source: Authors.
Notes: * = Township and location could be used interchangeably (although location is used more often in rural areas). These denote an urban or semi-urban area that includes formal and some informal settlements that are easily accessible in terms of transport.

Table 3.4 shows additional characteristics of the sample that describe measures of socio-economic status. Access to electricity was common (92%) though access to piped water was less common (58.6%). Only about one-third of the sample received no government grant and about one-third said they would find it easy to access R100 if someone needed treatment. These measures were well balanced between intervention and control sites.

Table 3.4 Demographic Characteristics of Patient Interview sample

	Control N=316		Intervention N=315		Total N=631	
Characteristic	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Electricity to house *(n=630)*						
Yes	287	91.1	293	93.0	580	92.1
Access to piped water *(n=631)*						
Yes - water to house	186	58.9	184	58.4	370	58.6
Yes - community tap	108	34.2	102	32.4	210	33.3
No access to piped water	22	7.0	29	9.2	51	8.1
Household ever goes without food *(n=630)*						
Never go without food	137	43.4	152	48.4	289	45.9
Seldom/sometimes go without food	141	44.6	129	41.1	270	42.9
Often goes without food	38	12.0	33	10.5	71	11.3
Receives a government grant *(n=631)*	316		315		631	
No grant	98	31.0	108	34.3	206	32.6
Receives child grant	188	59.5	177	56.2	365	57.8
Receives disability/partial disability grant	21	6.6	13	4.1	34	5.4
Receives pension	60	19.0	58	18.4	118	18.7
Ability to access R100 if someone needs treatment *(n=627)*						
Very difficult	73	23.2	75	24.0	148	23.6
Difficult	140	44.6	149	47.6	289	46.1
Easy or very easy	101	32.2	89	28.4	190	30.3
CD4 at ART initiation (median, IQR) *(n=547)*	245 (118-337)		221 (129-329)		229 (129-333)	
Viral Load (copies/ml)(median, IQR*) (n=495)*	124 (124-346)		124 (124-334)		124 (124-334)	
$\log_{10}$ VL (copies/ml) (median, IQR) *(n=495)*	2.09 (2.09-2.54)		2.09 (2.09-2.52)		2.09 (2.09-2.52)	
Time on ART at enrollment (days) (median, IQR) *(n=607)*	861 (342-1522)		1167 (386-1945)		939 (369-1749)	

Source: Authors.

The table also shows baseline clinical characteristics of the sample. Patients interviewed largely had low CD4 counts at ART initiation, with a median of 229 cells/ml[3], below the CD4 eligibility thresholds that have been in place for some time of <350 cells/ml[3] and <500 cells/ml[3] that were only recently abandoned in favour of treatment for all. Last viral load was low with a median of 124 copies/mL. These characteristics were very well balanced between intervention and control arms, though intervention arm patients tended to be on ART a longer period of time than control arm patients as was seen in the effectiveness evaluation. This is likely because RPCS were prioritized for

those on ART longest. Each of the baseline tables stratified by the specific intervention cohort is presented in Appendix 2.

Table 3.5 below show the demographics for the focus group discussion participants. Here we have less information as these patients did not complete a full interview. However, much like the patient interview population, most were either 30-39 (33%) or 40-49 (33%) years old and about two-thirds were female (64.1%).

Table 3.5 Demographic Characteristics of Focus Group Discussion sample

	CONTROL N=74		INTERVENTION N=82		TOTAL N=156	
Characteristic	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Age (n=156)						
18–29	14	18.9	16	19.5	30	19.2
30–39	23	31.1	29	35.4	52	33.3
40–49	25	33.8	27	32.9	52	33.3
50+	12	16.2	10	12.2	22	14.1
Gender (n=156)						
Female	42	56.8	58	70.7	100	64.1
Male	32	43.2	24	29.3	56	35.9
Marital status (n = 154)	73		81			
Never married	50	68.5	49	60.5	99	64.3
Married	16	21.9	23	28.4	39	25.3
Widowed/Divorced/Separated	7	9.6	9	11.1	16	10.4
Respondents by Intervention Domain Type						
Testing and Initiation (i.e., eligible for FTIC)	17	23.0	22	26.8	39	25.0
Stable on treatment (i.e., eligible for repeat prescription collection strategy)	35	47.3	31	37.8	66	42.3
Adherence issues and retention (i.e., eligible for EAC or TRIC)	23	31.1	29	35.4	52	33.3
Respondents by District						
Bojanala, North West	17	23.0	19	23.2	36	23.1
Ekurhuleni, Gauteng	20	27.0	23	28.0	43	27.6
Mopani, Limpopo	20	27.0	21	25.6	41	26.3
King Cetshwayo, KwaZulu Natal	17	23.0	19	23.2	36	23.1

Source: Authors.

Overall, we found that the participants in both the FGDs and the patient interview population were broadly representative of the patient characteristics we would expect for an HIV clinic population and were roughly balanced between intervention and control arm on baseline demographics.

Taking the two samples together, we have an appropriate sample from the two different data collection methods at both the intervention and control sites to be able to draw conclusions.

3.3.1 KEY MESSAGES OF THE SAMPLE

i. Overall, we have a sufficient and appropriate sample from the two different data collection methods at both the intervention and control sites

ii. Qualitative data were sufficient to reach saturation and predictability at both the intervention and control sites

iii. Triangulating the quantitative and qualitative findings will allow us to generate programmatically meaningful recommendations on the scale up of the adherence strategy minimum package

3.4 FINDINGS FOR EVALUATION QUESTION 1

How does patient satisfaction with care at intervention sites compare to that at comparison sites among HIV-positive patients?

In order to understand satisfaction, it is important to know the reasons people are attending the clinic. To answer this question we collected data on clinic utilization through patient interviews. Table 3.6 presents basic utilization patterns and an overall ranking of quality of care as experienced at their most recent clinical visit, by intervention cohort. As would be expected, the FTIC patients had been at the facility the shortest duration at the time of interview and came to the clinic most often as they would not yet be eligible for multi-month scripting. The AC and DMD cohorts had been at the clinic the longest and had the longest intervals between clinic visits. Their visit spacing was even longer than those in the control arms (95% of AC patients and 100% of DMD patients reported coming to the clinic every 2-3 months or less, while only 57% of those eligible for RPCS in the control group did so). Most patients reported no other comorbid diseases, though comorbidities were most common among those in or eligible for FTIC, TRIC and EAC as would be expected as these patients were either new on ART (FTIC) or unstable (TRIC and EAC). Surprisingly, 16.7% of AC and 11.3% of DMD patients also reported having hypertension, higher than in the control group eligible for RPCS at 9.7%. For FTIC, AC and EAC, the intervention arm patients were more likely to report having received good or very good care than the control arm, but not for TRIC and DMD. At the same time, for both DMD and TRIC, the proportion of patients reporting bad or very bad care was actually lower than in the control group suggesting even with DMD the perceived quality of care was likely no worse than in the control group. This is consistent with the overall effectiveness evaluation where we did find difficulties with DMD implementation, though these results should be interpreted with caution as DMD was not randomized.

Table 3.6 Access and utilization as well as overall patient satisfaction by intervention cohort

PATIENT SURVEY	COHORT 1: FTIC		COHORT 2 AND 3: AC AND DMD			COHORT 4: EAC		COHORT 5: TRIC	
	Control	Intervention	RPCS Control	AC Intervention	DMD Intervention	Control	Intervention	Control	Intervention
	(n = 58)	*(n = 55)*	*(n = 134)*	*(n = 84)*	*(n = 62)*	*(n = 49)*	*(n = 44)*	*(n = 75)*	*(n = 70)*
Months coming to this facility in years, median (IQR)	0(0–1)	0(0–1)	4(2–5)	4(3–6)	4(3–6)	2(2–5)	3(1–4)	2(1–3)	2(1–4)
Frequency visiting facility (%) (q204)									
More than once per month	0.0	1.8	0.8	0.0	0.0	6.1	0.0	1.3	2.9
Monthly	81.0	69.1	41.4	0.0	3.2	63.3	56.8	42.7	59.4
Every 2–3 months	19.0	27.3	57.1	100.0	88.7	28.6	43.2	56.0	37.7
Every 4–6 months	0.0	1.8	0.7	0.0	3.2	0.0	0.0	0.0	0.0
Less than every 6 months	0.0	0.0	0.0	0.0	4.8	2.0	0.0	0.0	0.0
In addition to HIV, other diseases being treated for (q201)									
No other diseases	84.5	90.9	80.6	81.0	85.5	85.7	84.1	86.7	88.6
TB	6.9	3.6	0.8	0.0	0.0	4.1	6.8	1.3	1.4
Diabetes	1.7	0.0	2.2	0.0	3.2	0.0	4.6	0.0	0.0
Hypertension	5.2	0.0	9.7	16.7	11.3	6.1	4.6	10.7	5.7
Asthma	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.3	0.0
Overall rating of care received at the most recent clinical visit (q213)									
Very bad	0.0	0.0	3.8	0.0	3.2	4.1	2.3	4.0	4.4
Bad	17.2	5.5	9.1	2.4	3.2	6.1	13.6	17.3	13.0
Okay	15.5	20.0	22.0	16.7	46.8	18.4	22.7	20.0	27.5
Good	56.9	63.6	54.6	57.1	40.3	57.1	54.6	44.0	47.8
Very good	10.3	10.9	10.6	23.8	6.5	14.3	6.8	13.3	7.3

Source: Authors

3.4.1 Question 1 Key Messages

i. In general, respondents were attending facilities for HIV treatment and often at least one other chronic disease condition either monthly (for those in earlier stages of care) or every 2-3 months with fewer participants attending less than every three months

ii. Comorbidities, particularly hypertension were between 10-16% for those in repeat prescription strategy interventions

iii. Respondents from intervention sites generally perceived the quality of care as better or at least no different from respondents at control sites, with the AC and FTIC intervention cohorts reporting a higher level of satisfaction with care over the controls. Participants in the repeat prescription strategies (AC and DMD) were able to frequent the clinic less often than participants in the control group, with little difference in perceived quality by DMD participants but an improved perception of quality of care amongst AC participants.

3.5 FINDINGS FOR EVALUATION QUESTION 2

What are the barriers to and facilitators of ART initiation and adherence for HIV-positive patients eligible for each intervention for patients on ART?

In patient interviews, we surveyed patients as to what they perceived as important barriers to and facilitators of adherence. Table 3.7 below shows barriers and facilitators that are common to all cohorts stratified by intervention and control cohorts. Most patients were able to get to the clinic in less than 1 hour with between 10% and 27% reporting taking 1-2 hours depending on the cohort, and between 1.5% and 7.5% of patients reporting taking more than 2 hours. We found little differences between intervention and control arm patients in terms of time to get to the clinic, with the exception of the TRIC cohort where 87% of intervention arm patients, but only 77.3% of control arm patients reported taking less than an hour to get to the clinic. This supports our effectiveness finding that suggest that TRIC was targeted at patients with more barriers to adherence than all patients who were eligible for TRIC.

While we found no differences between the intervention and control arms for TRIC, it does suggest that transport (and other) costs may be a barrier to adherence overall.

Reporting having to pay transport expenses was common among participants at between 43.6% and 61.4% depending on the cohort. Still it appeared to be higher among RPCS control arm patients than DMD and AC patients and highest overall among those in both the intervention and control arms for the TRIC cohort. While we found no differences between the intervention and control arms for TRIC, it does suggest that transport (and other) costs may be a barrier to adherence overall. Reports of childcare costs, unpaid time off from work and other costs were rare overall.

Table 3.7 Prevalence of common barriers to adherence as indicated by patient survey respondents and by type of intervention

	COHORT 1: FTIC		COHORT 2 AND 3: AC AND DMD			COHORT 4: EAC		COHORT 5: TRIC	
	Control	**Intervention**	**RPCS Control**	**AC Intervention**	**DMD Intervention**	**Control**	**Intervention**	**Control**	**Intervention**
	(N = 58)	**(N = 55)**	**(N = 134)**	**(N = 84)**	**(N = 62)**	**(N = 49)**	**(N = 44)**	**(N = 75)**	**(N = 70)**
Clinic Visits									
Time to get to clinic									
Less than 1 hour	75.9	74.6	74.4	81.0	75.8	79.6	70.5	77.3	87.0
1-2 hours	20.7	20.0	18.1	15.5	24.2	16.3	27.3	17.3	10.1
2-4 hours	3.5	5.5	6.0	2.4	0.0	4.1	2.3	4.0	0.0
5 or more hours	0.0	0.0	1.5	0.0	0.0	0.0	0.0	1.3	1.5
Expenses incurred for each clinic visit									
No expenses	39.7	47.3	29.9	52.4	51.6	40.8	50.0	34.7	35.7
Transport	51.7	52.7	57.5	46.4	43.6	49.0	47.7	58.7	61.4
Unpaid time off work	1.7	9.1	7.5	2.4	0.0	6.1	2.3	4.0	7.1
Child Care	1.7	0.0	0.8	0.0	1.6	0.0	0.0	0.0	0.0
Other	6.9	0.0	8.2	2.4	0.0	4.1	0.0	2.7	2.9
Cost in rand per clinic visit, median (IQR) (n=518)	16 (0-30)	24 (0-45)	20 (0-30)	20 (0-36)	16 (0-32)	16 (0-26)	24 (0-40)	16 (0-24)	30 (20-56)
Average time spent a clinic per visit									
Less than 1 hour	3.5	7.3	15.0	42.9	17.7	8.2	4.6	9.3	2.9
1-2 hours	29.3	14.6	21.1	38.1	25.8	22.5	22.7	13.3	23.2
3-4 hours	25.9	49.1	30.8	13.1	19.4	36.7	31.8	26.7	44.9
4-6 hours	29.3	23.6	17.3	4.8	25.8	12.2	22.7	24.0	15.9
More than 6 hours	12.1	5.5	15.0	1.2	9.7	20.4	18.2	25.3	13.0

Table 3.7 Prevalence of common barriers to adherence as indicated by patient survey respondents and by type of intervention (continued)

	COHORT 1: FTIC		COHORT 2 AND 3: AC AND DMD			COHORT 4: EAC		COHORT 5: TRIC	
	Control (N = 58)	Intervention (N = 55)	RPCS Control (N = 134)	AC Intervention (N = 84)	DMD Intervention (N = 58)	Control (N = 55)	Intervention (N = 134)	Control (N = 84)	Intervention (N = 58)
Average time waiting in the queue or waiting room per clinic visit in minutes									
Less than 1 hour	22.4	21.8	36.6	69.9	30.7	24.5	14.0	32.0	21.7
1-2 hours	48.3	54.6	35.1	20.5	35.5	40.8	51.2	38.7	49.3
3 hours or more	29.3	23.6	26.7	8.4	33.9	34.7	34.9	29.3	29.0
Appointment times convenient									
Not given appointment	33.9	49.1	35.4	28.8	30.0	17.4	33.3	40.5	36.2
No/Not always	3.6	3.8	7.7	5.0	6.7	10.9	2.4	5.4	4.4
Yes	62.5	47.2	56.9	66.3	63.3	71.7	64.3	54.1	59.4

Source: Authors.

Time reported spent at the clinic was long with fewer than 10% of patients reporting spending less than an hour in the clinic per visit with the exception of RPCS patients, where between 15% and 43% of patients reported taking less than an hour. Those most likely to report short visits were in the AC cohort where 42.9% of patients reported spending less than 1 hour per visit and another 38% reported 1-2 hours per visit. For all other cohorts, longer times were more common. Still, for FTIC, AC and TRIC patients, intervention arm patients were less likely to spend four or more hours per visit than control arm patients. Surprisingly, about 35% of all DMD patients did report spending four or more hours at a visit, more than in the control arm. This may be the result of cases in which implementation of DMD was poor where drugs were not at the pick-up-point. In such cases, patients had to return to the clinic to pick up their medications but with no prior appointment or arrangement.

The tables below present further cost and expenses incurred for those intervention participants enrolled in ACs (Table 3.8), for intervention participants picking up their medication via DMD (Table 3.9) and for any participant (control or intervention) who reported receiving some enhanced adherence counselling (Table 3.10). Among those patients enrolled in AC, 80% reported they were able to get to the club in less than 1 hour, half of these patients still incurred transport costs although the cost per club visit was significantly less than the cost of a clinic visit (ZAR12 per club visit vs. ZAR20 per clinic visit) and most AC members interviewed (93%) reported that club visits took less than 2 hours.

Slightly more DMD patients had to travel more than hour to pick up their medications, although interestingly only 40% indicated that they incurred transport costs for these visits which was less than AC patients. The cost in rand per medication pick up was slightly higher than AC visit and was the same as the cost reported by DMD patients as visiting the clinic. This may be because pick-up-points are often still at the clinic or nearby to the clinic although the same could also be true for ACs. However the time taken to actually pick up medications is significantly shorter than a clinic visit with 90% of these DMD patients reporting that they can pick up their medications in less than 1 hour and 100% saying it took less than 2 hours – a clear benefit of this model if implemented well.

Table 3.8 Costs and expenses incurred by intervention patients enrolled in adherence clubs (n=84)

ADHERENCE CLUB VISITS	% (N=84)
Distance travelled for AC meetings	
Within walking distance	50.7
<1 hour	29.3
1 hour or more	20.0
Expenses incurred for each clinic visit	
No expenses	36.9
Transport	50.0
Unpaid time off work	2.4
Child Care	0.0
Other	2.4
Cost in rands per club visit, median (IQR)*(n=57)*	12 *(0–30)*

Table 3.8 Costs and expenses incurred by intervention patients enrolled in adherence clubs (n=84) (continued)

ADHERENCE CLUB VISITS	% (N=84)
Time spent at average club visit	
<1 hour	65.8
1–2 hours	27.8
More than 2 hours	6.3

Source: Authors.

Table 3.9 Costs and expenses incurred by intervention patients picking up their medications via DMD (n=64)

DMD MEDICINE PICK-UPS	% (N=84)
Distance travelled to DMD pick-up-point	
Within walking distance	40.3
<1 hour	32.3
1 hour or more	12.9
Expenses incurred for each DMD visit	
No expenses	48.4
Transport	40.3
Unpaid time off work	1.6
Child Care	0.0
Other	11.3
Cost in rands per DMD pick-up, median (IQR)	16 *(0–22)*
Time taken to pick up treatment and pick-up point	
<1 hour	90.0
1–2 hours	10.0
3–4 hours	0.0
More than 4 hours	0.0

Source: Authors

Because EAC is required to some degree under HIV treatment guidelines, patients in both the control and intervention arm reported receiving this counselling on the patient questionnaire and as such we can compare related costs of this intervention in both arms (see Table 3.10). It seems that patients requiring EAC in the intervention arm may be prioritised as over 90% reported having to wait less than an hour for this counselling compared to 64% of control arm patients. The actual time spent in counselling did not seem to vary between arms with 70% in each arm reporting that it took less than 1 hour and 30% saying 1-2 hours.

Table 3.10 Time costs incurred by control and intervention patients receiving enhanced adherence counselling

ENHANCED ADHERENCE COUNSELLING	CONTROL	INTERVENTION
	% (n=49)	*% (n=44)*
Average time waiting before additional adherence counseling in minutes		
<1 hour	63.6	92.3
1–2 hours or more	36.4	7.7
Average time in additional adherence counseling in minutes		
<1 hour	70.0	70.8
1–2 hours	30.0	29.2

Source: Authors.

3.5.1 Facilitators of Adherence from FGDs

Table 3.11 below shows the themes that were most commonly elicited from the focus group discussions.

Table 3.11 Most frequently cited perceived barriers and facilitators to adherence among patient respondents by intervention and control groups

CONTROL		INTERVENTION	
Barriers	**Facilitators**	**Barriers**	**Facilitators**
▪ Clinic level barriers	▪ Intrinsic motivation	▪ Clinic level barriers	▪ Intrinsic motivation
▪ Stigma	▪ Clinic facilitators	▪ Stigma	▪ Family support/ disclosure
▪ Cost/Distance	▪ Family support/ disclosure	▪ Side effects	▪ Strategies for remembering
▪ Food insecurity	▪ Strategies for remembering	▪ Time/cost	▪ Clinic facilitators

Source: Authors.

Below we provide illustrative quotes that answer the specific study questions and speak to the specific themes.

Intervention Sites

Through focus group discussions, we elicited facilitators of improved adherence. At the intervention sites, patients noted that having support from someone to remind them to take their pills was a strong facilitator of adherence. In particular, support from outside the clinic, particularly from family and friends was considered very helpful in remembering to take medication on time as illustrated in the quotes below:

> *"Taking your pills on time and having someone to help you remember when it is time, or something that is a memory aid to remind you when it is time to take the pills."*
> FTIC participant

> *"I second on that because support should primarily be from your family and friends. For instance where I live there are four of us. When one of them realises that I have forgotten they say "hey mam it is 7" and then I drink them. I am not scared to tell them that I go to the clinic for these pills."*
> FTIC participant

Thus disclosure to friends and family members was found to be a key facilitator to remaining adherent. Interestingly, it was noted that this was particularly true early on in in the course of treatment before patients had much experience on antiretroviral therapy and were still developing treatment routines as would be the case for FTIC patients:

> *"At the beginning I told my husband that he should check on me and remind me if I have taken the pills."*
> RPCS participant

Still others noted that having the support of someone who also had HIV and was taking medications was a helpful facilitator to good adherence. Taking pills together with someone else was noted as being supportive. It was also noted that this was helpful in supporting medication pick-up as one could pick up medication for the other, reducing the time needed to be spent at the facility:

> *"I ended up getting used to and I ended up fetching them for him and he would also fetch them for me when I am busy and I would pour us water and drink them together and we have been doing like this up until we both got used to it."*
> RPCS participant

Again this was noted as being particularly important early on in the course of treatment as would be so for FTIC patients. Others noted specific devices or approaches they used to continue to remember to take their treatment on time as facilitators of adherence. Taking advantage of routines and the repetitive nature of pill taking was also discussed as important for adhering to treatment. This was noted as being important even when outside one's normal routine:

> *"I take my treatment at 8 o'clock. Even when I am at the tavern, I would go out and take my treatment."*
> RPCS participant

> *"Suppose I take a trip, I make sure that I take the treatment either before I leave or else wrap the pills with a piece of toilet tissue. On my arrival at my destination, I would then take the treatment."*
> RPCS participant

While such strategies were often mentioned as being helpful by themselves as aids to remembering to take their treatment and to take it regularly, these strategies often overlapped with the helpful nature of disclosure and the support of friends and family as illustrated by this quote:

> *"In order not to miss the time for taking the treatment, I have asked my wife to remind me when it is time to take the treatment. Or I also listen to the radio."*
> FTIC participant

While many noted specific approaches they took to taking their pills on time, still others noted fear of the consequences of not taking their treatment as a motivating factor. This appears to be most strongly related to patients who had already experienced the symptoms of HIV disease prior to initiating treatment. This would be expected to be common in our sample because, as noted above,

the median starting CD4 count at the time of treatment initiation was just above 200 cells/ml[3] when many patients would have already experienced illness related to HIV, some quite severely:

> *"My nails were beginning to rot and even their colours was becoming black and showing signs of decay. Since I started taking the pills, I no longer experience any problem at all. I have gained weight and I can see that I am adhering to the treatment as expected."*
> FTIC participant

Care providers also emerged as a motivating factor, encouraging patients to continue to take their medication and highlighting the benefits of treatment. In particular, it was noted that patients responded well to hearing that those who took their treatment regularly would feel better and be able to engage in daily activities and improved health encouraged others to keep taking their medicines:

> *"Then they said to me … if you adhere to this treatment and take the pills consistently, you will quickly gather stamina. I obeyed the instructions and I saw them supporting me throughout. I am not afraid to take them. I know that when I take them, I would be okay. I think they have given me the greatest support."*
> FTIC patient

> *"What actually helped me until now in taking my pills…There is a certain lady called Sister Hellen, she is a social worker at the clinic. Until now, that Sister … I attended class for three days and she has been encouraging us to take pills, take care of ourselves, eat healthy for example fruits, vegetables, drink lots of water and exercise. Whilst we do that, we must be taking our medication in the correct way, that is how we will pick up …we take them to boost our immune system in the body. That is what encouraged me to still be taking my medication even today."*
> EAC/TRIC participant

Control sites

Patients in the control sites reported similar approaches to adherence as did patients in the intervention arm. Support from family and friends was often mentioned, again noting that having someone else who is also infected and on treatment was a help:

> *"My mother is the one who supported me, she's been living for 14 years with this virus, she is the one who supported me."*
> FTIC participant

> *"I am also reminded by the children. But when I am away from home, most often I am with friends who remind me."*
> RPCS participant

Also like the intervention arm, use of alarms, cell phones and other devices were mentioned as important strategies to remembering to take medications on time.

> *"I use my cell phone, it reminds me when is time to take medication at 7 in the morning and in the evening it tells me that there's something missing in my body".*
> RPCS participant

> *"When is time to take pills, even when I'm busy with something, when I look at time there's something that just tells is time take pills."*
> RPCS participant

However, it was also noted that not all of the devices that people use are available to all patients in need of adherence support. In particular, while cell phone ownership is common, it was noted that this is not true everywhere, and therefore using cell phone reminders may not be feasible in all areas:

> *"To tell you the truth I agree … that alarm is good. Because some of us in the rural areas we don't have phones."*
> FTIC participant

One difference between the intervention and control group was that several control group participants noted simply needing to comply with what the nurses or clinical staff advised them to do as a motivating factor, particularly if the information given was easy to understand:

> *"When I come to the clinic and speak to the nurses, when they advise me to take the treatment at a particular time, I oblige."*
> FTIC participant

> *"I would say it is about abiding by what the nurses are telling you…They do share this kind of information with us and it is exactly what they explained us and it has helped me take the treatment as prescribed, I would be able to live like any other person."*
> FTIC participant

Control arm patients also noted the benefits of taking treatment as important motivators for adhering to the treatment. In particular, the fact that those who take their treatment appear healthy without signs of the disease was a motivating factor:

> *"They do talk about it, and they enjoy taking their medication, some even say that a person with HIV looks better than a person with diabetes. When people take their medication well you might not even believe that they are sick, because they stick to their medication and the clinic also makes sure that they get medication at the right time. People speak positive about it, those taking their medication look so healthy that some people may find it hard to believe that they are actually living on medication for the rest of their lives."*
>
> RPCS participant

Still others in the control group noted a personal desire to continue living and the expected benefits of treatment as a strong motivator for adhering to treatment:

> *"Because I love life and no one else can fight for my life, I have to consider my own life, I must know what time to take them and stick to it."*
>
> RPCS participant

3.5.2 Barriers to Adherence from FGDs

Intervention sites

At interventions sites, a commonly noted barrier to adherence that participants described was the necessity to have sufficient food to take ARVs. This barrier is one that has been found consistently in the literature as a barrier to treatment adherence since the early days of the treatment rollout, with some patients in our study even noting abandoning treatment because of food insecurity:

> *"Many people in our households are unemployed. When you collect your treatment and take them home with you; when you arrive at home and take them on an empty stomach, they won't have any effect. As a result you end up abandoning them. You end up no longer taking them."*
>
> RPCS participant

> *"..some people do not know where their next meal will come from. I can image that burning sensation in the stomach so that could be an obstacle leading to them defaulting on that day with the hope that they will be able to drink it on the next day, they might go on like that and eventually stop taking their medication."*
>
> RPCS participant

Stigma, another barrier that has been well described in the literature, was also a common reason that intervention arm patients noted for not adhering to treatment. This was true despite how common HIV treatment has become and nearly a decade of experience with HIV treatment in South Africa. In particular, patients noted a desire to keep their treatment status hidden when travelling or interacting with people they did not know well or trust with disclosing their HIV status:

> *"Because sometimes we are staying with some people, we don't want some people to see our medicine."*
> FTIC participant

While the medications used in HIV treatment have improved over time, side effects associated with treatment can still lead to poor adherence and were raised by intervention arm participants as being a reason for not adhering to treatment. This was particularly true in cases where the side effects impacted their ability to carry out their daily responsibilities, especially with working. Participants expressed that they found they received little support on how to deal with side effects:

> *"And when you tell them that these tablets make you feel sick, they cause me heartburn, or I become dizzy, they say that is how they are."*
> FTIC participant

> *"No, I think there is something missing in them. They make me lose sleep and that affects my work, I do temp work and sometimes I cannot go to work. I feel sleepy during work. I cannot stand it anymore. They should have informed us or they should tell us how they will manage this. They really affect me. "*
> FTIC participant

In terms of treatment initiation, intervention arm patients frequently noted long wait times and the need for waiting to complete blood work or being turned away from the clinic as barriers to starting treatment:

> *"But regarding treatment as mentioned earlier I have been back here 3 time for [unclear]. I arrived here around 9 and waited until 10, until 2. At 2 I would be told to go home, meanwhile I am absent from school, the same would happen on the next day, I was not on treatment at the time but I was meant to start. I gave up eventually. I asked myself who is the patient here and convinced myself to return the 4th time and only then did I get a chance to do a blood test."*
> FTIC participant

For those on treatment, staff attitude and lack of clinic staff support and understanding of the patient's personal situation was highlighted as a reason why patients might not discuss issues of adherence with staff and consequently might adopt behaviours that risk treatment adherence:

> *"You know what brother, we are really not getting support in there. What makes our viral load to be high is because they are not helping us to solve the problems we have."*
> EAC/TRIC participant

> *"And again when you have stress and you go to the counsellor, she asks you what makes the viral load to be high, you find that you have a lot of stress and she is not helping you instead asks you about the high level of your viral load. You are aware that you have too much stress and you started drinking alcohol, when you start talking they say stress does not do anything, they are not able to talk to me in an appropriate manner."*
> EAC/TRIC participant

Control sites

For control arm patients, a common theme around barriers to adherence was stigma just as was noted in the intervention arm. Some participants who said that disclosure was important to improving adherence also noted issues with accidental disclosure that could prevent strong adherence including issues with outreach workers. This fear of disclosure was noted as a reason for seeking care at facilities further away from where they live:

> *"Some people don't want to disclose their status, but as soon as they go to your house people will notice them since they even have a uniform identifying where they come from, so it's good for support but is also not good because we have people who are very ignorant when a person is positive they start gossiping about them, no wonder some don't want to disclose it, even when they are seriously ill they will stay at home and not even go to the clinic since we all know each other in the community. And those people will help you and go around talking about you as well. That's why you will find that a person stays at certain place but will collect treatment somewhere else very far and end up not having money for transport, they avoid being helped by a nurse staying in their community."*
> FTIC participant

Like at intervention sites, control site participants also noted that consistent access to food, travel time and long queues at clinics were barriers to good adherence. Interestingly, participants noted that some clinics make provisions for those who are sicker or older to shorten their wait times, but even then it was not considered sufficient to overcome the barriers to good adherence.

> *"Some old people travel by foot to the clinic on an empty stomach, they made a rule that people who exceeded certain age must pass to the front but you will find them waiting in queues for a long time."*
> FTIC participant

While participants generally had positive things to say about the clinic staff, like in the intervention arm, control arm participants noted that they did not always receive supportive advice from clinic

staff. In particular, participants noted that clinic staff were not always supportive in helping patients understand how to deal with issues around travel and medication taking:

> *"Like me right now I work in [location], my work needs me to travel. Sometimes I will be working very far but I will try to be late at least with 2 days not more than that. Even when you try to explain to them that you had problems, they don't understand."*
> FTIC participant

3.5.3 Question 2 Key Messages

i. Patients identified numerous factors that led to improved adherence, including using reminders and cell phones for remembering when to take medications as well as disclosure of HIV status to those who could support them. These factors were perceived to interact, as disclosure could also lead to having someone who could serve as a reminder to take medications.

ii. Patients also identified a series of barriers to ART adherence, including food insecurity, medication side effects and long wait times at the clinics and long travel times to get to the clinics and poor staff attitude and support. Patients also expressed concern over accidental disclosure from attending the clinic and being seen by the community health workers associated with the clinic.

3.6 FINDINGS OF EVALUATION QUESTION 3 AND 4

Question 3: What are the strengths and weaknesses of each intervention for HIV positive patients from the perspective of patients?

Question 4: What additional strategies do patients feel would be helpful in improving treatment adherence?

As they are closely related, we analyzed the data on question 3 and 4 together. We first present the quantitative data and then follow it with information from the focus group discussions.

3.6.1 Treatment Initiation Interventions

Table 3.12 below shows the results from interviews comparing intervention to control groups in terms of factors related to treatment initiation for those in the FTIC cohort. These are presented among the intervention and control groups to allow for comparison across groups. Overall, we saw little difference in the proportion of patients reporting good or very good quality services at the time of testing, though the ratings were high overall. This was true for ratings of staff friendliness and satisfaction with care. FTIC participants did report one fewer visit prior to treatment initiation (median 2 vs 3) and they were about 10 percentage points more likely to say they felt involved or

somewhat involved in decisions affecting their care. They were substantially more likely to receive individual counselling after initiation ART than those in the control group (27.3% vs 13.8%).

Table 3.12 Experiences of patients eligible for interventions to support imitation of treatment by intervention and control sites

	COHORT 1: FTIC	
	Control	**Intervention**
Characteristic	***(n = 58)***	***(n = 55)***
Initiated On Art	100	100
Perceptions of Quality of Care		
Rating of overall service received at time of testing and diagnosis		
Very bad	3.5	0.0
Bad	0.0	1.8
Okay	15.5	14.6
Good	56.9	54.6
Very good	24.1	27.3
Rating of staff friendliness, welcoming and being respectful at time of testing		
Very bad	0.0	1.8
Bad	0.0	1.8
Okay	13.8	7.3
Good	56.9	69.1
Very good	29.3	20.0
Rating of staff friendliness, welcoming and being respectful at time of initiating treatment		
Very bad	0.0	0.0
Bad	0.0	0.0
Okay	3.5	7.3
Good	62.1	63.6
Very good	34.5	29.1
Rating of satisfaction with care received from testing to initiating ART		
Extremely dissatisfied	0.0	0.0
Not satisfied	3.5	1.8
Neither satisfied or dissatisfied	3.5	9.1
Satisfied	69.0	54.6
Very satisfied	24.1	34.6
Experience of counselling		
Adherence counselling prior to ARV initiation		
No counselling	5.2	7.3
Group counselling	24.1	10.9
Individual counselling	70.7	81.8
Median (IQR) no. of counselling session prior to ART initiation	1 (1-3)	1 (1-2)

Table 3.12 Experiences of patients eligible for interventions to support imitation of treatment by intervention and control sites (continued)

	COHORT 1: FTIC	
	Control	**Intervention**
Adherence counselling after ARV initiation		
No counselling	79.3	61.8
Group counselling	6.9	10.9
Individual counselling	13.8	27.3
Median (IQR) no. of HIV visits from HIV diagnosis to ART initiation	3 (2-4)	2 (1-3)
Involved or somewhat involves in decisions affecting care		
No	33.9	29.1
Somewhat	23.2	18.2
Yes	41.1	50.9

Source: Authors

3.6.2 Adherence Clubs (AC) and Decentralised Medicine Delivery (DMD)

Because they both had the same comparison group, we analysed data on AC and DMD together in Table 3.13. The benefits of being in one of the repeat prescription strategies are seen in the frequency of pill collection. 22.6% of patients in DMD and 39.3% of patients in AC reported picking up medications every 3 months while only 8.3% reported doing so in the control group. Interestingly, the most common DMD pick-up point was still at the facility with 64.5% of DMD participants collecting their medications at the facility. This is something we also noted in the provider interviews. We also saw a fair bit of overlap in interventions as many on AC (52%) and DMD (64%) had also registered for fast lane medication pick up and this was substantially higher than in the control group (9%).

The lower half of the table represents questions asked only of DMD or AC participants. Overall, we found satisfaction with AC to be high as 98.8% of those asked said they were happy to be in a club and 96% said they were either satisfied or very satisfied with receiving ART at a club. All said they would recommend it to others. Importantly, most felt their adherence was high before joining the club (91.3%) (as would be expected given the eligibility criteria for the program) and even better after (97.5% said they had very good adherence or always adhere).

Self-reported adherence was unchanged from before and after joining a club with about 93% saying they had very good adherence or always adhered at both time points.

We found similar high satisfaction with DMD with 96.3% saying they were happy to be enrolled in DMD and 92.5% said they would recommend DMD to others. After joining, 86% said the service they received was good or very good. Only 20.4% of patients reported ever sending a buddy to collect their medications for them. Self-reported adherence was unchanged from before and after joining a club with about 93% saying they had very good adherence or always adhered at both time points.

Table 3.13 Experiences of patients eligible for repeat prescription strategies by intervention and control sites

	COHORT 2 AND 3: AC AND DMD		
	RPCS Control	**AC Intervention**	**DMD intervention**
Characteristic	***(n = 134)***	***(n = 84)***	***(n = 62)***
Physical Pill Collection			
Frequency of Pill Collection			
Monthly	38.3	0.0	1.6
Every 2 months	53.4	60.7	75.8
Every 3 months	8.3	39.3	22.6
Location of medicine pick-up			
At the clinic	100.0	41.0	64.5
At an Adherence Club/Support group	0.0	59.0	0.0
At a pick-up-point outside the facility	0.0	0.0	30.6
Other	0.0	0.0	4.8
Ever registered for fast lane pick-up at the facility			
No	89.5	46.4	33.9
Yes	9.0	52.4	64.5
Not sure or don't know	1.5	1.2	1.6
Adherence Clubs			
Enrolled in an adherence club			
No	94.0	3.6	93.4
Yes	6.0	96.4	6.6
Median (IQR) no. of club visits attended		3 (2-4.5)	
Happy to be enrolled in a club			
No		0.0	
Somewhat		1.2	
Yes		98.8	
Ever sent a buddy to the club to pick up ART			
No		86.4	
Yes		13.6	
Months of medication distributed at the club			
One month		0.0	
2 months		63.0	
3 months		35.8	
4 months or more		1.2	
Level of satisfaction with receiving ART at an AC			
Extremely dissatisfied		2.5	
Not satisfied		0.0	
Neither satisfied or dissatisfied		1.2	
Satisfied		33.3	
Very satisfied		63.0	

Source: Authors.

Table 3.13 Experiences of patients eligible for repeat prescription strategies by intervention and control sites (continued)

	COHORT 2 AND 3: AC AND DMD		
	RPCS Control	**RPCS Control**	**DMD Intervention**
Recommend AC clubs to others			
No	–	0.0	–
Yes	–	100.0	–
Rating of overall service received at the adherence club			
Very poor/bad	–	1.3	–
Bad/poor	–	0.0	–
Okay	–	2.5	–
Good	–	34.2	–
Very good	–	62.0	–
Rate your adherence before joining the club			
Bad/poor	–	0.0	–
Neither bad nor good	–	1.3	–
Good/Fair	–	7.5	–
Very good/always adhere	–	91.3	–
Rate your adherence after joining the club			
Bad/poor	–	0.0	–
Neither bad nor good	–	0.0	–
Good/Fair (take your	–	2.5	–
Very good/always adhere	–	97.5	–
Decentralized Medicine Delivery			
Enrolled to pick up meds outside of the facility			
No	90.8	96.4	12.9
Yes	9.2	3.6	87.1
Median (IQR) no. of times picked up meds at DMD pick-up-point			2 (1-2)
Happy to be enrolled in DMD			
No	–	–	1.9
Somewhat	–	–	1.9
Yes	–	–	96.3
Not sure / Can't remember	–	–	0.0
Ever sent a buddy to pick up ART at pick-up-point			
No	–	–	79.6
Yes	–	–	20.4
Frequency of visits to pick-up-point			
One month	–	–	1.9
2 months	–	–	86.8
3 months	–	–	11.3
4 months or more	–	–	0.0

Table 3.13 Experiences of patients eligible for repeat prescription strategies by intervention and control sites (continued)

	COHORT 2 AND 3: AC AND DMD		
	RPCS Control	**RPCS Control**	**RPCS Control**
Recommend DMD to others			
No	–	–	7.5
Yes	–	–	92.5
Rating of overall DMD service for picking up ARVs			
Very poor/bad	–	–	4.0
Bad/poor	–	–	4.0
Okay	–	–	6.0
Good	–	–	34.0
Very good	–	–	52.0
Rate your adherence before DMD			
Bad/poor	–	–	1.9
Neither bad nor good	–	–	0.0
Good/Fair	–	–	5.6
Very good/always adherent	–	–	92.6
Rate your adherence after DMD			
Bad/poor	–	–	0.0
Neither bad nor good	–	–	1.9
Good/Fair	–	–	5.7
Very good/always adherent	–	–	92.5

Source: Authors.

3.6.3 Enhanced Adherence Counselling (EAC)

Table 3.14 below shows the results of questions asked of the EAC cohort and their controls. The groups were similar with respect to the number of times they had stopped taking medications since ART initiation and with respect to self-reported adherence in the past 4 days. However, control arm patients were much more likely to have stopped treatment for more than 4 weeks compared to patient in the intervention arm (57.1% vs 30.0%). Those in EAC reported being twice as likely to have attended more than 2 counselling sessions since June 2016 (19.2% vs 10.0%). The counselling EAC members received also appeared to be more interactive than control group participants, with cards and desk aids, flip charts and posters being much more frequently used than in the control group. Those in EAC were also much more likely to rate their service as good or very good than those in the control group (92.3% vs 63.7%). Still, those in the EAC group rated their adherence after counselling about the same as those in the control group (90.9% vs 88.0% reporting very good or always adherent).

Table 3.14 Experiences of patients eligible for enhanced adherence counselling by intervention and control

	COHORT 4: EAC	
	Control	**Intervention**
Characteristic	***(n = 49)***	***(n = 44)***
Adherence to ART		
Adherence in past 4 days (scale 1-100) median (IQR)	100 (94-100)	99 (95-100)
No. of times stopped taking ART since initiating		
Never	0.0	0.0
Once only	57.1	50.0
2-5 times	14.3	30.0
More than 5 times	28.6	20.0
Longest time have stopped ART		
One day only	21.4	10.0
Less than 1 week	14.3	60.0
2-4 weeks	7.1	0.0
More than 4 weeks	57.1	30.0
Experiences with enhanced adherence counselling		
No. of counselling sessions attended since June 2016		
One	70.0	65.4
Two	20.0	15.4
More than two	10.0	19.2
Information and tools used during counselling sessions (n=37)		
None - counselling only	72.7	51.4
Flip charts	9.1	8.6
Posters/wall charts	0.0	11.4
Leaflets	0.0	5.7
Cards or other desk aids	0.0	17.1
Other	18.2	5.7
New ART regimen given after counselling session		
No	72.7	80.0
Yes	27.3	20.0
Rating of service received at these counselling sessions		
Very bad	0.0	0.0
Bad	0.0	0.0
Okay	36.4	7.7
Good	36.4	73.1
Very good	27.3	19.2

Table 3.14 Experiences of patients eligible for enhanced adherence counselling by intervention and control (continued)

	COHORT 4: EAC	
	Control	**Intervention**
Rate your adherence before EAC		
Very bad/very poor	0.0	3.8
Bad/poor	9.1	7.7
Neither bad nor good	9.1	7.7
Good/Fair	18.2	15.4
Very good/always adherent	63.6	65.4
Rate your adherence before EAC		
Bad/poor	0.0	4.0
Good/Fair	9.1	8.0
Very good/always adherent	90.9	88.0

Source: Authors.

3.6.4 Tracing and Retention in Care (TRIC)

Finally, Table 3.15 below describes the results in the TRIC cohort. Both intervention and control groups were unlikely to report ever having been contacted by a tracer, which is consistent with what we heard anecdotally at the clinics. Some patients were never contacted, while others were traced but did not realize it as they confused this with other services the clinic offered. Still, those in the TRIC group were more likely than those in the control group to say they were contacted (20.3% vs 8.0%). For those that were traced, phone calls seemed to be the most common method in both groups, though it was more common in the intervention arm (86.7% vs 66.7%).

Table 3.15 Experiences of patients eligible for tracing by intervention and control sites

	COHORT 5: TRIC	
	Control	**Intervention**
Characteristic	***(n = 75)***	***(n = 70)***
Retention in care		
Reasons for missing or returning late to appointment		
Forgot appointment	12.2	10.3
Ill health	1.4	0.0
Too far to facility	1.4	1.5
No money for transport	10.8	4.4
Could not leave work	16.2	14.7
Afraid HIV status will get known	0.0	0.0
Travelling/away	13.5	10.3
Other	13.5	16.2

Table 3.15 Experiences of patients eligible for tracing by intervention and control sites (continued)

	COHORT 5: TRIC	
	Control	**Intervention**
Experiences with tracing and retention in care		
Ever been contacted by facility staff/tracer because missed visit or did not pick up medications		
No	92.0	79.7
Yes	8.0	20.3
Missed appointments/scheduled visits since June 2016		
No	52.2	57.4
Yes	47.8	42.6
Frequency miss appointments or medicine pick-ups		
Never miss appointments	47.3	46.4
Rarely (no more than 1 per year)	29.7	37.7
Occasionally (2-3 times per year)	20.3	7.2
Often (4 or more times per year)	2.7	8.7
Method of tracing		
SMS	16.7	0.0
Phone call	66.7	86.7
House visit	16.7	13.3
Rating of how respectful tracer was who contacted/followed-up patient		
Very bad	0.0	0.0
Bad	0.0	7.1
Okay	0.0	7.1
Good	60.0	64.3
Very good	40.0	21.4

Source: Authors.

3.6.5 Strengths and Weaknesses of Specific Interventions and Suggestions for Improvement

As part of the patient questionnaire, participants were asked generally how patient support could be improved around ART initiation. Those attending ACs (at intervention sites) were asked about how ACs could be improved and a similar question was asked of those who were picking up their medications at DMD pick-up-points. Finally those who received/were registered for enhanced adherence counselling or who were registered for tracing were asked how enhanced adherence counselling might be improved and if there was anything that the tracers could do differently.

In focus group discussions, we asked participants about the specific interventions and the benefits that each provided as well as ways to improve them. Below are illustrative quotes around the main themes that participants raised alongside the quantitative responses from the patient questionnaire. and Table 3.16 below shows the common themes that emerged.

Table 3.16 Most frequently cited perceived strengths and weaknesses of adherence support interventions among patient respondents by intervention and control groups

CONTROL		INTERVENTION	
Strengths	**Weaknesses**	**Strengths**	**Weaknesses**
▪ DMD /external med pick up* ▪ Individual counselling ▪ Alternative medicine collection strategies ▪ Home visits	▪ Labs & monitoring ▪ Individual counselling ▪ Difficulty collecting meds and lack of DMD	▪ AC ▪ DMD ▪ Individual counselling ▪ SMS messages and home visits	▪ Labs & monitoring ▪ Poor implementation of AC and DMD ▪ Poor staff attitude of counsellors

Source: Authors.
Note: *=DMD was delivered at a number of controls sites and hence emerges as a common theme within control facilities as there was only one site which was a control site with no implementation of DMD.

Fast track initiation counselling

Patient questionnaires

From the questionnaire, we found that around 35% of participants in the intervention arm said that they thought that patient support at ART initiation was fine, 5% thought there should be less counselling, while just under 30% thought there should be more initiation sessions. One fifth of the FTIC eligible patients in the intervention arm said they thought that treatment should be initiated at the time of diagnosis and over 30% said that staff needed to be friendlier. Open ended responses also allowed participants to make other suggestions on how patient support could be improved at ART initiation. Control arm participants highlighted the following aspects that could be improved, which interestingly included a number of issues that should be addressed by implementation of the adherence guideline interventions:

- Access to more than one month of medication
- Ensuring patient confidentiality within the clinic
- Helping food insecure patients with access to food
- Providing more information about treatment and use of more visual aids
- Making it easier to access medication closer to the patient
- Opening up more facilities
- Reducing waiting times at facilities and fast-tracking treatment queues
- Increasing the number of staff at facilities
- Improvement in staff attitude and communication

In the intervention arm some of the same issues were raised as areas of improvement in terms of increasing the number of staff, reducing patient queues, providing food support and ensuring patient confidentiality. These patients also thought that medications should be brought closer to the

patients but went further in identifying home delivery and CHWs supporting patients initiating and taking their medication. Other suggestions for improvement included:

- Better education of patients
- Increased campaigns
- Targeting of certain population groups such as the young and the old so that they could access services outside the clinic and not have to queue

Integration of services was presented as positive with many patients feeling that the separation of clients by service type made it easier to identify those who were HIV positive thus increasing stigma, and therefore integration of services reduced stigma as patients were not separated by disease.

Focus group discussions

Many of the points identified on the patient questionnaire are supported by quotes from the FGDs. FTIC participants mentioned the counselling they received as benefits to FTIC saying that it made them feel supported in their treatment:

> *"I got support, because when I started taking the treatment, they told me about the kind of food I should eat. They also said that I should not indulge in unsafe sex. They also helped me realise the kind of life I am supposed to live. "*
>
> FTIC participant

Particular aspects of counselling, especially around how to keep to a schedule to take their medication, the importance of follow-up blood tests and around the importance of reducing alcohol use were mentioned by the participants as important parts of FTIC counselling:

> *"The support they gave me by giving me a card to write down the date so that I am able to know that on this particular date, I am supposed to be going to the clinic to collect my treatment. By so doing, I think, they have given me a good support, because I am able to know the dates on which I am supposed to be collecting my pills. "*
>
> FTIC participant
>
> *"I also got support so that I could also take the treatment at the right time and after taking them I should give myself time to rest and not wander at night and go around drinking alcohol. If I was drinking five bottles of beer, I should reduce the amount of alcohol intake until I no longer take alcohol."*
>
> FTIC participant

At the same time, participants mentioned that FTIC could be improved by continuing this support and counselling beyond the first initiation sessions:

> *"To tell you the truth, the clinic is not doing much, first day when you have to start your treatment, they will tell you all the facts about alcohol, but as time goes on when you collect your treatment, they don't say much to remind you to keep taking your treatment well. It is not always they come with the strategy to help you if you can't take your treatment as instructed."*
> FTIC participant

> *"I think they should provide counseling not only on that day they should continue providing it until you feel that you have accepted your status. I don't think they are doing that much to help people understand how this sickness actually works. Because immediately after finding out, they just tell you what you should do and what you should not do, after that they leave you."*
> FTIC participant

FTIC participants also noted that additional support beyond just the fast track counselling was important to helping them adhere to treatment. In particular, they mentioned community health care workers as being an important part of their support and appreciated receiving calls and tracing from these cadres.

> *"They must also take down our phone numbers so that they can phone us when we don't show up. I often receive their calls while at work reminding about the date for collecting my treatment."*
> FTIC participant

While FTIC was generally perceived as positive, participants still noted problems with blood testing with delays in being able to access blood testing and results and the fact that blood results were not properly explained to them. They suggested this was a common barrier to continued care and indicated that this would be another key area for improvement:

> *"I think we do not get sufficient care because it is usually full. I was supposed to do a blood test but they only managed to do that on Friday. They say blood cannot be stored at the clinic overnight so if it is full they must have other ways to take blood samples anyway. I eventually left the facility without doing it on that day. A week went by without doing the blood test. I eventually had it done after another week had passed, you see. It would be much better to separate us - those that come here for blood tests should be separated from those that come for other things."*
> FTIC participant

"I support what has been said. I have also been through it, actually it happens often because it is usually full. I have accepted that maybe it is because an elderly person works with blood. She takes her time and if she comes across someone she knows then they will waste time chatting and gossiping and when she is finished with that person she would say 'next, and this is the last person I will see today'. "

FTIC participant

"…they gave me the 16th of February to go for my blood samples. They won't explain how my CD4 count is doing, even that paper I don't know if it is from the lab, it has biology terms that we don't know, they read it to us but we need them to explain what is happening to our bodies. They just put it in our files."

FTIC participant

Participants also noted continuity of care providers as leading to decreased quality of services because the new provider had no history with the patient. In addition they felt that moving between providers meant that their files and documentation of their history could easily be lost or misplaced. They felt that seeing a consistent provider could improve adherence:

"One thing I came to be aware of is that the results are not handled by one person. It seems like there are so many of them because one time when I went to collect my results, the person I dealt with in the past was not the one who attended to me even though she was there. It was a different person. You see? Things like that confuse us. It would have been better if results were handled by one person … In that way none of them will go missing."

FTIC participant

Another common theme that FTIC patients expressed, along with participants in other cohorts, was that they felt that their adherence would be better if they could get more months of medication at once. This is of particular concern for patients in FTIC however, as these patients are only able to access one month of medication for the first twelve months of care:

"Yes. I think it would be better if we were given our treatment that would last for two months."

FTIC participant

Patients also expressed that treatment would be improved if they could have other ways to access their medication:

"I think … they could improve it by making card carrying member. Like the ones, we use on the ATMs"

FTIC participant

"I support that, if you are unable to come then they should have a way to deliver the pills to me."

FTIC participant

Participants also noted that specific populations needed extra help with accessing care and adherence to treatment once they initiated. They specifically noted the young and the old as needing specialized care:

> *"A group of young people must go out and encourage people to adhere. A group of women should go out and encourage people to adhere."*
> FTIC participant

> *"Elderly men and women cannot walk or wait on the queue for a long time. With regard to school children, they could be easily assembled at a central place at school where we can talk to them as a group. It may not be possible to visit them where they normally play, because they are scattered all over the places; the school is an ideal place. The youth are still strong, they can visit the centre, and when they come here. And when they come here, there must be several rooms for consultation so that they don't have to wait for a long time. They must be attended to and go back home."*
> FTIC participant

Adherence Clubs

Patient questionnaires

On the patient questionnaire, just over 25% of patients who were registered for ACs said they thought the clubs could be improved if they were held on the weekend or at different times of day and outside of work hours. Over 15% of club participants also suggested that clubs should have more staff and access to a nurse at the clubs. In addition, they mentioned that they would prefer having blood draws at the club rather than back at the facility. Treatment support for other conditions through the clubs was also identified as a potential way to improve delivery of the clubs and this was clarified further when patients were given the opportunity to discuss suggested improvements. Several patients suggested that the clubs should also treat minor ailments such as headaches and flu, but also provide support and treatment for other chronic conditions such as TB, diabetes and hypertension which is already a longer-term aim of the Adherence Guidelines. Other patients indicated that they thought there should be more ACs; that clubs should be run by the same staff each time so that they came to know their patients well and could run their clubs more efficiently. There was also the suggestion that WhatsApp groups could also be created for each club which could potentially be used to deliver results but also allow an open line on which to ask questions of club members and staff.

Other patients indicated that they thought there should be more ACs; that clubs should be run by the same staff each time so that they came to know their patients well and could run their clubs more efficiently.

Focus group discussions

In focus groups, AC participants, much like DMD participants, frequently mentioned the time saving aspect of being in a club as an important benefit of the program

> *"Before we used to go to the clinic queuing up and the procedure took a long time, you spent the whole day just to get [the pills]. So I think now it's better because they have made us part of the club. You go there, collect and leave."*
> RPCS participant

> *"I also think that where we have now been taken it's better, there at the clinic the procedure was long, we would stay there for a long time, now where we have been taken to, at the club when you go in just after prayer time you get your pills, you leave..."*
> RPCS participant

The clubs were also seen as better than DMD because they could get pills for a longer period of time which required them to come to fewer visits:

> *"I see the club as being better because we are no longer queuing up, you are even able to leave on time, even when you are going to work you are able to get in early in the morning and then around 07h00 or 08h00 when they have arrived, they give you your pills and you go home or you go to work. So the club is better, so the ones at the pharmacies like you collect the pills at [pharmacy A] or at [pharmacy B] I see it being…I don't see as being okay because here at least they give us for three months. "*
> RPCS participant

Participants in ACs, expressed that they found being in a club helpful. One benefit that was not anticipated but does speak to the barriers noted above was that participant could still get their pills even if they could not find transport to get to the clinic:

> *"I think being part of a club helped. I was able to get my pills from the club when I didn't have money for transport. They could give me pills for at least 2 months or even 4 months until I could get money to go to the clinic as I am unemployed."*
> RPCS participant

Some also expressed that being in a club helped with stigma because they were not getting treatment at the clinic where everyone knew they had HIV:

> *"I think the club one is great, because when we would queue up at the clinic it was too crowded, so like people know that the ones for room 2, that ART goes to room 2, so some people when they call out your name you out for the file there the person is unable stand up because you feel that people are watching that you are going to room 2 …the whole clinic is watching me, that I'm going to room 2, and they'll end up talking about me. So at least at the club it's better because we're few and we know each other."*
>
> RPCS participant

It is worth noting however, that not all patients at intervention sites were aware that clubs existed. This was commonly expressed among FTIC patients, who might not yet be eligible at the time of interview. Still, they expressed a wish that they had known about clubs earlier:

> *"I also support that, I had no knowledge of clubs I only heard about it on Friday when that gentleman I spoke about earlier mentioned it."*
>
> FTIC participant

> *"Ok have others heard of various methods while waiting at this facility or from someone else or how did you receive the information you have that helps you to take your pills correctly? If we have this information about easier methods for receiving our medication, like what B mentioned a pharmacy and that the queue is shorter and it is convenient for us in terms of time and our health condition, is it so? Ok so it means for most us this is the first time we are hearing about these methods today. We were not aware of them. "*
>
> FTIC participant

Some participants in clubs noted a benefit to those who were not in clubs, namely that it made the clinic less congested and it provided an incentive to adhere to treatment so one could join a club:

> *"I think that they have helped because they left the people whose CD4 counts are low, those who are not taking their pills properly on the queues, they should also push themselves, that they will get to where those people are at, for them to be able to get to where we are."*
>
> RPCS participant

In addition there was a sense of pride in being in a club because it meant one was well and taking their medications as they should:

> *"Yes, they ask themselves when we enter through the door as to why is it that you are continuing to that direction, you are able to see that the person is not taking the medication properly if he or she was taking it properly you would be continuing with me that side. You should take good care of yourself so that you are able to continue with me to that side. It means that I am well, I am on the corner of being told that I have been healed. You should eat, take the pills properly get out in what you are in. You see we also explain to them that they should rush to where we are. So that they also reach where we are."*
>
> RPCS participant

However, some participants noted that they thought the providers should have access to more information about their patients at the clubs so that their treatment might be more holistic and also so that the patient themselves could note down any relevant information.

> *"I request that when we come to collect the treatment, they must bring along our files, when they provide you with the pills, they must also explain to you what your condition is at the moment. They must tell you how you are progressing and what is happening. The file must be nearer so that you can see for yourself and also write down some of the information so that when you get home, you can scrutinise it on your own. They must carry along our files when they give us the pills, instead of just giving us the pills and then leaving."*
>
> RPCS participant

Participants also mentioned that ACs provided a chance to get to know others who could provide support to them:

> *"My experience is that there is value for me because I have made friends at the club and again when we were at the club, we used to be there from the early morning and leave at 4h00 without talking to anyone."*
>
> RPCS participant

> *"Yes, it is not difficult when we are people with the same status we speak that we are the same, like when we talk like this I know that we have the same status unlike when we get to the clinic and we are too many with the status, and they say those that have a certain status must mention the challenges that they come across with in line with their disease. It was not possible but when it is like this and we are like a choir, we sing the same song."*
>
> RPCS participant

Other participants noted the benefits of clubs by talking with those who were in them and noted that it both made it easier to collect pills and to get support for their care in the community or outside the facility:

> *"They help because for some the facilities are too far for them to collect their pills. The people that assist end up going to the homes of those people to help them. They may find that they do not know the time for taking their pills or how to take them. That is how they get help."*
> FTIC participant

Some who were not in clubs also saw them as an incentive for patients who are taking their medications and adhering to treatment schedules:

> *"These programs encourage us to take our pills, and you know you will not qualify to be in a club if you do not take your pills correctly. You are transferred to a club only when you take your pills right. I think you will not be able to collect from the pharmacy if your blood shows that you are not taking your pills correctly."*
> FTIC participant

One concern raised about the clubs was that it was not always clear that participants were given the choice to join or not, which could lead to poor retention long term:

> *"With me the sister just opened up the file and then said you are going to the club, then she gave me directions to the club so that next time when you come you just go straight to the club. You are no longer queueing up, so who likes to queue up? I then agreed."*
> RPCS participant

Decentralized Medication Delivery

Patient questionnaires

Within the patient questionnaire, the main suggestion that patients had for DMD improvement was to have more staff available at the pick-up points to reduce problems (16%) and to have better locations for patients to pick up their medications (14%). Several participants suggested that they felt the pick-up points should be open at more convenient times and provide more months of medication. Again when given the opportunity to expand further on their responses and suggest other ways to improve DMD most patients who responded expressed how satisfied they were and how much they liked the service. Several of those that offered other ideas for improvement were at sites where implementation has been challenging—participants from these sites highlighted the need to ensure that medications were always at the pick-up-points on the required days and that there were sufficient staff to manage the pick-up points. A number of patients indicated that they thought there should be more pick-up points and that extended hours at those points would be beneficial.

Focus group discussions

In focus group discussions, similar themes were identified. While DMD was not implemented in a randomized fashion as initially planned, somewhat complicating our interpretation of the results, those who got DMD expressed that it was helpful in supporting adherence as they could pick up their medication less frequently and in a more convenient location:

> *"Sometimes at the clinic they make things easy for us by giving us the forms to fill and then you'll come back after six months for blood samples therefore you'll be able to collect your medications from other places such as [Pharmacy A] or any other pharmacy of your choice near you …after six months you'll come back again for blood samples and then go and collect your medication again."*
>
> RPCS participant

> *"I think it helped me a lot because when I got there, I just produce my ID, they give me a two months subscription, I don't wait on a queue, you won't find queues. I just go in and go out. I will start my work on time. Is different from the clinic, you will arrive there around 5 or 6 in the morning, but you will leave around three or four, you will sit and wait for your medication. This one is very helpful because when you are at work and ask for permission, you just go in you won't find a queue, you pick your medication and go back to work. From what I've experience is very helpful."*
>
> RPCS participant

DMD participants frequently expressed saving time as an important strength of participating in DMD. Many also noted that there was a benefit to other patients if they chose to get their medication through DMD because it allowed clinic staff to focus on patients who needed more intense care:

> *"They are right because they save time and also assist in reducing the queue at the clinic. You also mentioned about collecting treatment without wasting time particularly by those people who are going to work. "*
>
> RPCS participant

While DMD and other repeat prescription strategies were seen as beneficial when they worked well, in other cases, they were seen as creating difficulties for the patient in accessing their treatment. Some expressed frustration with repeat prescription strategies if their medications were not ready for them when they arrived and felt that care would be improved if staff ensured their medications were ready when they presented to the pick-up point:

> *"We shouldn't be expected to be running behind the staff. It is wrong. Whoever is supposed to dispatch the treatment should know what is expected of him/her that tomorrow it's his/her turn to distribute the treatment. They must know the number of people who are coming to collect their treatment on a particular date, package the supplies accordingly and carry them to the dispatch area before knocking off. When we come the following day, we mustn't be told to wait while they are still running around and carrying along with them the treatment on the street. If a moving car runs over them, then the pills are gone."*
>
> RPCS participant

It was also noted as a difficulty if they had to get blood results and collect medication for a pick-up point or a club at the same time as the services were not integrated. Participants expressed that the program would be improved if blood draws could be integrated into the program:

> *"When we come here to take the treatment, we must collect them over that side together with the CD4 count results; we should not collect them this side but the other side as well as the blood tests. Everything should be done that side. We should come this side only when we are sick. At the moment everything is done this side. When they refer us here, they waste our time."*
>
> RPCS participant

Some participants also indicated that it should be made clearer that it was possible for patients to send somebody else to pick up their medications and should be better informed about what was required to be able to do this.

> *"After filling the form for collecting pills at the pharmacy, when you go to collect pills that's when you go with your ID because they already have your information. When they ask you to bring your ID is because they want to see if those pills are yours. That lady was trying to say if you can't collect them yourself, you can register someone who will collect them for you."*
>
> RPCS participant

In some instances, DMD was seen as providing less medication than at the clinic and therefore participants had to get to the DMD pick-up point more often and this made the ACs more attractive than DMD. Participants expressed that DMD would be improved if they could get more months of medication at each pick up like they perceived was occurring at ACs:

> *"So the club is better, so the ones at the pharmacies like you collect the pills at [pharmacy A] or at [pharmacy B] I see it being…I don't see as being okay because here at least they give us for three months. Sometimes you find that you don't have the money to go to [pharmacy B] every month, so at [pharmacy A] and [pharmacy B] it seems like people are given pills for one month … Sometimes you don't have money, what will you use to go to town from where you stay to fetch the pills? At least at the clinic they give you for three months, you stay…you know that at this particular time I need to have budgeted money for transport so that I may go collect the pills."*
>
> RPCS participant

Additionally participants also suggested that medicines could be packaged in way that made them less noisy. This suggestion was related to the perception that if you had medications on you in a noisy bottle people would know that you were HIV positive.

> *"I would suggest they remove them in that bottle because is causes them to make noise. They don't make noise when they are in a plastic bag. You can just remove them and take them."*
>
> RPCS participant

Another improvement that was suggested was greater flexibility in terms of where medications could be picked up, particularly if a patient is travelling. Patients highlighted the benefits of being able to go into anyone of a chain of pharmacies providing DMD or to other clinics to pick up their medication.

> *"Because you see for them to send you back I don't agree with. Suppose I have already left for Vereeniging and then they send you back to go and fetch this thing, because I believe that even at Clicks it is only one thing that they are supposed to help me with. I have even exhausted my pills, I might be in Pietersburg or anywhere else. Each and every clinic is supposed to assist me, they must not complain about my surname, as long as I have come to collect the pills, they are supposed to assist me."*
>
> RPCS participant

Enhanced Adherence Counselling

Patient questionnaires

In our patient questionnaires, patients had some suggestions for improving EAC. Some felt that having more sessions would improve adherence (16%), while others felt that more information/materials were important (16%). While it was less common, some suggested that the sessions should be longer (14%). Finally, some suggested that EAC could be improved if participants could access counsellors outside of work hours and if the staff were friendlier. When given the opportunity to make further suggestions about how the service could be improved, most

who answered this question in the intervention arm said that they actually felt the service was acceptable, two people suggested that it should be done for all patients and another suggested that there should be a fast track queue or system for these patients to see the counsellor or nurse.

Focus group discussions

Despite the benefits seen to EAC, participants also felt that they were often chastised for not being adherent and that this affected their care and that care could be improved if the staff were more understanding of the circumstances of the patients and listened to what they had to say. This issue was highlighted by both FGD participants from control and intervention sites:

> *"We do not know, they'll rather go off on you...For being honest that you forgot to take your medication. They take it so seriously that they go off on you. You end up been completely discouraged and not go to the clinic because of that."*
> EAC/TRIC participant

Participants noted that this was particularly true if patients were experiencing the effects of lack of treatment and that being chastised was demotivating in getting them to adhere to treatment:

> *"More especially when you visit the clinic while you have lost weight, they say you do not take your medication, they scold, instead of seating you down and give you support."*
> EAC/TRIC participant

It was suggested that counsellors perhaps need to undergo more training to equip them better and make them more sympathetic to dealing with patient challenges and that patients should be able to provide feedback on the quality of counselling that they have received perhaps via suggestion boxes:

> *"They should also train the counsellors that people can never be the same and that we are facing different challenges. They should know that everyone has her own different problem. They must be there to support and not to judge because at the end of the day when you leave here your problem is known by a certain sister and they start looking at you and say oooh, it's that one, there is no more that privacy between a counsellor and a patient, no more confidentiality to express our own views."*
> EAC/TRIC participant

> *"Like I said, when you are done with counselling, there is something that you have to sign, it shows if the person is wrong or right. Then month end the management comes to collect it, then they can see if the person is right or wrong from the form that you signed as a patient."*
> EAC/TRIC participant

EAC participants also felt that they still had to spend a long time at the clinic to receive care and that this was a deterrent to continuing treatment. Reducing the time that it took to complete EAC could improve patient resuppression rates:

> *"When I go to the clinic on my date to collect pills I can arrive there at four. In the morning. I sit on the bench so that I can be Number 5, 6 or Number 1 on queue.... But when those who take you to the nurses come, you will sit there and wait, they will say a person who check vitals is not there. There will be a nurse who feels pity for you and offer to help you even though your vitals are not checked. There's a huge delay were the vitals are checked there's nothing we can do."*
> EAC/TRIC participant

Several participants also highlighted how they go for blood tests but often do not get their results which either leads to additional tests or patients perceiving that in fact these tests are not important.

> *"I also have a problem with blood samples. Ever since I started taking the pills I have taken blood samples but I have never received results from these samples. Each time they tell me that they cannot find my blood samples, they're lost."*
> EAC/TRIC participant

> *"Even with the viral load and other things, you don't understand because they take your blood samples and send them, sometimes the results don't come. They won't tell you when your results have arrived they will just leave you, as long as they took your blood. Because of that you will tell yourself that taking blood samples is not important and when the date comes to go for blood samples you end up not going because you don't know the importance of it."*
> EAC/TRIC participant

Interestingly, patients who were receiving EAC also mentioned receiving support from others in the clinic as being a supportive aspect of the program. This suggests that group counselling or clubs for patients who are not adhering could have benefits for patients by bringing together patients with similar adherence issues to come up with solutions:

> *"Yes, but we do talk amongst ourselves, even during lunch time we do talk about it. It is easy to engage with someone who understands what you are going through, who knows what you are going through. It's like talking about your pregnancy with someone who is also pregnant. So, it's the same thing. It is easy. It's easier than to talk with someone who doesn't understand at all what you are go through that every night you have to take your medication."*
> EAC/TRIC participant

"… at the time to go collect the treatment and when you get there you get a chance to talk about your experiences … you find that the very same person also experienced the same thing that you had, you then sit down and discuss the problem with a professional who will then say 6 out of 10 people has the same problem. She then assess the problem and try to come up with the solution to that problem. Now if you go alone to the clinic, for me it's a waste of time. I advise that we meet in a group of 10, collect your medication then sit down and discuss your problems with your group and sometimes for me to keep my health to be stable I do 1 2 3, then you advise fellow group members to keep healthy by eating this and not eating this then your health will be stable."

EAC/TRIC participant

However, other patients highlighted that having others in those counselling sessions meant they were less likely to want to talk about their issues, especially if other staff or counsellors were in the session and felt it resulted in confidentiality issues and a lack of trust in their counsellors:

"Okay, the counsellor can be there, but I think when we come to counselling it must not be one two three, … You find that when you go for counselling and you are alone then you are able to talk, but now when there is three of you, you won't be able to open up. When there is the three of you, you decide to show some respect and keep quiet. Our problems are not the same that is why when you go for counselling they must sit you down and explain to you and then you are also able to open up and again you need privacy because you can't be able to talk in front of many people. Counselling means people should trust each other, you must trust your counsellor and she must also trust you. It is not supposed to be a group like that."

EAC/TRIC participant

"It worked for me but my problem was that she was not alone, there was somebody else and I was not able to talk, I ended up bottling up many things."

EAC/TRIC participant

As was highlighted in the patient questionnaire, participants in the EAC/TRIC FGD in the intervention arm also raised the need for and benefits of ongoing counselling. Those who had received such counselling felt motivated and supported.

"…you need to understand that when you go to the clinic and they find that your viral load is too high, they tell you that you must go to the other side and see the counsellor. When you go that side they ask you to draw blood and they find out that your viral load is high and then they send you for counselling. It is helping. That intervention is done at the clinics, like now you find that they have counsellors that will counsel you again, they sit you down and explain to you why you have to go on the other side and see the counsellors.

EAC/TRIC participant

Tracing

Patient questionnaires

While a question was asked on the patient questionnaire about how tracers might do things differently very few patients responded with suggestions to this question. Anecdotally we know that patients do not always realise that they have been 'traced' and often do not consider that they have missed an appointment if they attend the clinic while they still have some medications remaining, instead they interpret phone calls and SMS messages as more of a reminder. Those few patients that did respond on how tracing could be improved indicated a preference for only being called, rather than having home visits, being warned of a home visit and ensuring that patient permission had been given to be traced.

Focus group discussions

Despite our inability to see much effect of the AGL early tracing model in the effectiveness study, participants who received TRIC did seem to appreciate it. They noted that having someone come to them in the community provided an opportunity to discuss their adherence issues and plan to return to the clinic:

> *"I recommend this strategy of tracing, because when the tracers visit your neighbourhood...you can speak to the people who come and trace you and check the reasons that prevent you from visiting the clinic. And then they would advise you to go to the clinic… I was one of the people who were traced. So tracing is right."*
> EAC/TRIC participant

> *"I recommend this one for tracing because when they come here, the neighbour won't know what they came for, may be they are here because they do house visits, house to house. The tracing is ok because you can talk to the people who come to do the tracing that you have a problem and the reason you did not go to the clinic then they can advise you to go and when you get here you look for a certain individual. It will help you through the process."*
> EAC/TRIC participant

Patients seemed to appreciate the role that community health workers play in visiting them at their homes and providing them with information and encouragement to return to the facilities. However, some participants noted that they felt this was not appreciated by other healthcare staff and managers.

> *"We have made a point about community based care workers. I think if they are trained regarding health issues they can be encouraged and if their job could be viewed as important, that could help us. I have noticed that their job is not taken seriously and as a result they lose motivation."*
> RPCS participant

Participants noted that not only do community health workers trace them if they have missed visits but they also provide some level of education to patients. They also thought that there was potential for community health workers to deliver medicines direct to households which they thought would be more discreet.

> *"I think community based care workers have a good job. If they come to my house no one will think it's because she has brought my pills. They will probably think she is there to teach me like she does with everyone else."*
> RPCS participant

Even participants in other groups were aware of tracing that was being done and found it encouraging, feeling that it would be a good way to keep people motivated to come to clinics and adhere to their treatment.

> *"Because I heard that they were taking people's cellular phone numbers back home so that they can phone us. That is very encouraging. May you be around for a very long time because you know how to encourage us."*
> RPCS participant

Interestingly participants also recognised that the contact details they give to the clinic and not updating these details if they change was a key challenge to this intervention:

> *"Tracing is ok but the problem might be when one changes the address and does not inform that she has moved, let's say you were staying at [X] and moved to [Y], when you get there they do not have your history and you start from scratch… What is important is that when you move, you must disclose that you are no longer staying there … this will help."*
> EAC/TRIC participant

As in the patient questionnaire, participants had little to suggest in terms of how this intervention could be improved although one group did suggest that a community committee might be a way to lessen the work load on clinic staff and help with tracing those in their community:

> *"…if the committee in the community can be used, it will lessen the work load of the nurses, I think that committees should be allowed to attend meetings that are held at the clinic so that nurses can inform the committee members that there is so and so that stays in room 55, this person doesn't come to fetch his/her treatment. If that is the case the committee members will be able to identify the person because maybe they know most of the people in the community. Most nurses that work here in [X] don't stay here, they stay at [Y] which means that they wouldn't know the zones in [X]. I think this is one of the programs that can make work a bit easier."*
> EAC/TRIC participant

3.6.6 Question 3 and 4 Key Messages

i. Patients receiving FTIC report feeling more supported by the additional counselling sessions that are held after initiation and indicated that this helped with adherence. However, poor staff attitude and service at clinics particularly around the time of initiation poses a significant threat to patient adherence.

ii. Having the option to pick up more months of medication at more convenient locations is seen by patients as a key strength of adherence interventions and one that may significantly impact adherence. Those patients in ACs and enrolled in DMD reported high satisfaction with these services in terms of convenience and saving them time and they also reported high adherence. However, issues with implementation of these interventions were noticed by patients and it is important to ensure that issues of staffing and medication delivery are resolved.

iii. Patients at intervention sites reported that they received more counselling than at control sites and also reported more use of desk aids and materials at those sessions. However, staff attitude and the time at the clinic for these sessions was seen as a big deterrent and a risk to potentially losing these higher risk patients from care.

iv. Counsellors may need additional training to ensure that they are equipped to deal with patient issues as effective counselling and ongoing support are key to ensuring that patients continue to feel motivated and supported.

v. It is important that the reasons for blood tests are clearly explained to patients and that patients are informed of their blood test results and what these mean. Failure to give this information back to patients results in the perception that these laboratory tests and monitoring are not important.

vi. Patients often do not seem to be aware that they are being traced, particularly when traced after early missed appointments. However for the most part patients saw tracing as being beneficial for retention in care and encouraged greater involvement of CHWs and community groups.

vii. Patients perceive missing laboratory results as an issue, they are aware when staff do not have results in hand and do not appreciate when tests have to be repeated unnecessarily. Being able to have blood draws done at ACs or the pharmacies with DMD pick-up points was considered a key improvement to these interventions.

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4 CONCLUSION

Sustained adherence to HIV treatment is a complex process that isn't well understood. Numerous studies have evaluated barriers to treatment adherence, but few have done so in the context of an evaluation of targeted interventions to improve adherence. The results of this mixed method study shed substantial light on the results of the overall impact evaluation. By collecting both qualitative and quantitative data, we were able to observe the general trends in barriers to and facilitators of adherence within the population of the study but also get detailed information on participants' experiences with the clinics and the interventions.

By collecting both qualitative and quantitative data, we were able to observe the general trends in barriers to and facilitators of adherence within the population of the study but also get detailed information on participants' experiences with the clinics and the interventions.

Our study sample was well balanced between the intervention and control arms and were representative of the patient characteristics we would expect for an HIV clinic population. At a median CD4 count of just above 200 cells/ml[3] at treatment initiation, many patients in the sample would already have experienced illness related to HIV, which is important when interpreting the patient perspectives on treatment adherence.

Implementation of the minimum package of interventions outlined in the National Adherence Guidelines seemed to be associated with the perception that the quality of care was slightly better at those sites although clinic-level challenges particularly related to staff attitude and service were highlighted as an issue at both intervention and control sites. Hence care must be taken as the National Guidelines are rolled-out nationally that any improvements in the quality of care resulting from implementation of the interventions are not negated by failing to address these clinic level barriers which are commonly reported.

Repeat prescription collection strategy interventions (AC and DMD) that allowed stable patients to collect their medications at more convenient locations, for longer periods and avoiding long clinic queues were seen by participants at both control and intervention sites as a major advantage in terms of promoting adherence. Patients in the focus group discussions who were either new to treatment or who had had issues with adherence and were receiving additional counselling as a result, also suggested that these interventions would likely increase their ability to adhere to treatment and expressed a desire to be enrolled as soon as possible in these interventions. ACs in particular were associated with an improved perception of quality of care and patients also recognised the benefits to clinics as patient numbers were reduced and decanted to the external ARV pick-up points. While it was always the intention that these clubs and external pick-up points would cater for other chronic conditions, implementation aspects of these approaches do first need to be addressed to ensure that some of the staffing issues and distribution of medicines that have

caused challenges do not negatively impact the benefits of these strategies. Implementation of these interventions and the decanting of patients from facilities has been a focal point for the National Department of Health and implementing partners in priority districts during the latter part of 2016 and beginning of 2017, and when implemented properly they are well received by patients. Consideration might also be given to expanding the services offered at these external care points, such as the ability to get bloods drawn, to improve patient satisfaction and likely retention of patients in care.

Individual strategies to ensure adherence have been established by many other researchers and were highlighted in the data collected from patients as part of this process evaluation. Disclosure, family support and methods to remember when to take medications were all highlighted as means to improve adherence. Clinic level barriers to adherence are also fairly well established and were expressed as challenges and causes of concern by the patient population surveyed here. Food security and lack of access to sufficient food was also raised frequently by patients as a reason for not being able to adhere to treatment and represents a challenge that is perhaps beyond the scope of the National Guidelines but one that needs to be considered and addressed to ensure that the full potential of these interventions can be achieved.

As follow-up of the HIV cohorts continues, we will be able to link this data with follow up effectiveness data to create a complete picture of participant experience and the reasons for the successes and failures of any of the interventions.

Even though there was less information and discussion around tracing of patients it did appear that patients generally consider this type of follow-up to be a worthwhile intervention and they value the services that community health workers can provide. They also see the potential for those services to be expanded further and indicated that the value of these healthcare providers must not be underestimated in terms of their ability to promote and ensure adherence.

Based on the information available from this study it appears that several of the minimum package interventions have been well received and resulted in an improvement in the quality of care and some improvement in patient satisfaction and adherence. As follow-up of the HIV cohorts continues, we will be able to link this data with follow up effectiveness data to create a complete picture of participant experience and the reasons for the successes and failures of any of the interventions.

4.1 KEY MESSAGES AND RECOMMENDATIONS

- **Before scale up, it is important to address some of the perceived clinic-level barriers to adherence, ensuring site readiness and sufficient resources so that providers feel engaged and empowered to implement the interventions and address the issues of staff attitudes towards their patients.**
- **The counselling sessions after treatment initiation are important to patients and counsellors should be guided by the specific job aids and by the patients' individual**

needs for information, as well as the general principles of good patient communication.

- **Patients experiencing adherence problems and receiving EAC should feel supported by this additional support, with staff showing an understanding for the circumstances of patients who struggle to adhere. Chastising patients for not being adherent risks to demotivate them.**
- **It is important to promote the continued implementation of ACs alongside implementation of DMD, ensuring that facilities are sufficiently resourced to run these clubs. Some patients perceive the eligibility for ACs and DMD as an incentive to become stable on treatment, and the program can promote this aspect of graduating to efficient schemes of drug refill.**
- **While some patients prefer the option to visit a DMD pick-up point other patients benefited from the additional support provided by the clubs. During scale up it is essential that patients are given the option as to which repeat prescription collection strategy they prefer in order to maximise their retention in these programs.**
- **Issues around DMD implementation need to be resolved, scripting and staffing issues at pick-up points must be addressed to prevent patients becoming disheartened with this intervention, risking patient adherence and potentially returning to and causing further congestion at the facilities.**
- **In addition, it is important to collect accurate data on patients to be able to provide strong patient care. In particular we found data on tracing of patients to be limited as no standard register or approaches existed to track who had been traced. Implementing a standard register could help with better tracing of patients and improved retention.**
- **The study demonstrates the importance of staff orientation and training on the AGL interventions to maximise these powerful interventions and patient perception of quality care.**

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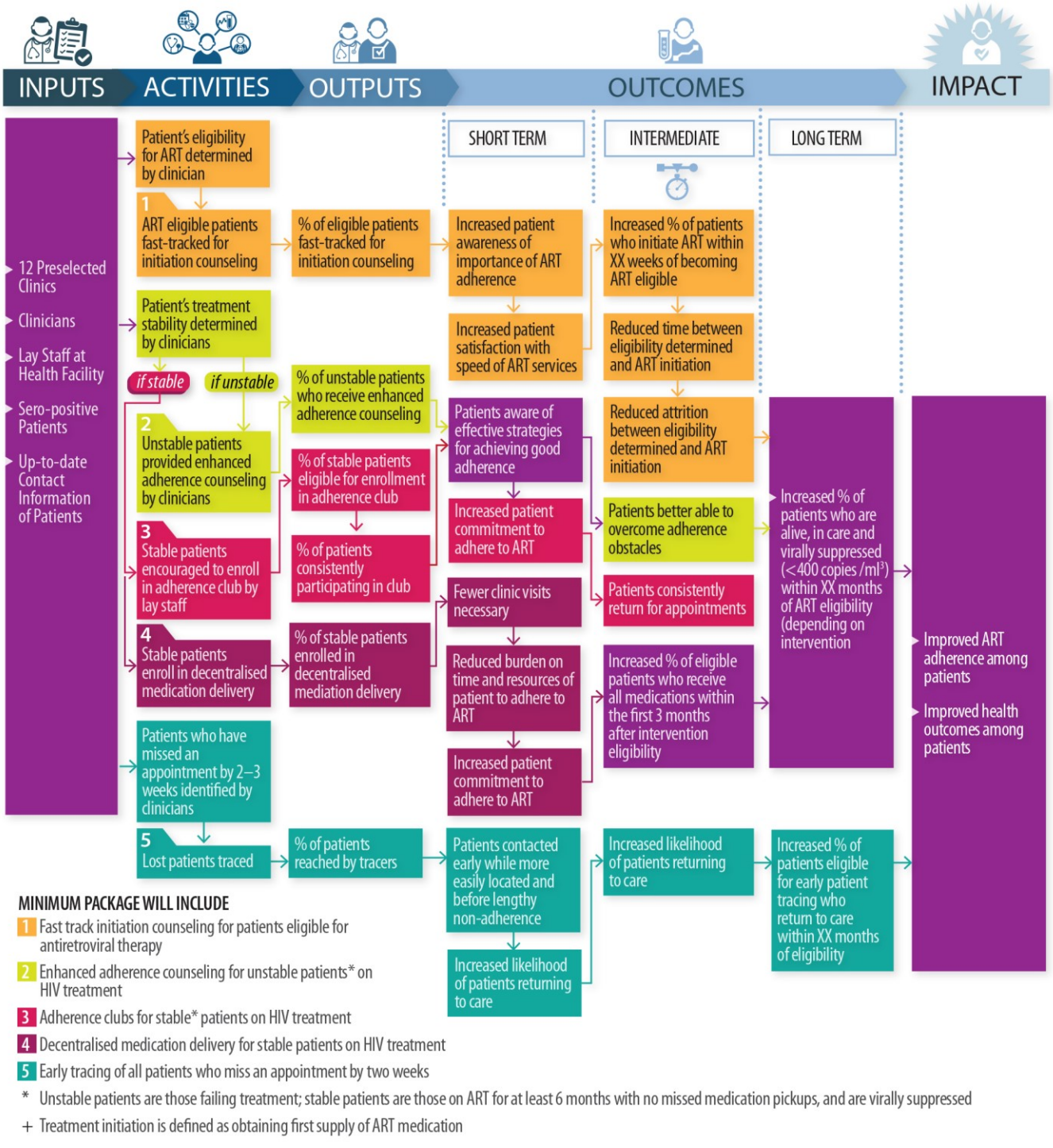
APPENDIX 1 – PROJECT LOGIC MODEL

A. 1 ART Gudelines Evaluation



APPENDIX 2 – PATIENT INTERVIEW CHARACTERISTICS BY SPECIFIC INTERVENTION COHORT

A.2 Characteristics of interview subject for the FTIC cohort

	CONTROL		INTERVENTION		TOTAL	
	N=58		N=55		N=113	
Characteristic	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Age *(n=107)*						
18–29	14	26.4	15	27.8	29	27.1
30–39	23	43.4	15	27.8	38	35.5
40–49	9	17.0	17	31.5	26	24.3
50+	7	13.2	7	13.0	14	13.1
Gender *(n=113)*						
Female	33	56.9	34	61.8	67	59.3
Male	25	43.1	21	38.2	46	40.7
Marital Status						
Never married	39	67.2	40	72.7	79	69.9
Married	17	29.3	11	20.0	28	24.8
Divorced	1	1.7	1	1.8	2	1.8
Separated	1	1.7	0	0.0	1	0.9
Widowed	0	0.0	3	5.5	3	2.6
Nationality						
South Africa	50	86.2	48	87.3	98	86.7
Other	8	13.8	7	12.7	15	13.3
Settlement Type *(n=96)*	50		46			
Formal	50	40.0	16	34.8	36	37.5
Informal	25	50.0	16	34.8	41	42.7
Location	12	24.0	9	19.6	21	21.9
Township	0	0.0	14	30.4	14	14.6
Education/Highest grade *(n=113)*						
No schooling	3	5.2	2	3.6	5	4.4
<Grade 5	5	8.6	4	7.3	9	8.0
Grade 6–7	6	10.3	6	10.9	12	10.6
Grade 8–10	19	32.8	8	14.5	27	23.9
Grade 11–12	16	27.6	22	40.0	38	33.6
Grade 12	9	15.5	13	23.6	22	19.5
Employment *(n=113)*						
Unemployed	25	43.1	25	45.5	50	44.2

Employed part time	12	20.7	8	14.5	20	17.7
Employed full time	19	32.8	17	30.9	36	31.9
Unable to work/Retired	1	1.7	1	1.8	2	1.8
Student	0	0.0	4	7.3	4	3.5
Other	1	1.7	0	0.0	1	0.9
CD4 Count at ART initiation) (control n=55, intervention n=51	211 (135–322)		255(148–400)		235(148–337)	
Viral Load (copies/ml) (median, IQR (n=41)	124(124–502)		124(38–343)		124(60–487)	
Log_{10}(copies/ml) (median, IQR (n=41)	2.09(2.09–2.70)		2.09(1.58–2.54)		2.09(1.78–2.69)	
Time on ART at enrollment (days) (median, IQR (n=107)	133(85–165)		167(118–197)		145(108–182)	

Source: Authors.

A.3 Characteristics of interview subject for the RPCS cohort

	RPCS CONTROL		AC INTERVENTION		DMD INTERVENTION		TOTAL	
	N=58		N=58		N=62		N=280	
Characteristic	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**	***n***	**(%)**
Age *(n=269)*	134		77		58			
18–29	18	13.4	10	13.0	6	10.3	34	12.6
30–39	47	35.1	21	27.3	19	32.8	87	32.3
40–49	41	30.6	20	26.0	21	36.2	82	30.5
50+	28	20.9	26	33.8	12	20.7	66	24.5
Gender *(n=280)*								
Female	97	72.4	62	73.8	49	79.0	208	74.3
Male	37	27.6	22	26.2	13	21.0	72	25.7
Marital Status *(n=279)*								
Never married	86	64.2	47	56.6	38	61.3	171	61.3
Married	32	23.9	22	26.5	9	14.5	63	22.6
Divorced	2	1.5	2	2.4	7	11.3	11	3.9
Separated	2	1.5	3	3.6	4	6.5	9	3.2
Widowed	12	9.0	9	10.8	4	6.5	25	9.0
Nationality *(n=280)*								
South Africa	126	94.0	78	92.9	59	95.2	263	93.9
Other	8	6.0	6	7.1	3	4.8	17	6.1
Settlement Type *(n=258)*	131		76		50			
Formal	20	15.3	27	35.5	31	62.0	78	30.2
Informal	95	72.5	25	32.9	8	16.0	128	49.6
Location	16	12.2	14	18.4	9	18.0	39	15.1
Township	5	3.8	22	28.9	17	34.0	44	17.1

A.3 Characteristics of interview subject for the RPCS cohort (continued)

	RPCS CONTROL		AC INTERVENTION		DMD INTERVENTION		TOTAL	
	N=58		N=58		N=62		N=280	
Education/Highest grade *(n=276)*	132		84		62			
No schooling	12	9.1	5	6.0	2	3.2	19	6.9
<Grade 5	13	9.8	8	9.5	5	8.1	26	9.4
Grade 6–7	14	10.6	9	10.7	7	11.3	30	10.9
Grade 8–10	36	27.3	14	16.7	19	30.6	69	25.0
Grade 11–12	34	25.8	24	28.6	12	19.4	70	25.4
Grade 12	23	17.4	24	28.6	17	27.4	62	22.5
Employment *(n=280)*								
Unemployed	62	46.3	35	41.7	31	48.4	128	45.7
Employed part time	23	17.2	11	13.1	15	23.4	49	17.5
Employed full time	40	29.9	32	38.1	14	21.9	86	30.7
Unable to work/Retired	6	4.5	5	6.0	0	0.0	11	3.9
Student	0	0.0	0	0.0	2	3.1	2	0.7
Other	3	2.2	1	1.2	2	3.1	6	2.1
CD4 Count at ART initiation) (control *n=100*, intervention *n=141*)	248 (109–352)		200(130–296)		200(112–323)		224(112–323)	
Viral Load (copies/ml) (median, IQR *(n=261)***	124(124–124)		124(89–149)		124(124–150)		124(124–124)	
Log_{10}(copies/ml) (median, IQR *(n=261)*	2.09(2.09–2.09)		2.09(1.95–2.17)		2.09(2.09–2.18)		2.09(2.09–2.09)	
Time on ART at enrollment (days)(median, IQR *(n=271)*	1218(800–1825)		1667(982–2241)		1798(973–2519)		1474(918–2071)	

Source: Authors

A.4 Characteristics of interview subject for the EAC cohort

	CONTROL		INTERVENTION		TOTAL	
	N=49		N=44		N=93	
Characteristic	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Age *(n=90)*	48		42			
18–29	1	2.1	8	19.0	9	10.0
30–39	20	41.7	16	38.1	36	40.0
40–49	17	35.4	10	23.8	27	30.0
50+	10	20.8	8	19.0	18	20.0
Gender *(n=93)*						
Female	24	49.0	34	77.3	35	62.4
Male	25	51.0	10	22.7	58	37.6

A.4 Characteristics of interview subject for the EAC cohort (continued)

	CONTROL		INTERVENTION		TOTAL	
	N=49		N=44		N=93	
Marital Status *(n=93)*						
Never married	29	59.2	25	56.8	54	58.1
Married	13	26.5	14	31.8	27	29.0
Divorced	4	8.2	1	2.3	5	5.4
Separated	0	0.0	2	4.6	2	2.1
Widowed	3	6.1	2	4.6	5	5.4
Nationality						
South Africa	44	89.8	39	88.6	83	89.2
Other	5	10.2	5	11.4	10	10.8
Settlement Type *(n=85)*	44		41			
Formal	15	34.1	10	24.4	25	29.4
Informal	26	59.1	16	39.0	42	49.4
Location	7	15.9	6	14.6	13	15.3
Township	0	0.0	14	34.1	14	16.5
Education/Highest grade *(n=93)*						
No schooling	1	2.0	3	6.8	4	4.3
<Grade 5	9	18.4	4	9.1	13	14.0
Grade 6–7	7	14.3	2	4.5	9	9.7
Grade 8–10	10	20.4	14	31.8	24	25.8
Grade 11–12	16	32.7	16	36.4	32	34.4
Grade 12	6	12.2	5	11.4	11	11.8
Employment *(n=93)*						
Unemployed	25	51.0	23	52.3	48	51.6
Employed part time	4	8.2	6	13.6	10	10.8
Employed full time	16	32.7	15	34.1	31	33.3
Unable to work/Retired	3	6.1	0	0.0	3	3.2
Student	1	2.0	0	0.0	1	1.1
CD4 Count at ART initiation) *(n=80)*	148 (66–257)		170(135–292)		164(97–259)	
Viral Load (copies/ml) (median, IQR *(n=87)***	3330(804–33800)		2015(642–11300)		2453(734–33800)	
Log_{10}(copies/ml) (median, IQR *(n=87)*	3.52(2.91–4.53)		3.30(2.81–4.05)		3.39(2.87–4.53)	
Time on ART at enrollment (days) (median, IQR *(n=88)*	1321(714–1852)		1031(496–1704)		1276(588–1760)	

Source: Authors.

A.5 Characteristics of interview subject for the TRIC cohort

	CONTROL		INTERVENTION		TOTAL	
	N=75		N=70		N=145	
Characteristic	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Age *(n=136)*	72		64			
18–29	18	25.0	15	23.4	33	24.3
30–39	31	43.1	30	46.9	61	44.9
40–49	15	20.8	12	18.8	27	19.9
50+	8	11.1	7	10.9	15	11.0
Gender *(n=145)*						
Female	52	69.3	47	67.1	99	68.3
Male	23	30.7	16	22.9	39	26.9
Marital Status *(n=145)*						
Never married	52	69.3	47	67.1	99	68.3
Married	14	18.7	16	22.9	30	20.7
Divorced	2	2.7	4	5.7	6	4.1
Separated	1	1.3	2	2.9	3	2.1
Widowed	6	8.0	1	1.4	7	4.8
Nationality *(n=145)*						
South Africa	70	93.3	64	91.4	134	92.4
Other	5	6.7	6	8.6	11	7.6
Settlement Type *(n=135)*	75		60			
Formal	15	20.0	17	28.3	42	31.1
Informal	48	64.0	27	45.0	75	55.6
Location	4	5.3	8	13.3	12	8.9
Township	8	10.7	12	20.0	20	14.8
Education/Highest grade *(n=145)*						
No schooling	5	6.7	2	2.9	7	4.8
<Grade 5	7	9.3	4	5.7	11	7.6
Grade 6–7	5	6.7	3	4.3	8	5.5
Grade 8–10	26	34.7	15	21.4	41	28.3
Grade 11–12	21	28.0	27	38.6	48	33.1
Grade 12	11	14.7	19	27.1	30	20.7

A.5 Characteristics of interview subject for the TRIC cohort (continued)

	CONTROL		INTERVENTION		TOTAL	
	N=75		**N=70**		**N=145**	
Employment *(n=145)*						
Unemployed	33	44.0	34	48.6	67	46.2
Employed part time	14	18.7	8	11.4	22	15.2
Employed full time	24	32.0	26	37.1	50	34.5
Unable to work/Retired	1	1.3	0	0.0	1	0.7
Student	1	1.3	2	2.9	3	2.1
Other	2	2.7	0	0.0	2	1.4
CD4 Count at ART initiation) *(n=120)*	282 (161–363)		288(158–474)		287(158–399)	
Viral Load (copies/ml) (median, IQR *(n=106)***	124(124–205)		124(56–253)		124(124–211)	
Log_{10}(copies/ml) (median, IQR *(n=106)*	2.09(2.09–2.31)		2.09(1.74–2.40)		2.09(2.09–2.32)	
Time on ART at enrollment (days) (median, IQR *(n=141)*	675(350–1152)		799(363–1477)		692(355–1386)	

Source: Authors.