An Evaluation of a National Program to Improve Linkage-to-Care

Early Enrolment and Retention in HIV Care among Clients HIV-diagnosed in Two Settings in Swaziland, 2011-2012

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Abstract

Background: To help document and improve early enrollment and retention in HIV care in 2011, the Swaziland Ministry of Health implemented a new set of standard operating procedures on linkage and retention (National SOP). The National SOP was implemented as part of two programs: the Soka Uncobe male circumcision campaign (SOKA) in 2011 and 2012, during which HIV testing was facility-based, and the Swaziland HIV Incidence Measurement Survey (SHIMS) in 2011, during which HIV testing was home-based. The purpose of this study was to evaluate (1) compliance with the National SOP, and (2) early enrollment and retention in HIV care among newly HIV diagnosed SOKA and SHIMS clients.
Methods: The study included two components. Component I was a retrospective cohort analysis of 1,105 newly HIV-diagnosed SOKA and SHIMS clients. Routinely collected program data on this retrospective cohort were abstracted from multiple sources including HIV testing and counseling forms (referral forms), and records maintained at facilities where clients were referred and elected to enroll in HIV care. Component II was a telephone survey of clients who were not initially verified to have enrolled in care at facilities to which they were referred. The brief survey ascertained if and where the client enrolled in care, and for those clients who did not enroll, reasons for not enrolling in care. For clients who reported enrolling in care, study personnel visited facilities to verify enrollment and abstracted data from client records in accordance with Component I procedures.
Results: The 1,105 clients (494 SHIMS females, 294 SHIMS males, 317 SOKA males), diagnosed with HIV at a median (Q1-Q3) age of 29 (24-35) years, were referred to 69 HIV care facilities throughout Swaziland (18 in Hhohho, 16 Lubombo, 17 Manzini, 18 Shiselweni). Most clients were referred to government (71.4%) facilities categorized as clinics (47.4%) or hospitals (34.4%). At referral facilities, referral forms were located for only half (46.8%) of the clients; few (9.6%) were recorded in the appointment register and called either before (0.3%) or after (4.9%) their appointment. Of 267 clients interviewed, few (9.0%) reported receiving a phone call from the referral facility. After adjusting for non-response, of 1,105 clients, an estimated 464 (41.9%) enrolled in HIV care overall, and 155 (14.0%), 192 (17.3%), 269 (24.3%), 342 (30.9%), and 409 (37.0%) within 3, 6, 12, 18, and 24 months of diagnosis, respectively. Of interviewed clients, the most common reasons reported for not enrolling in care included perceived good health, and care that is inconvenient or costly. Of 300 clients verified to have enrolled in HIV care, at enrollment, 66.0% were ART eligible based on national guidelines (CD4 $\leq$ 350 cells/µl or WHO stage III or IV). Of ART-eligible clients at enrollment, 94.4% were initiated on ART and 86.5% were retained on ART two years after initiation. Of the few clients who enrolled in pre-ART care, 54.8% and 35.1% were retained in pre-ART care one and two years after enrollment, respectively.
Conclusion: Of over one thousand clients newly HIV diagnosed in two settings in Swaziland in 2011 and 2012, very few received linkage services in accordance with the National SOP, and less than 40% were estimated to have enrolled in HIV care within two year of their diagnosis. Of the few clients found to enroll in pre-ART care, most were not retained in care after 12 months of enrollment. The findings from this retrospective study (RetroLink) are a call to action to assess and improve linkage services, and early enrollment and retention in HIV care in Swaziland.

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List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ARV	Antiretroviral
CCF	Chronic Care File
CDC	United States Centers for Disease Control and Prevention
CTX	Cotrimoxazole
DAF	Data Abstraction Form
DSF	Data Source Form
DTF	Defaulter Tracing Form
EC	Expert Client
EMR	Electronic Medical Record
HBHTC	Home-Based HIV Testing and Counseling
HIV	Human Immunodeficiency Virus
HTC	HIV Testing and Counseling
IAPAC	International Association of Physicians in AIDS Care
IRB	Institutional Review Board
IQR	Interquartile Range (Q1-Q3)
MC	Male Circumcision
MOH	Ministry of Health
NGO	Non-Government Organization
PHU	Primary Health Unit
PITC	Provider Initiated Testing and Counseling
PSI	Population Services International
RHM	Rural Health Motivator
SHIMS	Swaziland HIV Incidence Measurement Survey
SOP	Standard Operating Procedure
TB	Tuberculosis
USDF	Umbutfo Swaziland Defence Force
WHO	World Health Organization

Key Definitions

1. ***Newly HIV-diagnosed.*** As recorded on the HTC form, newly HIV-diagnosed clients were defined as (1) having tested HIV-positive at the SHIMS or SOKA encounter, and (2) either never previously testing for HIV or last testing HIV-negative.
2. ***Data-abstraction match.*** A data-abstraction match was defined as a clinical record (e.g., chronic care file, electronic medical record) that matched on the HTC form the first or last name of the client, client gender, and at least one of the following variables: date of birth, physical address, telephone contact number, next of kin or treatment supporter, or telephone number of next of kin.
3. ***Partial match.*** A partial match was defined as a clinical record that matched information on the HTC form on one variable alone. All partial matches were evaluated and resolved by team leaders as either a match or non-match. Only data from those records that met the above matching criteria could be abstracted onto data abstraction forms.
4. ***Referral facility*****.** Referral facilities are locations where clients were referred for HIV care at HIV diagnosis. As part of the eligibility criteria, the referral facility name had to be legibly recorded on all HTC forms included in this study.
5. ***Enrollment facility.*** Enrollment facilities are locations where ≥1 clients were verified as having enrolled in HIV care.
6. ***Non-enrollment facility*****.** Non-enrollment facilities are locations where clients were either referred for HIV care or where clients reported having enrolled in care, but where no clients were verified as having enrolled in care.
7. ***Enrollment appointment.*** The enrollment appointment is the date of appointment clients were given to enroll in HV care. This date, typically within two-weeks of HIV diagnosis, was recorded on the HTC form with the name of the referral facility. In accordance with the national linkage SOP, the enrollment appointment was to be used by referral facility staff as the date to record clients in the clinic appointment register.
8. ***Enrollment in HIV care*****.** Enrollment in care is defined as documentation of either (1) having been clinically staged at an HIV care facility using the World Health Organization (WHO) HIV staging criteria, or (2) having received services at an HIV care facility at least once *after* the date a CD4 test was conducted. Thus, for the purposes of this report, enrollment in care presumes clients were informed of their ART-eligibility status based on WHO stage or CD4-count result.
9. ***Date of enrollment in HIV care.*** Date of enrollment in care is defined as the earliest date on which either enrollment criterion was met.
10. ***Baseline clinical characteristics.*** Baseline clinical characteristics are defined as WHO clinical staging and CD4-cell count that were abstracted from the pre-ART enrollment visit page of the chronic care file, or the earliest date identified for these clinical assessments. Because psychosocial assessments (e.g., disclosure to partners and family members) are supposed to be conducted at the time of or soon after enrollment, findings from these assessments are also included as part of baseline characteristics.
11. ***Pre-ART Care.*** HIV care, including clinical and psychosocial assessment and support services provided to patients who are not eligible for ART in accordance with the Swaziland national HIV care and treatment guidelines.

12. ***ART eligibility.*** ART eligibility is defined as having a CD4 ≤350 cells/µl (regardless of clinical stage) or a WHO clinical stage of III or IV (regardless of CD4 count).
13. ***Retained in pre-ART care.*** For pre-ART clients, retention in care was defined as having a documented visit at the facility within 151 days from the date of data abstraction. In accordance with national treatment guidelines, the recommended interval of time between pre-ART-care visits is 120 days.[21]
14. ***Retained in ART care.*** For ART clients, retention in ART care was defined as having a documented visit at the facility within 90 days from the date of data abstraction. In accordance with national treatment guidelines, the recommended interval of time between ART-care visits is 30 days.[22]

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Introduction

Background

Limited information is available on the magnitude and correlates of early enrollment and retention in HIV care among HIV diagnosed persons in resource-limited countries. Studies from South Africa suggest that one- to two-thirds of newly HIV-diagnosed persons do not enroll early in HIV care.[1,2] In a study from Mozambique where 7,005 patients were diagnosed with HIV during a 12-month period, only 3,956 (57%) enrolled in care within 30 days of their diagnosis.[3] Further, a recent meta-analysis of studies conducted in Africa suggests that many newly HIV-diagnosed clients either do not enroll or drop out of care within 6 months of diagnosis, and as a result, many patients initiate antiretroviral therapy (ART) late in the course of their HIV disease.[4] Late ART initiation is associated with increased risk of HIV morbidity and mortality, and transmission to uninfected sex partners.[5-9] Thus, to help reduce HIV morbidity and mortality, additional information is needed on the magnitude of early enrollment and retention in HIV care among newly HIV diagnosed persons, and whether services implemented to promote enrollment in care are effective. This need is particularly acute for countries with high HIV morbidity and for groups known to be at high risk for delayed enrollment in or defaulting from HIV care.

Of all countries, Swaziland has the highest estimated HIV prevalence, with an estimated 32% of the adult population 18-49 years of age infected with HIV.[10] A recent evaluation of the Swaziland ART program for 2004-2010 found that more than 50% of patients initiate ART late in the course of their disease with a median CD4 <100 cells/µl.[11] While many factors contribute to late initiation of ART, delay in enrollment in care following HIV diagnosis is thought to be particularly important.[12-14] To help document and improve early enrollment and retention in HIV care, the Swaziland Ministry of Health implemented in 2011 a new set of linkage and retention standard operating procedures (National SOP).[15] The National SOP was implemented in multiple HIV-care facilities, and for clients HIV tested at Soka Uncobe male circumcision sites (SOKA) in 2011 and 2012, and at homes during the Swaziland HIV Incidence Measurement Survey (SHIMS) in 2011. Providing linkage services and documenting enrollment in care of SOKA and SHIMS clients are particularly important because young men and persons diagnosed at home are at high risk for delayed enrollment and retention in HIV care.[16-20]

This retrospective study (Project RetroLink) was implemented to meet the above needs by evaluating compliance with the National SOP, and determining the magnitude and correlates of early enrollment and retention in HIV care among newly HIV diagnosed persons. The study population of RetroLink included both SOKA and SHIMS clients who were newly HIV diagnosed because these were the first two HTC populations among whom the National SOP was implemented.

Swaziland Linkage and Retention SOP

Although the National SOP was implemented with standard methods to document and track linkage to care, different linkage services were available for the two HTC populations. The common tracking and different linkage procedures are described below.

Client Tracking

Procedures for tracking clients from HIV diagnosis to enrollment in HIV care were based on the use of the same HTC form that was completed on all clients who were HIV tested in the two settings.[15] Produced in triplicate (white, pink, and yellow copies), the HTC form was used to not only document program indicators at the client level, but also to refer those clients for follow-up medical and social services (Appendix A). Facilities to which clients were referred (referral facilities) were recorded at the bottom of the form, including the date of appointment. If obtained, consent for follow-up contact was recorded on the HTC form, as well as the telephone number of the client and the name and telephone number of the next of kin (Appendix A). In accordance with the National SOP, clients who tested HIV-positive were informed that the purpose of follow-up calls is for staff at the referral facility to remind clients of their upcoming appointment and to encourage them to enroll in HIV care.[15] Once complete, the white copy of the form was given to the client to present to facility staff during registration; the pink copy was sent to the referral facility via the national sample transport system courier; and the yellow copy remained with the HTC provider.[15]

Linkage Services

Upon receipt of the pink copy of the HTC form, referral facility staff were expected to record the client's name in the appointment register on the date of appointment and store the pink copy in an "Expected Patients" binder.[15] Facility staff were expected to review the appointment register on a daily basis. One day before the enrollment appointment, for those clients who provided consent and a telephone number, staff were expected to either send an SMS text reminder or to call and remind clients of their appointment the following day, and to clarify and resolve any barriers for enrolling in care.[15] Clients who missed their appointment were to be called again after 3 days to assess and resolve barriers to care and to schedule another appointment. Facility staff were expected to review the appointment register daily for clients who missed their appointments and document all calls in the call register (sometimes the pink copy of the HTC form was used to document call attempts).[15] Clients who consented for follow-up contact who could not be reached by phone could also be visited at home through standard defaulter tracing procedures.[15] For clients who visited the facility, the white copy of the HTC form (if presented) was attached to the pink copy and both were to be placed in an "Arrived Patients" binder.[15]

SOKA-specific Linkage Services

At Population Services International (PSI) supported male circumcision clinics (SOKA sites), after standard post-test counseling, clients who tested HIV positive were offered the opportunity to speak with an HIV-positive expert-client (EC) counselor. EC counselors explained the nature and value of HIV care, used a standard form (HIV care readiness assessment form) to identify and resolve barriers to care, and in some settings, escorted and helped clients register at co-located HIV care facilities (Appendix B). PSI EC counselors did not have any follow-up responsibilities with clients after the single post-test counseling session (although some counselors were known to contact some clients on their own). EC counselors were not available for SHIMS clients who were tested at their home.

Primary Study Objectives

The primary study objectives of RetroLink included the following:

Compliance with the National SOP

1. Linkage services
    a. The proportion of referred, newly HIV diagnosed clients for whom a pink referral copy was located at the referral facility.
    b. The proportion of clients for whom at least one telephone contact attempt was documented to remind the client of his/her upcoming appointment to enroll in care.
    c. The proportion of clients who were successfully contacted by phone to remind them of their upcoming appointment.
2. Appointment defaulter tracing
    a. The proportion of referred, newly HIV-diagnosed clients who did not link to care within 14 days of their appointment who consented to and provided telephone contact information.
    b. The proportion of clients in 2(a) for whom at least one telephone contact attempt was documented.
    c. The proportion of clients in 2(b) who were successfully contacted, as documented on the pink form or telephone log.

Enrollment & Retention in HIV Care

3. Enrollment in Care
    a. The proportion of referred clients who enrolled in care for whom a white HTC form was located at the facility.
    b. The proportion of referred clients who enrolled in care at the referral facility within 3 months of their diagnosis (early enrollment in care), and the median (Q1-Q3) interval of days from diagnosis to enrollment in care.
    c. The proportion of clients who were not initially verified as having enrolled in care at the referral facility who were successfully contacted by phone by study personnel.
    d. The proportion of clients in 3(c) who reported and were verified to have enrolled in HIV care.
    e. The distribution of reasons for enrolling in care at non-referral facilities, and reasons for not enrolling in care at any facility.
    f. The proportion of clients who enrolled in care and who at baseline were ART-eligible and the proportion who had AIDS or CD4 $\leq$200 cells/µl.
4. Early retention in care
    a. The proportion of referred clients who were ART-eligible at baseline who were subsequently initiated on ART.
    b. The median (Q1-Q3) interval in days from HIV diagnosis to ART initiation among referred clients ART-eligible at baseline.
    c. The proportion of enrolled clients in pre-ART and ART care who were retained in care 6 and 12 months after enrollment or ART initiation.
    d. The median (Q1-Q3) number of follow-up facility visits at which clients were screened for tuberculosis and prescribed cotrimoxazole.

Methods

Study Populations

The two study populations of RetroLink were eligible clients newly HIV-diagnosed through (1) home-based HTC conducted as part of SHIMS from February 1, 2011 through June 30, 2011, and (2) provider-initiated HTC conducted at 13 male circumcision sites as part of Soka Uncobe from March 1, 2011 through March 31, 2012.

Eligibility

Eligibility for RetroLink was based on a comprehensive review of archived HTC forms used during SHIMS and Soka Uncobe. As the implementing partner of SHIMS, ICAP archived HTC forms at the country office in Mbabane. HTC forms used during Soka Uncobe were archived at care and treatment facilities located throughout Swaziland. To be considered eligible, all HTC forms had to have complete and legible information for each of the following variables: client first and last name, date of birth, test date, gender, ever previously tested for HIV, most recent HIV test result, attendance at an HIV care facility in the last 3 months, final HIV test result, and name of referral facility (Appendix A). Additionally, only clients on whom HTC forms indicated that they had tested HIV-positive, and (1) had never previously tested for HIV or (2) had last tested HIV-negative were defined as newly HIV diagnosed and considered eligible for the study, provided the required referral threshold was met (see Sample Restriction below).

Study Design and Client Selection

Two design components were included in this evaluation. Component I was a retrospective cohort study of eligible SHIMS and SOKA clients. Component II was a brief cross-sectional telephone survey of Component I clients on whom enrollment in HIV care was not initially verified at the referral facility.

Component I Selection

To select clients for Component I, study personnel reviewed all located copies of SHIMS HTC forms archived at the ICAP country office, and all located copies of SOKA HTC forms archived at 13 of 31 SOKA sites (Appendix C). Teams of approximately 4 persons reviewed all archived HTC forms and separated all forms of clients who tested HIV-positive. Two staff, one of whom was fluent in siSwati (the official language in Swaziland), then independently reviewed each HIV-positive HTC form against the above set of eligibility criteria. Having one staff member fluent in siSwati was needed to ensure client names were accurately recorded. Both staff had to agree that all the eligibility criteria were met, and only those HTC forms that met all eligibility criteria were chosen. For SOKA clients, the 13 sites were selected because they provided 89.1% of all clients who tested HIV-positive during the Soka Uncobe campaign (insufficient resources were available to review all archived HTC forms at all 31 facilities).[21] An incomplete but unknown percentage of HTC forms of all SHIMS participants were archived at the ICAP country office (personal communication, Jessica Justman, SHIMS Principal Investigator, ICAP-Columbia).

SOKA Sample Restriction

After eligible study forms were selected, only those forms of clients referred to HIV care facilities with $\geq$3 referrals for SOKA clients were included in this evaluation (referral threshold). This referral threshold

was imposed because insufficient resources were available to visit all facilities to which SOKA clients were referred. A referral threshold was not imposed on selecting eligible SHIMS forms because the protocol sampling plan called for a 1:1 ratio of selected male clients from SOKA and SHIMS (to optimize power to detect outcome differences in these two groups). For the range of expected enrollment-in-care rates among MC clients (55%-75%), a sample size of 520 males (260 in each group) was planned to provide >80% power to detect absolute differences of enrollment-in-care rates that were 13% or lower among SHIMS clients compared with MC clients. The original sampling plan also called for including 473 SHIMS female clients to match the same selection probability for sampling SHIMS male clients. To meet the target sample sizes and achieve the 1:1 ratio of selected male clients from SOKA and SHIMS, all located HTC forms of eligible SHIMS males had to be selected for the study. Because all located HTC forms of eligible males were selected, all located HTC forms of eligible SHIMS females were also selected for the study. Excluding clients who were initially thought as eligible but who were determined to be previously diagnosed based on examination of clinical records, the final sample size for each study-gender group was slightly more than the original targets (Figure 1).

Component II Selection

Component II was restricted to the subset of Component I clients who (1) were not initially verified to have enrolled in HIV care at the referral facility, and (2) consented to be contacted and provided a telephone number on their HTC form.

Study Measures

Data Collection Forms

The following forms were used to collect data for this study: (1) data abstraction form (DAF), (2) clinic characteristics form (CCF), (3) data source form (DSF), and (4) the defaulter tracing form (DTF). Study measures included on each of these forms are summarized below. Refer to the list of definitions for key measures (page 6).

Data abstraction form. The DAF was used to measure implementation of national linkage procedures and enrollment and retention in HIV care (Appendix D). The DAF included measures on demographic characteristics (e.g., age and sex); HIV diagnosis and referral (e.g., date of HIV diagnosis and name of referral facility); expected National SOP management procedures (e.g., storage of pink and white copies of HTC forms at referral facilities, documentation of enrollment appointments); expected national linkage procedures (e.g., telephone reminders before appointments and calls after missed appointments); and among clients who enrolled in care, clinical services received and client characteristics through the date of abstraction (e.g., baseline and follow-up CD4 testing and WHO staging, ART initiation, cotrimoxazole prescription, screening for TB, etc.).

Clinic characteristics form. The CCF was used to measure facility characteristics that might be associated with enrollment and retention in care (Appendix E). These characteristics include the type, class, and location of facilities (e.g., government, private, hospital, clinic, rural, urban); clinic services, operations, and staffing (e.g., days open, number and types of HIV-care providers, ART initiation or refill services,

etc.); and capacity to call clients in accordance with national linkage procedures (e.g., availability of telephone, monthly airtime credit, responsible personnel, etc.).

Data source form. The DSF was used at each facility to measure the availability of data sources that study personnel used to locate, match, and abstract data on eligible clients (Appendix F). Data sources inventoried at each facility included expected and arrived patient binders; electronic medical records (EMRs); chronic care files; and appointment, call, pre-ART, ART, and laboratory registers. For appointment, pre-ART, and ART registers, the total months that registers were available were recorded for calendar years 2011, 2012, and 2013. Register availability was measured in months because even though registers were available for a calendar year (e.g., 2011), parts of the register could be missing (e.g., sections that were torn from the register).

A summary index of data-source availability, ranging from 1 (optimal availability) to 4 (inadequate availability) was calculated based on the availability of an electronic medical record system; EC counselors (who were used to identify and locate files of clients); and appointment, pre-ART, and ART registers for calendar years 2011, 2012, and 2013. Category 1 was defined as EMR, EC, and 108 register months available for each of the three registers. Category 4 was defined as <u>not</u> having any of these data sources available, including not having any register months available for years 2011, 2012, and 2013 for each of the three registers (see Table 10 footnote for complete definition).

Defaulter Tracing Form. The DTF was used for all Component II eligible clients and served as the standardized questionnaire administered to those clients who were contacted by telephone and consented to be interviewed (Appendix G). The DTF measured Component II processes (e.g., telephone contact attempts; success at contacting and consenting clients); information about their post-test counseling session (e.g., if the client remembered being referred to HIV care and the name of the referral facility, if applicable); enrollment and retention in HIV care (e.g., name of facilities where the client enrolled and is currently receiving HIV care, dates of enrollment and last visit); and reasons for enrolling at a facility different from the referral facility or not enrolling in care at all (e.g., perceived good health, costs and quality of HIV care, accessibility, etc.).

Facility Data Sources

Component I

For Component I, the following data sources were used to meet the two broad objectives of the evaluation.

Study Objectives	Data Sources
1. Evaluation of Compliance with National Linkage and Retention Procedures	Expected Patients Binder (Pink HTC Forms) Arrived Patients Binder (White HTC Forms) Appointment Register for 2011-2014 Call Registers for 2011-2014

2. Evaluation of Enrollment and Retention Outcomes	Chronic Care Files Electronic Medical Record Pre-ART Registers for 2011-2014 ART Registers for 2011-2014 Laboratory Registers for 2011-2014

Data Collection

Preparing for Data Abstraction.

One DAF was created for each of the SHIMS and SOKA clients selected for the study prior to data collection. Client identifiers (e.g., first and last name, date of birth, telephone number, etc.) used for matching client medical records were transcribed onto DAFs from corresponding fields from selected HTC forms. DAFs were then grouped according to referral facilities and dispatched with a data-abstraction team to that facility.

In advance of the team's arrival, each facility was phoned or visited by the study facility coordinator. The study facility coordinator recorded the name and phone number of the facility's point of contact, and the availability, location, and missing dates of data sources. This information was provided to the field supervisor of the assigned team to help plan data abstraction activities. Whenever possible, an appointment date and time for the team's visit was established in advance to ensure the availability of relevant facility personnel and to improve access to data sources.

During data-abstraction visits, field supervisors located the facility's primary point of contact or designee to introduce the team, explained the purpose and methods of the study, and provided a letter of authorization from the Swaziland MOH. Clinic staff and team supervisors then identified a secure workspace and assembled or located data sources required for identifying enrolled clients.

Evaluation of National Linkage and Retention Procedures

To evaluate national linkage procedures, the abstraction teams located and searched all HTC forms within the expected and arrived patients binders or envelopes. In accordance with standard procedures, for each DAF, teams of two persons searched for a matching HTC form (usually pink or white copies) included in the binders or envelopes. Forms were matched by name and unique HTC form number. If a matching form was located, the white and pink copies of the HTC form were examined for documentation of calls between facility staff and client.

Appointment and call registers were next searched for all assigned DAFs. Data abstractors worked in teams of two to examine register dates two weeks before and two weeks after the client's appointment at that facility. For each page in the register during this four-week interval, data abstractors searched for the client name of the assigned DAFs. Located matching HTC forms, names in the appointment or call register within the four-week interval, and documentation of appointment-reminder or missed-appointment telephone calls was used to complete Section C of the assigned DAF (Appendix D).

Evaluation of Enrollment and Retention Outcomes

To evaluate enrollment and retention outcomes, abstraction teams focused on locating the chronic care file for each assigned DAF. The chronic care file was the primary data source from which enrollment and retention data were abstracted. Only if the chronic care file could not be located were data abstracted from other facility records (e.g., EMR or register). Searches began by querying the facility's EMR (if available) using combinations of the client's first name, surname, and date of birth. If the EMR search yielded a record that at least partially matched the client's name, abstraction teams asked for or assisted facility staff to obtain the chronic care file. If a matching chronic care file was located, data from the file were abstracted onto Sections D and E of the DAF (Appendix D).

Assigned DAFs that did not yield a match on the EMR search were then reviewed by available expert clients, counselors, or nurses. If names were recognized by facility staff, corresponding chronic care files were located and matched with client identifiers; data on matching clients were then abstracted onto DAFs. For remaining un-matched DAFs, at most facilities, abstraction teams next searched through all of the chronic care files to identify potentially matching clients. At some facilities, the number and methods by which chronic care files were stored prohibited comprehensive searches of all chronic care files. Depending on the filing system, a targeted approach was used to search through chronic care files (e.g., files arranged alphabetically by client's surname).

If an assigned client's chronic care file had not yet been located through the above procedures, data abstractors last conducted searches of names on paper registers. Unless the client was located, a minimum of three primary registers had to be reviewed in accordance with standard procedures from the date of the client's HIV diagnosis through the date of register review. These registers included appointment, pre-ART, and ART registers. If one or more primary registers were unavailable, secondary laboratory or pharmaceutical registers were reviewed for those time periods that the primary registers were unavailable.

To review registers, data abstractors also worked in teams of two. No more than two client names could be searched at one time by an abstractor, and each team could only search for the same two names. The intent of these methods was to ensure at least two persons searched for each assigned client to minimize the risk of missing a matching name recorded on a register. In searching for names on the registers, the two team members had to review each page of the register, beginning from the earliest date of HIV diagnosis for the set of searched clients through the date of register review. Typically, two teams of two could review a register, page-by-page, at any one time.

If at any point during the search a partial match was identified, the chronic care file was located and reviewed. If a partial match was resolved to a match, data was abstracted from the file onto the DAF. Field supervisors had to review and resolve all partial matches as either a non-match or a match. If the chronic care file could not be located, relevant data was transcribed from the matching data source—typically the EMR, or pre-ART or ART register.

Teams also recorded any indication that a client initially referred to that facility was potentially enrolled at an alternate facility. In the event this occurred, an abstraction team was sent to the alternate facility to initiate a full search and abstract data in accordance with the above procedures. Before leaving the facility, field supervisors completed the data source form, and conducted brief interviews with the chief medical officer, administrator, or facility designee(s) to complete the clinic characteristics form.

Component II

Study interviewers created a DTF for eligible Component II clients by transcribing identifiers and client referral information from the DAF. To reach clients, a minimum of three call attempts were made to the client or their next of kin. Each call was made on a different day and at varied times to increase the likelihood of contacting the client.

Once contact was made, interviewers verified the client's identity and read a script that explained the purpose of the phone call and its sanction by the Swaziland Ministry of Health (Appendix G). If permitted by the client, the consent form was read verbatim and clients were asked if they had any questions about the purpose of the study and if they would consent to the brief telephone interview. If consent was obtained, interviewers administered the questionnaire and recorded responses onto the DTF in accordance with standard procedures. Appointments for call backs were scheduled if the client was reached but unable to participate at that time.

If contacted clients reported having enrolled at the facility to which they were referred, then data-abstraction teams returned to those facilities and a new search was conducted. Conversely, if clients reported having enrolled in care at a facility other than where they were referred (alternate facilities), data-abstraction teams visited those facilities and searched clinic records and abstracted data in accordance with Component I procedures. If applicable, clients were asked their reasons for enrolling in a facility different from the referral facility or their reasons for never enrolling in HIV care. Clients who reported never enrolling in care were encouraged to enroll and were offered assistance with locating a convenient HIV care facility that met their needs. If assistance was accepted, the facility where the client wished to enroll was contacted by study personnel and an appointment was made for the requested date and time.

Data Entry & Management

After quality assurance review procedures were conducted (below), approved completed DAFs, CCFs, and DTFs were double-data entered into CSPro v5.0 on a secure server by trained data specialists. All DSFs were single-data entered onto an Excel spreadsheet by the deputy project coordinator. All completed study forms were maintained at ICAP Swaziland in locked filing cabinets in an access-controlled room.

Study Personnel & Training

Study personnel included one project coordinator, one deputy project coordinator, one facility coordinator, five field supervisors, twenty-one data abstractors, one data management supervisor, and two data entry specialists (Appendix H). Component I staff were trained during a five-day workshop on

standard operating procedures to identify and search facility data sources, locate and accurately match facility records with client HTC forms and DAFs, and abstract enrollment and retention data from chronic care files. Training consisted of both didactic and practical sessions. Data abstractors were subject to daily evaluations and had to pass a final matching and data-abstraction exercise to be hired.

Two EC counselors were hired as interviewers and were trained over 10 days on Component II standard operating procedures. Interviewers were required to role play multiple response scenarios to ensure they were prepared to mitigate a range of potential negative responses, administer the consent form and questionnaire in accordance with standard procedures, and accurately code client responses. A team of two data specialists were also hired and trained over 3 days on data-management standard operating procedures. These procedures specified how to enter data from study forms, perform daily reconciliations of double-entered data, upload and secure project databases, and perform quality assurance activities as described below.

Quality Assurance

Quality assurance procedures were employed throughout the study to ensure to the extent possible that (1) records of clients who enrolled at HIV care facilities were located and accurately matched with study HTC and data-abstraction forms, (2) that abstracted data were accurately transcribed from matching facility records onto study forms, and (3) that all completed forms were accurately entered into the project database. To meet these objectives, quality assurance procedures included (1) multi-level form reviews, tracking, and weekly briefings, (2) manual and automated database reviews, (3) enrollment and data-abstraction validations, and (4) database validations.

1. Form Reviews and Briefings

Facility-based reviews. In accordance with standard procedures, team supervisors reviewed all completed DAFs at facilities to confirm that records matched those of selected clients, that each abstracted DAF was complete and legible, and that transcribed data matched that of the original data source. After conducting their review and correcting any observed errors, team leaders signed and attached a quality assurance tracking sheet to each DAF and submitted approved DAFs and DSFs for office review.

Office-based reviews. The data management supervisor and deputy project coordinator conducted independent reviews of submitted DAFs, CCFs, and DTFs evaluating completeness, legibility, and logic consistency of selected variables (e.g., chronology of dates). Forms with errors were returned to the field supervisor, facility coordinator, or Component II interviewer for corrections. For forms without observed errors, the deputy project coordinator and data management supervisor signed the quality assurance tracking sheet and submitted the form for data entry. Finally, at data entry, records that failed data entry specialist reviews or automated checks for completeness, valid-values, and logic in the data entry applications were returned to the deputy project coordinator for further review and potential correction.

Briefings. Weekly briefings attended by all study personnel were held to discuss challenges observed at facilities and common data errors. When necessary, the briefings were used to conduct refresher trainings of standard operating procedures and problem solving of observed challenges.

2. Database Reviews

Manual and automated reviews of the study database were carried out in the last month of data collection to assess the extent to which abstracted data were complete and logically consistent, and to resolve missing or inconsistent data. Client records were identified that had key fields missing (e.g., CD4 test results, WHO staging, ART initiation, etc.) or inconsistent data (e.g., out-of-chronology dates). Hardcopy DAFs were re-reviewed and errors resolved using information in the DAF comment field (which often explained the discrepancy). If key missing or inconsistent data were not resolvable based on these reviews, the DAF, CCF, or DSF was re-sent to the appropriate facility for correction. Corrected forms were reviewed and double-data entered in accordance with standard procedures; forms with discrepancies that could not be corrected were noted as not correctable.

3. Enrollment and Data Abstraction Validations

Data abstraction teams led by the deputy project coordinator or CDC investigators were re-deployed to select facilities to (1) assess correct matching of clinic records and, of matched clients, the accuracy of transcribed data; (2) locate and abstract records of clients who had reportedly enrolled at that facility but had not been located previously; and (3) locate and abstract records of clients who had not been located previously and could not be contacted during Component II. Updated or corrected DAFs were reviewed and double-data entered in accordance with standard procedures; forms with discrepancies that could not be corrected were noted as not correctable.

4. Database Validations

A two-stage validation of the project database was conducted to assess the completeness and accuracy of data entry. First, all hardcopy DAFs, CCFs, DSFs, and DTFs were located, reviewed, and compared against the electronic database to ensure a matching record existed in the electronic database. Second, all recorded variable values of a random 10% sample of DAFs, DTFs, and CCFs were compared against corresponding variable values of electronic records. Corrected forms were reviewed and double-data entered in accordance with standard procedures. Finally, because DSFs were not double-data entered into the Excel database, all recorded values on DSFs were compared against those in the electronic database.

Data Analysis

Analytic Software and Restrictions

SAS 9.3 (SAS Institute Inc., Cary, NC, USA) was used to evaluate all study objectives and Microsoft Excel was used to analyze data collected as part of the quality-assurance database validations. SAS analyses were restricted to the sample of eligible SHIMS clients $\geq$17 years of age and SOKA clients $\geq$14 years of age. Clients who were originally eligible but who were discovered at HIV care facilities to have been previously HIV diagnosed were excluded from analyses.

Levels of Analysis & Statistical Tests

Findings are reported at two levels: facility and individual. Facility-level characteristics are reported for enrollment and non-enrollment facilities separately, and for all facilities combined. Individual-level characteristics are reported for the three study-gender groups separately: SHIMS females, SHIMS males, and SOKA males, and for all groups combined. Findings are reported as percentages for nominal and ordinal variables (e.g., type of facility and WHO clinical staging, respectively), and as medians and interquartile ranges (Q1-Q3) for ratio-scaled variables (e.g., age and CD4 count). Group differences were evaluated with the chi-squared (χ^2) and t-test (*t*) statistics for categorical and ratio-scaled variables, respectively. Kaplan Meier analyses were conducted to evaluate time to enrollment in HIV care. The log-rank (*LR*) test was used to evaluate differences in survival functions. For all analyses, p-values (*P*) < 0.05 were considered statistically significant.

Content & Sequence of Findings

All principal objectives of this study were evaluated and findings in this report are presented in the following sequence: (1) Component I and II Study Periods; (2) Client and Referral Facility Characteristics; (3) Sample Description; (4) Implementation of National Linkage Procedures; (5) Client Interviews; (6) Enrollment in HIV care; (7) Baseline Clinical Characteristics; (8) ART Initiation; (9) Retention in HIV Care; (10) TB Screening and Cotrimoxazole Prescription; (11) Availability of Primary Data Sources; and (12) Quality Assurance.

Enrollment in HIV Care

Enrollment in HIV care was defined as documentation of either (1) having been clinically staged at an HIV care facility using the World Health Organization (WHO) HIV staging criteria, or (2) having received services at an HIV care facility at least once after the date a CD4 test was conducted. Thus, for the purposes of this report, enrollment in care presumes clients were informed of their ART-eligibility status based on WHO stage or CD4-count result. Unless otherwise indicated, enrollment in HIV care in this report was "verified" by data abstractors, supervisors, and CDC investigators in accordance with the above procedures. Enrollment outcomes that were not 100% verified are noted as either "self-report" or "adjusted for non-response."

Enrollment in HIV care adjusted for non-response was estimated because study personnel were unable to interview all clients who were not initially verified as having enrolled in HIV care at facilities to which they were referred. The overall adjusted enrollment-in-care rate was estimated by (1) applying the age-group-specific, verified enrollment-in-care probabilities of clients interviewed in Component II, to the corresponding age-group distribution of Component II eligible clients who were not interviewed (sum of products = estimated enrolled clients); and (2) dividing the sum of estimated and verified enrolled clients by the total sample size. Adjusted time-period-specific enrollment-in-care rates (e.g., 6 months after diagnosis) were estimated by applying the distribution of verified enrolled clients by time-period, to estimated enrolled clients, and dividing the sum of the estimated and verified enrolled clients for each time period by the total sample size.

Retention in Pre-ART and ART Care

Retention was evaluated separately for pre-ART and ART clients in 6-month intervals (observation periods) after enrollment in HIV care (pre-ART retention) or after ART initiation (ART retention). To be eligible for retention analyses, the date of abstraction had to occur after the date the observation period ended for each client (e.g., 12 months after ART initiation). The maximum observation period for retention analyses was 24 months, as too few clients were observed in pre-ART or ART care beyond 24 months.

For the set of clients eligible for analyses in each observation period, clients were coded as retained in accordance with the following definitions. For pre-ART clients, retention in care was defined as having a documented visit at the facility within 151 days from the date of data abstraction. In accordance with national treatment guidelines, the recommended interval of time between pre-ART care visits is 120 days.[22] For ART clients, retention in ART care was defined as having a documented visit at the facility within 90 days from the date of data abstraction. This 90-day interval was chosen to match the definition of ART retention in the Swaziland national ART program evaluation.[11] In accordance with national treatment guidelines, the recommended interval of time between ART-care visits is 30 days.[22]

In accordance with the above definitions, clients not retained in HIV care were assigned a LTFU date as the date of the most recent HIV-care visit. For the set of clients eligible for analyses in each observation period, if the LTFU date occurred before the end of a retention observation period (e.g., 12 months after ART initiation), the client was defined as not retained during that observation period. For example, if a client was eligible for retention analyses for 6 and 12 month observation periods ending on 06/30/2013 and 12/31/2013, respectively, and the client's LTFU date was 09/01/2013, the client was defined as retained for the 6-month observation period and not retained for the 12-month observation period.

ART clients who were in pre-ART care for at least 6 months were also included in pre-ART retention analyses. For these clients, if ART initiation occurred *after* the end of a pre-ART observation period (e.g., 6 months after enrollment), the client was defined as retained during that pre-ART observation period. ART clients were excluded from pre-ART retention analyses if ART initiation occurred during or before a pre-ART care observation period. For example, if a client enrolled in care on 01/01/2013 and was initiated on ART on 09/01/2013, then the client was defined as retained in pre-ART care for the first 6-month observation period for pre-ART care. The client was also excluded from all subsequent pre-ART retention analyses (e.g., 12-, 18-, and 24-month pre-ART observation periods).

Results

1. Component I and II Study Periods

Final IRB approval of Component I was received on July 25, 2013 and study personnel initiated data-abstraction visits to the 69 referral facilities on September 18, 2013. Final IRB approval of Component II was received on October 31, 2013 and study personnel initiated telephone interviews on December 3, 2013. Telephone interviews were completed on January 23, 2014 and data-abstraction visits at facilities were completed on February 11, 2014. Study personnel visited a total of 92 facilities as part of Components I & II (Appendix I). Of these 92 facilities, 69 were facilities to which all participants were referred to care at HIV diagnosis, 20 were identified from clients interviewed during Component II, and 3 were uniquely identified as part of Component I activities (e.g., facilities that medical records or study personnel indicated as likely enrollment facilities). Finally, study personnel conducted data abstraction validation visits at facilities from January 27, 2014 to February 13, 2014, at which point all data collection activities ended.

2. Sample Description

In August 2014, study personnel from MOH, PSI, and CDC visited 13 SOKA sites located in each of the four regions of Swaziland to locate and review all archived HTC forms of males ≥14 years of age who sought MC services and who tested HIV-positive during the Soka Uncobe campaign. Review of all archived SOKA HTC forms at these sites identified 389 initially eligible SOKA clients (Figure 1). Of these, 44 were referred to HIV care facilities that had less than three SOKA referrals and were excluded from the study. Of the 345 clients referred to eligible facilities, 28 (8.1%) were identified at facilities to have been in HIV care before their SOKA HIV test date. These 28 ineligible clients were excluded from analyses, leaving an analytic sample size of 317 male SOKA clients (Figure 1).

During August and September 2014, study personnel from ICAP and CDC reviewed all HTC forms of SHIMS participants who tested HIV-positive that were archived at the ICAP country office. Review of archived forms identified 850 initially eligible SHIMS clients (Figure 1). During data abstraction, 62 (7.3%) clients were identified at facilities to have been in HIV care before their SHIMS HIV test date. Records from these 62 clients were excluded from analyses, leaving an analytic sample size of 788 SHIMS clients (494 females, 294 males).

The combined sample of 1,105 eligible SHIMS and SOKA clients were referred to 69 HIV care facilities located in the four regions of Swaziland (16-18 facilities each) (Figure 2). Although the percentage of referral facilities was similar by region (23.2% - 26.1%), proportionally more clients were referred to facilities in Hhohho and Manzini (31.8% and 31.0%, respectively) than clients referred to facilities in Shiselweni and Lubombo (21.7% and 15.6%, respectively) (Figure 1).

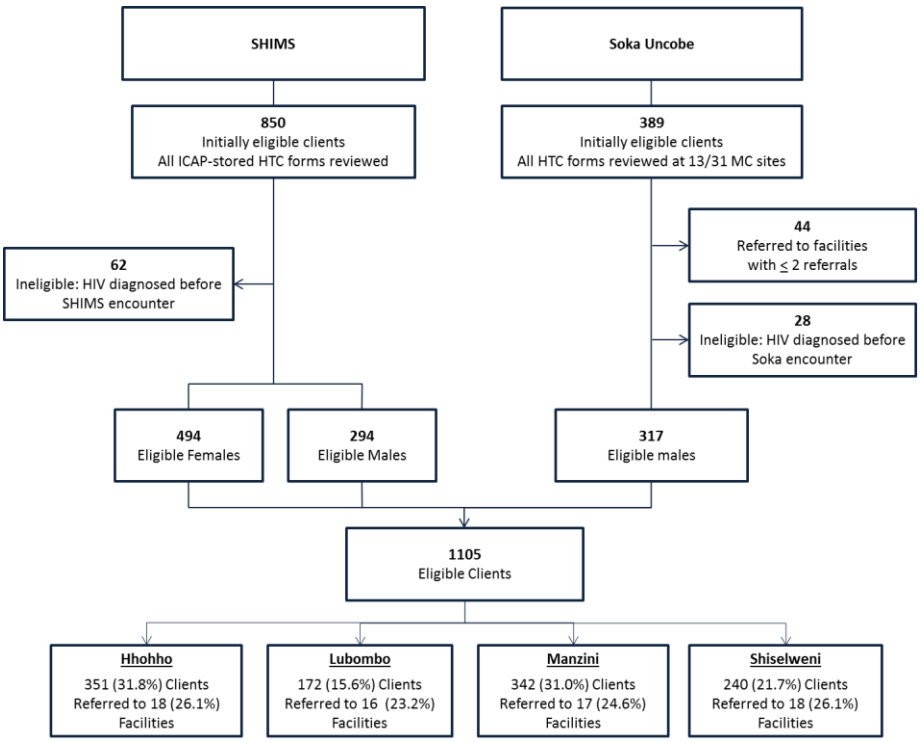

Figure 1. Distribution of eligible newly HIV diagnosed SHIMS and Soka Uncobe clients referred to health facilities in the four regions of Swaziland, 2011-2012.

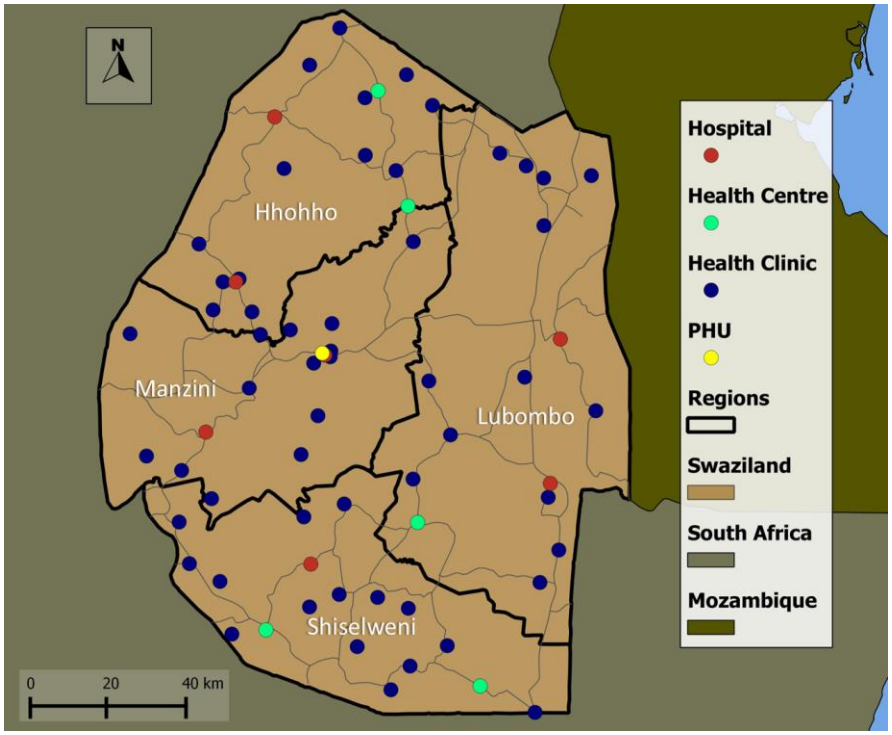

Figure 2. Distribution of 69 HIV care facilities to which eligible SHIMS and Soka Uncobe clients were referred at HIV diagnosis, by class of facility, 2011-2012.

4. Client and Referral Facility Characteristics

Study Groups Combined

Table 1 includes findings on client and referral facility characteristics, by study-gender group. Of the 1,105 eligible clients, the median (Q1-Q3) age at HIV diagnosis was 29 years (24-35). At the time of their HIV diagnosis, clients were predominantly referred to government-operated facilities (71.4%), and facilities classified as clinics (47.4%) and hospitals (34.4%); 14.8% of clients were referred to facilities operated by private or non-government organizations, or the Swaziland military. Similar proportions of clients were referred to facilities in urban and rural areas (42.9-42.0%). All clients were referred to facilities that provided ART refills on site (100%), and nearly all were referred to facilities which initiated ART (98.6%) and had phones (95.6%) and monthly airtime credit [median (Q1-Q3) Swaziland emalangeni: 150 (150-200)] available to implement the National SOP (Table 1).

Study Group Similarities & Differences

SHIMS females were younger than SHIMS males (t = -8.44; $P < 0.0001$) and SOKA males (t = -4.46; $P < 0.0001$) (Table 1). All characteristics of referral facilities were similar for SHIMS males and females. Compared with SHIMS clients, SOKA clients were less likely to be referred to a government facility (χ^2 = 140.7; $P < 0.0001$), and were more likely to be referred to an urban facility (χ^2 = 60.1; $P < 0.0001$) and a facility located on a paved road (χ^2= 43.3; $P < 0.0001$) (Table 1). Similar proportions of clients in all study-gender groups were referred to facilities with the same HIV clinical-services characteristics (Table 1).

Table 1. Client and referral facility characteristics, by study-gender group.

Characteristic	SHIMS Female (N=494)	SHIMS Male (N=294)	SOKA Male (N=317)	All Clients (N=1105)
Age at diagnosis, median (Q1-Q3)	26 (22 – 33)	32 (27 – 38)	29 (25 – 35)	29 (24 – 35)
Age at diagnosis (years)				
<25	204 (41.3%)	37 (12.6%)	58 (18.3%)	299 (27.1%)
25-29	122 (24.7%)	72 (24.5%)	105 (33.1%)	299 (27.1%)
30-35	81 (16.4%)	84 (28.6%)	87 (27.4%)	252 (22.8%)
>35	87 (17.6%)	101 (34.3%)	67 (21.1%)	255 (23.1%)
Region of referral facility				
Hhohho	148 (30.0%)	101 (34.4%)	102 (32.2%)	351 (31.8%)
Lubombo	83 (16.8%)	51 (17.4%)	38 (12.0%)	172 (15.6%)
Manzini	135 (27.3%)	81 (27.6%)	126 (39.8%)	342 (31.0%)
Shiselweni	128 (25.9%)	61 (20.8%)	51 (16.1%)	240 (21.7%)
Type of referral facility				
Government (non-military)	369 (74.7%)	231 (78.6%)	189 (59.6%)	789 (71.4%)
Faith-based	91 (18.4%)	39 (13.3%)	23 (7.3%)	153 (13.9%)
Private	24 (4.9%)	15 (5.1%)	46 (14.5%)	85 (7.7%)
NGO	8 (1.6%)	4 (1.4%)	46 (14.5%)	58 (5.3%)
Military	2 (0.4%)	5 (1.7%)	13 (4.1%)	20 (1.8%)
Class of referral facility				
Hospital	166 (33.6%)	109 (37.1%)	105 (33.1%)	380 (34.4%)
Health Center	92 (18.6%)	43 (14.6%)	36 (11.4%)	171 (15.5%)
Clinic	227 (46.0%)	137 (46.6%)	160 (50.5%)	524 (47.4%)
PHU	9 (1.8%)	5 (1.7%)	16 (5.1%)	30 (2.7%)

Characteristic	SHIMS Female (N=494)	SHIMS Male (N=294)	SOKA Male (N=317)	All Clients (N=1105)
Location of referral facility[1]				
Urban	176 (35.6%)	110 (37.4%)	188 (59.3%)	474 (42.9%)
Peri-urban	66 (13.4%)	56 (19.1%)	45 (14.2%)	167 (15.1%)
Rural	252 (51.0%)	128 (43.5%)	84 (26.5%)	464 (42.0%)
Referral facility on a paved road	370 (74.9%)	217 (73.8%)	292 (92.1%)	879 (79.6%)
Days per week HIV services provided				
Monday – Friday	353 (71.5%)	217 (73.8%)	232 (73.2%)	802 (72.6%)
Monday – Saturday	90 (18.2%)	45 (15.3%)	61 (19.2%)	196 (17.7%)
Monday – Sunday	51 (10.3%)	32 (10.9%)	24 (7.6%)	107 (9.7%)
Change in days per week facility is open since March 2011				
Increase	137 (27.7%)	96 (32.7%)	119 (37.5%)	352 (31.9%)
Decrease	31 (6.3%)	28 (9.5%)	26 (8.2%)	85 (7.7%)
No change	326 (66.0%)	170 (57.8%)	172 (54.3%)	668 (60.5%)
Providers per HIV-clinic day, median(Q1–Q3)				
Doctors	1 (1 – 2)	1 (1 – 2)	1 (1 – 2)	1 (1 – 2)
Nurses	4 (2 – 6)	5 (2 – 6)	6 (4 – 8)	5 (2 – 6)
Counselors	0 (0 – 1)	0 (0 – 1)	0 (0 – 1)	0 (0 – 1)
Lay Counselors	0 (0 – 1)	0 (0 – 1)	0 (0 – 1)	0 (0 – 1)
Expert Clients	2 (2 – 3)	2 (2 – 3)	2 (1 – 3)	2 (2 – 3)
All cadres combined	8 (6 – 13)	9 (6 – 13)	10 (6 – 13)	9 (6 – 13)
ART initiated at referral facility	487 (98.6%)	289 (98.3%)	314 (99.1%)	1090 (98.6%)
ART refills provided at referral facility	494 (100%)	294 (100%)	317 (100%)	1105 (100%)
Providers who initiate ART				
Doctor only	57 (11.5%)	29 (9.9%)	25 (7.9%)	111 (10.1%)
Nurse only	153 (31.0%)	97 (33.0%)	94 (29.7%)	344 (31.1%)
Doctor and Nurse	277 (56.1%)	163 (55.4%)	195 (61.5%)	635 (57.5%)
N/A	7 (1.4%)	5 (1.7%)	3 (1.0%)	15 (1.4%)
Phone available to implement National SOP[2]	465 (94.1%)	279 (94.9%)	312 (98.4%)	1056 (95.6%)
Monthly credit available to implement National SOP, median (Q1-Q3)	SZL 150 (150-200)	SZL 150 (150-200)	SZL 150 (150-300)	SZL 150 (150-200)
Staff responsible for calling defaulters[3]				
Doctors	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Nurses	239 (48.4%)	141 (48.0%)	200 (63.1%)	580 (52.5%)
Counselors	8 (1.6%)	12 (4.1%)	13 (4.1%)	33 (3.0%)
Lay Counselor/EC	321 (65.0%)	194 (66.0%)	188 (59.3%)	703 (63.6%)

[1] Self-defined by providers interviewed on facility characteristics.

[2] Patient linkage, retention, and follow-up in HIV care standard operating procedures, Swaziland National AIDS Programme, 2012.

[3] More than one cadre could be responsible for calling clients who defaulted from their first or subsequent appointment to the HIV facility, in accordance with the National SOP.

4. Implementation of National Linkage Procedures

Linkage Service Expectations

In accordance with the national linkage SOP, staff at the 69 referral facilities were expected to conduct the following four linkage procedures (% expectation of target population): (1) receive and store the pink copy of the HTC form (100% of referred clients), (2) record referred clients in the appointment register (100% of referred clients), (3) call or send SMS text appointment reminder to clients before their date of appointment (100% of referred clients who provided a telephone number and consented to follow-up contact), and (4) call clients approximately 3 days after their missed appointment (100% of clients who missed their appointment who gave a telephone number and consented to follow-up.)

HTC Referral Forms and Enrollment Appointments

Table 2 includes findings on the documented implementation of the above four procedures at referral facilities, by study-gender group, region, and facility characteristics. Of the 1,105 clients referred to 69 facilities, study personnel located 517 (46.8%) pink HTC forms and found that 106 (9.6%) clients had their enrollment appointment recorded in the appointment register at the referral facility (Table 2). Compared with corresponding subgroups, proportionally fewer copies of the pink HTC form were found for SOKA clients, and at referral facilities (1) located in Lubombo region, (2) typed as private, and (3) classified as health centers. These subgroups were also less likely to have enrollment appointments documented in facility appointment registers (Table 2).

Table 2. Documented linkage procedures at referral facilities.[1]

Characteristic	N	Pink Copy of HTC Form Located[2]	Client Recorded in Appt. Register	Client Called *Before* First Appointment[3]	Client Called *After* First Appointment[4]
Total	1105	517 (46.8%)	106 (9.6%)	3 (0.3%)	54 (4.9%)
Study-gender group					
SHIMS Female	494	249 (50.4%)	52 (10.5%)	2 (0.4%)	29 (5.9%)
SHIMS Male	294	150 (51.0%)	34 (11.6%)	1 (0.3%)	19 (6.5%)
Soka Uncobe	317	118 (37.2%)	20 (6.3%)	0 (0.0%)	6 (1.9%)
Facility region					
Hhohho	351	200 (57.0%)	43 (12.3%)	2 (0.6%)	11 (3.1%)
Lubombo	172	46 (26.7%)	8 (4.7%)	1 (0.6%)	3 (1.7%)
Manzini	342	167 (48.8%)	41 (12.0%)	0 (0.0%)	39 (11.4%)
Shiselweni	240	104 (43.3%)	14 (5.8%)	0 (0.0%)	1 (0.4%)
Facility type					
Government	789	396 (50.2%)	98 (12.4%)	2 (0.3%)	50 (6.3%)
Faith-based	153	84 (54.9%)	6 (3.9%)	1 (0.7%)	3 (2.0%)
Private	85	8 (9.4%)	1 (1.2%)	0 (0.0%)	0 (0.0%)
NGO	58	16 (27.6%)	1 (1.7%)	0 (0.0%)	0 (0.0%)
Military	20	13 (65.0%)	0 (0.0%)	0 (0.0%)	1 (5.0%)
Facility class					
Hospital	380	217 (57.1%)	47 (12.4%)	1 (0.3%)	33 (8.7%)
Health Center	171	55 (32.2%)	7 (4.1%)	0 (0.0%)	1 (0.6%)
Clinic	524	219 (41.8%)	52 (9.9%)	2 (0.4%)	20 (3.8%)
PHU	30	26 (86.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

[1]These standard procedures were supposed to be implemented at all government health facilities during the time of the study in accordance with the national standard operating procedures for client linkage and retention.

[2] Sent from the HTC provider to the referral facility via the specimen transport network, then located by study staff at the facility.

[3] Of 3 total clients called before their appointment, facility staff spoke with 2.

[4] Of 54 total clients called after the appointment, facility staff spoke with 32.

Enrollment Appointment Reminder & Missed Appointment Calls

Of the 1,105 clients, 789 (71.4%) provided a phone number and consented to follow-up contact on the day of their HIV diagnosis. Study personnel found documentation that 3 (0.3%) were called before their first appointment (clinic staff spoke with 2 clients of the 3 called), and 54 (4.9%) were called within two weeks after their enrollment appointment (clinic staff spoke with 32 clients of the 54 called). Analyses included all referred clients because some HTC forms that were not located at the time of data abstraction could have been available at the facility at the time linkage services should have been provided. Of the 517 located pink HTC forms, 351 (67.9%) indicated that the client gave a telephone number and consented for follow-up contact. Among these 351 clients, study personnel found documentation that 1 (0.3%) had been called before their enrollment appointment. Of the 351 clients with located HTC forms, 333 (94.9%) did not enroll in HIV care within 21 days of their HIV diagnosis (7 days after their estimated date of appointment). Of these 333 clients who missed their enrollment appointment, study personnel found documentation that 27 (8.1%) were called within two weeks after their missed appointment.

5. Client Interviews

Eligibility & Participation

Of the 1,105 clients, 225 were initially verified to have enrolled in HIV care at the facility to which they were referred. Of the 880 clients not initially verified to have enrolled at their referral facility, 641 (72.8%) provided a telephone number and consented to follow-up contact at HIV diagnosis. Of these Component II eligible clients, 322 (50.2%) were contacted, and 267 (41.7%) consented to and completed a telephone interview (Figure 3). Of contacted clients, 55 (17.1%) refused to be interviewed. Among the 880 clients not initially verified to have enrolled in care, interview rates (30.3%, 267/880) varied by age group among SHIMS females (age <25 years vs. $\geq$25 years, 18.6% vs. 33.3%; $\chi^2 = 10.2$; $P = 0.001$), but not among SHIMS and SOKA males (age <25 years vs. $\geq$25 years, 36.6% vs. 32.0%; $\chi^2 = 0.64$; $P = 0.42$); interview rates did not vary by region (range 28.2-31.9%; $\chi^2 = 1.0$; $P = 0.80$).

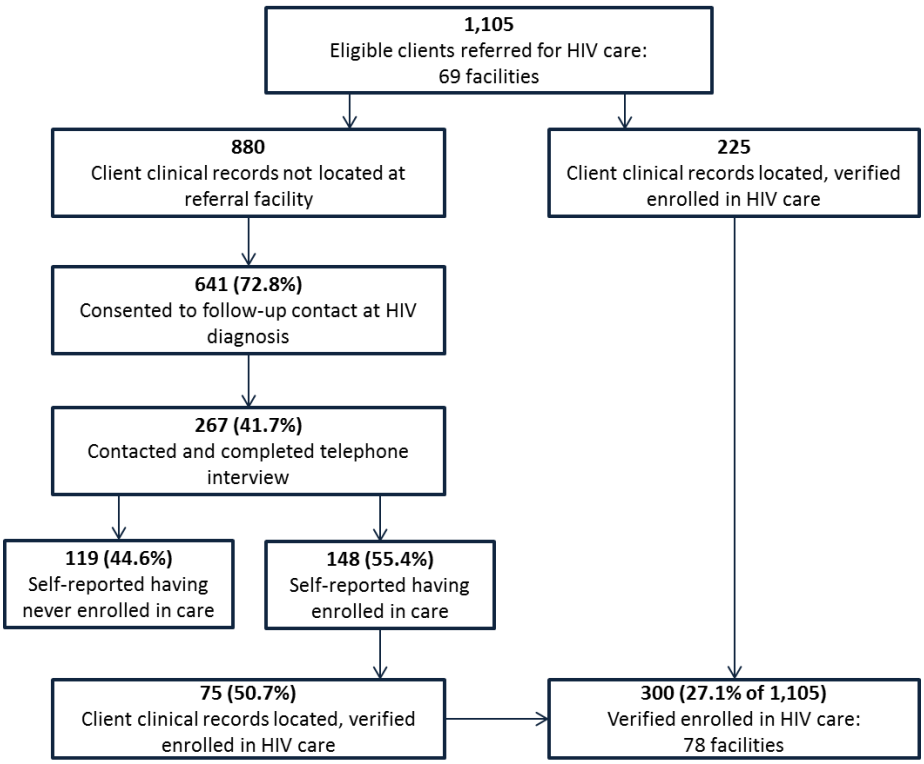

Figure 3. Eligible newly HIV diagnosed SHIMS and Soka Uncobe clients verified to have enrolled in HIV care.

Linkage Services Received

Table 3 includes findings on self-reported linkage services received by interviewed Component II clients. Of the 267 interviewed clients, 251 (94.0%) recalled being referred to HIV care at the time of their HIV diagnosis in SHIMS or Soka Uncobe, and of these, 181 (72.1%) accurately reported the name of the referral facility on the HTC form to which they were referred (Table 3). Of the 267 clients, few reported receiving linkages services from the referral facility: 21 (7.9%) reported receiving an SMS reminder of their appointment; 24 (9.0%) reported having received a phone call from the referral facility; 13 (4.9%) reported having a home visit from facility personnel; and 9 (3.4%) reported speaking to someone from the facility at their home (Table 3).

Table 3. Self-reported linkage services received by clients whose enrollment in HIV care was not initially verified and who were successfully contacted and interviewed by phone.[1]

Linkage Services Received	SHIMS Females (n=105)	SHIMS Males (n=71)	Soka Uncobe (n=91)	All Clients (n=267)
Reported being referred to HIV care at diagnosis.	102 (97.1%)	65 (91.6%)	84 (92.3%)	251 (94.0%)
Accurately recalled the same referral facility noted on the HTC form.[2]	74 (70.5%)	47 (66.2%)	60 (65.9%)	181 (67.8%)
Received an SMS text reminder to enroll in HIV care.	9 (8.6%)	5 (7.0%)	7 (7.7%)	21 (7.9%)
Received a phone call from the referral facility to enroll in HIV care.	8 (7.6%)	4 (5.6%)	12 (13.2%)	24 (9.0%)
Received a home visit from a referral facility representative.	10 (9.5%)	3 (4.2%)	0 (0.0%)	13 (4.9%)
Spoke at home with referral facility representative about enrolling in care.	6 (5.7%)	3 (4.2%)	0 (0.0%)	9 (3.4%)

[1] Interviews were conducted a median (Q1-Q3) of 957 (914-992) days from diagnosis.

[2] Of the 251 clients who recalled being referred to care and treatment at the time of their diagnosis, 181 (72.1%) accurately reported the name of the facility where they had been referred.

Self-reported and Verified Enrollment in Care

Table 4 includes findings on self-reported and verified enrollment in care of interviewed Component II clients, by study-gender group. Of 267 interviewed clients, 148 (55.4%) reported and 75 (28.1%) were verified as having enrolled in HIV care; 13 (4.9%) were verified at the referral facility and 62 (23.2%) were verified at an alternate facility (Table 4). Of 267 interviewed clients, 15.0% (9/60), 28.2% (40/142), and 40.0% (26/65) were verified to have enrolled in HIV care among those aged <25 years, 25-35 years, and >35 years of age, respectively ($\chi^2 = 9.65$; $P = 0.008$); verified enrollment in HIV care did not vary by study-gender group ($\chi^2 = 1.01$; $P = 0.60$) and region ($\chi^2 = 0.91$; $P = 0.82$).

Reasons for Enrolling at an Alternate Facility

Of clients who reported enrolling at an alternative facility, the four most common reasons for enrolling at the alternate facility (more than one reason could be given) included: (1) less transportation cost or greater convenience by living closer to that facility (64.9%); (2) greater trust in the providers or believing that the quality of care is better at the alternate facility (42.5%); (3) believing that health care staff are more respectful and less discriminatory (22.3%); and (4) believing that they have a shorter wait time at that facility (14.9%)(Table 4). No differences were observed between the three groups in the relative order of these most common reasons (Table 4). When restricted to the 75 clients who were verified to have enrolled at an alternate facility, the reported proportions and order of common reasons were similar (data not reported).

Table 4. Self-reported and verified enrollment in HIV care of clients whose enrollment at referral facilities was not initially verified and who were successfully contacted and interviewed by phone.[1]

Enrollment in HIV care	SHIMS Females (n=105)	SHIMS Males (n=71)	Soka Uncobe (n=91)	All Clients (n=267)
Self-reported ever enrolled in HIV care				
Referral facility	26 (24.8%)	11 (15.5%)	14 (15.4%)	51 (19.1%)
Alternate facility	37 (35.2%)	24 (33.8%)	36 (39.6%)	97 (36.3%)
Any facility	63 (60.0%)	35 (49.3%)	50 (55.0%)	148 (55.4%)
Verified enrollment in HIV care				
Referral facility	7 (6.7%)	2 (2.8%)	4 (4.4%)	13 (4.9%)
Alternate facility	21 (20.0%)	16 (22.5%)	25 (27.5%)	62 (23.2%)
Any facility	28 (26.7%)	18 (25.4%)	29 (31.9%)	75 (28.1%)
Clients who enrolled at alternate facility[2]	*n=35*	*n=23*	*n=36*	*n=94*
Reasons for enrollment at alternate facility[3]				
Lives closer[4]	24 (68.6%)	19 (82.6%)	18 (50.0%)	61 (64.9%)
Receives better care[5]	14 (40.0%)	12 (52.2%)	14 (38.9%)	40 (42.6%)
Health care staff are more respectful[6]	6 (17.1%)	6 (26.1%)	9 (25.0%)	21 (22.3%)
Shorter wait to see a provider[7]	4 (11.4%)	2 (8.7%)	8 (22.2%)	14 (14.9%)
Greater anonymity[8]	2 (5.7%)	1 (4.3%)	3 (8.3%)	6 (6.4%)
More familiar with facility[9]	3 (8.6%)	0 (0.0%)	1 (2.8%)	4 (4.3%)
Other reason	1 (2.9%)	0 (0.0%)	3 (8.3%)	4 (4.3%)

[1] Interviews were conducted a median (Q1-Q3) of 957 (914-992) days from diagnosis.
[2] Clients who reported one or more reasons for enrolling at an alternate facility.
[3] Response options were not provided to clients; more than one reason could be given.
[4] Lives closer; transportation to alternate facility is less expensive.
[5] Receives better care; has greater trust in the providers.
[6] Health care staff are more respectful; health care staff at referral facility discriminate.
[7] Shorter wait time to receive services; services are available on the weekends.
[8] Greater confidentiality; does not know people at the facility; lives further away from the facility.
[9] More familiar with the facility; knows people at the facility.

Reasons for not Enrolling in Care

Of the 267 clients interviewed during Component II, 119 (44.6%) reported having never enrolled in HIV care. These 119 clients were interviewed a median (Q1-Q3) of 956 days (902-992) after their HIV diagnosis. Of 116 clients who provided reasons for not enrolling in HIV care (Table 5), the four most common reasons included: (1) feeling well and believing they didn't need to go to an HIV clinic (50.9%); (2) being too busy or not having the time for HIV care (37.1%); (3) believing they would have to wait too long to see providers at HIV care facilities (18.1%); and (4) that HIV care facilities were either too far away or travel costs were too high (13.8%). No differences were observed between the three study-gender groups in the relative order of these most common reasons for never enrolling in HIV care (Table 5). Few clients reported the following reasons for never enrolling in HIV care: concerns about ART or the quality of HIV care, belief that staff at facilities are not respectful, and not being HIV-positive (five clients reported that they did not know their HIV status and five reported that they had re-tested and were HIV-negative).

Table 5. Reasons for not enrolling in HIV care reported by clients whose enrollment at referral facilities was not verified and who were successfully contacted and interviewed by phone.[1]

Reasons[2]	SHIMS Females (n=42)	SHIMS Males (n=36)	Soka Uncobe (n=38)	All Clients[3] (n=116)
Feeling well, no need to go to HIV clinic	21 (50.0%)	15 (41.7%)	23 (60.5%)	59 (50.9%)
Too busy, no time	18 (42.9%)	14 (38.9%)	11 (28.9%)	43 (37.1%)
Has to wait too long to see a provider	5 (11.9%)	7 (19.4%)	9 (23.7%)	21 (18.1%)
Facility too far away / travel too expensive	4 (9.5%)	8 (22.2%)	4 (10.5%)	16 (13.8%)
Staff at health facilities are disrespectful	4 (9.5%)	2 (5.6%)	3 (7.9%)	9 (7.8%)
Negative opinion of ART[4]	1 (2.4%)	3 (8.3%)	1 (2.6%)	5 (4.3%)
Poor quality of care at health facilities[5]	3 (7.1%)	0 (0.0%)	1 (2.6%)	4 (3.4%)
Wants to remain anonymous[6]	3 (7.1%)	0 (0.0%)	2 (5.3%)	5 (4.3%)
Does not know HIV status[7]	3 (7.1%)	1 (2.8%)	1 (2.6%)	5 (4.3%)
Retested HIV negative	2 (4.8%)	2 (5.6%)	1 (2.6%)	5 (4.3%)
No one followed up after diagnosis	0 (0.0%)	1 (2.8%)	4 (10.5%)	5 (4.3%)
Other reason	1 (2.4%)	2 (5.6%)	3 (7.9%)	6 (5.2%)

[1] Of 267 clients interviewed, 119 reported not having enrolled in HIV care. These 119 clients were interviewed a median (Q1-Q3) of 956 days (902-992) after their HIV diagnosis.
[2] Response options were not provided to clients; more than one reason could be given.
[3] Clients who reported one or more reasons for not having enrolled in HIV care.
[4] Does not believe HIV treatment is effective; believes HIV treatment has severe side effects; fears ART, being treated by a traditional healer.
[5] Poor quality of HIV care; does not trust HIV care providers.
[6] Does not want others to know HIV status; not yet disclosed status to partner; fears separation from spouse or partner.
[7] Did not receive HIV test results.

Interest in Enrolling in Care

Of the 119 clients who reported having never enrolled in care, study personnel asked if they would like to enroll in care and whether they would accept an appointment and referral to an HIV care facility; 87 (73.1%) clients responded that they would like to enroll in HIV care and 78 (65.6%) accepted the appointment. Because the study protocol did not explicitly permit tracing these newly referred clients to HIV care, the percentage of clients who subsequently enrolled is unknown.

6. Enrollment in HIV Care

Verified Enrollment in HIV Care

Study personnel visited 92 facilities to verify enrollment, 69 referral and 23 alternate (Appendix I). At least one client was verified to have enrolled in each of 78 facilities: 61 (88.4%) referral and 17 (73.9%) alternate. Thus, 86 facilities were available for individual-level analyses including 78 facilities with at least one enrollment and 8 referral facilities without any enrollments (for clients not enrolled in care, the referral facility was selected for analyses). The 86 facilities were equally distributed in the four regions (range: 22.1%-27.9%), and included 72 clinics, 8 hospitals, 5 health centers, and 1 public health unit. Of 1,105 clients, study personnel verified that 300 (27.2%) enrolled in HIV care (Figure 3); 136 (27.5%) SHIMS females, 73 (24.8%) SHIMS males, and 91 (28.7%) SOKA males. Of those enrolled in 78 facilities, white referral forms were located for 53 (17.7%) clients, and medical charts were located and used for data abstraction on 266 (88.7%). Of the remaining 34 clients, pre-ART or ART registers (n=21) and electronic medical records (n=13) were used for data abstraction.

Client Correlates. Overall, 100 (9.1%), 124 (11.2%), 174 (15.8%), 221 (20.0%), and 265 clients (24.1%, including censored observations) were verified to have enrolled within 3, 6, 12, 18, and 24 months of diagnosis, respectively. Kaplan Meier survival (enrollment-in-care) functions did not vary by region (LR = 0.73; P = 0.87), but varied by age-group (LR = 18.39; P = 0.0004) (Figures 4, 5). Clients >35 years of age were more likely to enroll in care compared with those 14-24 (LR = 14.74; P = 0.0001) and 25-29 (LR = 10.60; P = 0.001) years of age. Kaplan Meier functions indicating higher enrollment probability among older age groups remained statistically significant when controlling for region, urban/rural location of facility, and study-gender group (data not shown). Taking censoring into consideration, within two years of diagnosis, 18.8%, 21.2%, 26.3%, and 31.4% of clients 14-24, 25-29, 30-35, and >35 years of age, respectively, enrolled in care. Differences in enrollment by study-gender group depended on time since diagnosis (Figure 6). Proportionally more SOKA than SHIMS clients enrolled in care 90 and 182 days after diagnosis (90 days, 13.2% vs. 7.4%; (χ^2 = 9.48; P = 0.002; 182 days, 15.5% vs. 9.5%; (χ^2 = 7.96; P = 0.005); at 600 days after diagnosis prior to the first censored observation, no differences were observed between SOKA and SHIMS clients (χ^2 = 0.15; 21.8% vs. 20.7%; P = 0.70) (Figure 6).

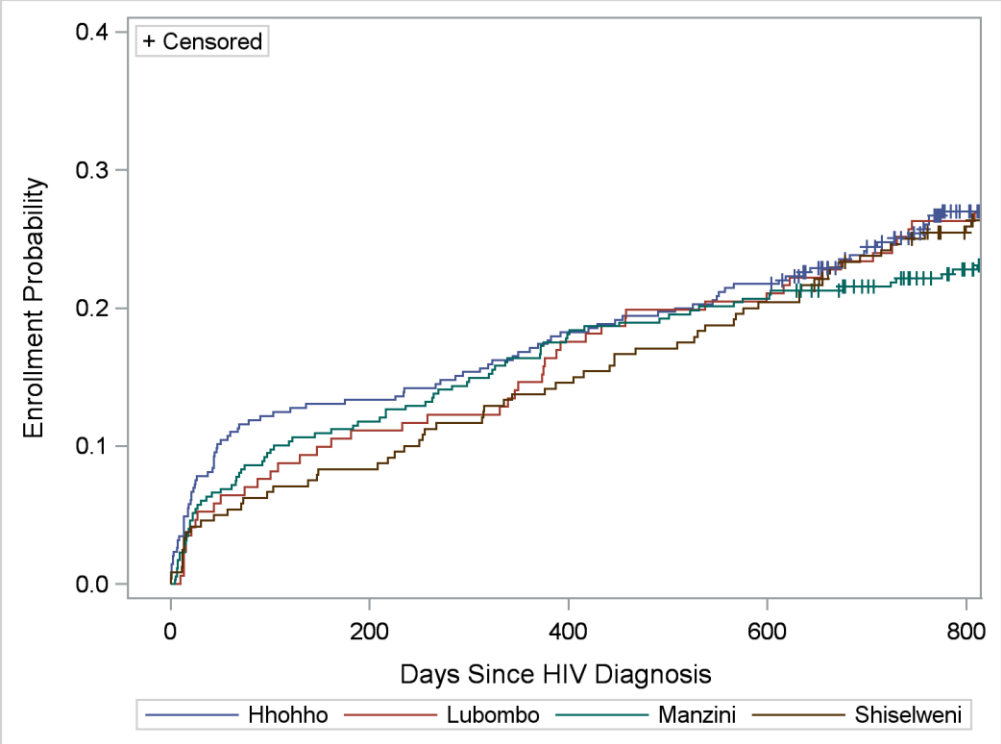

Figure 4. Cumulative verified enrollment in HIV care, by region of facility.

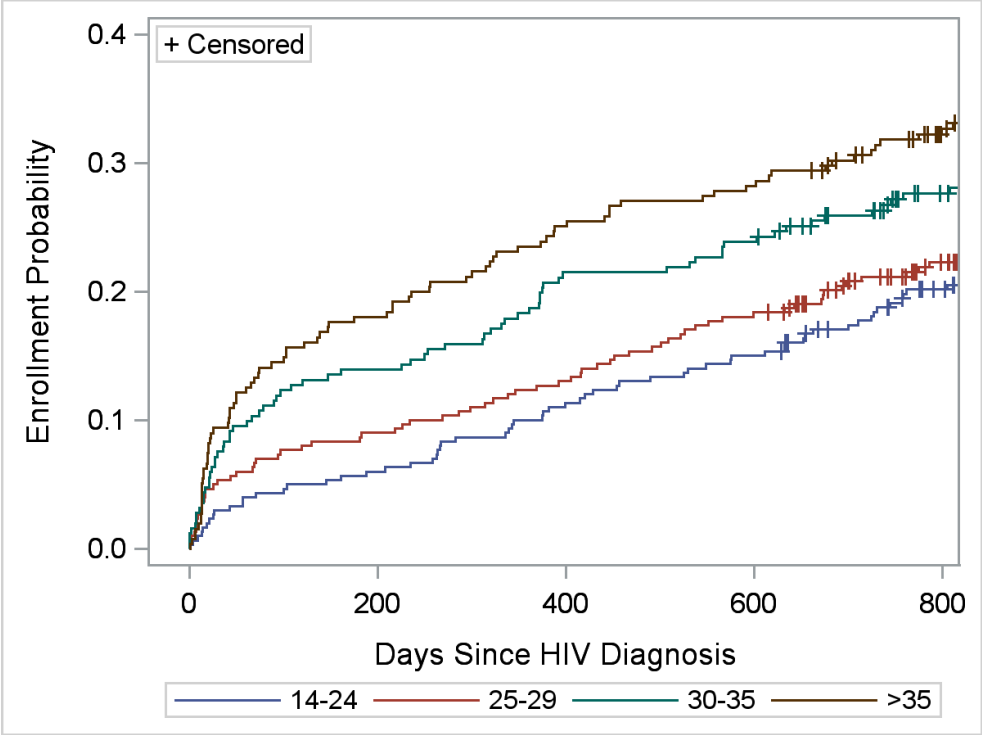

Figure 5. Cumulative verified enrollment in HIV care, by age group (years).

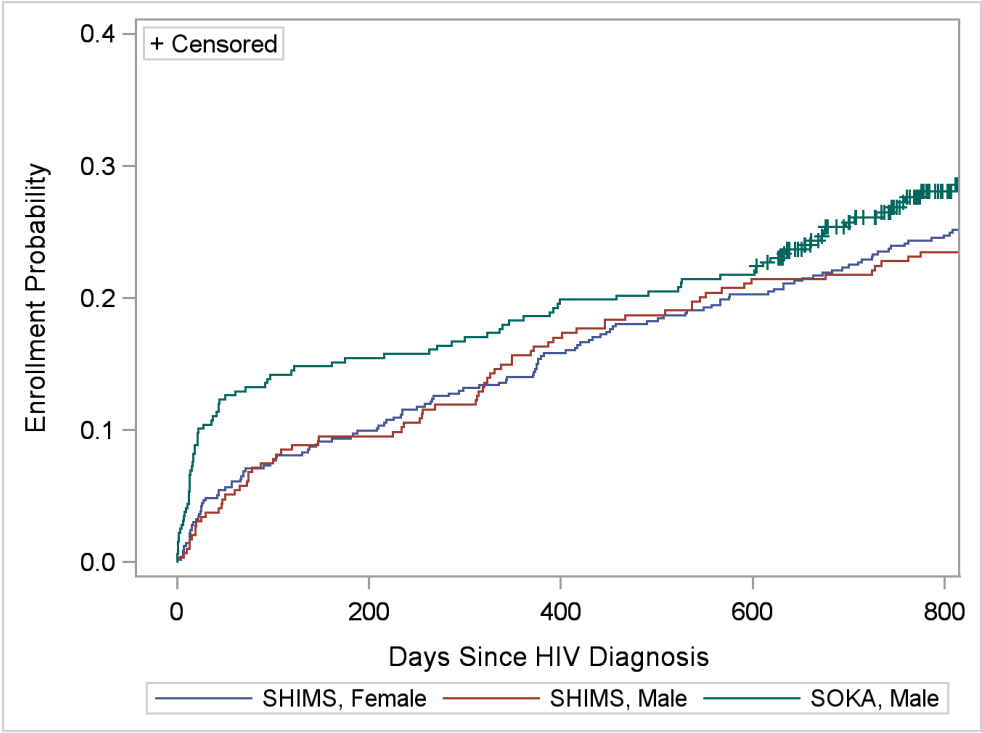

Figure 6. Cumulative verified enrollment in HIV care, by study-gender group.

Facility Correlates. Kaplan Meier functions varied by facility classification among both SHIMS males (*LR* = 18.47; *P* < 0.0001) and females (*LR* = 6.09; *P* = 0.014) (Figures 7, 8), but not among SOKA males (*LR* = 0.45; *P* = 0.50) (data not shown). Among SHIMS males, enrollment in hospitals and health centers was particularly low (Figure 7). Kaplan Meier functions indicating greater clinic enrollment probability among SHIMS clients remained statistically significant when controlling for age-group, region, urban/rural facility location, and after restricting the analysis to referral facilities alone (data not shown). Of clinics located in rural and peri-urban areas only (clinics on paved roads, n=20; clinics on dirt roads, n=34), enrollment in care among SHIMS clients (n=311) was greater in those clinics located on dirt roads (*LR* = 8.01; *P* = 0.005) (Figure 9). Analyses were restricted to SHIMS because few SOKA clients were referred to or enrolled in clinics served by dirt roads. Kaplan Meier functions indicating greater enrollment probability in clinics on dirt roads remained statistically significant after controlling for gender and restricting the analysis to referral facilities alone (data not shown).

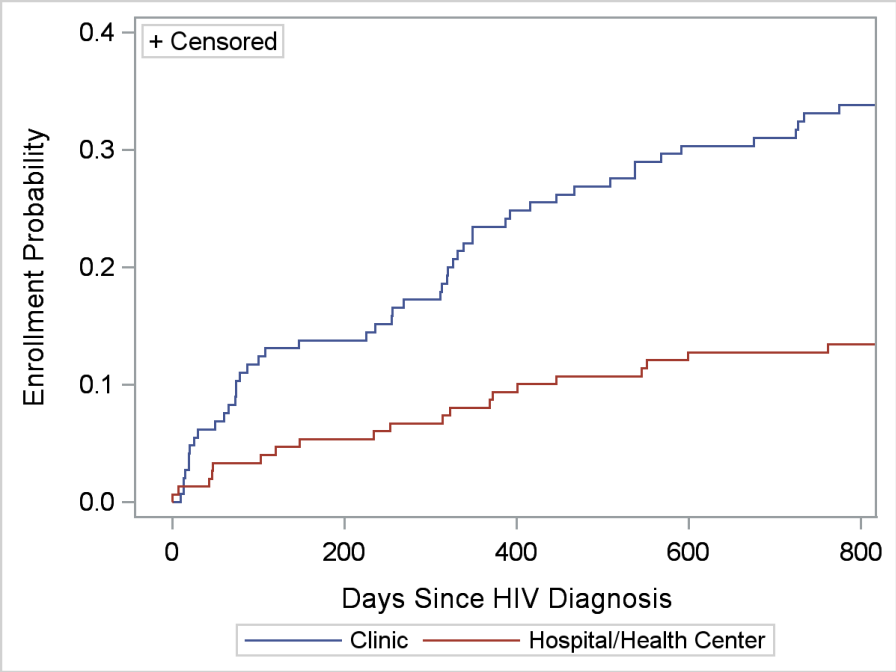

Figure 7. Cumulative verified enrollment in HIV care, by type of health facility, SHIMS male clients only.

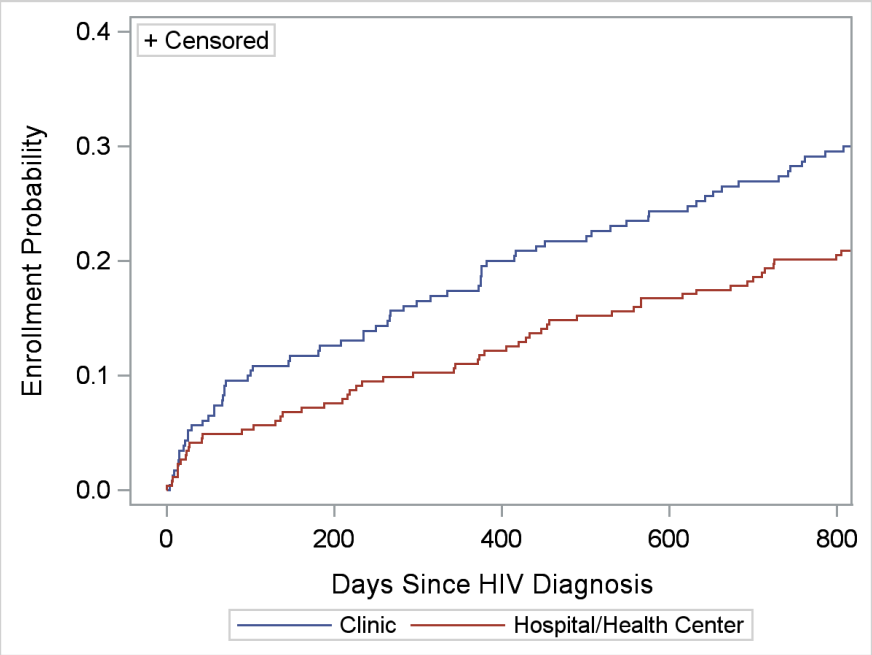

Figure 8. Cumulative verified enrollment in HIV care, by type of health facility, SHIMS female clients only.

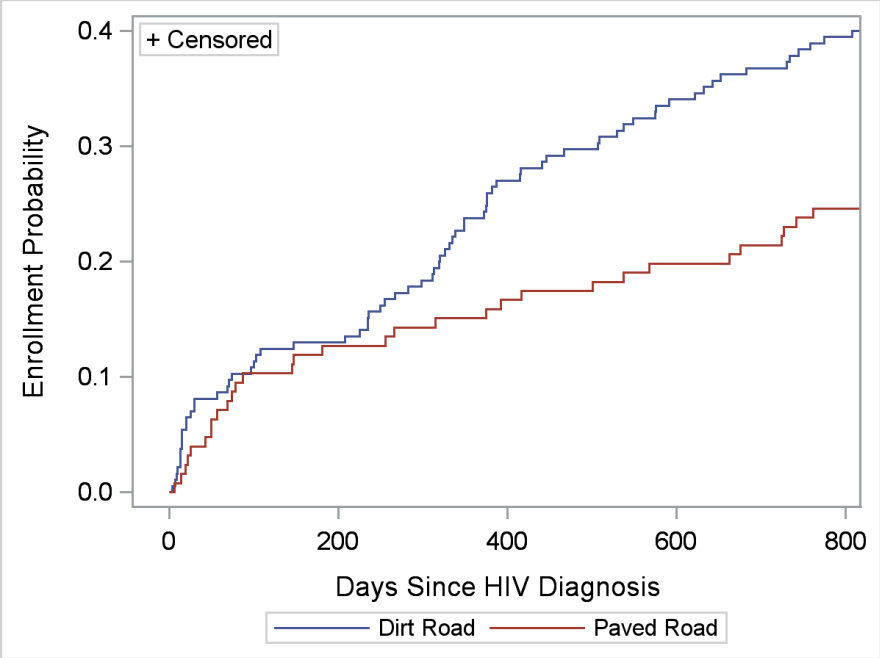

Figure 9. Cumulative verified enrollment in HIV clinics located in rural and peri-urban areas, by road condition serving the clinic, SHIMS clients only.

Facility Characteristics

Table 6 includes findings on the characteristics of those facilities in which clients were verified as having enrolled in HIV care. Of the 300 clients who enrolled in HIV care, most enrolled at facilities that were government operated (72.7%), designated as clinics (59.0%) or hospitals (27.7%), accessed by paved roads (69.3%), and located in Hhohho (31.7%) and Manzini (29.3%), and in rural (49.7%) locations (Table 6). Although most clients enrolled at the facility to which they were referred, a large minority (28.0%) enrolled at alternate facilities. Compared with SHIMS clients, proportionally more SOKA clients enrolled at facilities that were non-governmental ($\chi^2 = 40.4$; $P < 0.0001$), located in urban areas ($\chi^2 = 33.9$; $P < 0.0001$), designated as hospitals ($\chi^2 = 15.0$; $P = 0.02$), and accessed by a paved road ($\chi^2 = 23.4$; $P < 0.0001$) (Table 6).

Table 6. Facility characteristics of clients enrolled in HIV care, by study-gender group.

Characteristic	SHIMS Females (n=136)	SHIMS Males (n=73)	Soka Uncobe (n=91)	All Clients[1] (n=300)
Enrollment Facility[2]				
Referral	104 (76.5%)	48 (65.8%)	64 (70.3%)	216 (72.0%)
Alternate	32 (23.5%)	25 (34.3%)	27 (29.7%)	84 (28.0%)
Region of enrollment facility				
Hhohho	44 (32.4%)	20 (27.4%)	31 (34.1%)	95 (31.7%)
Lubombo	22 (16.2%)	13 (17.8%)	14 (15.4%)	49 (16.3%)
Manzini	34 (25.0%)	19 (26.0%)	35 (38.5%)	88 (29.3%)
Shiselweni	36 (26.5%)	21 (28.8%)	11 (12.1%)	68 (22.7%)
Facility type				
Government	109 (80.2%)	59 (80.8%)	50 (55.0%)	218 (72.7%)
Faith-based	18 (13.2%)	4 (5.5%)	12 (13.2%)	34 (11.3%)
Private	8 (5.9%)	9 (12.3%)	15 (16.5%)	32 (10.7%)
NGO	1 (0.7%)	0 (0.0%)	11 (12.1%)	12 (4.0%)
Military	0 (0.0%)	1 (1.4%)	3 (3.3%)	4 (1.3%)
Facility class				
Hospital	35 (25.7%)	14 (19.2%)	34 (37.4%)	83 (27.7%)
Health Center	24 (17.7%)	7 (9.6%)	7 (7.7%)	38 (12.7%)
Clinic	75 (55.2%)	52 (71.2%)	50 (55.0%)	177 (59.0%)
PHU	2 (1.5%)	0 (0.0%)	0 (0.0%)	2 (0.7%)
Facility location[3]				
Urban	35 (25.7%)	18 (24.7%)	50 (54.9%)	103 (34.3%)
Peri-urban	16 (11.8%)	15 (20.5%)	17 (18.7%)	48 (16.0%)
Rural	85 (62.5%)	40 (54.8%)	24 (26.4%)	149 (49.7%)
Facility access				
Paved road	88 (64.7%)	40 (54.8%)	80 (87.9%)	208 (69.3%)
Dirt road	48 (35.3%)	33 (45.2%)	11 (12.1%)	92 (30.7%)

[1] Enrollment at any HIV care facility; 225 enrolled clients verified during Component I and 75 verified during Component II.

[2] Referral facility: an HIV care facility to which clients were referred at HIV diagnosis; alternate facility: any HIV care facility except the referral facility. Fifteen clients met the definition of enrolled at both the referral facility and an alternative facility; assignment to one of the two facilities as the location of initial enrollment was based on the earliest date of enrollment.

[3] Self-defined by providers interviewed on facility characteristics.

Enrollment in HIV Care Adjusted for Non-response

Of the 613 clients who were not initially verified to have enrolled in care and not interviewed (<25 years, n=183; 25-35 years, n=305; >35 years, n=125), 164 are estimated to have enrolled in HIV care by applying age-group-specific verified enrollment probabilities of interviewed clients (<25 years, 0.150; 25-35 years, 0.282; >35 years, 0.400). Assuming the cumulative enrollment distribution of the 300 clients

apply to these 164 additional clients, the age-group-adjusted number (%) of clients estimated to have enrolled in care at any facility in Swaziland is 464 (41.9%) overall, and 155 (14.0%), 192 (17.3%), 269 (24.3%), 342 (30.9%), and 409 (37.0%) within 3, 6, 12, 18, and 24 months of diagnosis, respectively.

Facility Visitation without Enrollment in HIV Care

Of the 1,105 clients, study personnel verified that an additional 49 (4.4%) clients had visited an HIV care facility but either (1) did not have their ART eligibility assessed through WHO clinical staging or CD4 test (n=37), or (2) had a CD4 test (without WHO clinical staging) but did not return to the clinic at least once after their CD4 test (n=12). Of these 49 non-enrollment visitors (13 SHIMS females, 6 SHIMS males, 30 SOKA males), the only documentation found at the facility for nine was the located white HTC form; the remaining 40 were documented either on a register or with a chronic care file. These 40 clients visited the HIV care facility a median (Q1-Q3) of 1 day (0-43) after their HIV diagnosis, and had a median (Q1-Q3) of 1 (1-1) visit to the facility. Of the 30 SOKA clients who had visited a facility but had not enrolled in HIV care, 19 (63.3%) visited the facility only once on the day of their HIV diagnosis, and all had visited the facility within 30 days of their diagnosis. Of the 12 clients who visited a facility and had a CD4 test, but did not return to the facility after their CD4 test [median CD4 count (Q1-Q3): 376 (256-524)], 6 (50.0%) were eligible for ART. Of the 49 clients who visited but did not enroll at the facility, 37 (75.5%) provided a telephone number and consented to be contacted in the future; study personnel found documentation that clinic staff had attempted to call two of the visitors.

7. Baseline Clinical Characteristics

Study Groups Combined: Clinical Characteristics

Table 7 includes findings on clinical and psychosocial characteristics at baseline among the 300 SHIMS and SOKA clients that study personnel verified had enrolled in HIV care. Overall, the 300 clients enrolled in HIV care at a median (Q1-Q3) age of 32 years (26-38) and 285 days (43-566) after HIV diagnosis. Of clients with documented baseline WHO clinical stage (n=279, 93.0%) or CD4-count (n=292, 97.3%); 16.1% were classified at WHO stage III or IV; 64.3% had CD4 $\leq$350 cells/µl; and 66.0% were ART eligible by either clinical stage or CD4 count; 120 (40.0%) clients at baseline already had severe immunologic impairment (AIDS or CD4 $\leq$ 200 cells/µl) (Table 7). Although proportionally more clients in older age-groups were ART eligible at baseline, half of clients <25 years were ART eligible (% ART eligible: <25 years, 50.8%; 25-35 years, 67.4%; >35 years, 74.7%).

Study Groups Combined: Psychosocial Assessments

Of the 300 enrolled clients, assessments were documented (defined as either an observed check for "Yes" or "No") for each of the following six psychosocial assessments included within the chronic care file: (1) disclosed HIV status to partner (n=158; 52.7%); (2) disclosed HIV status to family (n=166, 55.3%); (3) consented to be visited at home by Rural Health Motivator (n=139, 46.3%); (4) partner tested for HIV (n=140, 46.7%); (5) fears discrimination or violence (n=147, 49.0%); and (6) faces financial challenges (n=142, 47.3%). Of the 300 enrolled clients, 108 (36.0%) had complete documentation for all six psychosocial assessments. Of abstracted records, many indicated the client had disclosed their HIV status to a partner [40.7% of 300 (overall); 77.2% of 158 with complete documentation for this

assessment (documented)] or to family members (39.0% overall; 70.5% documented); that their partner had tested for HIV (30.3% overall; 65.0% documented); and that they could be visited by a Rural Health Motivator (31.3% overall, 67.6% documented). Fewer chronic care files indicated the client was concerned about discrimination or violence because of their HIV status (12.0% overall; 24.5% documented) or faced financial hardships (12.3% overall, 26.1% documented).

Study Group Differences

As noted in Table 7, of the 300 enrolled clients, SOKA clients enrolled earlier in HIV care compared with SHIMS male and female clients: median (Q1-Q3) days from diagnosis to enrollment in HIV care: 119 (15-566) vs. 313 (74-467) and 344 (71-622), respectively (Table 7). Compared with male SHIMS and SOKA clients, SHIMS female clients were younger, proportionally more enrolled in care at WHO Stage I, and proportionally fewer were ART eligible at enrollment (Table 7).

Table 7. Client characteristics at enrollment in HIV care, by study-gender group.

Characteristic	SHIMS Females (n=136)	SHIMS Males (n=73)	Soka Uncobe (n=91)	All Clients (n=300)
Days from HIV diagnosis to enrollment, median (Q1-Q3)	344 (71-622)	313 (74-467)	119 (15-566)	285 (43-566)
Years of age, median (Q1-Q3)	28 (24-36)	35 (30-42)	32 (27-39)	32 (26-38)
Psychosocial assessment				
Disclosed status to partner	54 (39.7%)	38 (52.1%)	30 (33.0%)	122 (40.7%)
Disclosed status to family	54 (39.7%)	32 (43.8%)	31 (34.1%)	117 (39.0%)
Ok for RHM to make home visits	36 (26.5%)	24 (32.9%)	34 (37.4%)	94 (31.3%)
Partner tested for HIV	30 (22.1%)	32 (43.8%)	29 (31.9%)	91 (30.3%)
Fears discrimination or violence	16 (11.8%)	12 (16.4%)	8 (8.8%)	36 (12.0%)
Faces financial challenges	23 (16.9%)	9 (12.3%)	5 (5.5%)	37 (12.3%)
WHO clinical stage documented	124 (91.2%)	69 (94.5%)	86 (94.5%)	279 (93.0%)
WHO clinical stage[3]				
I	88 (71.0%)	32 (46.4%)	47 (54.7%)	167 (59.9%)
II	23 (18.6%)	19 (27.5%)	25 (29.1%)	67 (24.0%)
III	13 (10.5%)	15 (21.7%)	13 (15.1%)	41 (14.7%)
IV	0 (0.0%)	3 (4.4%)	1 (1.2%)	4 (1.4%)
CD4 count documented	131 (96.3%)	72 (98.6%)	89 (97.8%)	292 (97.3%)
CD4 count, median (Q1-Q3)	350 (186-597)	247 (115-344)	262 (186-347)	280 (165-420)
CD4 count category[1]				
< 50	3 (2.3%)	3 (4.2%)	2 (2.3%)	8 (2.7%)
50 – 200	33 (25.2%)	27 (37.5%)	28 (31.5%)	88 (30.1%)
201 – 350	30 (22.9%)	25 (34.7%)	37 (41.6%)	92 (31.5%)
351 – 500	27 (20.6%)	9 (12.5%)	15 (16.9%)	51 (17.5%)
> 500	38 (29.0%)	8 (11.1%)	7 (7.9%)	53 (18.2%)
ART eligibile[2]	71 (52.2%)	58 (79.5%)	69 (75.8%)	198 (66.0%)
AIDS[5] or CD4 $\leq$ 200 cells/µl	43 (31.6%)	40 (54.8%)	37 (40.7%)	120 (40.0%)

[1] Percentages based on the number of clients that had documentation of having received the service (clinical staging or CD4 test).

[2] WHO Clinical Stage III/IV or CD4 $\leq$ 350 cells/µl.

8. ART Initiation

Eligibility, Timeliness, & Clinical Status

Table 8 includes findings on client characteristics at ART initiation. Of the 300 clients who enrolled in HIV care, 208 (69.3%) were initiated on ART, of whom 202 (97.1%) were ART eligible at the time of initiation by WHO clinical stage or CD4 count; 121 (58.2%) clients at initiation had severe immunologic impairment (AIDS or CD4 ≤ 200 cells/µl). The 208 clients were initiated on ART a median (Q1-Q3) of 342 (87-629) days after HIV diagnosis and 15 (7-28) days of their most recent CD4 test. Of clients with documented clinical stage (n=200, 96.2%), 56 (28.0%) initiated on ART had AIDS (stage III or IV) (Table 8). Of the 208 clients, 201 (96.6%) had a median (Q1-Q3) CD4 count at ART initiation, of 213 (123-282). Of the six ineligible clients (by clinical stage and CD4 count) who were initiated on ART, the median (range) CD4 count of five clients was 355 (351-386); the remaining male client was initiated on ART at CD4 of 514 cells/µl and at a WHO clinical stage of I (all documented TB screenings for this client were negative).

Table 8. Client characteristics at ART initiation, by study-gender group.

Characteristic	SHIMS Females (n=77)	SHIMS Males (n=62)	Soka Uncobe (n=69)	All Clients[1] (n=208)
Days from HIV diagnosis to ART initiation, median (Q1-Q3)	379 (112-673)	325 (105-602)	323 (35-603)	342 (87-629)
WHO stage documented	74 (96.1%)	60 (96.8%)	66 (95.7%)	200 (96.2%)
WHO stage[2]				
I	34 (46.0%)	18 (30.0%)	23 (34.9%)	75 (37.5%)
II	23 (31.1%)	22 (36.7%)	24 (36.4%)	69 (34.5%)
III	17 (23.0%)	16 (26.7%)	15 (22.7%)	48 (24.0%)
IV	0 (0.0%)	4 (6.7%)	4 (6.1%)	8 (4.0%)
CD4 count documented	75 (97.4%)	61 (98.4%)	68 (98.6%)	204 (98.1%)
CD4 count, median (Q1-Q3)[3]	211 (126-279)	174 (103-282)	241 (138-292)	219 (124-284)
Days from CD4 assessment to ART initiation, median (Q1-Q3)	16 (5-27)	14 (7-21)	15 (7-29)	15 (7-28)
CD4 count category[2,3]				
< 50	3 (4.0%)	2 (3.3%)	3 (4.4%)	8 (3.9%)
50 - 200	32 (42.7%)	31 (50.8%)	24 (35.3%)	87 (42.6%)
201 - 350	34 (45.3%)	24 (39.3%)	37 (54.4%)	95 (46.6%)
> 350	6 (8.0%)	4 (6.6%)	4 (5.9%)	14 (6.9%)
ART eligibile[4]	75 (97.4%)	59 (95.2%)	68 (98.6%)	202 (97.1%)
AIDS[5] or CD4 ≤ 200 cells/µl	45 (58.4%)	40 (64.5%)	36 (52.2%)	121 (58.2%)

[1] Of 300 study clients who enrolled in HIV care.
[2] Percentages based on the number of clients that had documentation of having received the service (clinical staging or CD4 test).
[3] Based on the most recent CD4 either before ART initiation (n=203) or ≤30 days after ART initiation (n=1).
[4] WHO Clinical Stage III/IV or CD4 ≤ 350 cells/µl.
[5] WHO Clinical Stage III/IV.

CD4 Gain after ART Initiation

Of the 201 clients initiated on ART on whom a CD4 count at initiation was documented, a CD4 count after ART initiation was documented on 113 (56.2%). Of these clients, the median (Q1-Q3) interval in days from the most recent CD4 test preceding ART initiation to the most recent CD4 test after initiation was 449 (251-655). The 113 clients had a median (Q1-Q3) CD4 count at ART initiation of 226 (126-289) and a CD4 count after ART initiation of 337 (247-522), representing a net CD4-cell-count gain of 132 (38-246).

Eligibility at Baseline

Of the 198 clients who were eligible for ART at baseline (Table 8), 187 (94.4%) were initiated on ART at the enrollment facility. Of the 11 ART-eligible clients at baseline who were not initiated on ART, the median (range) number of days from enrollment in care to last facility visit for nine clients was 0 (0-17) (6 defaulted and three transferred to another facility). Of the remaining two baseline-eligible clients who were not initiated on ART, one defaulted from care after enrollment and returned to the facility one time only 788 days after enrollment. The other client visited the facility on the day of diagnosis and had a baseline CD4 test (count=320 cells/µl), returned to the facility and enrolled in HIV care approximately two years later, and had a documented CD4 count of 494 cells/µl after enrolling in HIV care (two years after the first CD4 test).

9. Retention in HIV Care

Eligibility

Table 9 includes findings on pre-ART and ART retention, by incremental 6-month observation periods. Of the 300 clients who enrolled in HIV care, 12 had died (n=5, 1.7%) or had transferred out of care (n=7, 3.7%) before the end of the first 6-month observation period. Retention analyses were restricted to the remaining 288 clients. Of these, 98 pre-ART and 172 ART clients were eligible for the first 6-month retention analysis after enrollment (pre-ART retention) or ART initiation (ART retention). Of the 98 pre-ART clients, 19 were also included in the 6-month ART retention analysis because they remained in care, were eventually initiated on ART, and were eligible for the 6-month ART retention analysis (i.e., date of abstraction occurred >6 months after ART initiation). Thus, 251 (270 - 19) unique clients were available for 6-month retention analyses for both pre-ART and ART care (Table 9). Fewer clients were eligible for retention analyses for longer observation periods; for retention at 24 months, only 37 and 74 clients were available for pre-ART and ART retention analyses, respectively (Table 9).

Pre-ART & ART Retention

Retention in pre-ART care was low at 6-months (63.3%) and decreased considerably over time; at 24 months after enrollment, 13 (35.1%) of 37 eligible clients were retained in pre-ART care (Table 9). Potential psychosocial predictors of defaulting from pre-ART care (e.g., non-disclosure to family members and partners, concerns of stigmatization or violence, financial hardship) could not be reported because these measures were completed on approximately half of enrolled clients. Retention in ART care was high, and compared with pre-ART retention, higher for each observation period. Retention in ART care was 92.4% 6 months after ART initiation, decreasing to 86.5% 24 months after ART initiation (Table 9). Pre-ART and ART retention at 6 months did not vary substantially by study or age group; sub-

group retention analyses beyond 6 months were not conducted because too few clients were available for these analyses.

Table 9. Retention in pre-ART and ART care, and HIV care (combined), by observation period and study-gender group.[1]

Patient Characteristic	Pre-ART Care		ART Care		HIV Care	
	Eligible[2] n	Retained n (%)	Eligible n	Retained n (%)	Eligible[3] n	Retained n (%)
Observation period[4]						
6 Months	98	62 (63.3)	172	159 (92.4)	251	202 (80.5)
12 Months	73	40 (54.8)	135	123 (91.1)	197	152 (77.2)
18 Months	52	23 (44.2)	103	91 (88.4)	150	109 (72.7)
24 Months	37	13 (35.1)	74	64 (86.5)	107	73 (68.2)
			6 Month Retention			
Study-gender group						
SHIMS Females	56	38 (67.9)	62	57 (91.9)	111	88 (79.3)
SHIMS Males	13	8 (61.5)	52	48 (92.3)	62	53 (85.5)
Soka Uncobe Males	29	16 (55.2)	58	54 (93.1)	78	61 (78.2)
			6 Month Retention			
Age group						
≤ 30 years	59	38 (64.4)	78	73 (93.6)	128	102 (79.7)
≥ 31 years	39	24 (61.5)	94	86 (91.5)	123	100 (81.3)

[1] Sixteen clients who transferred out of care or died were excluded from analyses.
[2] Includes 19 ART clients who were in pre-ART care for at least 6 months. All 19 ART clients were defined as retained in pre-ART care; 19 retained at 6 months, 11 retained at 12 months; 5 retained at 18 months, and 4 retained at 24 months.
[3] The 19 ART clients who were also retained in pre-ART care are counted only once.
[4] For pre-ART clients, the observation period began on the date of enrollment and ended on the date at the end of the defined period (e.g., 6 months after enrollment). For ART clients, the observation period began on the date of ART initiation and ended on the date at the end of the defined period. To be eligible, the date of abstraction had to occur after the date the observation period ended for each client.

10. Screening for Tuberculosis and Prescription of Cotrimoxazole

Analytic Restriction

Of the 288 clients eligible for retention analyses, study personnel located and used the chronic care file for data abstraction on 258 (90.0%). Analyses were restricted to these 258 clients because documentation of TB screening and cotrimoxazole (CTX) prescription was incomplete on a per-visit basis for register and electronic medical record data abstractions. Of these 258 clients, study personnel abstracted TB screening and CTX prescription data from pre-ART and ART follow-up visit sections only of the client's chronic care file.

Receipt of Services

The 258 clients had a median (Q1-Q3) of 9 (4-14) follow-up visits to the facility after enrollment in care. During these follow-up visits, clients received a median (Q1-Q3) of 7 (2-12) TB screenings and 8 (3-13) prescriptions for CTX. Of the 258 clients, 244 (94.6%) had at least one follow-up visit to the facility, of whom 226 (92.6%) were ever screened for TB and 239 (98.0%) were ever prescribed CTX. Of 226 clients screened for TB, 40 (17.7%) screened positive at least one time and were considered suspect for TB.

11. Primary Data Source Availability

Enrollment & Non-enrollment Facilities

Table 10 includes findings on the availability of primary data sources used to identify clients who enrolled in HIV care at the 92 visited facilities. Findings are reported of facilities in which ≥1 clients were verified to have enrolled in care (enrollment facilities; n=78) and facilities in which no clients were verified to have enrolled in HIV care (non-enrollment facilities; n=14) (Appendix I). Primary data sources include the set of data sources that study personnel were required to use in accordance with standard procedures to identify enrolled clients.

All Facilities Combined

Of the 92 facilities visited, study personnel found that most had pink and white copies of HTC forms stored in binders or envelopes, and that most had expert clients available for interviews and chronic care files that could feasibly be searched (Table 10). Nearly a third of the 92 facilities had an electronic medical record (EMR) system that could be searched for combinations of first and last name, and date of birth. Of 108 total register months available (36 months for each of the three primary registers), the median (Q1-Q3) number of months that appointment, pre-ART, and ART registers were available to search for clients for calendar years 2011, 2012, and 2013 was 92 (72-103). For all facilities, the median number of register months available was greater for pre-ART and ART registers than appointment registers (Table 10). Of the 92 facilities, 13 (14.1%) had a data-source-availability rating of 1, defined as having a working EMR, at least one expert client available for interview, and 108 register months available for searching for the three primary registers combined; one (1.1%) facility had a rating of 4 in which none of these data sources were available (Table 10).

Differences between Enrollment and Non-enrollment Facilities

Compared with enrollment facilities, proportionally fewer non-enrollment facilities had HTC copies, EMR, expert clients, and chronic care files available to help search for and identify clients who enrolled in HIV care. Non-enrollment facilities also had a lower median (Q1-Q3) of primary register months available for all three registers combined, and for appointment and pre-ART registers separately. Finally, proportionally more non-enrollment than enrollment facilities had data-source-availability ratings of 3 or 4 (lower availability); no non-enrollment facilities had a data-source-availability rating of 1 (compared with 16.7% of enrollment facilities) (Table 10).

Table 10. Primary data sources available at enrollment and non-enrollment facilities.

Primary Data Source[1]	Enrollment Facilities[2] (N = 78)	Non-enrollment Facilities[3] (N=14)	All Facilities (N = 92)
HTC binders or folders			
Facility copy (pink)	60 (76.9%)	10 (71.4%)	70 (76.1%)
Client copy (white)	48 (61.5%)	7 (50.0%)	55 (59.8%)
Electronic medical records	26 (33.3%)	2 (14.3%)	28 (30.4%)
Expert client(s)	64 (82.1%)	8 (57.1%)	72 (78.3%)
Searchable chronic care files[4]	73 (93.6%)	12 (85.7%)	85 (92.4%)

Primary Data Source[1]	Enrollment Facilities[2] (N = 78)	Non-enrollment Facilities[3] (N=14)	All Facilities (N = 92)
Register months available 2011-2013, median (Q1–Q3) [5]			
Appointment registers	32 (24-36)	28 (22-36)	29 (24-36)
Pre-ART registers	34 (29-36)	30 (28-36)	33 (29-36)
ART registers	32 (24-36)	33 (20-36)	32 (24-36)
All primary registers combined	92 (72-103)	89 (60-108)	92 (72-103)
Data source availability rating[6]			
1	13 (16.7%)	0 (0.0%)	13 (14.1%)
2	47 (60.3%)	7 (50.0%)	54 (58.7%)
3	18 (23.1%)	6 (42.9%)	24 (26.1%)
4	0 (0.0%)	1 (7.1%)	1 (1.1%)

[1] Sources of data that were expected to be located and reviewed to verify if a client enrolled in HIV care in accordance with protocol standard operating procedures. Note: secondary data sources (e.g., laboratory and attendance registers) were used when primary sources were not available.

[2] Facilities where ≥1 clients were verified as having enrolled in HIV care.

[3] Facilities where clients were referred or where clients self-reported having enrolled in care, but where no clients were verified as having enrolled in care.

[4] When feasible, abstraction teams searched through all of the chronic care files at a facility to verify enrollment in care of a client. A targeted approach was used to search through client charts if the filing system at the facility allowed (e.g. files arranged alphabetically by client's surname).

[5] Observed register months 2011-2013 with ≥1 documented client entries. Some registers did not have any documented entries during particular months (e.g., pages missing, clinic not open, or registers were not used during that period). Note: 36 months of register documentation is possible for each register; 108 (3*36) total months of register documentation is possible for all three registers combined.

[6] Rating 1: EMR and EC, and 108 register months available (36 months for each primary register); Rating 2: EMR and EC available but <36 register months available for each register, OR either EMR or EC available and at least 36 months available for one primary register with <36 months available for other two primary registers; Rating 3: EMR and EC available, and 0 months available for all primary registers, OR <36 months available for all three primary registers, EMR or EC available or not; Rating 4: Neither EMR and EC available, and 0 months of primary registers available.

12. Quality Assurance

Data Abstraction Form Reviews

A total of 135 data abstraction forms (DAFs) were identified through manual and automated reviews of electronic records for having ≥1 missing or inconsistent data (e.g., clinical staging) (n=103), or comment information suggesting that the client might have received care at an alternate facility (n=32). Of the 103 DAFs with missing or inconsistent data, data issues were resolved for 71 (68.9%) either through a review of DAF and other client records (n=27) at the office, or by returning to the facility and validating the DAF against available data sources (n=44). Data issues for the remaining 32 DAFs were unresolved because required information was missing or could not be located from one or more data sources at visited facilities. Of the 32 DAFs suggesting that clients might have enrolled elsewhere for HIV care, study personnel visited each of these facilities and found 11 (34.4%) clients enrolled at these facilities.

Data-abstraction Validation

Of 78 enrollment facilities and 300 enrolled clients, abstraction-validation teams led by the ICAP deputy project coordinator and CDC technical advisors revisited 15 (19.2%) facilities and validated DAFs against data-abstraction sources for 120 (40.0%) enrolled clients. High-volume facilities in each of the four regions were purposefully selected for data-abstraction validation, and DAFs for all clients who enrolled in care at the selected facilities were validated. Of the 120 validated DAFs, one (0.8%) was incorrectly matched to another client and eight (6.7%) had important transcription or missing-data errors. Missing

data errors on four of the eight DAFs were attributed to EMR abstractions (not to abstractor error); these four DAFs were re-abstracted with chronic care files which had not been previously located.

Enrollment Validation

At 12 of the 15 facilities visited, abstraction-validation teams also conducted an additional search for all clients who reported in Component II interviews that they had enrolled at that facility, but were not verified as having enrolled by study personnel in previous data-abstraction visits. Of 34 clients who reported attending these facilities, data sources for two (5.9%) were located, matched to the clients, and abstracted. Finally, at the approximate mid-point and at the end of the study, abstraction-validation teams re-visited 28 referral facilities (including 14 of the 15 validations facilities) and attempted to locate records on 328 clients who had not been previously matched with facility records. Depending on the facility visited, these clients represented either all or a sample of clients who had not been previously matched with records at that facility. Of these 328 clients, data sources for 13 (3.9%) were located, matched to the client, and abstracted.

Data-entry Validation

An approximate 10% sample of DAFs of clients who enrolled in HIV care, and a 10% sample of defaulter tracing (DTF) and clinic characteristics (CCFs) forms (n=161 forms total) were randomly chosen for data-entry validation. The validation was conducted by the CDC project manager who compared each variable value recorded on the 161 forms against its corresponding value in the electronic record. All 161 forms had a corresponding record in the electronic database; no major data-entry errors were identified. Minor data-entry errors were identified and corrected for seven DAFs and one DTF. Of the seven DAF data-entry errors, all involved the open-ended comment field and were thus classified as minor. The one data-entry error on the DTF was an incorrect date entered into the interviewer call log.

Discussion

Principal Findings

Enrollment in HIV Care

In this first study of its kind in Swaziland, the retrospective linkages evaluation (Project RetroLink) found that of over one thousand clients newly HIV diagnosed in community and male-circumcision clinic settings throughout Swaziland in 2011 and 2012, less than one in ten (9.1%) were verified to have enrolled in HIV care within three months of their HIV diagnosis and less than one in four (24.1%) were verified to have enrolled in care within two years of their diagnosis. Even after adjusting for non-response, unacceptably few clients (37.0%) enrolled in HIV care within two years of their diagnosis. Similar very low rates of verified enrollment in HIV care were observed for both men and women diagnosed in their homes, among men seeking MC services, in each of the four regions of Swaziland, and in all age groups. Although older persons in our sample were more likely to have enrolled in HIV care at each observed time period after diagnosis, less than one in three (31.4%) in the oldest age group (>35 years) were verified as having enrolled in care within two years of diagnosis.

Clinical Status and Retention in Pre-ART Care

Of the few RetroLink clients who were verified as having enrolled in HIV care, two-thirds were already eligible for ART, and four in ten had severe immunologic impairment at the time of enrollment. Of clients who were initiated on ART, nearly half were initiated 1 or more years after their HIV diagnosis. Although we found that a large majority of clients who were initiated on ART were retained in HIV care 24 months after initiation, of the clients verified to have enrolled in pre-ART care, nearly half defaulted from care within 12 months of enrollment. Consistent with those of the Swaziland National ART Program Evaluation, our findings suggest that many persons who are initiated on ART in Swaziland are initiated late in the course of their HIV disease, and thus considerable HIV transmission might be averted by reducing delay in ART initiation.[5-9,11]

Main Conclusions

Presuming that a large majority of all HIV-diagnosed clients eventually enroll in HIV care, our findings suggest that many Swazis newly HIV diagnosed in 2011 and 2012 may delay their enrollment in HIV care for years. Moreover, among the few newly diagnosed clients who enroll early in pre-ART care, many default from care after only 1 year. Given the established efficacy of ART in preventing HIV transmission to sexual partners, our findings suggest that the high HIV incidence observed in Swaziland may be attributed, at least in part, to the long delay in ART initiation among clients *after* their HIV diagnosis either from (1) not enrolling in HIV care soon after diagnosis, or (2) defaulting from pre-ART care among the few who enroll early. National procedures designed to help facilitate enrollment in HIV care or retain clients in pre-ART care either were not sufficiently applied and documented at this time, or if applied in accordance with the SOP, did not apparently work for most clients in our study. The failure in either application or efficacy of these linkage procedures was particularly acute for clients under 25 years of age, less than one in five (18.8%) of whom were verified to have enrolled in care within two years of their diagnosis.

Linkage Services

Missed Opportunities to Provide Linkage Services

Notably, we found that there was considerable opportunity to intervene and help clients enroll early in HIV care: nearly three in four (71.4%) of the 1,105 clients provided a telephone number and consented to follow-up contact at the time of their diagnosis. Consent for follow-up contact was similar among men and women, and of clients and who missed their enrollment appointment at referral facilities. RetroLink staff were able to call and interview many of these clients >900 days after providing their telephone number at HIV diagnosis. Of those contacted, nearly nine in ten agreed to discuss with persons whom they didn't know sensitive topics on HIV/AIDS, including whether they had enrolled in HIV care, and reasons for not enrolling in care. Of clients who reported never enrolling in HIV care, two-thirds reported wanting to enroll and accepted a new appointment and referral to an HIV care facility. Although fewer younger than older clients were reached, relatively few contacted clients refused to be interviewed, suggesting that had the calls been conducted soon after diagnosis (e.g., 1 week after defaulting from the enrollment appointment), linkage services could have been provided to most clients in accordance with the National SOP.

Delivery and Storage of HTC Referral Forms

The HTC referral form delivery system is essential to providing linkage services because it is the only means available for facility staff to appoint clients, and to initiate reminder and missed-appointment calls. We found that in many facilities, particularly those that are government operated, pink referral forms were most often maintained in accordance with the National SOP in either the expected or arrived patient binders that staff easily accessed. Although rare, at some facilities, forms were not maintained at all or were maintained in envelopes that were not readily accessible, and most likely, never used.

Although managed well at most facilities, we found pink HTC forms for only *half* of the clients at facilities to which they were referred. Although it is unknown what percentage of forms were actually delivered and available for use for linkage services at the time of the enrollment appointment, these findings suggest that many forms may not have been delivered. We also learned at several facilities that the referral forms often arrived >2 weeks after HIV diagnosis and could not be used to appoint and remind clients of their upcoming enrollment appointment (but apparently still could have been used to make calls to appointment defaulters). Of clients who enrolled in HIV care, we found white copies of their HTC referral forms on less than one in five. It is unknown whether the low percentage of located white referral forms was attributed to storage practices at facilities (sometimes white forms were found in the chronic care file rather than the arrived patient binder) or to clients failing to bring their referral form. Given the observed management of forms at most facilities, however, it is likely that most of these clients simply didn't bring their forms.

Reminder and Appointment Defaulter Calls

Despite the availability of many HTC forms which facility staff could have used to SMS text or call clients to remind them of their appointment or missed appointment, documentation of these calls were found for very few clients. Notably, nearly all clients were referred to facilities that had received training to implement the national linkage and retention SOP as evidenced by the appropriate storage of HTC forms, that had cell phones and airtime credit to make these calls, and that had linkage focal persons and specific nurses or expert client counselors charged with making calls. We also found that call logs were often used at many facilities, but these were used for clients who had enrolled in care, rather than for clients who were supposed to enroll in care. Although we cannot rule out that SMS texts or calls were made in accordance with the National SOP, but simply not documented, we believe clients were not called for two main reasons.

First, only approximately one in ten referred clients were found to be recorded in appointment registers maintained at referral facilities. In accordance with the National SOP, the appointment register is used to monitor when clients should be sent SMS appointment-reminder texts or when calls should be made to address missed appointments. Because very few clients were appointed in the register, the regular means by which clinic staff manage calls for clients in care was not implemented for clients *referred* to HIV care. At nearly all referral facilities, we did not find other mechanisms by which staff managed SMS texts and calls to clients referred to care (e.g., documentation of calls on referral forms maintained in expected patient binders).

Second, very few clients interviewed as part of Component II who had defaulted from their enrollment appointment remembered ever receiving an SMS text reminder or telephone call from the facility. These clients should have received at least one SMS text before their scheduled appointment and at least one call after their missed appointment. Although failure to recall these SMS texts or calls is certainly possible, we were encouraged that many interviewed clients remembered the specific facility to which they were referred at the time of their diagnosis. If they remembered the specific referral facility, it is reasonable that at least some would have remembered receiving one of the two expected contacts from that facility. Because of the consistency of findings from both facility and client perspectives, we conclude that very few of the 1,105 referred newly HIV diagnosed clients ever received an SMS text or telephone call from the facility either before their enrollment appointment or after they missed their enrollment appointment.

Linkage Services for Soka Uncobe Clients

Although few newly HIV diagnosed SOKA clients received linkage services from referral facilities, many received linkage services at the point of HIV diagnosis. It was standard practice at many of the Population Services International (PSI) supported Soka Uncobe sites that clients were offered the opportunity to meet with expert client counselors after being informed of their HIV diagnosis. Expert client counselors are HIV-positive clients who are successfully adhering to ART and managing their HIV disease; who are open about and living positively with HIV; and who have received specialized training to help new clients understand the nature and value of HIV care, and to provide psychosocial support to help clients remain in HIV care.

As part of linkage services, expert client counselors provided some informational and psychosocial counseling, used a standard form to assess and attempt to resolve barriers to HIV care (readiness assessment form), and when appropriate, escorted some clients to HIV care facilities at co-located sites. During HTC form reviews conducted at the 13 SOKA sites to identify eligible clients for RetroLink, we found that many medical circumcision files of HIV-positive clients included completed readiness-assessment forms. Anecdotal reports from some expert client counselors during Soka Uncobe suggest that the readiness-assessment forms were helpful in identifying potential barriers to care and guiding discussion on HIV/AIDS and HIV care (Appendix B).

Differences in Early Enrollment in HIV Care

Interestingly, although similar enrollment rates were observed between study-gender groups overall and within 18 months of diagnosis, proportionally more SOKA than SHIMS clients enrolled in HIV care within 3-6 months of diagnosis. Although many reasons might explain this difference, observed differences in early enrollment in care *might* be attributed to (1) that many Soka sites were co-located at HIV care facilities, and enrollment in care might have been more convenient at these potentially better-known facilities; (2) that young men seeking circumcision services (health seekers) may have a greater propensity for health care than their general-population peers who accepted, but did not seek HTC services at home; and (3) that many SOKA clients received at least some linkage services from expert client counselors, including escort services at co-located facilities. It is unknown whether expert client counselors charged with follow-up responsibilities would have been able to take advantage of the initial

relationship established from their single HIV post-test encounter and help more SOKA clients enroll and remain in care. As noted below, however, brief case management services (i.e., 1-5 encounters following diagnosis) is one of the few evidence-based linkage interventions known to increase early enrollment in HIV care.

Reasons for not Enrolling in HIV Care

As reported in many studies, the most frequently reported reasons for not enrolling in HIV care among clients interviewed during Component II included feeling well and not perceiving the need to receive care; inconvenience (not having the time for HIV care, and perceptions of long wait times to see a provider); and costs (perceptions of expenses for transport and potentially opportunity costs from lost work).[23,24] A minority of clients who did not enroll in HIV care reported that they had not enrolled because of perceived low quality or efficacy of care, or that they were not infected with HIV (a few clients reported re-testing HIV negative). These findings suggest linkage-intervention targets at social, facility, and individual levels. For example, low perceived need to enroll in HIV care, and perceived costs and inconvenience are well recognized barriers to care that could be addressed through social marketing during community HTC outreach campaigns; decentralized HIV care, task shifting, and policies to reduce wait times at facilities; and follow-up counseling, escort, and treatment-navigation services provided by expert-client counselors.[23-29]

The well-established importance of task shifting and decentralized HIV care is underscored in our findings of substantially greater enrollment at clinics than hospitals and health centers to which clients were referred; and in rural and peri-urban areas, at clinics served by dirt roads.[26-29] For SHIMS clients diagnosed at their homes, these findings were not unexpected given substantially greater congestion and longer wait times we observed at large facilities, mostly served by paved roads at plausibly greater distances from client residences. These associations were not observed for SOKA clients, who were more likely than SHIMS clients to be referred to larger urban facilities served by paved roads and often co-located at circumcision sites. Notably, substantial scale up of decentralized HIV care to small rural clinics in Swaziland began at the time of SHIMS and Soka Uncobe. Our findings suggest that for men diagnosed through home-based HTC, decentralized care at presumably more convenient clinics is particularly important.

Enrolling in Alternative Facilities

Interestingly, we found that over one quarter (28%) of clients who were verified to have enrolled in HIV care enrolled at facilities to which they were *not* referred (alternate facilities). Of clients who enrolled at an alternate facility, most reported that they chose the facility for reasons of convenience (living closer to the facility and perceived shorter wait times); however, many also reported attending the alternate facility because they perceived care was better at that facility and that staff were more respectful to clients. Assuming that most clients did not change their residence from the time of diagnosis to enrollment in care, these findings suggest that counselors should ensure that the most convenient facilities are discussed as potential referral facilities. However, these findings also underscore the importance for counselors to explore perceived barriers to care at nearby facilities and ensure that concerns about the quality of care and the treatment of clients are explored and addressed. Notably, at

the point of diagnosis, counselors can assess these perceptions and help clients resolve potential barriers to care—but an intervention based on a single encounter with clients who have just been informed of their HIV diagnosis and who haven't fully realized the implications of the diagnosis on enrollment in care, should not be expected to have considerable impact on early enrollment and retention in care.

Health Visitation without Enrollment in HIV Care

We found that some clients visited HIV care facilities only once or twice and did not meet our definition of enrollment in care. This was particularly true of SOKA clients, of whom nearly one in ten had visited the facility on or shortly after the day of their HIV diagnosis, but apparently never returned to that facility. These clients were not classified as having enrolled in care because they did not undergo clinical evaluation (WHO staging), and if tested for CD4, were not informed of their CD4 test results. Unfortunately, half of the facility visitors who were CD4 tested were eligible for but not initiated on ART.

The high rate of facility visitation without enrollment is discouraging, because these clients were "linked" to HIV care. Information on the individual circumstances of these clients and the context of their facility visits was not available to RetroLink staff. It may be true that some of these clients (the majority of whom were SOKA) were simply escorted to the facility in accordance with standard procedures but were not provided services because of the time of their visit or were not ready to enter HIV care at that time. Most (75%) of these clients provided a telephone number and consented to be contacted; if counselors at HIV diagnosis were responsible for following up on clients, it is possible that they might have identified and resolved apparent barriers to care or facilitated enrollment at a more suitable facility.

HIV Care

TB Screening, CTX Prescription, & ART Initiation & Retention

RetroLink staff found that a large majority of clients who enrolled in HIV care received timely services in accordance with national treatment recommendations. Based on documentation of follow-up visits in chronic care files, nearly all study clients were prescribed cotrimoxazole and screened for symptoms of tuberculosis, and nearly all received these services at every follow-up visit. Encouragingly, nearly all clients eligible for ART at baseline were initiated on ART, and three-quarters of ART clients were initiated within 30 days of their most recent CD4 test. Consistent with findings from the National ART Program Evaluation, nearly nine in ten ART clients were retained in ART care two years after initiation.[11] The few clients who were eligible at baseline and did not receive ART either defaulted or transferred from care the day of or soon after ART eligibility was determined. Of the few clients initiated on ART who were ineligible by CD4 count and clinical staging, all but one had CD4 counts slightly above the 350 cell-count treatment cutoff. Consistent with findings from the National ART Program Evaluation, of study clients who were initiated on ART and who had a follow-up CD4 test, over half had a net median CD4-cell count gain of over100 cells/µl.[11]

Trends in CD4 and WHO Clinical Staging at ART Initiation

Encouragingly, RetroLink findings suggest that trends of increasing CD4 count and decreasing WHO clinical stage III/IV at ART initiation observed in the national ART program evaluation (2004-2010) may be continuing beyond 2010.[11] In the national ART program evaluation, the median (Q1-Q3) CD4 count at ART initiation increased from 94 (35-151) in 2004/2005 to 180 (98-275) in 2010. In RetroLink, the median (Q1-Q3) CD4 count at ART initiation was 219 (124-284). In the national ART program evaluation, the percentage of clients on whom ART was initiated at WHO clinical stage III/IV, decreased from approximately 90% for both men and women in 2004/2005 to 40% of women and 53% of men in 2010.[11] In RetroLink, the percentage of clients on whom ART was initiated at WHO clinical stage III/IV was 23% for women and 30% for men.

Psychosocial Assessment & Intervention

Unfortunately, psychosocial assessments were not documented in chronic care charts for half or fewer of enrolled clients, and just over one-third had complete documentation on the set of six assessments we chose to evaluate. The six psychosocial assessments were selected for abstraction because of their importance to retention in care and providing HTC to persons at high risk for undiagnosed infection. As a result of incomplete documentation, it is unclear whether a majority or minority of enrolled clients had disclosed their status to partners and family members, whether their partners had tested for HIV, or whether clients agreed to home visits by a rural health motivator. Although documentation was incomplete, an important minority of clients who enrolled in care indicated that they feared stigmatization or violence due to HIV/AIDS or faced financial hardships.

Limitations

1. Estimation of Enrollment in Care

RetroLink findings are subject to four important limitations. First, our reported adjusted estimate of enrollment in HIV care should be considered a minimum estimate because of the limited availability of data sources at some facilities and because of human error in searching for matching names in source documents at HIV care facilities. Although we were encouraged to find that most data sources were available at many facilities, including chronic care files, expert client counselors, and appointment, pre-ART, and ART registers dating back to 2011, some facilities had fewer sources to identify enrolled clients. Notably, none of the facilities at which study personnel were unsuccessful in locating clients (non-enrollment facilities) received a data-source-availability rating of 1 (complete availability); and compared with enrollment facilities, fewer non-enrollment facilities had available data sources of each type. Although unknown, it is reasonable to expect that at least some clients enrolled at facilities and study personnel were simply unable to verify their enrollment because of the lack of available data sources.

Despite the challenges of searching for enrolled clients at facilities (often requiring comprehensive page-by-page reviews of 3 different types of registers over 108 months of documentation), we were encouraged by the outcomes of quality assurance audits headed by the ICAP deputy coordinator and CDC technical advisors. Audits on 364 clients, who were not initially verified as having enrolled in care, identified only 15 additional enrollments. We were also encouraged that of 267 Component II interviews, only 13 clients who were originally missed at referral facilities in Component I were found

after a second or third attempt in Component II (2 of the 13 clients were found through quality assurance audits). These modest gains in verified enrollments from quality assurance audits and Component II interviews suggest that standard operating procedures implemented at facilities, and the use of all available data sources including a mandatory three-register review by teams of two, were reasonably effective. Despite our efforts, however, undoubtedly a few enrolled clients were missed, and thus the adjusted enrollment rates should be considered minimum estimates.

2. Validity of HIV Care Data

RetroLink findings on clients who enrolled in HIV care are also subject to errors and omissions of clinical information recorded on facility registers and chronic care files, and entered into electronic medical records. With respect to data errors, with the exclusion of some CD4 test results, it is unknown the extent to which recorded information reflected actual clinical practices and client conditions. RetroLink was not designed, for example, to verify that clients received documented screenings for tuberculosis and prescriptions of cotrimoxazole, and whether recorded WHO clinical stages were accurate. To the extent possible, however, study personnel abstracted CD4 test results directly from available laboratory slips (e.g., FACSCount sample reports) rather than from results recorded in data sources. Laboratory CD4 result slips were not available for EMR and register data abstractions, and not all CD4 result slips were maintained in chronic care files. Although not quantifiable, study personnel did observe high consistency between CD4 results on laboratory slips and values recorded in chronic care files.

With respect to omissions, we learned that at several facilities some client visits and client services are not routinely documented on chronic care files. For example, per standard procedures at some facilities, new clients on their first visit provide blood specimens for baseline tests are *not* seen by a clinician and do not have chronic care files created or "opened." At these facilities, chronic care files are opened after the client returns to receive their test results and are examined by a provider (thus the date of the baseline CD4 test recorded in the file precedes the date of the first recorded clinic visit). We also learned that some clients who are ART eligible at baseline may revisit the clinic more than once for required ART readiness counseling, and that these clinic visits may either precede opening the chronic care file or are not documented on the chronic care file (personal communication, Dr. Sikhathele Mazibuko, August 5, 2014). Thus, as documented in their chronic care file for some clients, ART appears to be initiated on their very first clinic visit when in reality, several visits have preceded ART initiation. Because early visits are not documented for all clients, we did not report the median (Q1-Q3) interval in days from the first clinic visit to ART initiation, and we also do not report the median (Q1-Q3) number of total clinic visits (only follow-up pre-ART and ART visits are reported). Finally, reported time intervals may not be precise because of undocumented visits and errors in reported dates of visits (we found some unresolved inconsistent chronologies).

3. Fidelity of Data Abstraction

Findings from this study are also subject to omissions and errors in correctly matching clients with facility data sources, transcribing clinical data onto data abstraction forms, and entering data from forms into electronic databases. To mitigate these potential errors, we required team leaders to review, and to the extent possible, verify in the field all completed data abstraction forms. At the ICAP office, we

also established a two-level review of submitted forms for completeness, legibility, and consistency, and all forms were double-data entered. We also reviewed manually and through automated checks all entered electronic records for incomplete and inconsistent data, and returned data abstraction forms to facilities to try to complete omitted data or resolve noted inconsistencies. To ensure data were accurately transcribed, we validated 40% of data abstraction forms completed on enrolled clients by comparing all recorded data against the corresponding data source. In these audits we found very few records with notable errors; only one record was found in which the data were abstracted on an incorrect client (matching error). Finally, our 10% validation of all variable fields against values recorded on paper records yielded no notable data-entry errors. Although our audits were extensive, we could not validate all forms and undoubtedly a few data-abstraction errors exist.

4. External Validity & Currency

Finally, RetroLink findings are limited to SHIMS and SOKA clients diagnosed through home-based HTC and provider-initiated HTC at SOKA sites in Swaziland in 2011 and 2012. Although this project is one of the largest of its kind with a sample size of over one thousand newly HIV diagnosed persons, it is unknown the extent to which observed early enrollment and retention in care outcomes are applicable to other populations in Swaziland, such as clients tested in other clinical settings or clients tested at stand-alone HTC sites. RetroLink is also limited to describing linkage services provided at HIV care facilities in 2011/2012, and early enrollment and retention outcomes of the 2011/2012 cohorts. Thus, our findings may not reflect current linkage-service practices in HIV care facilities or by HTC providers, and early enrollment and retention outcomes among cohorts of clients HIV diagnosed in 2013/2014. Population Services International, for example, currently provides ongoing telephone follow-up of all clients who they newly HIV diagnose through their New Start HTC site, and through community-based HTC. Indicators from their linkage program suggest that as many as 64% of clients might enroll in HIV care.[30] Interestingly, if found to be true (64% reflects verified enrollment as defined in RetroLink), these findings are similar to verified enrollments among the very few clients who were called by facility staff (50%) in accordance with the National SOP, suggesting that follow-up interactions post-HIV diagnosis may help some clients enroll in care.

Recommendations

Given the importance of ART in reducing HIV-associated mortality and HIV transmission to offspring and partners, our findings call for urgent action to strengthen linkage and pre-ART retention services in Swaziland. Five principal actions that might be taken to address these needs include: (1) holding one or more national meetings to re-focus providers on the importance of and exploring strategies to improve early enrollment and retention in HIV care; (2) assessing current linkage-service practices at HIV care facilities, and if needed, conducting refresher trainings to ensure compliance with the national linkage and retention SOP; (3) developing and implementing standard operating procedures and reporting tools for routine national reporting of linkage indicators; (4) implementing and evaluating evidence-based linkage interventions that are not currently implemented as part of the National SOP; and (5) establishing that HTC providers, rather than HIV-care providers, have the primary responsibility in delivering evidence-based linkage services and ensuring that newly HIV diagnosed clients enroll early in HIV care.

1. *National Meetings on Linkage & Retention in HIV Care*

Convening one or more national meetings with public health authorities and stakeholders should be considered to take stock of RetroLink findings in the context of current linkage practices; current estimates and gaps of understanding enrollment in HIV care following diagnosis; gaps in service delivery and recommendations by international public health and research organizations; and potential new strategies to improve early enrollment and retention in care. This meeting could serve to help populate and launch task forces to address one or more of the below recommendations or alternative consensus recommendations identified from the meetings.

2. Assessing Current Practices & Retraining on National Linkage & Retention Procedures

Evaluating whether current linkage and retention procedures are routinely conducted in accordance with the national linkage and retention SOP should be considered. These evaluations could be conducted in a single day at selected HIV care facilities. Audit teams, for example, could examine the management of referral forms in expected and arrive patient binders, whether newly referred clients are recorded in appointment registers, and whether telephone logs have documentation on SMS text or phone call reminders to referred clients. Teams could evaluate the percentage of appointed clients who were called before or after their scheduled appointments and the percentage of referred clients who enrolled at the referral facility. A sample of chronic care files could be selected on pre-ART clients and evaluated for adequate documentation of services and retention in HIV care. If programmatic audits confirm inadequate compliance with the national linkage and retention SOP, refresher trainings of linkage and retention focal persons should be conducted as soon as possible. If enough audits confirm RetroLink findings of low retention in pre-ART care, a national evaluation of pre-ART retention should also be considered.

3. Developing, Implementing, & Reporting National Linkage Indicators

To help monitor and improve delivery of linkage services over time, the development and routine reporting of national indicators of linkage to care should be considered. These indicators should address the three dimensions of program evaluation including (1) key program processes, such as the number of referral forms received at facilities in the past month; (2) program outputs, such as the number of referred clients to whom automated SMS texts were sent or who were called by telephone before their enrollment appointment; and (3) program outcomes, such as the number of referred clients who enrolled in HIV care. Definitions and methods for classifying clients who enroll in care should be carefully considered and made explicit in M&E standard operating procedures. Notably, defining "linkage" as visiting the clinic one time or being "registered" may overestimate enrollment in HIV care because some clients do not return for a second visit; storing and counting client-delivered referral forms may considerably underestimate enrollment in HIV care because many clients do not bring their referral forms when enrolling in care. Finally, because many clients enroll in HIV care at non-referral facilities, the responsibilities for reporting program outcomes should be vested with HTC providers who should be charged with follow-up responsibilities to trace and report whether their clients enrolled in HIV care.

4. Implementing & Evaluating Evidence-based Linkage Interventions

To improve the potential impact of linkage services, the development, implementation, and evaluation of an expanded package of evidence-based linkage interventions should be considered. Evidence-based linkage services that are currently recommended by WHO or the International Association of Physicians in AIDS Care (IAPAC), and that are not currently included in the National SOP include: (1) brief linkage case management for newly HIV diagnosed clients; (2) use of peer counselors and treatment navigators; and (3) point-of-diagnosis CD4 testing.[24-29] Brief case management, demonstrated in a randomized controlled trial to increase early enrollment in HIV care, involves providing supplemental psychosocial support and strengths-based counseling over a limited number of face-to-face sessions to help clients cope with their new diagnosis and enroll in care.[31,32] Peer counselors recommended by WHO are expert client counselors who can draw on their experiences of living positively with HIV and their specialized training to help clients understand the value and nature of HIV care. Expert client counselors could escort and help clients navigate their enrollment in care at unfamiliar facilities, and with additional training, would seemingly be optimally suited to provide brief case management services. Finally, provision of point-of-diagnosis and point-of-care CD4 has been shown to increase awareness of ART eligibility and increase the number of eligible clients on whom ART is initiated.[33,34] Although each of the above recommended interventions are evidence based, their cultural and operational fit, feasibility and acceptance, and efficacy on early enrollment and retention in HIV care in Swaziland is unknown. As part of any rollout of new linkage services, consideration should be given to appropriate evaluation of corresponding program processes, outputs, and outcomes.

5. Expansion of Linkage Responsibilities of HTC Providers

Low compliance with the national linkage and retention SOP for SHIMS and SOKA clients in 2011 and 2012, in retrospect, was not unexpected because of the reliance on (1) a specimen transport system to provide referral forms to facilities in a timely manner, and (2) on HIV clinic staff who through their training and orientation are unfamiliar with providing services to clients who are *not* under their care. Moreover, many newly HIV diagnosed clients enroll at facilities different from those to which they were referred. The effect of linkage services provided by staff at a clinic to which clients may have chosen not to enroll is reasonably questionable. For the above reasons and observed very low compliance with the National SOP, the implementation of new evidence-based linkage services should be the responsibility of HTC providers. Responsibilities such as brief linkage case management provided by expert client counselors are a better fit with HTC providers who have established rapport with newly diagnosed clients and should be more aware than HIV care providers of the individual circumstances and needs of their clients, including barriers to enrollment in HIV care and potential strategies to overcome identified barriers.

Closure

RetroLink was a retrospective cohort study designed to evaluate early enrollment and retention in HIV care among clients newly HIV diagnosed at home and in male circumcision sites in Swaziland in 2011 and 2012. It is one of very few studies conducted of its kind and the first of its type in Swaziland. Of over one thousand newly HIV diagnosed clients, we estimate that less than four in ten enrolled in HIV care within two years of their diagnosis. Of the few clients who were found to enroll in pre-ART care, many

defaulted from care soon after their enrollment and nearly half defaulted and were lost to follow-up within 12 months of enrollment. In spite of well-recognized limitations of retrospective evaluations, our findings are a call to action to improve linkage services and early enrollment and retention in HIV care in Swaziland.

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APPENDIX A: HTC REFERRAL FORM

HISCC PILOT From :20/02/2011 To :31/03/2011

Swaziland HTC Client Record

Form No C 001712

Form will be in triplicate (original copy to be given to client, 1st copy to be given to the referral point, 2nd copy to remain in client HTC book)

HTC Settings:

Health Facility (name) ☐ VCT ☐ Home ☐ Community

Other (specify)

Date of Visit (dd/mm/yyyy) / / Provider name:

Client Information:

Client first name Surname

Client Code Date of Birth (dd/mm/yyyy) / /

Physical address Contact number

Client Gender ☐ Male ☐ Female Marital Status ☐ Single ☐ Married with one partner ☐ Polygamous ☐ Widowed ☐ Separated ☐ Divorce ☐ Cohabiting with one partner

Client can be contacted in future? ☐ Yes ☐ No

Can next of kin be contacted if client could not be reached? ☐ Yes ☐ No

If YES, name of next of kin

Contact number for next of kin

HIV Testing Information:

Ever tested for HIV? ☐ Yes ☐ No

If yes, when was your most recent HIV

/ (mm/yyyy)

If yes, what was your most recent HIV test result?

☐ NR ☐ R ☐ Indeterminate ☐ Never collected result

Consent for testing:

(Where verbal consent is given, provider should tick box and request for signature)

I agree that I/my relative/child may be tested for HIV today ☐

Ngiyavuma kuhlolwa simo sami sengati/sihlobo sami/umntfwana

Sign: Thumb print

If HIV positive:

Have you attended an HIV care facility for care and treatment in the last 3 months?

☐ Yes Name of facility

☐ No (******Client should be referred to care and treatment******)

Pre -Test Risk Assessment

Are you or your partner pregnant? ☐ Yes ☐ No

Have you had genital sores or discharge? ☐ Yes ☐ No

Are you or your partner circumcised? ☐ Yes ☐ No

Have you talked to your partner about HTC? ☐ Yes ☐ No

Have you ever been treated for TB/partner ? ☐ Yes ☐ No

Have you had contact with human blood? ☐ Tattoo ☐ Transfusion ☐ Caring ☐ No

What is your partner's recent HIV status ☐ NR ☐ R ☐ Unknown

When ever you have sex,do you use condoms? ☐ Always ☐ Sometimes ☐ Never

How many sexual partners did you have in the last 6 months?

When was your recent unprotected sexual exposure? / /

Anticipated HIV results ☐ NR ☐ R ☐ Unknown

Post Test Session

Client received results ☐ Yes ☐ No

Final confirmation results if indeterminate ☐ NR ☐ R

Client coping mechanism ☐ Yes ☐ No

Final HIV test results ☐ NR ☐ R ☐ Indeterminate

Client to disclose results ☐ Yes ☐ No (If no, encourage disclosure)

Risk reduction plan for (tick each that applies):

☐ Condoms ☐ Male Circumcision ☐ Partner reduction ☐ Other:

If client tested negative and has risk factors that indicates the need for re-testing within two months;

Follow up counselling session scheduled? ☐ Yes ☐ No

Condom usage skills built and condoms provided? ☐ Yes ☐ No

Referrals:

Client referred for:

☐ Care and treatment services ☐ Nutritional Support ☐ Home based care ☐ TB Services

☐ STI screening and/or treatment ☐ Medical Male Circumcision ☐ Psychological and/or Social Support Groups ☐ Repeat testing for inconclusive results

☐ PMTCT services ☐ Family Planning Services ☐ DNA PCR ☐ Other (Specify)

Client prefers to go to the following health facility for HIV services (This section can be filled in by an additional counsellor where available):

Name of health Facility

Date the client is expected at referal point: / / *** within 2 weeks of HIV test ***

TO BE FILLED IN BY RECEIVING POINT STAFF:

Receiving Point Name

Date client seen (dd/mm/yyyy) / /

* TB screening should be conducted to every client attending HTC

** A negative test is only valid for 2 months from date of testing.

APPENDIX B: CARE READINESS ASSESSMENT FORM

Assessments and Measures of Barriers to HIV Care **YES** **NO**

Open ended question EC poses to client	Meaning inferred/ interpretation from the clients response	YES (tick)	NO (tick)
1a. What do you believe about your HIV test result? (denial about HIV infection status)	*1b. Client believes he/she is not infected with HIV.*		
2a. What do you believe about the effectiveness and side effects of HIV treatment? (beliefs about the efficacy and effects of ART)	*2b. Client believes HIV treatment is ineffective or harmful.*		
3a. What do you believe will happen to your health if you don't receive HIV care and treatment? (severity of HIV/AIDS without treatment)	*3b. Client believes that he/she will be healthy without receiving HIV care or treatment.*		
4a. What do you believe about the need to go to the clinic ART unit even if you feel well? (low perceived need for HIV care)	*4b. Client does not believe he/she needs to go to the HIV clinic because of perceived good health or wellness.*		
5a. What do you believe about the quality of care and how patients are treated at the clinic? (low quality of care)	*5b. Client believes he/she will be treated poorly or receive poor care at the Clinic .ART unit*		
6a. What do you believe might happen if people that you know will see you at the clinic ART Unit? (stigmatization and discrimination)	*6b. Client is concerned or afraid about being identified as HIV+.*		
7a. How will your spouse, family, and friends react if they found out you are going to the clinic ART Unit? (low support for care and Tx) V	*7b. Client believes he/she will not have support for HIV care from spouse, family, or friends.*		
8a. How will your community react if they found out you are going to the Clinic ART Unit? (low community support for care and Tx)	*8b. Client believes he/she will not have support for HIV care from their community.*		
9a. What do you believe about the power of traditional healers or medicine to cure or control HIV (efficacy of traditional therapy)	*9b. Client believes that traditional healers or medicine are effective against HIV/AIDS.*		

10a. How much do you believe it will cost you for HIV care and treatment? (costs for HIV care and treatment)	*10b. Client believes he/she cannot afford to pay for HIV care and treatment.*		
11a. What other costs or responsibilities might prevent you from receiving care at the clinic AER Units? (transportation, work, family)	*11b. Client believes other costs or responsibilities (e.g., transportation, work, family) are barriers to care.*		
12a. How would you feel if an RHM/HBC/ EC came to visit you at home if you missed your appointment?	*12b. Client is comfortable with RHM/HBC/ EC home visit and feel their visit would benefit them.*		

11. What is the main barrier that might prevent you from making your appointment in two weeks at the clinic ART UNIT? **[Note: if the barrier is above, circle M, for the main barrier; only one barrier may be noted as main. If the barrier is not in the above table, write the barrier in the space provided below.]**

Other noted barriers to care at the clinic (Please tick)	**YES**	**NO**
• **Do you currently have any other medical conditions (e.g. ill health, disability)**	☐	☐
○ **Disability (deaf/ dumb/ blind etc)**	☐	☐
○ **Diabetes**	☐	☐
○ **TB**	☐	☐
○ **Mental illness**	☐	☐
• **Do you sometimes go to bed hungry?**	☐	☐
• **Drug use or abuse**	☐	☐
• **Does your use of drugs/alcohol negatively affect your every day function?**	☐	☐
• **Do you know how to read and write?**	☐	☐

[Note to the CLEC:]
Where barriers have been identified, allow them to guide the counseling session. If the CLEC is unable to adequately address barriers, counsel the client, or feels that the barriers are beyond their capacity, it is advised that they seek the support of the Regional PSI APS officer or the SU Clinical teams.

[Note: do not read the following sentence to the client; circle the appropriate response]

12. How confident are you that your client will make his/her appointment and receive care at the referred HIV clinic?
    a. Not at all confident. [The client should be contacted again within 2 weeks.]
    b. Somewhat confident.
    c. Very confident

APPENDIX C: SOKA UNCOBE MALE CIRCUMCISION CLINICS

Region	MC Facility Name	MC Clients Tested for HIV	MC Clients Tested HIV-positive	Clients Eligible for Study
Hhohho	Family Life Association Clinic (Mbabane)	2,240	217	✓
	Pigg's Peak Government Hospital	642	65	✓
	Mkhuzweni Health Center	338	15	✓
	Dvokolwako Health Center	213	11	✓
	Sappi Health Center	250	10	
	Ntfonjeni Clinic	69	6	
	Malandzela Nazarene Clinic	57	2	
Lubombo	Tabankulu Estates Clinic	374	75	✓
	Siteki Public Health Unit	678	55	✓
	RSSC Medical Services (Simunye/Lusoti)	315	33	✓
	RSSC Medical Services (Mhlume)	134	18	
	Siphofaneni Clinic	104	13	
	Ubombo Sugar Hospital	121	11	
	Mpolonjeni Clinic	57	6	
	Sithobela Rural Health Center	184	5	
	Ngomane Clinic	20	5	
Manzini	PSI Manzini (Litsemba Letfu)	1,653	247	✓
	Phocweni U.S.D.F Clinic	488	110	✓
	Mankayane Government Hospital	932	61	✓
	Family Life Association Clinic (Manzini)	1,148	56	✓
	Sigombeni Red Cross Clinic	118	7	
	Mangcongco Clinic	32	3	
	Bhekinkosi Nazarene Clinic	15	3	
	Bulunga Nazarene Clinic	8	2	
	Sibovu Clinic (Mahlangatsha)	165	1	
	Luyengo Clinic	8	0	
Shiselweni	Nhlangano Health Center	1,169	104	✓
	JCI (Mphelandzaba) Clinic	645	36	✓
	Matsanjeni Health Center	276	14	
	Mtsambama Inkhundla	268	14	
Multiple Regions	The Luke Commission	528	13	

APPENDIX D: DATA ABSTRACTION FORM

GENERAL INSTRUCTIONS

The Data Abstraction Form (DAF) is composed of 5 sections (A-E) that collect client-level information on demographic, behavioral, and clinical characteristics, and information on the processes and outcomes of the pilot linkage and retention SOP. Each section should be completed in sequence; sections A and B will be completed at the ICAP central office, and sections C-E will be completed at those HIV care and treatment sites to which clients selected for this evaluation were referred. Data abstractors must ensure that all sections of the DAF are completed in accordance with instructions, and that responses are clearly coded using ink (not pencil). Any errors should be clearly marked through with an initialized and dated single line. The below table provides information on the content, subjects, and locations of data abstraction for each section of the DAF. Variable-specific instructions are also provided in the right-most column in each section of the DAF.

Section	Data Sources	Data Abstraction Content, Subjects, and Locations
A	HTC Form Master list of facilities and codes	Section A of the DAF collects client identifying and facility-referral information and will be completed on all subjects (clients) selected for the program evaluation. Information collected in Section A will be used to identify/locate clients for data abstraction on subsequent sections of the DAF. The HTC form and master list of facilities and codes will be used to complete all items in this section. Section A will be completed at the ICAP central office after copies of all HTC forms of clients selected for the program evaluation are obtained.
B	EC Daily Register Linkage Register	Section B collects information on linkage services that might have been provided as part of voluntary medical male circumcision (MC) services. Section B will be completed only on MC clients selected for the program evaluation. The EC daily register will be used to complete items B3-B5 and the Linkage Register will be used to complete items B6-B15. Section B will also be completed at the ICAP central office after copies of all EC Daily and Linkage Registers are obtained.
C	Expected Patients Binder Arrived Patients Binder Appointment Register Call Register Pink HTC Referral Forms	Section C collects information on linkage and retention SOP processes and linkage services provided at HIV care and treatment sites. Five sources of data will be used in accordance with the variable-specific instructions noted in this section of the DAF. Section C will be completed on all clients selected for the program evaluation at those care and treatment sites to which they were referred.
D	Pre-ART Register Chronic Care File ART Register Laboratory Register	Section D collects information on whether clients selected for the program evaluation enrolled in HIV care and treatment. Up to four sources of information will be used to document enrollment in care in accordance with variable-specific instructions noted in this section of the DAF. Section D will be completed on all clients selected for the program evaluation at those care and treatment sites to which they were referred. Section D is the last section of the DAF that is completed for clients who do not enroll in care.
E	Chronic Care File Pre-ART Register ART Register Laboratory Register	Section E collects information on clinical services and outcomes of clients who enrolled in HIV care and treatment. If located, the chronic care file should be the only source of data that is used to complete this section. If the chronic care file is not located, the three registers may be used in accordance with variable-specific instructions noted on the DAF. Section E will be completed on only those clients who are determined in Section D to have enrolled in care and treatment.

A. Patient Identifiers			Data Sources: HTC Form Master Facility List
A1.	*Name of data abstractor*		Capital letters only.
A2.	*Date of data abstraction*	D D M M Y Y Y Y	
A3.	HTC form number (N) including initial letter (L)	L N N N N N N	The number is located in the upper right hand corner of form, include letter and all zeros.
A4.	Name and code of referring facility	**Name:** **Code:**	Under HTC Settings: record 'Health Facility (name). Use master facility list to obtain code.
A5.	HTC setting	**SHIMS** ☐ **Soka Uncobe** ☐	If form number is preceded with 'A', check SHIMS, if preceded with 'B', check Soka Uncobe.
A6.	Client first name		Capital letters only.
A7.	Client surname		Capital letters only.
A8.	Client code		Found below "Client first name."
A9.	Date of birth	D D M M Y Y Y Y	
A10.	Physical address		Capital letters only.
A11.	Region of residence	**Hhohho** ☐ **Lubombo** ☐ **Manzini** ☐ **Shiselweni** ☐ **Unknown** ☐	Based on physical address. Check 'Unknown' if address is missing or unreadable.
A12.	Residence in urban, peri-urban, or rural area	**Urban** ☐ **Peri-urban** ☐ **Rural** ☐ **Unknown** ☐	Based on physical address. Check 'Unknown' if address is missing or unreadable.
A13.	Date of HIV diagnosis	D D M M Y Y Y Y	Under HTC Settings: record 'Date of Visit.'
A14.	Name and code of receiving facility	**Name:** **Code:**	Under "Referrals:" record "Name of health facility." Use master facility list to obtain code.
A15.	Appointment date at receiving facility	D D M M Y Y Y Y	Under Referrals: confirm care and treatment services is marked, record 'Date the client is expected at referral point.'

B. **Linkage Services Provided at Referring Facility**										Data Sources: B3-B5 = EC Daily Register B6-B15 = Linkage Register
WAIT! If A5 = SHIMS, SKIP TO SECTION C										
B1.	*Name of data abstractor*									Capital letters only; leave blank if same as A1.
B2.	*Date of data abstraction*	D	D	M	M	Y	Y	Y	Y	Leave blank if same as A2.
B3.	Client met with EC counselor	**Yes** ☐ **No** ☐ **Unknown** ☐								Check 'No' if client is not found on EC Daily Register. Check 'Unknown' if EC daily register is not found.
B4.	EC counselor referred client to care and treatment clinic that is *different from* A14 (above)	**Yes** ☐ **No** ☐ **Unknown** ☐								Check 'Unknown' if EC daily register is not found. **IF NO or UNKNOWN → B6**
B5.	If yes, name and code of clinic	**Name:** **Code:**								Capital letters only. Use master facility list to obtain code.
B6.	EC counselor/APS officer attempted to contact the client by telephone	**Yes** ☐ **No** ☐ **Unknown** ☐								Check 'Unknown' if linkage register is not found. **IF NO or UNKNOWN → C1**
B7.	Number of telephone contact attempts	_____ **Unknown** ☐								Check 'Unknown' if linkage register is not found.
B8.	Date of first telephone contact attempt	D	D	M	M	Y	Y	Y	Y	**IF B7 = 1 → B10**
B9.	Date of last telephone contact attempt	D	D	M	M	Y	Y	Y	Y	
B10.	EC counselor/APS officer spoke with client by telephone	**Yes** ☐ **No** ☐ **Unknown** ☐								Check 'Unknown' if linkage register is not found. **IF NO or UNKNOWN → C1**
B11.	Number of times EC counselor/APS officer spoke with client by telephone	_____ **Unknown** ☐								Check 'Unknown' if linkage register is not found.
B12.	Date EC counselor/APS officer first spoke with client by telephone	D	D	M	M	Y	Y	Y	Y	**IF B11 = 1 → B14**
B13.	Date EC counselor/APS officer last spoke with client by telephone	D	D	M	M	Y	Y	Y	Y	
B14.	Client reported enrollment in HIV care and treatment	**Yes** ☐ **No** ☐ **Unknown** ☐								Check 'Unknown' if linkage register is not found.
B15.	If yes, name and code of clinic where client enrolled	**Name:** **Code:**								Capital letters only. Use master facility list to obtain code.

C. Linkage Processes at Receiving Facility										Data Sources: Expected Patient Binder, Arrived Patient Binder, Appointment Register, Call Register, Pink HTC Referral Forms
C1.	*Name of data abstractor*									Capital letters only; leave blank if same as A1/B1.
C2.	*Date of data abstraction*	D	D	M	M	Y	Y	Y	Y	Leave blank if same as A2/B2.
C3.	Name and code of receiving facility	**Name:** **Code:**								Capital letters only. Use master facility list to obtain code.
C4.	**Pink** copy of HTC Form is at the receiving facility	**Yes** ☐ **No** ☐								Look at: Expected Patients Binder, Arrived Patients Binder
C5.	**White** copy of HTC Form is at the receiving facility	**Yes** ☐ **No** ☐								Look at: Arrived Patients Binder; Expected Patients Binder (if not in Arrived)
C6.	Patient is recorded in Appointment Register	**Yes** ☐ **No** ☐								Look at: Appointment Register, check "No" if appointment register is not used.
C7.	Receiving facility staff attempted to call client by telephone **BEFORE** scheduled appointment	**Yes** ☐ **No** ☐								Look at: Call Register, Pink HTC Referral Form, Appointment Register **IF NO → C15**
C8.	Number of telephone contact attempts **BEFORE** appointment	_____								Look at: Call Register, Pink HTC Referral Form, Appointment Register
C9.	Date of first call attempt **BEFORE** appointment	D	D	M	M	Y	Y	Y	Y	**IF C8 = 1 → C11**
C10.	Date of last call attempt **BEFORE** appointment	D	D	M	M	Y	Y	Y	Y	
C11.	Receiving site staff spoke with client by telephone **BEFORE** appointment	**Yes** ☐ **No** ☐								Look at: Call Register, Pink HTC Referral Form, Appointment Register **IF NO → C15**
C12.	Number of times staff spoke with client by telephone **BEFORE** appointment	_____								
C13.	Date staff first spoke with client **BEFORE** scheduled appointment	D	D	M	M	Y	Y	Y	Y	**IF C12 = 1 → C15**
C14.	Date staff last spoke with client **BEFORE** scheduled appointment	D	D	M	M	Y	Y	Y	Y	

C15.	Receiving site staff attempted to call the client by telephone **AFTER** scheduled appointment	**Yes** ☐ **No** ☐								Look at: Call Register, Pink HTC Referral Form, Appointment Register **IF NO → D1**
C16.	Number of telephone contact attempts **AFTER** appointment	_____								
C17.	Date of first call attempt **AFTER** appointment	D	D	M	M	Y	Y	Y	Y	**IF C16 = 1 → C19**
C18.	Date of last call attempt **AFTER** appointment	D	D	M	M	Y	Y	Y	Y	
C19.	Receiving site staff spoke with client by telephone **AFTER** scheduled appointment	**Yes** ☐ **No** ☐								Look at: Call Register, Pink HTC Referral Form, Appointment Register **IF NO → D1**
C20.	Number of times site staff spoke with client by telephone **AFTER** appointment	_____								
C21.	Date site staff first spoke with client **AFTER** appointment	D	D	M	M	Y	Y	Y	Y	**IF C20 = 1 → D1**
C22.	Date site staff last spoke with client **AFTER** appointment	D	D	M	M	Y	Y	Y	Y	

D. Enrollment in HIV Care										Data Sources: Pre-ART Register Chronic Care File (CCF) ART Register Laboratory Register
D1.	*Name of data abstractor*									Capital letters only; leave blank if same as A1/B1/C1.
D2.	*Date of data abstraction*	D	D	M	M	Y	Y	Y	Y	Leave blank if same as A2/B2/C2.
D3.	Client recorded in pre-ART register	**Yes** ☐ **No** ☐								Look at Pre-ART Register. **IF NO → D6**
D4.	Date of registration in pre-ART register	D	D	M	M	Y	Y	Y	Y	
D5.	Pre-ART patient number									
D6.	Client has chronic care file (CCF)	**Yes** ☐ **No** ☐								Look for Chronic Care File (CCF). **IF NO → D9**
D7.	Date chronic care file was opened	D	D	M	M	Y	Y	Y	Y	Use 'Visit Date' on top right of Pre-ART Enrolment Visit form in CCF.
D8.	Patient's HIV care number									Use 'HIV Care No.' on top left of HIV Care File form in CCF.
WAIT! If D6 = YES, SKIP TO SECTION E										

D9.	Client recorded in ART register	**Yes** ☐ **No** ☐								Look at ART Register. **IF NO → D12**
D10.	Date of registration in ART register	D	D	M	M	Y	Y	Y	Y	
D11.	ART patient number									
D12.	Client recorded in Laboratory Register	**Yes** ☐ **No** ☐								Look at Laboratory Register. **IF NO → Instructions after D13**
D13.	Date of registration in Laboratory Register	D	D	M	M	Y	Y	Y	Y	
WAIT! If D3, D6, D9 AND D12 = NO, SKIP TO COMMENT BOX ON PAGE 10 AND END DATA ABSTRACTION!										

E. Clinical Outcomes and Follow-up Visits for Newly Diagnosed Patients										Data Sources: Chronic Care File (CCF) Pre-ART Register, ART Register, Laboratory Register
E1.	*Name of data abstractor*									Capital letters only; leave blank if same as A1/B1/C1/D1.
E2.	*Date of data abstraction*	D	D	M	M	Y	Y	Y	Y	Leave blank if same as A2/B2/C2/D2.
E3.	Patient had psychosocial assessment?	**Yes** ☐ **No** ☐								Look at psychosocial assessment form in CCF. **IF NO → E5**
E4.	Patient responses to select psychosocial assessments									Check one box only in accordance with responses to psychosocial assessment in CCF. Leave both boxes blank if specific response is missing on psychosocial assessment.

	Y	**N**
1. Patient disclosed status to family?		
2. Patient disclosed status to partner?		
3. Partner tested for HIV?		
10. Fears discrimination or violence?		
11. Ok for RHM to make home visits?		
12. Patient faces financial challenges		

E5.	Patient has documented WHO stage in chronic care file or HIV register	**Yes** ☐ **No** ☐								Look at: (1) CCF: 'WHO stage' on pre-ART enrollment visit form, or ART initiation or follow-up visits forms; (2) all other registers noted above as needed. **IF NO → E8**
E6.	Baseline WHO stage	**I** ☐ **II** ☐ **III** ☐ **IV** ☐								
E7.	Date of first (baseline) WHO staging	D	D	M	M	Y	Y	Y	Y	
E8.	Patient has CD4 cell count recorded in chronic care file or HIV register	**Yes** ☐ **No** ☐								Look at: (1) CCF: 'CD4+ results' on pre-ART enrollment or follow-up care forms, or ART initiation or follow-up visits forms; (2) all other registers noted above as needed. **IF NO → E12**

E9.	Baseline CD4 test result	_____								
E10.	Date of blood draw for baseline CD4 test	D	D	M	M	Y	Y	Y	Y	Look at "Date Taken" on pre-ART follow-up visit form, lab form, or pre-ART registry.
E11.	Date baseline CD4 test was performed	D	D	M	M	Y	Y	Y	Y	Look at relevant laboratory form in the CCF for the baseline CD4 test date.

E. Clinical Outcomes and Follow-up Visits for Newly Diagnosed Patients										Data Sources: Chronic Care File (CCF) Pre-ART Register, ART Register, Laboratory Register
E12.	Patient returned to this facility for follow-up care and treatment	**Yes** ☐ **No** ☐								Look at: (1) CCF and (2) all other registers noted above as needed. **IF NO → E25**
E13.	Visit 2 after D4/D7	D	D	M	M	Y	Y	Y	Y	Check boxes as noted on the follow-up visit form; leave both boxes blank if missing.
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E14.	Visit 3 after D4/D7	D	D	M	M	Y	Y	Y	Y	Note: N = negative; P = positive.
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E15.	Visit 4 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E16.	Visit 5 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E17.	Visit 6 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E18.	Visit 7 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E19.	Visit 8 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E20.	Visit 9 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E21.	Visit 10 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E22.	Visit 11 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E23.	Visit 12 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								
E24.	Visit 13 after D4/D7	D	D	M	M	Y	Y	Y	Y	
		CTX: Yes ☐ **No** ☐ **TB screen: N** ☐ **P** ☐								

E. Clinical Outcomes and Follow-up Visits for Newly Diagnosed Patients										Data Sources: Chronic Care File (CCF) Pre-ART Register, ART Register, Laboratory Register
E25.	Patient started ART	**Yes** ☐ **No** ☐								Look at: (1) CCF: ART initiation or follow-up visits forms; (2) pre-ART or ART registers as needed. **IF NO → E32**
E26.	Date patient started ART	D	D	M	M	Y	Y	Y	Y	
E27.	Patient has CD4 test result at start of ART different from baseline CD4 test result (E9)	**Yes** ☐ **No** ☐								Look at 'CD4+ results' on pre-ART enrollment or follow-up care forms, or on ART initiation or follow-up visits forms. **IF NO → E31**
E28.	CD4 test result at start of ART	_____ **Unknown** ☐								Look at pre-ART follow-up care or ART initiation visit forms, or pre-ART register.
E29.	Date of blood draw for CD4 test at start of ART	D	D	M	M	Y	Y	Y	Y	Look at "Date Taken" on pre-ART follow-up care form, lab form, or pre-ART register.
E30.	Date CD4 test performed at start of ART	D	D	M	M	Y	Y	Y	Y	Look at relevant laboratory form in the CCF for the CD4 test date.
E31.	WHO stage at start of ART	**I** ☐ **II** ☐ **III** ☐ **IV** ☐ **Unknown** ☐								Look at ART initiation visit form in CCF or pre-ART or ART registers as needed.
E32.	Patient has CD4 test result in chronic care file or HIV register more recent than at baseline (E10) or at ART initiation (E29)	**Yes** ☐ **No** ☐								Look at 'CD4+ results' on pre-ART enrollment or follow-up care forms, or ART initiation or follow-up visits forms. **IF NO → E36**
E33.	Most recent CD4 test result	_____								
E34.	Date of blood draw for most recent CD4 test	D	D	M	M	Y	Y	Y	Y	Look at "Date Taken" on pre-ART follow-up visit form, lab form, or pre-ART register.
E35.	Date most recent CD4 test was performed	D	D	M	M	Y	Y	Y	Y	Look at relevant laboratory form in the CCF for the CD4 test date.

E. Clinical Outcomes and Follow-up Visits for Newly Diagnosed Patients										Data Sources: Chronic Care File (CCF) Pre-ART Register
E36.	Patient transferred out of care	**Yes** ☐ **No** ☐								Look under "Outcome" on HIV care file form in CCF; pre-ART register (if needed). **IF NO → E38**
E37.	Date patient transferred out	D	D	M	M	Y	Y	Y	Y	
E38.	Patient died	**Yes** ☐ **No** ☐								Look under "Outcome" on HIV care file form in CCF; pre-ART register (if needed). **IF NO → E40**
E39.	Date patient died	D	D	M	M	Y	Y	Y	Y	
E40.	Patient lost to follow-up	**Yes** ☐ **No** ☐								Look under "Outcome" on HIV care file form in CCF; pre-ART register (if needed). **IF NO → E42**
E41.	Date patient lost to follow-up	D	D	M	M	Y	Y	Y	Y	
E42.	Patient stopped care	**Yes** ☐ **No** ☐								Look under "Outcome" on HIV care file form in CCF; pre-ART register (if needed). **IF NO → E44**
E43.	Date patient stopped care	D	D	M	M	Y	Y	Y	Y	
E44.	Indication in the chronic care file that patient was diagnosed with HIV before A13	**Yes** ☐ **No** ☐								Look at HIV care file form in CCF: 'Date Tested Positive,' 'Date started ART,' and 'Transfer-in.' **If Yes → Additional Comments and Explain**

APPENDIX E: CLINIC CHARACTERISTIC FORM

GENERAL INSTRUCTIONS

The Clinic Characteristics Form (CCF) is composed of 2 sections (A, B) that collect information on system- and structural-level characteristics of voluntary medical male circumcision (MC) and HIV care and treatment sites that might be associated with early enrollment and retention in care. Two separate sets of the form will be printed: one set will contain only section A (MC), the other set will contain only section B (HIV care and treatment). For the first set, project staff will use the below data sources to complete one form on each of the MC sites included in the program evaluation (n=24). This set of forms may be completed at the ICAP central office or at MC sites by project investigators and clinic staff knowledgeable of site-specific linkage trainings and services provided during the pilot project. For the second set, project staff will use the below data sources to complete one form on each HIV care and treatment site to which randomly selected clients were referred (maximum n=71). This set of forms may be completed, in part, at the ICAP central office by project investigators knowledgeable of site-specific linkage trainings and services provided during the pilot project. To complete Section B, investigators will visit care and treatment sites to obtain required staffing data from the chief medical officer, administrator, or designee. Finally, geocodes of MC and care and treatment sites will be obtained for those sites for which geocodes do not already exist.

DATA SOURCES

The following data sources will be needed to complete the CCF.

- Master list of MC site names, codes, and classifications (e.g., mobile or fixed) (Section A only)
- Master list of HIV care and treatment site names, codes, and classifications (hospital, health center, PHU) (Section B only)
- Linkage training calendars and participation rosters or summaries
- HIV care and treatment chief medical officer, administrator, or designee
- Clinic visit register and Quarter 2 2012 (April-June) indicator report on new and total pre-ART/ART/LTF patients (Section B only)
- GPS unit to obtain site-specific geo-codes if not already available (see corresponding instruction below)

COMPLETION PROCEDURES

- Complete all items within each section of the CCF in accordance with instructions.
- Use ink (not pencil) to complete the CCF.
- Check boxes such that the check is marked through the entire box; ensure that the mark is restricted to only one box.
- Clearly record site names using capital letters only.
- Clearly record numeric dates and codes in designated locations (lines or boxes).
- Re-check all recorded site codes and names against the master list to avoid transcription errors.
- Re-check recorded geo-codes to avoid transcription errors.
- Strike through any errors with a single line; record and date your initials next to the line.
- Site-specific geocodes that already exist may be imported electronically into the project database rather than transcribed onto the CCF.

A. Voluntary Medical Male Circumcision Clinic Characteristics										Data Sources: Master Facility List Chief Medical Officer, Administrator, or designee GPS Unit
A1.	*Name of data abstractor*									Capital letters only.
A2.	*Date of data abstraction*	D	D	M	M	Y	Y	Y	Y	
A3.	Name and code of clinic	**Name:**				**Code:**				Capital letters only. Use master facility list to obtain code.
A4.	Clinic in urban, peri-urban, or rural area	**Urban** ☐	**Peri-urban** ☐	**Rural** ☐						
A5.	Region of clinic	**Hhohho** ☐	**Lubombo** ☐	**Manzini** ☐	**Shiselweni** ☐					
A6.	Geocode of clinic location									Double check code with GPS unit (if applicable).
A7.	Type of clinic	**Gov.** ☐	**Faith-based** ☐	**Military** ☐	**Private** ☐					Check one type that best applies.
A8.	Clinic classification	**Fixed** ☐	**Mobile-tent** ☐							
A9.	Expert client daily register used at clinic	**Yes** ☐	**No** ☐							Examine register to confirm use.
A10.	Linkages register used at clinic	**Yes** ☐	**No** ☐							Examine register to confirm use.
A11.	Co-located with HIV care and treatment clinic	**Yes** ☐	**No** ☐							**IF NO → B1**
A12.	Name and code of co-located HIV care and treatment clinic	**Name:**				**Code:**				Capital letters only. Use master facility list to obtain code.

B. HIV Care and Treatment Clinic Characteristics										Data Sources: Master Facility List, Clinic Visit Register Chief Medical Officer, Administrator or designee Q2-2012 Quarterly Indicator Report, GPS Unit
B1.	*Name of data abstractor*									Capital letters only.
B2.	*Date of data abstraction*	D	D	M	M	Y	Y	Y	Y	
B3.	Name and code of clinic	**Name:**				**Code:**				Capital letters only. Use master facility list to obtain code.
B4.	Clinic in urban, peri-urban, or rural area	**Urban** ☐	**Peri-urban** ☐	**Rural** ☐						
B5.	Clinic located on a tarred road	**Yes** ☐	**No** ☐							
B6.	Region of clinic	**Hhohho** ☐	**Lubombo** ☐	**Manzini** ☐	**Shiselweni** ☐					
B7.	Geocode of clinic location									Double check code with GPS unit (if applicable).
B8.	Type of clinic	**Gov.** ☐	**Faith-based** ☐	**Military** ☐	**Private** ☐					Check one type that best applies.
B9.	Clinic classification	**Hospital** ☐	**Health Center** ☐	**Clinic** ☐	**PHU** ☐					
B10.	Appointment register used at clinic	**Yes** ☐	**No** ☐							Examine register to confirm use.
B11.	Call register used at clinic	**Yes** ☐	**No** ☐							Examine register to confirm use.
B12.	Pre-ART register used at clinic	**Yes** ☐	**No** ☐							Examine register to confirm use.
B13.	ART register used at clinic	**Yes** ☐	**No** ☐							Examine register to confirm use.
B14.	Number of HIV clinic patient visits in July 2012	_____								Use HIV clinic visit register to count the total number of clinic visits for July 2012.
B15.	Number of new Q2-2012 (April-June) pre-ART, ART, and LTF patients, and total (cumulative) active and LTF patients.	**Patient Type**	**Q2-2012**	**Cumulative**						Use Q2-2012 Quarterly Indicator Report. Q2 refers to new pre-ART, ART, and LTF patients in Q2 2012. Cumulative refers to the total number of ACTIVE pre-ART and ART patients, and total LTF.
		Pre-ART								
		ART								
		Lost to follow-up (LTF)								

B. HIV Care and Treatment Clinic Characteristics			Data Sources: Master Facility List, Clinic Visit Register Chief Medical Officer, Administrator, or designee Q2-2012 Quarterly Indicator Report, GPS Unit
DATA SOURCE FOR FOLLOWING ITEMS: CMO, ADMINISTRATOR, OR DESIGNEE			
B16.	Days per week that clinic currently provides HIV-specific services.	**Mon** ☐ **Tues** ☐ **Wed** ☐ **Thurs** ☐ **Fri** ☐ **Saturday** ☐ **Sunday** ☐	Check only those days in which the clinic provides any HIV-specific services (e.g., ART initiation or refill).
B17.	Change in the number of days per week the clinic is open since March 2011	**Increase** ☐ **Decrease** ☐ **No change** ☐ **Unknown** ☐	
B18.	Average number of providers AVAILABLE during days that clinic is currently open for NEW HIV patients.	**Cadre** / **# Available** Doctor Nurse Counselor Lay Counselor EC Counselor	This item measures current average daily staffing when the clinic sees new patients. Ask the chief medical officer, administrator, or designee to exclude days that the clinic sees only a subset of patients such as on ARV refill days.
B19.	ART initiated on site	**Yes** ☐ **No** ☐	
B20.	ART refills provided on site	**Yes** ☐ **No** ☐	
B21.	Cadre who initiate ART	**Doctor** ☐ **Nurse** ☐ **N/A** ☐	Check only those clinicians who are permitted to initiate patients on ART.
B22.	Phone available for defaulter tracing calls	**Yes** ☐ **No** ☐ **Unknown** ☐	**IF NO → B25**
B23.	Average monthly airtime/credit available to conduct defaulter tracing calls	**_____ Credit (Emalengeni) Unlimited** ☐ **Unk.** ☐	Check unlimited if an upper limit on airtime usage for defaulter tracing calls does not exist.
B24.	Staff who conduct defaulter tracing calls	**Doctor** ☐ **Nurse** ☐ **Counselor** ☐ **Lay/EC Counselor** ☐	Check all that apply.
B25.	Clinic staff trained on SOP in 2011 and 2012	**Yes, 2011** ☐ **Yes, 2012** ☐ **Neither yr.** ☐ **Unknown** ☐	Check both if applicable. **IF NEITHER YR → END**
B26.	Number of SOP trainings received in 2011 and 2012	**____ 2011** **____ 2012** **Unk. 2011** ☐ **Unk. 2012** ☐	

APPENDIX F: DATA SOURCE AND QUALITY FORM

I. Site Abstraction Process Indicators

Site: _____ Submission Date: _____

1. Abstraction Visit Dates

Date	Supervisor	Date	Supervisor

2. Registers Available [Complete table for ART register, both primary registers, and alternate registers if primary registers are not available for all years.]

Registers Available	2011	2012	2013
ART Register	Y N	Y N	Y N
Appointment Register (Primary)	Y N	Y N	Y N
Pre-ART Register (Primary)	Y N	Y N	Y N
Laboratory Register (Alternate)	Y N	Y N	Y N
Pharmaceutical Register (Alternate)	Y N	Y N	Y N
Clinic Attendance Register (Alternate)	Y N	Y N	Y N
	Y N	Y N	Y N
	Y N	Y N	Y N

3. Missing Dates

Registers Available	Missing Dates 2011	Missing Dates 2012	Missing Dates 2013
ART Register			
Appointment Register			
Pre-ART Register			

4. Registers Reviewed

Registers Reviewed	2011	2012	2013
ART Register	Y N	Y N	Y N
Appointment Register (Primary)	Y N	Y N	Y N
Pre-ART Register (Primary)	Y N	Y N	Y N
Laboratory Register (Alternate)	Y N	Y N	Y N
Pharmaceutical Register (Alternate)	Y N	Y N	Y N
	Y N	Y N	Y N
	Y N	Y N	Y N

5. Other Data Sources

Other Data Sources	Available	Used
Electronic Medical Record System	Y N	Y N
HIV clinic Expert Clients	Y N	Y N
Call Register	Y N	Y N
Pink HTC forms	Binder Other None	Y N
White HTC forms	Binder Other None	Y N
Chronic Care File Chart Review (Chart Room)	Y N	Y N

II. Data Source & Abstraction Quality

EMR Sites

Code	Data Sources Reviewed for Complete-queried EMR Sites
A	**Duplicate, Primary Register Review: Appointment and Pre-ART registers available for all years and have complete coverage of dates for each year 2011, 2012, and 2013.**
A1E	All years reviewed with both primary registers; ART registers reviewed for all years.
A2E	All years reviewed with both primary registers; ART registers reviewed for some time interval.
A3E	All years reviewed with both primary registers; ART register not available.
B	**Duplicate, Mixed Register Review: Primary registers not available for all years or have missing dates of coverage. Alternate registers used to cover date gaps with two eligible data sources.**
B1E	All years reviewed with two eligible registers; ART registers reviewed for all years.
B2E	All years reviewed with two eligible registers; ART registers reviewed for some time interval.
B3E	All years reviewed with two eligible registers; ART register not available.
C	**Single Register Review: Primary and alternate registers are not available for all years or have missing dates of coverage. A single eligible register is used to cover one or more date gaps.**
C1E	<1 year reviewed with single eligible register; remainder with two; ART registers reviewed for all years.
C2E	≥1 year reviewed with single eligible register; any remainder with two; ART registers reviewed for all years.
C3E	Any interval reviewed with single eligible register; any remainder with two; ART registers for none or some int.
D	**Incomplete Register Review: Primary or alternate registers are not available for all years or have missing dates of coverage. One or more date gaps are not reviewed with any eligible register.**
D1E	<1 year without primary and alternate register review; ART registers reviewed for all years.
D2E	≥1 years without primary and alternate register review; ART registers reviewed for all years.
D3E	Any interval without primary and alternate register review; ART registers reviewed for none or some interval.

Non-EMR Sites

Code	Data Sources Reviewed for Incomplete-queried or Non-EMR Sites
A	**Duplicate, Primary Register Review: Appointment and Pre-ART registers available for all years and have complete coverage of dates for each year 2011, 2012, and 2013.**
A1	All years reviewed with both primary registers; ART registers reviewed for all years.
A2	All years reviewed with both primary registers; ART registers reviewed for some time interval.
A3	All years reviewed with both primary registers; ART register not available.
B	**Duplicate, Mixed Register Review: Primary registers not available for all years or have missing dates of coverage. Alternate registers used to cover date gaps with two eligible data sources.**
B1	All years reviewed with two eligible registers; ART registers reviewed for all years.
B2	All years reviewed with two eligible registers; ART registers reviewed for some time interval.
B3	All years reviewed with two eligible registers; ART register not available.
C	**Single Register Review: Primary and alternate registers are not available for all years or have missing dates of coverage. A single eligible register is used to cover one or more date gaps.**
C1	<1 year reviewed with single eligible register; remainder with two; ART registers reviewed for all years.
C2	≥1 year reviewed with single eligible register; any remainder with two; ART registers reviewed for all years.
C3	Any interval reviewed with single eligible register; any remainder with two; ART registers for none or some int.
D	**Incomplete Register Review: Primary or alternate registers are not available for all years or have missing dates of coverage. One or more date gaps are not reviewed with any eligible register.**
D1	<1 year without primary and alternate register review; ART registers reviewed for all years.
D2	≥1 years without primary and alternate register review; ART registers reviewed for all years.
D3	Any interval without primary and alternate register review; ART registers reviewed for none or some interval.

III. DAF Process Outcomes

1. Data Source & Abstraction Code: _____

2. SHIMS DAFs Assigned: _____

3. Soka DAFs Assigned: _____

4. DAFs Completed: _____

5. DAFs reviewed for legibility, completeness, and consistency: _____

6. DAFs returned to staff for clarification or corrections: _____

IV. Enrollment Outcomes

1. Number of clients (DAFs) who enrolled in care at this clinic: _____

2. Number of enrolled clients HIV diagnosed before SHIMS/SOKA indicated in register or CCF: _____

3. Revised number of enrolled clients newly HIV diagnosed during SHIMS/SOKA: _____

4. Revised newly diagnosed enrolled in care with Chronic Care File: _____

5. Data sources used to identify clients who enrolled in care: [Complete table if at least one client enrolled in care.]

Data Sources	**Data Source Code**	**Enrolled Clients**
Electronic Medical Record System	EMR	
HIV Clinic Expert Clients	ECS	
Other Clinic Staff [Identify Staff]:	OCS	
Appointment Register	APT	
Pre-ART Register	PRE	
Laboratory Register	LAB	
Pharmaceutical Register	PHA	
ART Register	ART	
Chronic Care File Chart Review	CCF	
Other [Identify]:	OTH	
Other [Identify]:	OTH	
Total clients enrolled in care [sum must equal #1 above.]		

APPENDIX G: DEFAULTER TRACING FORM

GENERAL INSTRUCTIONS

The Defaulter Tracing Form (DTF) is composed of 6 sections (A-F) that collect information on persons responsible for contacting clients who did not enroll in HIV care and treatment (defaulters); key processes and outcomes of tracing defaulters by telephone; whether contacted defaulters enrolled at other care and treatment sites and reasons for doing so (if applicable); and for those who report not enrolling in care, reasons for not enrolling and intentions to enroll in care. One DTF will be completed on each client determined not to have enrolled at the HIV care and treatment site to which he/she was referred (determination based on Data Abstraction Form). Trained linkage-to-care or care and treatment staff will call defaulters and complete the DTF after obtaining client consent to conduct the brief study. Client verbal consent will be obtained using the telephone script provided below. Only defaulters who gave permission to be contacted, as recorded on the HTC or data abstraction form, will be called. Required data sources, and DTF completion, storage, notification, and administration procedures are provided below.

DATA SOURCES

The following data sources will be needed to complete the DTF:

- Completed Data Abstraction Forms that identify which clients might be eligible for defaulter tracing.
- Copies of HTC forms on identified defaulters who gave permission to be contacted by phone (SHIMS only).
- Master list of HIV care and treatment facilities.

COMPLETION PROCEDURES

- Use ink (not pencil) to complete the DTF.
- Check boxes such that the check is marked through the entire box; ensure that the mark is restricted to only one box.
- Clearly record names using capital letters only.
- Clearly record numeric dates in designated locations (lines or boxes).
- Re-check all recorded names against the HTC or data abstraction form and master list of care and treatment facilities to avoid transcription errors.
- Re-check dates and times to avoid simple errors.
- Strike through any errors with a single line; record and date your initials next to the line.

FORM MANAGEMENT PROCEDURES

- Maintain files of completed forms in a secure office with limited controlled access until submission to the data manager for data entry.
- Completed forms transported to the ICAP central office will be transported in a locked portable file. Forms will be hand delivered only to the ICAP data manager or designee.

Section	DTF ADMINISTRATION PROCEDURES
A	Section A collects defaulter tracing management information. • Complete A1 – A4 **before** attempting to contact identified defaulters (clients). • Complete A5 only after the client has been contacted or after all contact attempts are exhausted AND all items on the DTF have been completed.
B	Section B is a script to read to the client after contact is made. It introduces the interviewer, explains the study and why they are being contacted, and obtains consent to conduct the interview. The script **must be read word-for-word**. When finished, mark the box to indicate if the client agrees to participate or not, then sign and date the consent form.
C	Section C collects information on whether defaulters were contacted by SMS, telephone, or in person in accordance with the National SOP. • Assess whether the client was ever contacted by the clinic through SMS, phone call, or visit.
D	Section D collects information on whether defaulters enrolled in care and reasons for enrolling at a different facility (if applicable) • Assess whether the client enrolled in care at any HIV care and treatment facility, and record the name of that facility (if applicable). Use the list of facilities to avoid misspellings. • For those clients who enrolled in care but not at the facility to which they were referred, assess the reasons they enrolled at a different facility. DO NOT READ THE LIST OF POTENTIAL REASONS. Only ask why they chose not to enroll at the facility to which they were referred and circle one or more numbers that correspond best with their response. Ask once if there are other reasons for not enrolling at the facility to which they were referred, and circle again one or more numbers that correspond best with their response. • For clients who reported enrolling in HIV care and treatment, record any additional information on barriers or facilitators in contacting the client or on their enrollment into HIV care; complete and store the DTF, and notify the project coordinator in accordance with the above procedures.
E	Section E collects information on why defaulters have not enrolled in HIV care at any facility and intentions to enroll in care. • For those clients who have not yet enrolled in HIV care, ask why they haven't enrolled and circle one or more numbers that correspond best with their response. DO NOT READ THE LIST OF POTENTIAL REASONS. Ask once if there are other reasons for not enrolling and circle again one or more numbers that correspond best with their response. • Assess whether the client intends to enroll in care in the next 12 months. Record the name of the facility (if applicable). • Underscore the value of enrolling in care and completing their enrollment, and identify and address real or perceived barriers to care. • Record any additional information on barriers or facilitators in contacting the client or on their enrollment into HIV care; complete and store the DTF, and notify the project coordinator in accordance with the above procedures.
F	Section F collects information on the dates and times that calls were made to reach the client or client next of kin. • Vary the day and time of calling clients: attempt at least one early morning and one late-afternoon call (if needed). • After three unsuccessful attempts to call the client have been made, call the next of kin (if number is provided on the HTC form or DAF). • In calling the next of kin, protect the client's confidentiality in accordance with standard defaulter-tracing procedures: never disclose the clients' test results. Leave a message for the client with the next of kin in accordance with standard procedures. • For clients who were not contacted by phone, record any additional information on barriers to contacting the client or information on their potential disposition provided by the next of kin; complete and store the DTF, and notify the project coordinator in accordance with the above procedures.

A. Defaulter Tracing Management										Data Source: HTC form or DAF Master Facility List
A1.	Person responsible for calling client and completing this form	**Name:**								Capital letters only.
A2.	HTC form number (N) including initial letter (L)	L	N	N	N	N	N	N		The number is located in the upper right hand corner of HTC form or DAF A3, include letter and all zeros.
A3.	Name of first referral HIV clinic	**Name:**								The referral clinic is at the bottom of the HTC form. In rare cases, two clinics might be noted.
A4.	Name of second referral HIV clinic	**Name:**								Leave blank if only one clinic is noted. Second referral clinic will be written on the HTC form or DAF.
A5.	Date form completed	D	D	M	M	Y	Y	Y	Y	

B. Defaulter Tracing Consent Script

[READ THIS CONSENT SCRIPT IN ACCORDANCE WITH INSTRUCTIONS. WHEN FINISHED, INDICATE IF THE CLIENT AGREES TO PARTICIPATE OR NOT, THEN SIGN AND DATE THE FORM.]

Introduction

Hello, my name is_____, and I am calling on behalf of [ORGANIZATION] and the Ministry of Health. Am I speaking with _____(*first and last name*)?

When you participated in [Swaziland HIV Incidence Measurement Survey (SHIMS)/SOKA UNCOBE], you gave permission to be contacted by telephone for follow-up services. If it is ok, I would like to explain why I'm calling you.

[IF NEEDED, CONFIRM PARTICIPATION IN SHIMS OR SOKA UNCOBE. PROCEED ONLY IF FULL NAME AND PARTICIPATON IN SHIMS/SOKA UNCOBE MATCH THE HTC OR DATA ABSTRACTION FORM. IF IDENTITY IS NOT CONFIRMED, APOLOGIZE FOR THE MISTAKE, THANK THE PERSON FOR HIS/HER TIME, AND END THE CALL.

[IF CLIENT SAYS IT IS OK, PROCEED; OTHERWISE, THANK THE CLIENT FOR HIS/HER TIME AND END THE CALL.]

Purpose

I'm calling you because the Ministry of Health, supported by Columbia University ICAP, Population Services International, and the Centers for Disease Control and Prevention, is conducting a research study to learn about medical services clients may have received after testing for HIV in _____[SHIIMS/SOKA UNCOBE].

Privacy

Before we proceed, are you in an area that is private and that you can speak freely and comfortably without being overheard?

[DO NOT PROCEED IF CLIENT CANNOT SPEAK PRIVATELY; IF NEEDED, MAKE AN APPOINTMENT TO CALL BACK WHEN CLIENT CAN SPEAK PRIVATELY.]

Procedures

Your participation in this research study is important for helping the Ministry of Health improve HIV services. With your consent, I will ask you a few questions about medical services you may have received after testing for HIV in [SHIMS/SOKA UNCOBE]. The questions will take about 5 minutes of your time. Before I ask you these questions, I must read information about the study and your rights, and then ask for your consent to participate. May I begin?

Confidentiality

All information you give during this study will be kept confidential and your name will be kept separate from your answers. Researchers from the Ministry of Health, Columbia University Medical Center, Population Services International, the Office of Human Research Protection, and the Centers for Disease Control and Prevention may examine study records to ensure we are protecting your rights as a study participant. Findings from this research study will be presented at meetings and published in national reports and scientific journals.

Voluntariness

You do not have to participate in this study, and you may stop at any time. If you decide to participate, you don't have to answer any questions you don't want to answer. If you decide not to participate, or if you decide to stop, you will not suffer any harm and you will not be denied any services.

Potential Harm

If you participate, you may feel uncomfortable about answering some questions that I will ask you. There is some risk that persons outside this study may learn information that you share. However, all members of the study are given special training on ways to keep information private. All interviewers, including myself, also take an oath to keep all information collected in this study private.

Potential Benefits

By participating in this study, you may help improve HIV services in Swaziland, which could benefit you or someone you know in the future.

Contact Information

Should you have any general questions about this study, you may contact Dr. Charles Azih from the Ministry of Health at +268 7607 8171. You may also contact the Swaziland Scientific and Ethics Committee Secretariat at 24047712 or 24045469 if you have any questions about your rights as a research participant, questions regarding research-related harm, or if you feel you have been harmed as a result of your participation. You may also contact Columbia University Medical Center in New York at 001-212 305-5883.

Do you have any questions or concerns about participating in this study?

[ANSWER ALL QUESTIONS OR CONCERNS BEFORE PROCEEDING]

Would you like to participate in this Ministry of Health study?

☐ **YES**, the client agrees to participate.

☐ **NO**, the client declines to participate.

Name of Interviewer: _____

Date of Consent: [_D_|_D_]-[_M_|_M_]-[_Y_|_Y_|_Y_|_Y_]

[IF THE CLIENT CONSENTS, THANK THE CLIENT FOR HIS PARTICIPATION AND BEGIN THE STUDY AT C1. IF THE CLIENT DECLINES, THANK THE CLIENT FOR HIS/HER TIME AND END THE CALL.]

C. Follow-up Services by Referral Clinic			
C1.	When you tested for HIV in [SHIMS/SOKA UNCOBE], do you remember if you were referred for HIV care?	**Yes** ☐ **No** ☐	**IF NO → C3**
C2.	To which clinic were you referred for HIV care?	**Name:**	This clinic may be different from (A3).
C3.	Did you ever receive an SMS text reminder to enroll in HIV care at _____[A3]?	**Yes** ☐ **No** ☐ **Unknown** ☐	
C4.	Did you ever receive a phone call from a representative from [A3] about enrolling in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐	**IF NO OR UNKNOWN → C6**
C5.	Did you ever speak by telephone with a representative from [A3] about enrolling in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐	
C6.	Did a representative from [A3] ever visit your home to speak with you?	**Yes** ☐ **No** ☐ **Unknown** ☐	**IF NO OR UNKNOWN → INSTRUCTIONS AFTER C7**
C7.	Did you ever speak at home with a representative from [A3] about enrolling in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐	
REFER TO A4: IF A SECOND REFERAL HIV CLINIC IS NOTED, ADMINISTER C8-12; OTHERWISE SKIP TO D1			

C. Follow-up Services by Referral Clinic			
C8.	Did you ever receive an SMS text reminder to enroll in HIV care at _____[A4]?	**Yes** ☐ **No** ☐ **Unknown** ☐	
C9.	Did you ever receive a phone call from a representative from [A4] about enrolling in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐	**IF NO OR UNKNOWN → C11**
C10.	Did you ever speak by telephone with a representative from [A4] about enrolling in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐	
C11.	Did a representative from [A4] ever visit your home to speak with you?	**Yes** ☐ **No** ☐ **Unknown** ☐	**IF NO OR UNKNOWN → D1**
C12.	Did you ever speak at home with a representative from [A4] about enrolling in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐	**CONTINUE TO NEXT SECTION**

D. Enrollment in Care									
D1.	Did you ever enroll in HIV care and treatment?	**Yes** ☐ **No** ☐							**IF NO → E1**
D2.	Where did you enroll for HIV care and treatment?	**Name:**							This clinic may be different than A3/A4.
D3.	What month and year did you enroll for HIV care at _____[D2]?		M	M	Y	Y	Y	Y	Help client remember month of enrollment; leave blank if unknown.
D4.	At which clinic did you last receive HIV care?	**Name:**							This clinic may be different than A3/A4 and D2.
D5.	What month and year did you last receive HIV care at _____[D4]?		M	M	Y	Y	Y	Y	Help client remember month of enrollment; leave blank if unknown.
D6.	**[DO NOT ASK]** Is D2 different from [A3/A4]?	**Yes** ☐ **No** ☐							**IF NO → INSTRUCTIONS AFTER D7**
D7.	Why did you decide to enroll in HIV care at [D2] and not at _____[A3/A4]? [ASK ONCE MORE ONLY] Are there any other reasons you decided to enroll in HIV care at [D2] and not at _____[A3/A4]?	COSTS LESS FOR HIV CARE AT THIS CLINIC	01						DO NOT READ RESPONSE OPTIONS TO CLIENT. Circle all responses that apply.
		COSTS LESS FOR TRANSPORT AT THIS CLINIC	02						
		CLIENT LIVES CLOSER TO THIS CLINIC	03						
		CLIENT LIVES FURTHER AWAY FROM THIS CLINIC	04						
		CLIENT DOES NOT KNOW PEOPLE AT THIS CLINIC	05						
		CLIENT KNOWS PEOPLE AT THIS CLINIC	06						
		FAMILY/FRIENDS WANT CLIENT TO ATTEND THIS CLINIC	07						
		CLIENT HAS GREATER TRUST IN PROVIDERS AT THIS CLINIC	08						
		HEALTH CARE STAFF ARE MORE RESPECTFUL AT THIS CLINIC	09						
		PATIENTS RECEIVE BETTER CARE AT THIS CLINIC	10						
		CLIENT HAS SHORTER WAIT TO SEE A PROVIDER AT THIS CLINIC	11						
		OTHER:	12						
		DOESN'T KNOW	99						

CONGRATULATE AND THANK CLIENT FOR ENROLLING IN CARE AND SPEAKING WITH YOU. END CALL, COMPLETE THE TELEPHONE LOG (SECTION F), AND WRITE ANY ADDITIONAL COMMENTS ON PAGE 11.

E. **Reasons & Intentions**				
E1.	Why haven't you gone to a clinic to enroll in and receive HIV care? [ASK ONCE MORE ONLY] Are there any other reasons you haven't gone to a clinic to enroll in and receive HIV care?	NO TIME, TOO BUSY	01	DO NOT READ RESPONSE OPTIONS TO CLIENT. Circle all responses that apply.
		CLIENT DOES NOT KNOW WHERE CLINIC IS	02	
		COSTS TOO MUCH FOR HIV CARE	03	
		COSTS TOO MUCH FOR TRANSPORT	04	
		CLIENT LIVES TOO FAR AWAY	05	
		CLIENT IS FEELING WELL, HAS NO NEED TO GO TO HIV CLINIC	06	
		CLIENT IS BEING TREATED BY TRADITIONAL HEALER	07	
		FAMILY/FRIENDS DO NOT WANT CLIENT TO GO TO HIV CLINIC	08	
		CLIENT DOES NOT BELIEVE HIV TREATMENT IS EFFECTIVE	09	
		CLIENT BELIEVES HIV TREATMENT HAS SEVERE SIDE EFFECTS	10	
		CLIENT DOES NOT TRUST THE HIV CARE PROVIDERS	11	
		HEALTH CARE STAFF AT HIV CLINIC ARE DISRESPECTFUL	12	
		PATIENTS RECEIVE POOR QUALITY OF CARE AT HIV CLINIC	13	
		CLIENT HAS TO WAIT TOO LONG TO SEE A PROVIDER	14	
		CLIENT DOES NOT WANT PEOPLE TO KNOW HE/SHE HAS HIV	15	
		OTHER:	16	
		DOESN'T KNOW	99	
E2.	Would you like to enroll in HIV care?	**Yes** ☐ **No** ☐ **Unknown** ☐		**IF NO OR UNKNOWN → INSTRUCTIONS AFTER E5**
E3.	Where would you like to enroll for HIV care?	**Name:**		Capital letters only. Use master facility list.
E4.	Can I make an appointment for you at [E3]? To do this, I will send your referral form to [E3] with a revised appointment date.	**Yes** ☐ **No** ☐		**IF NO OR UNKNOWN → INSTRUCTIONS AFTER E5**
E5.	Appointment date	D D M M Y Y Y Y		Date should not be more than 2 weeks from date of call with client.

ADDRESS REASONS FOR NOT ENROLLING IN CARE. CONVEY IMPORTANCE AND ENCOURAGE ENROLLMENT IN HIV CARE. END CALL, COMPLETE THE TELEPHONE LOG (SECTION F), AND WRITE ANY ADDITIONAL COMMENTS ON PAGE 11.

F. Telephone Log – Update after each call										
F1.	Date of **first ca**ll attempt.	D	D	M	M	Y	Y	Y	Y	
F2.	Telephone number is active?	**Yes** ☐ **No** ☐								**IF NO → F10**
F3.	Spoke with client?	**Yes** ☐ **No** ☐								**IF NO → F10**
F4	Consent script read to client?	**Yes** ☐ **No** ☐								**IF NO → F7**
F5.	Client gave consent for interview?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING**
F6.	Interview completed?	**Yes** ☐ **No** ☐								**IF YES → COMMENTS and END TRACING**
F7.	Client agreed to be called back?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING**
F8.	Date scheduled for follow up call.	D	D	M	M	Y	Y	Y	Y	**Leave blank if date was not scheduled.**
F9.	Time scheduled for follow-up call.	H	H	M	M					**Leave blank if time was not scheduled.**
F10.	Date of **second ca**ll attempt.	D	D	M	M	Y	Y	Y	Y	
F11.	Telephone number is active?	**Yes** ☐ **No** ☐								**IF NO →F19**
F12.	Spoke with client?	**Yes** ☐ **No** ☐								**IF NO → F19**
F13.	Consent script read to client?	**Yes** ☐ **No** ☐								**IF NO → F16**
F14.	Client gave consent for interview?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING**
F15.	Interview completed?	**Yes** ☐ **No** ☐								**IF YES → COMMENTS and END TRACING**
F16.	Client agreed to be called back?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING**
F17.	Date scheduled for follow up call.	D	D	M	M	Y	Y	Y	Y	**Leave blank if date was not scheduled.**
F18.	Time scheduled for follow-up call.	H	H	M	M					**Leave blank if time was not scheduled.**

F19.	Date of **third call** attempt.	D	D	M	M	Y	Y	Y	Y	
F20.	Telephone number is active?	**Yes** ☐ **No** ☐								**IF NO → INSTRUCTIONS AFTER F27**
F21.	Spoke with client?	**Yes** ☐ **No** ☐								**IF NO → INSTRUCTIONS AFTER F27**
F22.	Consent script read to client?	**Yes** ☐ **No** ☐								**IF NO → F25**
F23.	Client gave consent for interview?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING**
F24.	Interview completed?	**Yes** ☐ **No** ☐								**IF YES → COMMENTS and END TRACING**
F25.	Client agreed to be called back?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING**
F26.	Date scheduled for follow up call.	D	D	M	M	Y	Y	Y	Y	**Leave blank if date was not scheduled.**
F27.	Time scheduled for follow-up call.	H	H	M	M					**Leave blank if time was not scheduled.**
NOTE: CALL NEXT OF KIN ONLY IF CONSENT WAS GIVEN ON HTC OR DATA ABSTRACTION FORM										
F28.	Telephone number of next of kin is active?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING.**
F29.	Spoke with next of kin?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING.**
F30.	Date spoke with next of kin.	D	D	M	M	Y	Y	Y	Y	
F31.	**[DO NOT ASK; RECORD IF MENTIONED]** Client lives in different country?	**Yes** ☐ **No** ☐ **Unknown** ☐								**IF YES → COMMENTS and END TRACING.**
F32.	**DO NOT ASK; RECORD IF MENTIONED]** Client is deceased?	**Yes** ☐ **No** ☐ **Unknown** ☐								**IF YES → COMMENTS and END TRACING.**
F33.	Next of kin agreed to help contact client?	**Yes** ☐ **No** ☐ **Unknown** ☐								
F34.	Spoke with client after call with next of kin?	**Yes** ☐ **No** ☐								**IF NO → COMMENTS and END TRACING.**
F35.	Date spoke with client	D	D	M	M	Y	Y	Y	Y	**→ COMMENTS**

APPENDIX H: STUDY PERSONNEL ROSTER

Position	Name
Project Coordinator	Nosipho Storer
Deputy Project Coordinator	Nontobeko Dlamini
Facility Coordinator	Nolwazi Bhebhe
Data Management Supervisor	Lungile Nkambule
Data Entry Specialists	Lancelot Ndlovu Veli Madau
Field Supervisors	Dan Nxumalo Musa Tamhla Nomsa Mavimbela Siphiwangubani Sikhondze Zethu Mansoor
Data Abstractors	Banele Mohale Bongile Dlamini Gugulethu Nozipho Gule Mandisa Zwane Mark Mngomezulu Mkhosi Mdluli Mphikeleli Dlamini Mthulisi Moyo Ndumiso Dlamini Nelisiwe Masilela Nokuphila Magagula Nomkhosi Magagula Phetsile Ndabandaba Sibusiso Matsenjwa Sicelo Dlamini Sindie Silindza Siphesihle Shongwe Thabile Dlamini Thembela Nkambule Zamokuhle Mahlangu Zenani Mavuso
Interviewers	Jabulile Mgodlola Makhanya Buisilie

APPENDIX I: FACILITIES VISITED TO ASSESS ENROLLMENT IN HIV CARE[1]

Region	Facility Name & Classification	Type[2]	Location[2]	Referral[3]	Enrollment[4]
Hhohho					
	Mbabane Government Hospital	Government	Urban	Referral	Yes
	Pigg's Peak Government Hospital	Government	Urban	Referral	Yes
	Dvokolwako Health Center	Government	Rural	Referral	Yes
	Mkhuzweni Health Center	Government	Rural	Referral	Yes
	Baylor Clinic	Private	Urban	Alternate	Yes
	Bhalekane Nazarene Clinic	Faith-based	Rural	Referral	Yes
	Bulandzeni Clinic	Government	Rural	Referral	Yes
	Bulembu (Havelock) Clinic	Private	Rural	Alternate	Yes
	Giving Life Clinic	Private	Peri-urban	Alternate	Yes
	Herefords Clinic	Government	Rural	Referral	Yes
	Horo Clinic	Government	Rural	Referral	Yes
	Lobamba Clinic	Government	Peri-urban	Referral	Yes
	Maguga Clinic	Government	Rural	Referral	No
	Mahwalala Red Cross Clinic	NGO[5]	Urban	Referral	Yes
	Malandzela Nazarene Clinic	Government	Rural	Alternate	Yes
	Mangweni Clinic	Government	Rural	Referral	Yes
	Mbabane Clinic	Private	Urban	Alternate	No
	Medisun Clinic	Private	Urban	Alternate	Yes
	Motshane Clinic	Government	Peri-urban	Referral	Yes
	Ndvwabangeni Nazarene Clinic	Faith-based	Rural	Referral	Yes
	Nkaba Clinic	Government	Rural	Alternate	Yes
	Ntfonjeni Clinic	Government	Rural	Referral	Yes
	Salvation Army Clinic	Faith-based	Urban	Referral	No
	Satellite Clinic	Government	Urban	Referral	No
	Siphocosini Clinic	Government	Rural	Referral	Yes
Lubombo					
	Good Shepherd Hospital	Faith-based	Peri-urban	Referral	Yes
	Ubombo Sugar Hospital	Private	Peri-urban	Referral	Yes
	Sithobela Rural Health Center	Government	Rural	Referral	Yes
	Bholi Clinic	Government	Peri-urban	Referral	Yes
	Ebenezer Clinic	Faith-based	Rural	Alternate	No
	Embutfu Clinic	Private	Rural	Alternate	Yes
	Gilgal Clinic	Government	Rural	Referral	Yes
	Lubuli Clinic	Government	Rural	Referral	Yes
	Mhlume Clinic	Private	Peri-urban	Referral	No
	Mafutseni Nazerene Clinic	Faith-based	Rural	Alternate	Yes
	Manyeveni Nazarene Clinic	Faith-based	Rural	Alternate	Yes
	Mpolonjeni Clinic	Government	Rural	Referral	Yes
	Ndzevane Community Clinic	Government	Rural	Referral	Yes
	Nkalashane Community Clinic	Government	Rural	Alternate	Yes
	Simunye Lusoti Clinic	Private	Peri-urban	Referral	Yes
	Shewula Nazarene Clinic	Faith-based	Rural	Referral	Yes
	Sinceni Clinic	Government	Rural	Referral	Yes

	Siphofaneni Clinic	Government	Rural	Referral	Yes
	Tabankulu Estates Clinic	Private	Rural	Referral	Yes
	Tikhuba Clinic	Government	Rural	Referral	Yes
	Vuvulane Clinic	Government	Rural	Referral	Yes
	Siteki Public Health Unit	Government	Rural	Alternate	No
Manzini					
	Mankayane Government Hospital	Government	Rural	Referral	Yes
	National TB Hospital	Government	Peri-urban	Alternate	Yes
	Raleigh Fitkin Memorial Hospital	Faith-based	Urban	Referral	Yes
	Cana Alliance Clinic	Faith-based	Rural	Referral	Yes
	Private Doctor's Clinic[6]	Private	Urban	Alternate	Yes
	Private Doctor's Clinic[6]	Private	Urban	Alternate	Yes
	Dwalile Clinic	Government	Rural	Alternate	No
	Family Life Association Clinic	NGO[5]	Urban	Referral	Yes
	Gebeni Clinic	Government	Rural	Referral	Yes
	Lamvelase AHF Clinic	Private	Urban	Referral	Yes
	Lamvelase (Zombodze) Clinic	Government	Peri-urban	Referral	Yes
	Luyengo Clinic	Government	Peri-urban	Referral	Yes
	MSF Matsapha Clinic	Private	Urban	Alternate	Yes
	Mbikwakhe Clinic	Faith-based	Peri-urban	Alternate	Yes
	Mkhulamini Clinic	Government	Rural	Referral	Yes
	Mliba Nazarene Clinic	Faith-based	Rural	Referral	Yes
	Mpuluzi Clinic	Government	Rural	Referral	No
	Musi Clinic	Government	Rural	Referral	Yes
	Ngculwini Nazarene Clinic	Faith-based	Rural	Alternate	Yes
	Phocweni U.S.D.F Clinic	Military	Peri-urban	Referral	Yes
	Sibovu Clinic	Government	Rural	Referral	Yes
	Sigcineni Clinic	Government	Rural	Referral	Yes
	St. Theresa's Clinic	Faith-based	Urban	Referral	No
	King Sobhuza II Public Health Unit	Government	Urban	Referral	Yes
Shiselweni					
	Hlatikhulu Hospital	Government	Rural	Referral	Yes
	Matsanjeni Health Center	Government	Rural	Referral	Yes
	Nhlangano Health Center	Government	Urban	Referral	Yes
	Dwaleni Clinic	Government	Peri-urban	Referral	Yes
	Gege Clinic	Government	Rural	Referral	Yes
	Hluti Clinic	Government	Rural	Referral	Yes
	JCI (Mphelandzaba) Clinic	Government	Rural	Referral	Yes
	Jericho Clinic	Government	Rural	Referral	Yes
	Kamfishane (Kandlovu) Clinic	Government	Rural	Referral	Yes
	Lavumisa Clinic	Government	Urban	Referral	Yes
	Magubheleni Clinic	Faith-based	Rural	Referral	Yes
	Mahlandle Clinic	Government	Rural	Referral	Yes
	Mashobeni Clinic	Government	Rural	Referral	Yes
	Mhlosheni Clinic	Government	Rural	Alternate	No
	Moti Clinic	Government	Rural	Alternate	Yes
	New Haven Clinic	Government	Rural	Referral	Yes

Nhletsheni Clinic	Government	Rural	Referral	Yes
Nkwene Clinic	Government	Rural	Referral	Yes
Ntshanini Clinic	Government	Rural	Referral	No
Our Lady of Sorrows Clinic	Faith-based	Rural	Referral	No
Phunga Clinic	Government	Rural	Alternate	No

[1] Total = 92: Hospitals (n=8); Health Centers (n=5); Clinics (n=77); Public Health Unit (n=2); Referral (n=69); Alternate (n=23); Enrollment (n=78).

[2] Self-defined by providers interviewed on facility characteristics.

[3] Referral: facility to which the client was referred for HIV care at diagnosis; Alternate: facility where either the client reported receiving HIV care or study personnel learned from staff or records at the referral facility where the client may have enrolled for HIV care.

[4] Facilities at which study personnel verified at least one client had enrolled in HIV care.

[5] Non-governmental organization.

[6] Name withheld for confidentiality purposes.