USAID
FROM THE AMERICAN PEOPLE

FHMENGAGE
Healthy Markets for Healthy People

Frontier Health Markets (FHM) Engage – Tanzania

STRENGTHENING MARKET INTELLIGENCE FOR PRODUCT INTRODUCTION & SCALE-UP THROUGH THE PRIVATE SECTOR

Digital Health Data Integration Solution Use Case

November 1, 2022

Frontier Health Markets (FHM) Engage – Tanzania

STRENGTHENING MARKET INTELLIGENCE FOR PRODUCT INTRODUCTION & SCALE-UP THROUGH THE PRIVATE SECTOR

Digital Health Data Integration Solution Use Case

Authors:
[Name redacted], Zenysis Technologies
[Name redacted], Zenysis Technologies

Acknowledgements:
The cooperation and invaluable input from all the stakeholders engaged in the development of this report is acknowledged and appreciated.

Cooperative Agreement No:
7200AA21CA00027 (2021-2026)

Submitted to:
USAID

Prepared by:

1275 New Jersey Ave. SE, Ste 200,
Washington, DC 20003

Contents

Tables

Figures

Acronyms

ABYM	Adolescent Boys and Young Men
ADDO	Accredited Drug Dispensing Outlet
AGYW	Adolescent Girls and Young Women
ARV	Antiretrovirals
CSSC	Christian Social Services Commission
DHIS2	District Health Information Software
DMPA-SC	Subcutaneous Depot Medroxyprogesterone Acetate
eLMIS	electronic Logistics Management Information System
FBO	Faith Based Organization
FP	Family Planning
FSW	Female Sex Workers
HF	Health Facility
HIV ST MDG	HIV Self-Testing Market Development Group
HIV ST	HIV Self-Testing
HIV STKs	HIV Self-Testing Kits
HTS	HIV testing services
ICT	Information and Communication Technology
KVP	Key and Vulnerable Populations
M&E	Monitoring and Evaluation
MNCH	Maternal, Newborn, and Child Health
MOH	Ministry of Health
MSD	Medical Stores Department
MSM	Men who have Sex with Men
NACP	National AIDS Control Program
NGO	Non-Government Organization
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission
PO-RALG	President's Office – Regional Administration and Local Government
PoS	Point of Sale
PR	Principal Recipients
PrEP	Pre-Exposure Prophylaxis
PSI	Population Services International
PST	Pharmaceutical Society of Tanzania
PWID	People Who Inject Drugs
RMNCH	Reproductive, Maternal, Newborn, And Child Health
SES	Socioeconomic Status
SR	Sub-Recipients

SRH/FP	Sexual and Reproductive Health/Family Planning
SW	Sex Worker
TACAIDS	Tanzania Commission for AIDS
TB	Tuberculosis
TMDA	Tanzania Medicines and Medical Devices Authority
TOMSHA	Tanzania Output Monitoring System for HIV and AIDS
USSD	Unstructured Supplementary Service Data
WHO	World Health Organization

About FHM Engage

Frontier Health Markets (FHM) Engage is a five-year United States Agency for International Development (USAID) project that aims to strengthen health markets by supporting local actors to address supply-side gaps and meet consumer preferences to ensure equitable provision and use of priority health services in mixed health systems. FHM Engage aims to strengthen health markets by addressing market efficiencies and optimizing public and private sector engagement for increased access to family planning, maternal and child health, and other health services, products, and information. This will be achieved through two main result areas: 1) improved market environment for greater private sector participation in the delivery of health products and services, and 2) improved equal access to and uptake of high-quality consumer driven health products, services, and information. FHM Engage's interventions will focus on core market functions to improve access to financing, ensure balanced application and enforcement of health policy, increase availability and use of health market data, and strengthen donor coordination platforms for systematic engagement between governments and private sector organizations.

TABLE 1: FHM PROGRAM OBJECTIVES AND PARTNERS

FHM Engage Global Program Objectives		
1. Improved market environment for greater private sector participation in the delivery of health products and services. 2. Improved equal access to and uptake of high-quality consumer driven health products, services, and information.		
FHM Engage Core Partners		
Results for Development (co-technical lead)	Pathfinder	Zenysis
FHM Engage Partner Network		
ACCESS Health India	Insight Health Advisors	Scope Impact
Africa Christian Health Association Platform	Makerere University School of Public Health	Stage Six
Africa Healthcare Federation	Metrics for Management	Strathmore University
Amref Health Africa	Solina Group	Total Family Health Organization
Ariadne Labs	Strategic Purchasing Africa Resource Center	Ubora Institute
CERRHUD		Scope Impact

Background

FHM Engage is a five-year project that aims to strengthen health markets by supporting local actors to address supply-side gaps and meet consumer preferences to ensure equitable provision and use of priority health services in mixed health systems. In Tanzania, the goal of FHM Engage is to increase private sector contributions to achieving national objectives related to voluntary family planning; HIV; maternal, newborn, child, and adolescent health; and other priority health areas. The project will work towards this goal through two primary objectives: (1) harness private sector capacity to improve supply and uptake of priority health commodities and 2) leverage private health sector capacity to improve access to maternal, newborn, and child health (MNCH) clinical care and HIV prevention services.

FHM Engage applies a systematic approach to *diagnose, design, deliver*, and *iteratively adapt* interventions to improve the functioning of health markets. In Year 1, FHM Engage Tanzania focused primarily on activities to build trust, understand root causes to HIV market challenges, and identify potential leverage points as part of the diagnose phase. As part of the diagnose phase, the purpose of this activity was to understand and scope priority challenges related to data availability, accessibility, and use among key stakeholders to inform a "use case" for a digital solution. Per USAID guidance, this activity focused on HIV products, and more specifically, the introduction and scale of HIV self-testing kits (HIV STKs) through the private sector.

In line with this, in Year 1, the team conducted desk reviews and consulted with key stakeholders in-country to identify priority challenges related to HIV STK data fragmentation, quality, and use. The findings from this diagnosis phase inform a "use case"[1] for addressing data challenges through a data integration and analytics digital platform solution. Additionally, the team explored the applicability of a cohort tracking tool to strengthen the HIV self-testing (HIV ST) "continuum of care" across public and private sector service providers, particularly pharmacies.

This report summarizes the approach, findings, and recommendations for strengthening the availability and use of market data for the introduction and scale of HIV STK as well as other priority health products and services in Tanzania.

[1] For a high-level definition of a "use case" see Annex 1: Use Case Definition

Problem Statement

Tanzania's mixed health system is comprised of a highly decentralized public sector as well as a diverse private sector – non-governmental organizations (NGOs), faith-based organizations (FBOs), pharmacies, and accredited drug dispensing outlets (ADDOs) - as important providers of healthcare. This diversity, however, leads to fragmented, incomplete, siloed, and poor-quality data. Without adequate and reliable market intelligence, key decision-makers are not aligned in their understanding of how, when, and where to best leverage the private sector to expand access to priority family planning (FP), MNCH, and other health products and services. Adding to this complexity is the variety of digital tools, systems, and platforms used by different sectors and programs to collect, aggregate, and analyze data. When it comes to products such as HIV STKs, oral pre-exposure prophylaxis (PrEP), Subcutaneous Depot Medroxyprogesterone Acetate (DMPA-SC), etc., - products that are or will soon enter Tanzania's health market - stakeholders lack holistic, appropriate data to inform market pathway strategies for product introduction and scale-up, particularly through the private sector.

Scoping Activity Objectives

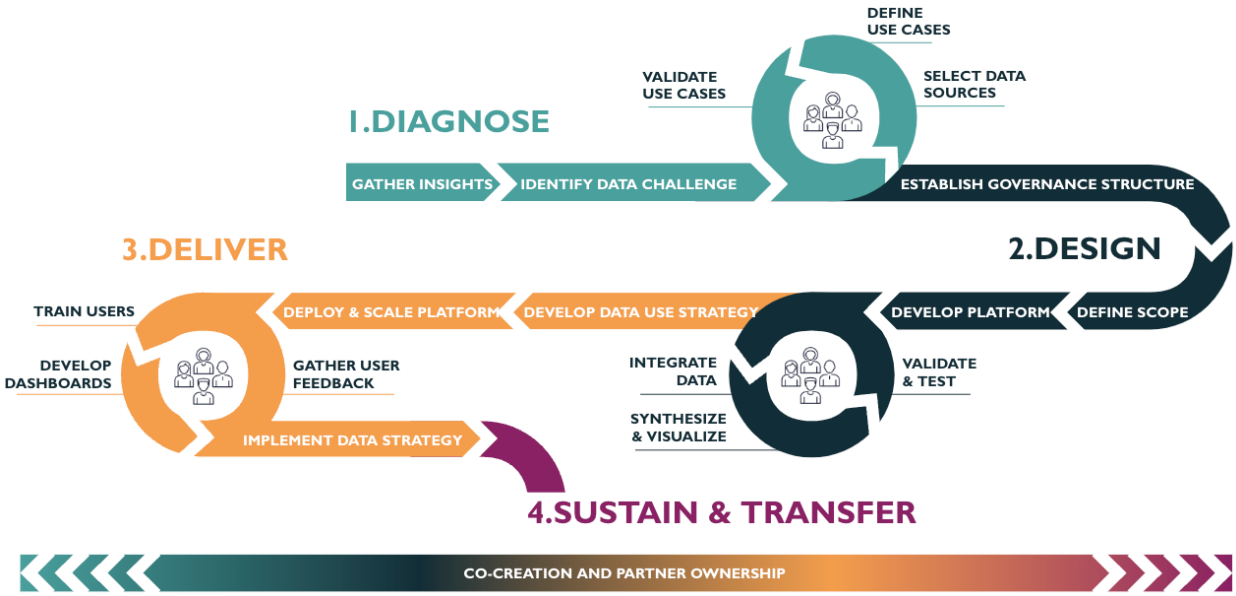
As part of the diagnose phase of FHM Engage's market development approach, Zenysis conducted a scoping exercise focused on the data landscape for priority HIV prevention products. The overall purpose of this activity was to understand challenges related to data availability, accessibility, and use among key stakeholders and identify a "use case" for a digital solution, through the following objectives:

1. **Gather insights on existing programs and data systems supporting HIV STK provision** (and other priority products) through the private sector, specifically pharmacies, including challenges with respect to data accessibility and use:
2. **Use the findings and develop recommendations** for implementation in Year 2.

Approach

Zenysis has adapted its 3D Approach for delivering technology solutions under FHM Engage. Figure 1 below presents the framework, with specific steps, for the Diagnose, Design, and Deliver phases. A central element across all stages of the 3D approach is co-creation and partner ownership. Users, stakeholders, and decision-makers are placed at the center of key conceptualization, design, and delivery activities – thus not only ensuring that the generated solutions are responsive to stakeholder challenges but that all stakeholders retain a sense of ownership of these solutions. As such the aim in the final phase is to sustain and transfer *Harmony*, an open-source platform and a Digital Public Good, to governments and/or local entities for their data harmonization, analytics, and use needs.

FIGURE 1: OUR 3D APPROACH ADAPTED FOR FHM ENGAGE



As part of this diagnosis phase, the FHM Engage Market Intelligence Team conducted the following activities:

1. **Developed a Key Stakeholder Interview Guide** that we adapted and tailored for each consultation
2. **Conducted a Desk Review** of past project reports, Ministry of Health plans/strategies, digital health frameworks, etc.
3. **Gathered and synthesized insights/information** through in-country stakeholder consultations

Under the guidance of FHM Engage Tanzania, the team identified and established an initial list of stakeholders to meet with, including but not limited to wholesalers/distributors, policy makers, NGOs, Ministry of Health program managers, and program implementers involved in HIV STK service delivery, as well as digital health experts. A comprehensive list of stakeholder consultations is presented in Annex II: HIV STK Stakeholders and Key Informants. An interview guide was developed and adapted for each stakeholder – sample questions are provided in Annex III: Interview Question Guide. At a high-level,

these interviews covered the following thematic areas as they related to HIV STKs and other health commodities:

- **Products and services:** Develop an understanding of the stakeholders' role in the provision of specific products/services; including existing and potential channels of distribution.
- **Interface with coordinating bodies:** Identify existing mechanisms for data coordination among government, implementing partner, private sector, if any.
- **Data collection and sharing:** Identify what data is collected by each stakeholder, where these data are stored, the level of granularity of the data (aggregation level, geographic coverage, indicators etc.), and willingness and existing practices to share data.
- **Data use:** Determine how data is currently being used, what decisions they make using their data, the quality of these data, what additional data they require to make decisions and the level of accessibility of these data.

FIGURE 2: GUIDING QUESTIONS FOR DATA SCOPING

The Discover Phase Guiding Questions

- Which data is desired? Why?
- What types of decisions need to be made? For whom?
- Is the desired data available?
- Is the desired data accessible?
- Is it of high quality?
- Is the desired data being used? Why/Why not? By whom?
- What are the potential solutions/opportunities to increase data availability, accessibility, quality, and use?

Using the information gathered from stakeholders, the team identified common challenges with respect to HIV STKs across stakeholders, which serve as the basis for developing an HIV market intelligence use case. See Annex I for the team's definition of a use case.

In response to interest in Zenysis's cohort tracking tool (currently used in South Africa), the team also explored opportunities for its application to strengthen the HIV ST "continuum of care" across public and private sector service providers in Tanzania. It should be noted that the team did not undertake a detailed diagnosis/scoping for this tool given early indications on the status of private sector HIV STK programming was limited to a pilot project, which ended in early 2022. Due to the lack of any existing private sector program or provision of HIV STKs in Tanzania's private health sector, there is no data available that can be captured by the cohort tracking tool. Moreover, HIV STK as a product category is not well-suited for this tool, given individual data privacy concerns. In sum, this is not the appropriate technology solution for the HIV STK private sector provision (and related data) challenges in Tanzania. Annex IV provides further detail on the team's findings, including the preconditions required and possible uses of the cohort tool beyond HIV STKs.

Findings

This section reports on the findings gathered through a desk review and stakeholder engagements, including opportunities to strengthen access and use of market intelligence to inform strategies for new production introduction and scale up through private sector pharmacies in Tanzania. The findings informed the development of a detailed market intelligence use case, through the lens of HIV STK introduction. Additional use cases can be developed in the future for other product/service categories.

Tanzania HIV ST Policy Environment

The Tanzania Medicine and Medical Devices Authority (TMDA) has so far registered two blood-based HIV STKs (Mylan and Abbott) and one oral based HIV STK (Orasure). Only the Orasure oral based HIV STK (Oraquick) is currently approved for use in Tanzania. Currently, HIV STKs are distributed, at scale, only through public health facilities (HF). Except for a pilot program through Population Services International (PSI), the provision of HIV STKs through other private sector channels (private pharmacies, ADDOs) has not been implemented and is pending regulatory approval from the National AIDS Control Program (NACP). The 2020 Tanzania HIV Self-Testing Implementation Framework calls for the "distribution of HIV STKs in private settings will be done through private pharmacies…" [1] However, through consultations with the Ministry of Health, stakeholders expressed concerns around the capacity of private pharmacies to deliver high-quality counseling, referral, and appropriate disposal of kits (for blood-based HIV STKs).

HIV STK Coordination through the HIV ST Market Development Group

The HIV ST Market Development Group (HIV ST MDG) was recently established by FHM Engage as a key forum to strengthen coordination and advocacy for regulatory approval for HIV ST programing in the general private sector. The HIV ST MDG is comprised of key market actors from public, private for-profit, private not-for-profit providers, social/commercial importers and distributors, and development partners. As the group evolves, their purpose is to co-create and collectively implement supply and demand-side HIV ST interventions through public and private channels. The HIV ST MDG has established four key priority actions for expanding access to HIV STKs:

1. Servicing/reaching individuals who don't know their HIV status.
2. Addressing challenges related to low testing and awareness among key populations.
3. Addressing challenges related to linkages for individuals who test positive using HIV STKs.
4. Encouraging unreached populations to use HIV ST by highlighting consumer-validated benefits such as privacy, confidentiality and time saving.

In line with the Tanzania HIV Self-Testing Framework, the HIV ST MDG confirmed the target populations for HIV ST as Men (18+), Key Populations (adolescent boys and young men (ABYM), adolescent girls and young women (AGYW), female sex workers (FSW), people who inject drugs (PWID), men who have sex with men (MSM)), partners of people living with HIV (PLHIV) and mobile populations and people working in certain occupations (drivers, miners, fishermen etc.). The HIV ST MDG cited that one of the key challenges with these target groups is low motivation to get tested and generally, a low awareness of testing using HIV STKs.

One of the key priorities of the FHM Engage Tanzania Team, who coordinate the HIV ST MDG, is to enhance access and utilization of market data to inform advocacy and private sector introduction strategies for HIV ST in Tanzania. Investment in more robust monitoring and evaluation (M&E) systems will also be critical to scale-up efforts and ensuring a continuum of HIV treatment, care, and support.

HIV ST Africa Initiative: Snapshot of the PSI-led Pilot in Tanzania

Between February 2021 and February 2022, PSI piloted the project, which focused on the distribution of HIV STKs through private pharmacies. The program distributed 18,550 HIV STKs through 60 private pharmacies in Dar Es Salaam, Mwanza, and Dodoma. The program utilized a digital platform: an unstructured supplementary service data (USSD)-based application for pharmacy data collection. PSI also piloted a Chatbot application or "virtual councilor" in other countries.

The Chatbot provided clients with a human-to-human interface to inform clients about where they could access HIV ST, generated e-vouchers for HIV ST access and post-testing services, and assessed information about health issues, products, and services. Additionally, the tool was used to assess risk profiles of clients and deliver automated follow-ups and reminders, and to educate clients about HIV prevention, care and testing, and promote the use of HIV STKs. Although the data collected through the Chatbot is unstructured (free-form text), these data could be categorized and used for monitoring purposes in the future, if the platform is utilized in scale-up efforts. PSI plans to work with the NACP to scale the Chatbot, however, at the time of writing this report, this initiative had not commenced.

The STAR program also adopted a USSD platform to collect data on clients who purchased HIV STKs from pharmacies. This USSD platform is owned and administered by the Tanzanian Pharmacy Council and has been in operational use for collecting malaria data. There are plans to integrate this data into the District Health Information Software (DHIS2), however, to date, these systems have not yet been integrated. Over the course of the pilot, the STAR program used the USSD platform to collect data on age, gender, testing history, and number of HIV STKs clients purchased from private pharmacies. The USSD platform has not been used for HIV STK data collection since the end of the program. Since the STAR program implemented the pilot on a small subset of pharmacies in Tanzania, further research is warranted around the effectiveness and acceptance of the USSD platform as a large-scale data collection tool for HIV STK distribution through private pharmacies.

With respect to market intelligence, PSI reported two key challenges: 1) limited visibility of distribution data over the implementation period; although DHIS2 dashboards were developed, they were not published; and 2) close follow-up to collect and monitor distribution data is resource intensive. Consultations revealed that it would be worthwhile to explore alternative data collection and monitoring approaches.

Given there are no active private sector HIV ST programs in the country, and thus limited data, if any, on private sector provision of HIV ST. The few examples of data collection systems/tools cited above have the potential for scale and could complement a wider array of data sources in the future.

HIV STK Data Collection and Reporting Considerations

If, and when, HIV STKs are provided at scale through private sector pharmacies, there are a few general approaches which could satisfy the data collection requirements for these indictors. These include identifying and leveraging existing private sector data sources which have the capability to include HIV ST data, e.g., private sector importer and distributor data or sales data (point of sales systems); deploying new data reporting tools (both for pharmacies and individual clients); and/or adjusting existing public sector data collection systems to include data points for private sector inclusion/integration of HIV ST results. Drawing on learnings from the World Health Organization's (WHO) HIV self-testing strategic framework, the HIV ST MDG defined four key considerations for designing and conceptualizing an M&E system:

- Data collection and monitoring should not be intrusive or burdensome and thus act as a deterrent from use of HIV ST.
- Confidentiality and privacy of individuals should be protected.
- Due consideration should be given toward the human and financial cost of active monitoring.
- Prioritization should be on the use of routine data and data triangulation for program monitoring and evaluation.

Data Considerations from Stakeholder Consultations

At present, HIV ST programing in Tanzania is implemented through a few modalities, namely, public and private sector health facilities and community-level programming. Most data from these HIV ST programming modalities are reported through the national DHIS2. Scaled private sector HIV ST programing through other avenues, such as private sector pharmacies or vending machines, were cited as an important "missing piece" in the Tanzania HIV ST programming ecosystem. Stakeholders generally agreed that there is a need to accelerate the introduction of HIV ST programing through more private sector channels, such as private pharmacies.

In a future state, where HIV STKs are distributed at scale through other private sector channels, most stakeholders who were interviewed expressed willingness to share data, which can be used to monitor HIV ST programing and inform decision-making across the health market. For example, both Synermed and Sciex indicated that they would be able to share distribution data (one of the five core indicators for an HIV ST M&E system identified by the HIV ST MDG). It should be noted, however, that both of these companies cited concerns around data privacy particularly related to exposing their client base and pricing to competitors. As such, when these data are shared, they will likely be aggerated at a regional/district level to be responsive to these concerns. Although aggregated distribution data would be valuable for some decision-making, when such data is accessed, careful consideration should be given to how these data should be interpreted and used. For example, if Synermed distribution data is generated (and shared) at a regional level, with the knowledge that Synermed distributes commodities to other (secondary) distributors, it should not be assumed that the all commodities distributed to a particular region were distributed to customer-facing entities in that same region.

Challenges related to follow up and support services for individual clients who access HIV STKs through the private sector was a theme among many stakeholders. While the STAR program attempted to

collect granular data from individual clients to support follow up activities, the program reported that individual level data collection was cumbersome and unsustainable at scale. New and innovative approaches, such as the MyService vending machine model, are promising solutions to address this issue for HIV STK provision through new and innovative modalities (in this case voucher redemption through vending machines). More generally, if HIV STK provision in the private sector is linked to vouchers, and vouchers are linked to individuals, this offers tremendous opportunity to strengthen the continuum of care, at least for a sub-set of the population who are part of a voucher-type scheme.

Snapshot of HIV ST Stakeholder Roles and Data Needs

The following table summarizes a subset of information gathered during consultative meetings held with stakeholders, who have a current or potential role in the private sector HIV ST market in Tanzania.

TABLE 2: SUMMARY OF STAKEHOLDER CONSULTATIONS

Stakeholder	Stakeholder Type	Background & Products/services	Data Sources & Willingness to Share	Data Needs	Challenges
Synermed Pharma	HIV STK importer and distributor	• Synermed has an exclusive agreement with Mylan Pharmaceuticals (supplier of blood-based HIV STKs) to supply blood-based HIV STKs and antiretrovirals (ARVs) in Tanzania • Currently working with the Ministry of Health to get the Mylan blood-based HIV STK approved for use in Tanzania • Commodities imported for the private sector are distributed to through various channels, including other distributors, wholesalers, sub-wholesalers, and directly to pharmacies, in some cases	*Data System(s):* Collect and store data in a warehouse/distribution system *Data Description:* • Captures customer, location, sales volume, and sales price data • For private market procurements, data is captured from import (order data) to end customer (sales). Depending on the region, the end customers could be distributors, wholesale or retail pharmacies, hospitals, or clinics. *Data Sharing:* • Willing to share sales volume data but may only share this data at the regional or district level • Not willing to share import price or sales prices data	• Data on product demand and utilization by customers • Data on commodities in the market including purchase and sale prices of other commercial suppliers of HIV products	*Regulatory:* Ministry of Health approval of blood-based HIV STKs for use in Tanzania is taking longer than expected *Data:* Data on product demand and commodities (see "Data needs") is not readily available for use
MyService	Potential technology partner for HIV STK distribution	• Mainly distributes condoms through vending machines • Piloted distribution of HIV STKs through four vending machines. Myservice is in conversation with NACP to legally approve and scale up HIV STK distribution through vending machines • Currently have operational four vending machines and is expecting 20 more in the next few months – MyService is looking for more partnerships to expand vending machine model	*Data System(s):* Individual clients (mainly key and vulnerable populations (KVPs)) receive and use trackable vouchers to access commodities through vending machines, their data is then collected and stored in a database on a local server *Data Description:* Individual level data (including age group, location, gender, and data on key and vulnerable populations) and consumption data is collected *Data Sharing:* Willing and ready to share their data; may look for some sort of exchange of value	None shared	Needs financial and partnership support to expand vending machine distribution model
Sciex Tanzania	HIV STK importer and distributor	• Sole importer and distributor of Oraquick (Oral HIV STK) • Orders funded through donors (Global Fund and USAID) and distributed to the Medicals Stores Department (MSD) • Supplied Oral HIV STKs to PSI for pilot study (STAR program) in 2021	*Data System(s):* Collect and store data in a warehouse/distribution system *Data Description:* • Captures customer, location, sales volume, and sales price data • For private market procurements, import (order data) to customer (sales) data is recorded. Sciex's customer base is 90% retailers (~100 pharmacies) and 10% wholesalers (~10 wholesalers) – therefore, geographically granular sales data is captured • Geo-coordinates of pharmacy customers are captured *Data Sharing:* Willing to share sales volume and pharmacy location data	Data on which pharmacies are trained and have capacity to distribute HIV STKs	None shared
Population Services International (PSI)	Implementor of HIV ST private pharmacy pilot	• Implemented HIV ST distribution pilot program (STAR) across 60 private sector pharmacies • PSI hasn't distributed HIV STKs since the end of the pilot program	*Data System(s):* During STAR program implementation, distribution data was collected through a USSD platform. This USSD data is planned to be integrated into DHIS2. *Data Description:* USSD platform collected client aggregate level data, including age, sex, testing history, number of kits	TBD	Ensuring follow up/linkage to support services of new cases was a challenge during STAR pilot. There is a need for targeted strategies to ensure follow up and linkage to support services when

			Data Sharing: Willing to share data from USSD data collection systems if they are used in the future and if data sharing is approved by data owners (TBD)		rolling out HIV STKs through private pharmacies at scale
FHI 360	Facility and community-level implementor of HIV STKs programs	• Distributes HIV STKs through community health workers (peer educators) – HIV STKs are supplied through public health facilities • Primary target population is KVPs	*Data System(s):* KVP HIV STK distribution data is collected on paper forms. This data is fed back into DHIS2 through the President's Office – Regional Administration and Local Government (PO-RALG) *Data Description:* Community-based consumption of HIV STKs *Data Sharing:* N/A – data should be accessed through Ministry of Health DHIS2	3. Data on HIV STK electronic Logistics Management Information System (eLMIS) distribution data to health facilities 4. Test results data from serviced individual clients	Community-level programs are not aware of HIV STK stock levels at health facilities – more visibility into health facility HIV STK distribution data is needed
Christian Social Services Commission (CSSC)	FBO, private health facility operator	• 900 facilities providing reproductive, maternal, newborn, and child health (RMNCH), prevention of mother to child transmission (PMTCT), and HIV/Tuberculosis (TB) services (hospitals, health centers and dispensaries) • Distributes HIV STKs through health facilities, HIV STKs received directly from MSD	*Data System(s):* • Government DHIS2 system • CSSC internal database *Data Description:* • DHIS2: Health facilities input data related to HIV ST programming in government DHIS2 • CSSC internal database: Tracks clinical, lab, finance, and human resource data. This database also contains geo-coordinates of health facilities *Data Sharing:* • DHIS2: N/A - data should be accessed through government • CSSC internal database: Willing to share geolocation of health facilities	None shared	None shared
Tanzania Commission for AIDS (TACAIDS)	Multi-sectoral HIV & AIDS response coordinating body	• Develops HIV/AIDs policy, standards and guidelines including those for HIV STK products and services • Develops strategic frameworks for planning HIV and AIDS control programs • Supports resource mobilization, disbursement, monitoring, and promotes high level advocacy for HIV and AIDS programs – including HIV ST.	*Data Systems:* Tanzania Output Monitoring System for HIV and AIDS (TOMSHA) *Data description:* TOMSHA collects data on 19 HIV indicators, including distribution of HIV STKs. NGOs which distribute HIV STKs at community level report into TOMSHA in parallel to reporting into DHIS2 (through PO-RALG). There is a 60% reporting rate into TOMSHA by NGOs *Data sharing:* willing to share data but will need to present proposal to TACAIDS Chief Executive Officer to get final approval	Compiled private, public and community level data on HIV STK distribution	Low reporting rates by implementing partners into TOMSHA (currently at 60%) Lack of central repository of private, public and community level HIV STK data. Currently, data compilation between various data sources is manually conducted
Pharmaceutical Society of Tanzania (PST)	Pharmacist Professional Association, and coordinating body	• Coordinating/advocating body for pharmacists • Provide opportunities/guidance for young pharmacists • Worked with PSI (STAR program) to determine requirements for a pharmacy to provide HIV STKs	*Data Systems:* Excel data sheets – planned development of a database *Data description:* Database of all members (pharmacists, pharmacy assistants, and technicians) including data on professional certification and training needs *Data sharing:* Willing to share data	None shared	N/A
Digital Square (PATH)	Technology and data partner of the Government (supporting the government).	• Digital Square's core focus is to align and strengthen investments in digital data systems across the Ministry of Health through: • Donor and investment coordination • Global goods sustainability • Development of digital health standards and strategies for the health sector • Supporting implementation of digital systems at national, regional and district levels • Currently supports Tanzania government with integrated health data system development	No data sources to share – all systems under the management of Digital Square are owned and governed by the Ministry of Health. Digital Square has been working with the Ministry of Health to define interoperability use cases to support information exchange. This includes the development of a data reference list (master facility register, patient identification register etc.) standardization layer, data use toolkits, and identification of data needs at different levels (community level all the way up to policymakers of the health system). Digital square has deployed the data reference list standardization layer, a software layer used to keep reference lists up to date across data systems, and over most of the Ministry of Health's data systems. Development of this standardization layer is on-going and driven by the identification of use cases.	N/A	Currently, there are no systems which aggregate private sector health data for use by other stakeholders, including the government. Digital Square cited the limited accessibility of private sector data as a significant gap in the Ministry of Health data ecosystem

Key takeaways from Consultations with HIV ST Market Stakeholders

1. Currently, HIV ST programming is mainly implemented through public sector health facilities and community-level programing as well as some private health facilities with service level agreements in place with the Government – data from these programs is centralized through the national DHIS2.
2. HIV ST programing through other avenues, such as private sector pharmacies, has not been implemented at scale due to operational and regulatory barriers.
3. In a future state, when HIV ST is introduced and scaled through private pharmacies, the private sector data landscape will be highly fragmented. However, when this happens, key market actors will be willing to share their data.
4. There is no central data aggregator/repository which harmonizes private sector health data.
5. Based on the private sector data that does exist, (not specific to HIV ST) combined with stakeholder consultations, the team developed a market intelligence use case to inform HIV STK private pharmacy introduction strategies – see Table 3 below.

Year 2 Implementation Recommendations

As presented in the table below, the use case aims to support the introduction and phased scale-up of HIV STKs through private sector pharmacies. In line with user needs, the use case addresses four challenge areas related to the introduction of HIV STKs in the private sector: supply channel "readiness" (private pharmacies), demand generation, linkage to support services, and rollout monitoring. Through engagement with HIV ST market stakeholders, the team identified key data sources which could be used to address these challenges areas and conducted a high-level assessment of the usability and quality of these data sources.

1. **Develop and Use a Private Sector Map to Inform a Phased HIV STK Introduction,** which can serve as a baseline and be used to monitor interventions over the life of project. The map will integrate available data sources on geographic locations of pharmacies. Depending on the accessibility and complexity of other data sources information on products/services offered by each pharmacy, may be included.
    - *Enhancing data accessibility and use for market stewardship:* The core technology that will be used to satisfy the use case is a data integration and analytics platform, *Harmony*. Although the use case detailed above articulates specific analytical products to support the rollout of private sector HIV STK, the same platform is well suited to serve as a central data repository for private sector HIV ST programing, when implemented at scale. For example, data from large scale HIV STK distributors can be integrated into the platform when these data are available, thus strengthening the ability of coordinating bodies to make decisions and steward market development.
    - *Integrating available pharmacy Point of Sale (PoS) data*: Maisha Meds currently supports over 200 pharmacies and ADDOs in Tanzania with digital technology solutions for business planning, inventory management, quality of care, etc. Maisha Meds's network provides an opportunity for FHM Engage to partner with local/regional private sector actors to introduce and scale priority health products. In a fragmented private sector data landscape, piloting data integration with Maisha Meds would generate valuable insights and learning for data triangulation and private sector data fragmentation.
2. **Enhance the Private Sector Map for Policy and Program Decision-Making** by integrating location data of public sector health facilities which offer HIV Prevention, Care, and Treatment Services to identify opportunities for referral and linkages with the private pharmacies to ensure client support, treatment, and care. The data integration and analytics platform could be used to assess the effectiveness of other key HIV ST interventions and support activities, such as demand generation (a key component of private sector HIV ST programming, as identified by the HIV ST MDG). Through the integration of data on where various demand generation activities are implemented, decision-makers will be able to monitor how these activities impact the real demand for HIV STKs through private pharmacies and deploy targeted demand generation interventions for different settings or geographical areas.

HIV STK Use Case

Goal: Introduce and scale HIV STKs through private pharmacies through enhanced data visibility (identifying/mapping pharmacy locations, HIV support service, HIV target populations, utilization of data systems, etc.)

TABLE 3: HIV STK USE CASE

User(s)	Data Challenge Areas	Inputs		Outputs		Decisions/Insights
		Data Sources	Data Quality Improvements	Digital Tools	Sample Indicators/Visualizations	
Current: The HIV STK Market Development Group **Future:** Other commodity market development groups and government.	**Supply:** Limited visibility into the location of possible supply channels (pharmacies) and their "readiness"[2] to supply HIV STKs to the market	**Data source 1** **Description:** Geocoded private pharmacy location data **Type:** Excel sheet **Refresh freq.:** Yearly (anticipated)	1. Pharmacies with missing geocodes to be geocoded using addresses/names of pharmacies 2. "Readiness" factors to be manually appended to dataset (e.g., from PSI STAR program)	1. Web-based pharmacy geolocation mapping tool with the ability to display, and filter on, pharmacy meta-data (type of pharmacy, region, HIV STK readiness factors etc.)	1. Maps of geo-location of pharmacies with visual prompts that display various pharmacy meta data (type of pharmacy, region, HIV STK readiness factors etc.) 2. Synthetic indicators which merge various combinations of target population data 3. Geographical triangulation between KVP populations, low SES populations and populations of people working in certain occupations 4. Layered maps displaying geolocation of private pharmacies (including meta-data), public & private health facilities (including meta data) with layered target population data 5. Consumption (purchase) of HIV STKs from pharmacies by geographical demarcation and over time	Decision-makers will be able to make decisions and inform the following key considerations related to the rollout of HIV STKs through private sector pharmacies in Tanzania: 1. Selection of pharmacies to initiate full rollout of HIV STKs will be informed by a combination of: a) Identification of location of pharmacies with positive "readiness" indicators b) Identification of pharmacies with compatible PoS systems for data collection c) Identification of pharmacies which service large target populations d) Identification of pharmacies situated in close vicinity to public and private health facilities which offer HIV support services (HIV prevention/care and treatment services) to facilitate linkage. 2. Decision-makers will be able to monitor the consumption (purchase) of HIV STKs, and other commodities of interest, through a live PoS data stream for pharmacies using Maisha Meds PoS systems data
	Demand: Siloed datasets on geographic location target populations (KVP, low socioeconomic status (SES), people working in certain occupations etc.) for the introduction of HIV STKs inhibit the ability of decision-makers to select the optimal (demand-driven) private sector supply channels (pharmacies).	**Data source 2** **Description:** AGYW, ABYM, FSW, PWID, MSM, low SES, people working in certain occupations population data by geography **Type:** Multiple excel sheets **Refresh freq.:** Will vary by dataset	TBD	1. Web-based mapping tool which can layer entity data (pharmacy data) with indicator data (population data) 2. Dashboards displaying combinations of different target population data by geographical demarcation		
	Linkage: The inability to triangulate between pharmacy locations and the availability of private and public sector HIV support services (PrEP, HIV testing services (HTS), counseling, ART, etc.), supplied through health facilities (HFs), inhibits decision-makers from selecting optimal (HIV support-services driven) private sector supply channels.	**Data source 3** **Description:** Geo-coded private and public health facility data with descriptive meta-data such as facility type (dispensary, clinic, nursing home, hospital etc.), operating status, ownership (FBO, private, public) and if they provide HIV prevention/care & treatment services **Type:** Multiple excel sheets **Refresh freq.:** Yearly (anticipated)	1. Verification of health facility geocodes for correctness and completeness 2. Health facilities with missing geocodes to be geocoded using addresses/names of facilities 3. Standardized health facility meta-data inputs for facility type, operating status, and ownership	1. Web-based pharmacy geolocation mapping tool with the ability to display, and filter on, health facility meta-data (facility type, operating status, ownership, provision of HIV prevention/care and treatment services)		
	Rollout monitoring: The inability to easily access data collected at the pharmacy level inhibits the ability for coordinating bodies and government to monitor the rollout of commodities, like HIV STKs, in the private sector.	**Data source 4** **Description:** Point of sale (PoS) data from identified pharmacy PoS service provider, Maisha Meds[3] **Type:** Live database integration **Refresh freq.:** Daily/weekly	TBD	1. Dashboards with visualizations displaying the consumption (purchase) of HIV STKs, and other commodities of interest, by geographic area (region, district, ward) and over time.		

[2] "Readiness" defined by the pharmacies HIV STK stocking history and trained personnel for HIV STK distribution.
[3] Maisha Meds point of sale system is currently used by 252 pharmacies and ADDOs in Tanzania. The PoS system collects granular sales data on all commodities supplied through these entities.

Use Cases for Other Priority Products & Services

Although the use case presented in this report focuses on private sector introduction and rollout of HIV ST, the platform can also be leveraged to support the introduction, scale-up, and monitoring of any health product or service, across various sectors. For example, by appending "readiness" factors related to a specific family planning products to the private pharmacies' dataset and integrating relevant family planning target population data, decision-makers will be able to use a similar methodology to define a supply and demand driven introduction/rollout strategy for products such as DMPA-SC. Furthermore, the integration of a PoS system (as recommended above) will offer decision-makers with access to all sales data (at an aggregated level) from participating pharmacies. Finally, in a future state where data from private sector actors, such as importers and distributors are integrated into the platform, the connection into these databases/formats will give users and decision-makers visibility into the market for a variety of priority health products and services.

Documents Reviewed

Advocacy Package for HIV Self-Testing through Private Sector in Tanzania. (2020).

AMREF Experience with HIV ST Implementation. HIV STK Workshop Meeting Workshop. (2022). FHM Engage

AMREF HIV ST Workshop. Afya Kamilifu. (2022). Amref Health Africa

Assessing the Potential for Community Level HIV Self-Testing in Tanzania. (2020). SHOPS PLUS & USAID

HIV Self-Testing Africa. Private Pharmacy HIV ST Distribution. (2022). UNITAID & PSI

Private Pharmacy Distribution Model for HIV Self-Testing Kits. HIV STK Workshop Meeting Workshop. (2022). FHM Engage

Partnering to Introduce Commercial HIV Self-Testing in Tanzania. (2018). SHOPS PLUS & USAID

Tanzania HIV Self-Testing Framework. (2020).

The Tanzania HIV Self-Testing Implementation Framework. (2020). A Guide for the Introduction, Market Approach and Delivery of HIV ST in Tanzania. National Aids Control Programme

WHO/ATLAS/STAR HIV STK M&E Lessons from West and Central Africa. HIV STK Workshop Meeting Workshop. (2022). FHM Engage

World Health Organization. (2018). HIV Self-Testing Strategic Framework: A Guide for Planning, Introducing, And Scaling Up. World Health Organization

Annex 1. Use Case Definition

There is no universally accepted definition for a "use case" in global health. Hence, we offer our definition and framework for a "use case," which builds upon existing literature, current practices in the digital technology space, and our experience with applying technology solutions in global health. Traditionally, a use case specifies functional requirements for software development and continues to be adapted into "templates" to streamline high-level inputs. At its core, we define a use case as a user-centric framework which describes the goal, challenge areas, inputs, outputs, and outcomes of a technology solution. The use case framework provides a structured, systems design approach to understanding and addressing market intelligence challenges by placing users and people at the center. While similar to a logical model framework or theory of change, specifically, a use case clearly defines the purpose of a technology solution from the user's perspective; the main actors who will contribute to or benefit from the solution; their data-related challenge areas; key inputs required to implement the solution (data sources and data quality improvements); expected outputs to be measured/used (digital tools and sample indicators/visualizations) as well as the types of decisions or insights that will result from the prescribed solution.

A use case aims to shape inform and enhance the types of decisions that can be made from the technology solution and it:

- Takes a user perspective
- Clearly defines the purpose of the system
- Provides a framework for system design
- Identifies how the user will interact with the system
- Informs functional requirements of the system
- Provides boundary for scope
- Ideally, is co-created with end users

Key Terms

- ***Goal:*** A high-level aspirational statement describing the desired outcome of the use case
- ***User(s):*** The stakeholders or decision-makers who will benefit from information generated by the use case technology solution
- ***Data challenge areas:*** The missing link between the user information needs, access, and use
- ***Data sources:*** A description of the data sources that will contribute to the use case (type, format, frequency, availability, quality, and access)
- ***Data quality improvements***: Any data process/appendages/considerations which are required to increase the quality of the data or make it ready for use
- ***Digital Tools:*** These are the digital platform features/tools to process and disseminate information to users (dashboards tools, entity maps, alerts etc.)
- ***Sample indicators/visualizations***: Processed information (analytics/triangulation) disseminated to users/actors
- ***Insights:*** new awareness or learning from data/information generated, analyzed, synthesized, and/or visualized
- ***Decisions:*** Actions (policy, program, investment, etc.) based on evidence generated through the use case

Annex II. HIV STK Stakeholders and Key Informants

Private Sector Distributors	Stakeholder type
Synermed Pharma	HIV STK importer and distributor
MyService	Potential technology partner for HIV STK distribution
Sciex Tanzania	HIV STK importer and distributor
Implementing Partners	**Stakeholder type**
Population Services International (PSI)	Implementor of HIV ST private pharmacy pilot
FHI 360	Community-level implementor HIV ST programming
Christian Social Services Commission (CSSC)	FBO, private health facility operator
PATH (Digital Square)	Government technology and data partner
FHM Engage Tanzania	N/A
USAID Tanzania	N/A
Public Sector Market Actors/Coordinating Bodies	**Stakeholder type**
TACAIDS	Multi-sectoral HIV & AIDS response coordinating body
Ministry of Health Information and Communication Technology (ICT) Department	Public sector technology stewards
Pharmaceutical Society of Tanzania (PST)	Pharmacists' society and coordinating body
National AIDS Control Program (NACP)	Tanzania national HIV/AIDS program

Annex III. Interview Question Guide

Date of meeting: [insert date]

Meeting with: [interviewee]

Background: [insert background information]

Stakeholder type: [insert description of stakeholder]

General notes from meeting: [Any additional notes]

Questions:

Overview products/services:

1. Can you give us an overview of your current programs as they relate to HIV, Condoms, FP commodities? (Implementing Partner)
2. What products (HIV, Condoms, FP) do you work with? (Implementing Partner/Importer/Distributor)
3. How do you work with these products? (Implementing Partner/Importer/Distributor)

Product distribution (who/where):

1. Who does [Interviewee] distribute [product X] to? (Implementing Partner/Importer/Distributor)
2. Who is the target population that [Interviewee] serves/provides [product X] to? (Implementing Partner/Importer/Distributor)
3. Are there any key geographical areas you are working in or will work in? (Implementing Partner/Importer/Distributor)

Product distribution (how):

1. For [product X], what are the modes of distribution? Are there intermediaries before the product reaches the end seller/consumer?
2. For [product X], what are service delivery models? Are there multiple approaches being used to serve the end seller/consumer?

Relationships with Governments/other coordinating bodies:

1. How does [Interviewee] interface with the Government or a coordinating body?
2. Do you share data with the Government? If yes, what data, how is this data shared, how often is it shared?
3. How does [Interviewee] interface with other coordinating bodies (working groups, x)?
4. Do you share data with these bodies? If yes, what data, how is this data shared, how often is it shared? (Implementing partner + Importer/Distributor)

Data collection:

1. What data for [product X] do you collect?
2. What is the level of aggregation of this data?
3. Where is it collected and stored?

Data use:

1. How do you use your own data? How would you describe the quality of your data?
2. How do other organizations want to use your data?
3. What kind of data would you need (other than your own data)? What data do you need to enhance your planning and coordination?
4. What types of decisions need to be made using your data and other data? Who needs to make these decisions? Why are these decisions important?
5. What are the potential solutions/opportunities to increase data availability, accessibility, quality, and use?
6. Are you willing to share the data you have? What kind of frameworks do you use to share data?

Additional questions (commercial suppliers):

1. What are the volumes of [product X] you import annually (or some other time period)?
2. What is the import price?

Annex IV. Cohort Tool Application Findings

Introduction

To address concerns associated related to linkage and referral for private sector HIV ST clients, the Zenysis team was requested to explore opportunities for applying a cohort tracking tool to ensure "continuum of care" across public and private sector service providers. The team's initial impression that the cohort tool may not be applicable for private sector HIV ST provision in Tanzania was validated during the scoping visit to Tanzania. Cohort tracking across HIV ST and support services, and across the private and public sector in Tanzania, is not currently possible because:

1. There is no active private sector HIV ST programming in Tanzania
2. A core benefit and feature of private sector provision of HIV ST is privacy and confidentiality and, as such, the collection of individual level HIV ST data (a precondition to tracking cohorts) would not adhere to the principles of individual data privacy in this context.

Since the applicability of the cohort tool for tracking individuals through the HIV ST continuum of care in Tanzania was not applicable, the team offers background on the cohort tracking tool and briefly outlines a real-world use case for the tool in a different context and setting.

Background - Cohort Analysis

Cohort analysis is used by digital marketers in B2B and B2C companies to answer critical questions such as: Which clients are responding to my new marketing campaign? Which clients are making the most repeat purchases? What client characteristics are driving retention? Applying questions such as these to global health and community-level programs is not so much a leap, but a logical step forward. Zenysis, has adapted the cohort analysis -- used so avidly by marketers to better understand their customer data and to target customers with new campaigns -- for strengthening community health programs and systems with a code-free querying tool.

In a public health setting, individual-level data are needed to monitor "cohorts" of patients. Each cohort is tracked according to common variables such as age, gender, key population type, location, testing date and outcome, counseling services received, referral dates, and treatment regimen, among other data elements. More generally, a cohort is any grouping of individuals defined by certain characteristics, as relevant to various kinds of health programming. By defining and tracking cohorts, M&E teams can flexibly leverage their 'big data' to assess the continuum of care across patient groups (cohorts) and better determine which cohorts need additional support or modifications in how their services are delivered to ultimately retain them in care and treatment and improve health outcomes.

Pre-conditions required for the application of the cohort tracking tool

The core precondition for the use of a cohort tracking tool is the availability of individual level data. If individual level data is available, there are two common scenarios the cohort tool can be applied to: 1) intra-database cohort tracking and 2) cross-database cohort tracking.

Intra-database cohort tracking is applicable where there is a single database containing individual-level health program data, but analysts and decision-makers are unable to answer core questions such as how

many individuals received repeat services or how many individuals received service X and service Y. In the case of HIV programming these questions translate to "how many people were retained on antiretroviral therapy (ART)" or "how many individuals who tested HIV positive were initiated on ART." Since all programmatic data is tracked in a single database, the database-generated patient unique identifiers are used to conduct cohort analyses (follow individuals through various services/indicators)

Cross-database cohort tracking is applicable when there is a need to track individuals and services across multiple individual-level databases. For example, and as it applies to HIV, if a program is capturing data on HIV testing in one database and ART services in another database, the programmatic need is to monitor individuals across these databases to assess their progression through the continuum of care. An added complexity of cross-database cohort tracking is that common unique patient identifiers between systems are often not available – that is to say, in the absence of common identifiers like national identification (ID) numbers, it is necessary to build alternative methods to link (match) individual profiles across databases. One of ways to solve this problem is "profile matching" – profile matching is a process whereby a common identifier between two or more systems is generated using combinations of profile data (name, surname, date of birth etc.). This approach does, however, have its drawbacks as it cannot be said with certainty that two profiles (one from each data system) is indeed the same person as individuals may, for example, have the same name, surname, and date of birth. In the case of cross-database cohort analysis, it is important that careful consideration is given to what data elements are used to define cross-database common identifiers.

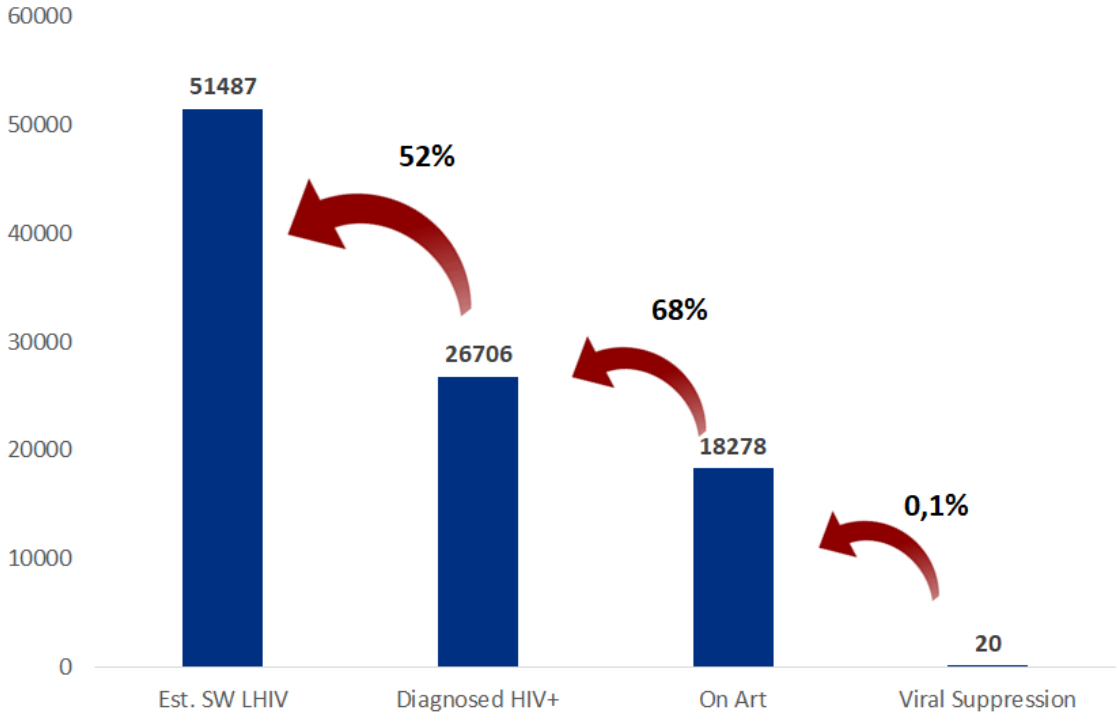
Use cases for the cohort tool

Presented below is a use cases where the cohort tool is currently being used for health programming in HIV. The names and specifics of the organizations who use the cohort tool have been omitted.

HIV Cohort Tracking in South Africa

Principal Recipients (PRs) and Sub-Recipients (SRs) of Global Fund grants in South Africa use the cohort tool to have a comprehensive picture of KVP (sex workers, PWID, AGYW, ABYM, and MSM) HIV treatment cascades. Before the use of the cohort tool, Global Fund PR's and SR's HIV cascade were not based on monitoring individuals through the cascade, but rather, they were based on aggregate numbers of individuals for each indicator in the cascade of care. For example, an individual sex worker (SW) could have been diagnosed HIV positive through a non-Global Fund program but may receive ART through the Global Fund program – in this case this sex worker would be counted under the "number of SW who are on ART" indicator but would not appear in the "number of SW diagnosed HIV positive" indicator. As such, this is an inaccurate representation of the cascade of care.

FIGURE 3: COHORT DRIVEN CASECADE OF CARE



Additionally, using the cohort tool, PRs learned that a SRs needed to enhance their cohort targeting (repeat targeting of high-risk individuals). The cohort tool revealed that there were districts with large numbers of SWs reached and tested by the program but low numbers of the SWs who tested positive and were initiated on ART. Using micro-level dashboards created using the cohort tool, the SR's cohort tracking improved, as they could now identify and target SWs that had tested positive for follow up treatment.

About FHM Engage

Frontier Health Markets (FHM) Engage is a five-year cooperative agreement (7200AA21CA00027) funded by the United States Agency for International Development. We work to improve the market environment for greater private sector participation in the delivery of health products and services and to improve equal access to and uptake of high-quality consumer driven health products, services, and information. Chemonics International implements FHM Engage in collaboration with Core Partners: Results for Development (co-technical lead), Pathfinder, and Zenysis. FHM Engage Network Implementation Partners include ACCESS Health India, Africa Christian Health Association Platform, Africa Healthcare Federation, Amref Health Africa, Ariadne Labs, CERRHUD, Insight Health Advisors, Makerere University School of Public Health, Metrics for Management, Solina Group, Strategic Purchasing Africa Resource Center, Scope Impact, Stage Six, Strathmore University, Total Family Health Organization, and Ubora Institute.

1275 New Jersey Ave. SE, Ste 200,
Washington, DC 20003