CASE STUDY

Infomovel

CommCare for HIV and TB Patient Tracking

OVERVIEW

Infomovel is a patient tracking tool developed to support community health workers (CHWs) administer services across seven provinces in Mozambique. Focused on HIV/AIDS, tuberculosis, and prevention of mother-to-child transmission (PMTCT), the tool was originally piloted in 2015 with Ariel Glaser Foundation in Cabo Delgado. In 2019, the program expanded to national scale, supporting more than 1,750 workers across eight different implementing partners.

Infomovel supports linkages between community workers and health facility focal points by including case management support for HIV testing and counseling (HTC), care & treatment (C&T), PMTCT, and tuberculosis programmatic workflows. Infomovel consists of two applications, Health Facility and Community, which support patient registration, follow-up, defaulter tracking, and household testing.

SUMMARY

LOCATION

Mozambique (seven provinces)

SECTOR

HIV/AIDS and TB

PARTNERS

Center for Disease Control, Friends in Global Health, Fundação Ariel Glaser, Elizabeth Glaser Pediatrics Aids Foundation, Centro de Colaboração em Saude, ICAP, Mothers2Mothers, and N'weti

FEATURES

Client case management, EMR & OpenMRS integration, import validation, case sharing (i.e. referrals), multimedia-based counseling, in-app adherence calculators.

NUMBER OF USERS

1,789 Health Workers

PROBLEM

Sub-Saharan Africa carries the global burden of HIV/AIDS. The region accounts for more than 70% of global infections and 1.5 million AIDS-related deaths in 2013 (Kharsany et al, 2016). In Mozambique, UNAIDS reported in 2018 that there were an estimated 2.2 million people living with HIV (UNAIDS).

The country faces major challenges in this fight, such as low national retention rates and limited budget to support the health system. For instance, 90% of Mozambicans live in an underserved primary health care area (PEPFAR, 2017).

Further, tuberculosis remains the leading cause of death for patients with HIV. In Mozambique, an estimated 56% of patients with TB are also co-infected with HIV. And as multi-drug resistant (MDR) TB rates rise – reaching 3-4% in Mozambique – proper treatment requires consistent supervision that the country's already strained health system struggles to provide.

Additionally, health workers are often playing catch up, as the detection rate for TB in Mozambique bared breaks 37%, leading to increased infections across the country. To make matters worse, these workers are overburdened and often undertrained.

SOLUTION

Led by UNAIDS, the global public health community has come to a set of targets for HIV/AIDS reduction referred to as: 90-90-90.

- **90% of all people living with HIV should know their HIV status**
- **90% of all people with diagnosed HIV infection should receive sustained antiretroviral therapy**
- **90% of all people receiving antiretroviral therapy should achieve viral suppression**

These targets are now a cornerstone of all HIV/AIDS prevention and care programs. In 2016, Mozambique committed to adopt the 90-90-90 UNAIDS goals and initiated treating people with ART immediately after they have tested positive (PEPFAR, 2017).

To support the countries' community health workers (CHWs) and improve treatment, adherence, and retention, the Ministry of Health, CDC, and USAID engaged Dimagi to design a CommCare-based mobile tool called Infomovel. The tool was designed to reduce loss to follow-up by implementing:

- **Electronic patient registries (with GPS integration and patient unique ID features)**
- **Tracking of individuals with HIV/AIDS and TB through the care cycle from diagnosis, initiation of treatment, adherence monitoring to end of treatment**
- **Prioritization of patients based on adherence, due dates for tests, missed deadlines for re-testing or appointments**
- **Automatic triggering of reminders for follow-up appointments to individuals and health care providers**

SYSTEM OVERVIEW

Infomovel supports community health workers (CHW) to perform on-site patient follow up, testing services, and systematized counselling. It provides organizations with real-time data collection, which in turn, improves indicators and health outcomes.

The core users of the system are:

Case Manager

User responsible to link the information from the Health Facility and the Community Workers. Each Health Facility can have one or more Case Managers. This person manages workflows related to the health facility's delivery of service to HIV/TB patients, including the connection with other health information databases such as OpenMRS and ePTS.

Counsellors (Conselheiros)

CHWs that do all community services related to HIV test and counseling and care & treatment. They use the application to update patient information, record information from home visits and on adherence compliance, and provide better quality counselling.

Mentor Mothers

Follow-up with mothers and children recently diagnosed with HIV. In some health facilities, they are the first line of counselling after a positive diagnosis. They do not perform testing.

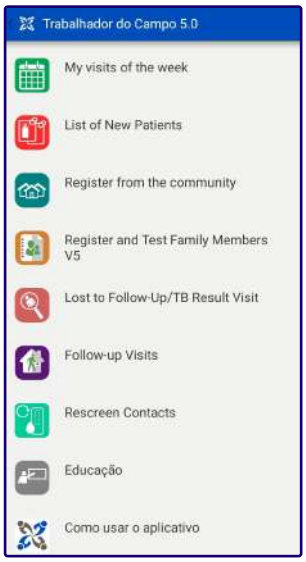
The digital solution facilitates services for individuals living with HIV and TB: mothers and pediatric patients of HIV and TB, individuals co-infected with HIV and TB, and TB contacts (requiring re-tracking and prophylaxis).

Patients are first enrolled in HIV care at the health facility by the facility focal point. The facility focal point then assigns HIV+ patients to the CHW for follow-up in their communities. Finally, patients and their household members are visited regularly by the CHW to reinforce adherence, especially if they represent a key population or vulnerable group, or if they have defaulted from their treatment.

SYSTEM OVERVIEW

Infomovel's design leverages several of CommCare's key features, such as:

- **Clinical decision support modules** that can be tailored for patient-specific diagnosis and care recommendations
- **Longitudinal tracking** for a patient-centered approach, supporting the patient's journey through the health system from detection through treatment and follow-up
- **Multimedia**, including audio video prompts and tips, to reinforce training and best practices for care
- **Secure data storage and sharing**, streamlining the flow of data between health facilities and community health workers from testing through treatment
- **Seamless third-party integrations** with systems such as OpenMRS, which the Ministry of Health uses at the health facility level to register HIV+ patients



Infomovel's core modules all contribute to the key objectives of the program: Reduce loss to follow-up.

Infomovel's case lists help to prioritize patients for follow-up based on adherence, due dates for tests, and additional criteria.

FEATURE HIGHLIGHTS

This application includes two complex case sharing functionality: (1) Importation of cases from the EMR to CommCare; and (2) Transferrals between different healthcare service providers and partners for HIV/TB care services at the community level.

1 - Importation of Cases from EMR to CommCare

Dimagi set up an integration between CommCare and OpenMRS for the Infomovel program using an open source middleware called MOTECH that was built and managed by Dimagi. We were able to set up the integration using the MOTECH platform and the OpenMRS REST API. We set up a push and pull type of integration. The push integration allows the creation of visits, encounters, observations and update patient data from CommCare into OpenMRS. The pull integration approach allows new patient data or modified patient data or information on defaulters to be pulled from OpenMRS into CommCare. This video demonstrates how the integration works.

2 - Transferral Cases

In some cases, a patient case will need to be transferred from one service provider (i.e. X) to another (i.e. Y). In this case, the patient is registered as usual, with their national unique ID. Then the patient is allocated or assigned to a service provider at the community. Once assigned, the case will show up on a different mobile device used by the assigned service provider once the application connects to the internet and synchronizes the new case list. The other service provider has to accept the transferral to continue delivering services for that patient. This video shows a live demo of the workflow.

IMPLEMENTATION

Since 2015, the system has brought together the different implementing partners to support inter-agency collaboration after an initial pilot carried with Ariel Glaser Foundation in Mozambique. With this system, now used by 10 US government partners funded by CDC and USAID, patients can be referred across multiple geographical regions and different programmes. The following partners are using Infomovel in Mozambique: Jhpiego, ADPP Mozambique, ICAP, N'weti, World Vision, Friends of Global Health, FHI360, EGPAF and Centro de Colaboração em Saúde.

Harmonizing HIV and TB workflows across different partners providing last mile services in different regions of the country was challenging. Our vision was to develop a standardized application which has adequate flexibility for adaptations based on unique programmatic priorities of each partner as well as regional needs. We accomplished this by setting up agreements for application and data sharing among the partners and established clear data dictionaries to establish the common data set required to be collected and used by all partners to support a coordinated national information database. Finally, the leadership and vision from the CDC was critical in forming the collaborative approach.

IMPACT

The standardized implementation model itself brought immense potential for impact. Through creating a standardized app for HIV and TB community-based workflows in Mozambique, we have seen the following:

- *Alignment of workflows and services provided by programmatic partners in different regions to meet national CHW program protocols and international HIV/TB standards*
- *Improved collaboration and knowledge sharing is improving across partners whose work was previously extremely siloed*
- *Greater accuracy and accessibility of HIV & TB data improving across the 6 regions of Mozambique.*

Dimagi supported the customization and local adaptation needs of each partner by building skills within each partner organization to build and modify the flexible components of the application.

Additionally, a machine learning program was tested using Infomovel, which saw marked improvements in the platform's effectiveness in supporting treatment adherence and appointment attendance. This program was able to flag the subset of patients at highest risk of defaulting, though more work needs to be done to refine the model. A recent study also highlighted the extensive use of the Infomovel system for patient tracking, as well as "regular usage of Infómovel data exports and reports for tracking application usage."

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