Real-time Medicine Tracker to Improve Health in Tanzania
OKOA is a cloud-based system for information sharing between health sector stakeholders

BACKGROUND

The healthcare system in Tanzania relies on many parts that must work together to ensure that medicines and medical supplies are distributed where they are needed. When this system fails to meet demand, Tanzanians can find themselves without access to life-saving medications at their local hospitals and clinics and may be forced to buy them at higher-priced private pharmacies or go without.

Patients wait for medicine that may not be in stock

Although tax dollars are allocated to purchase medicine, there is currently no publicly accessible accountability system that tracks medicines from procurement to patient. Even local government authorities and the Ministry of Health lack real-time data on medicines and medical supplies, as well as diseases, deaths, and births at health facilities, all information invaluable for proper allocation of resources.

PROBLEM

Local community members in need of medicine and medical supplies currently have no way to know whether what they need is available locally. To find out, they must go to their nearest health facility and wait – often for hours – sometimes only to discover that the medicine they require is not available. When this occurs, a private pharmacy may be their only option, but only if they are able to afford the higher prices. At the same time, in another community, that same medicine may be overstocked and expiring.

The current system is inefficient. It costs time and money of community members, as well as tax dollars spent on medicines that are overstocked and go unused. In some cases, the current inefficiencies even cost a life. These problems result from the lack of a platform to provide real-time data relevant to the necessary stakeholders for proper and timely decision-making. This is where OKOA comes in.

SOLUTION

OKOA is a cloud-based software that can be used by health facilities, local government authorities, the Ministry of Health, local and national medical stores, and local community members. Stakeholders at each of these levels have access to information pertinent to their

> **We see OKOA as a timely project which will not only save our customers' resources but also streamline our own operations.**
>
> *-Pharmacist at Ujiji Health Centre*

own decision-making: Medicine availability and queue times at the nearest health facility for citizens, detailed reports on medical supply distribution and health statistics for government authorities.

A Swahili word that means 'save', OKOA is designed to 'save lives' by improving access to medicines at public health facilities, 'save money' by ensuring that people receive affordable medicines at public health facilities rather than resorting to private pharmacies with higher prices, 'save time' for patients when they go to seek health services, and 'save tax money' by making the movement of medicines and medical supplies efficient and transparent.

Using OKOA, the **Ministry of Health** can track stocks in medical stores and access up-to-date reports on disease, birth, and death rates throughout the country. The **local government authority** can follow local supply and demand for medicines and medical supplies and obtain statistics on diseases, births, deaths, and revenue collected at each local health facility. **Medical stores** can access medicine and medical supply distribution data and track demand on a geographically disaggregated level. **Health facilities** can access their own inventory in real-time, monitor changes in demand, and control revenue collection to optimize ordering from medical stores. Finally, **local community members** can determine whether medicines are in supply at a particular health facility in their area and whether there is a queue of patients at that health facility before deciding to go for health services.

The software is cloud (web) based. It contains separate modules for use by the Ministry of Health, local government authorities, medical stores, health facilities, and local community members. These modules can be accessed using any internet-enabled computer, tablet, smart phone, or feature phone.

PROCESS

OKOA was first deployed in 2016 at a pilot site, Ujiji Health Center. After initial success, OKOA prepared for an expanded pilot at 10 health facilities - serving as many as 20,000 local residents - in Kigoma Ujiji Municipal Council. The team coordinated necessary IT equipment, and data entry clerks were assigned at each of the ten pilot facility to begin the data entry process in June 2017.
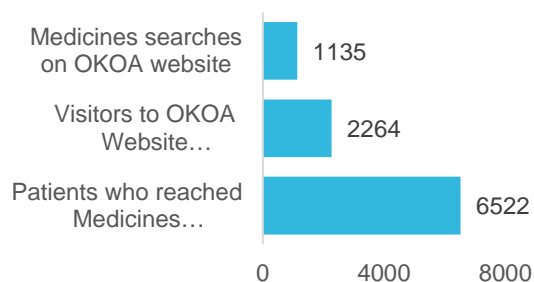
OUTCOMES & IMPACTS

In the expanded pilot period, OKOA was released to the public on July 24, 2017. Between July 24 and August 25, the OKOA website logged more than 2,000 visitors – an average of 90 per day and **more than 1/3 of all patients** - who checked medicine supplies and wait times at health facilities in Kigoma Ujiji Municipal Council. In that same period, Kigoma Ujiji locals conducted more than 1,000

> **We see it very useful in our localities, and we are going to allocate resources for its sustainability**
>
> *-Kigoma City Mayor*

Outcomes of Community Engagement on OKOA Platform

Category	Value
Medicines searches on OKOA website	1135
Visitors to OKOA Website…	2264
Patients who reached Medicines…	6522

searches on OKOA to locate health facilities that had specific medicines in stock, ensuring that their needs would be met before leaving home. Health facility workers have already noticed the difference, reporting that patients now arrive already knowing whether a particular medicine is available.

Through OKOA:

● Local community members (a) have increased access to affordable medicines and medical supplies at their public health facilities, saving both lives and money; (b) save time by knowing when health facilities are less busy; and (c) are well-informed of diseases in their area, enabling them to take precautionary measures

● Local government authorities know both the demand and supplies of medicines, revenue collection at each health facility, and diseases, births, and deaths in their area, enabling them to allocate resources appropriately.

● The Ministry of Health can optimize resource allocation by tracking the distribution of medical supplies and medicines at medical stores and health facilities in real-time.

● Medical stores can distribute medicines and medical supplies at the right time and in the right quantity by knowing the supply and demand at individual health facilities. This will reduce shortages of medicines and waste from the expiration of overstocked medicines.

● Health facilities (a) can track their ordering needs by tracking real-time inventories and demand, and (b) manage revenue collection at their facility.

OKOA is currently building collaborations with Sikika, a non-government, evidence-based, health systems advocacy organization, to explore how the OKOA platform can be used in health advocacy and with the National Blood Transfusion System to track the blood supply nationwide. OKOA plans to expand its platform for national use, where the system could benefit as many as 50 million Tanzanians.

KEY COLLABORATORS

Bukhary Kibonajoro is a Dar es Salaam based software engineer, founder, and CEO of StraightBook Limited. He has been developing OKOA since early 2015. He benefited from a $22,000 grant from the Data for Local Impact (DLI) Innovation Challenge in March 2017. With that grant and accompanying training and mentorship, he and his StraightBook Limited teammates are expanding OKOA. By 2019, they expect OKOA will be used by at least 20 District/Municipal/City Councils in Tanzania. Visit http://www.okoa.co.tz/ for more information.

DATA COLLABORATIVES FOR LOCAL IMPACT

PEPFAR   MCC

DCLI, a partnership between MCC and PEPFAR is enabling the use of data for better policies, programs, greater accountability and progress towards sustainable development goals.

The Data for Local Impact Innovation Challenge (DLIIC) is providing financial and technical support to this project. DLIIC is fostering data-driven innovations through small grant challenges for youth and entrepreneurs. Visit www.dlinnovationchallenge.com or follow DLIIC on Twitter @DLIinnovation for more information.

Kigoma Ujiji Municipal Council has been a key collaborator on the project and now uses OKOA-generated reports for decision-making.