MAKING STOCK DATA VISIBLE
How Dashboards Increase Vaccine Availability

Big changes are happening in Ethiopia around how vaccines are distributed throughout the country. With a population of 94.1 million, Ethiopia is the second most populous country in Africa. Supplying hospitals, health centers, and health posts with safe supplies for immunizing the nearly 3 million infants born each year[1] is a complex endeavor, recently made more efficient through a vaccine man-agement transition and a series of data-driven initiatives that are fundamentally changing how vaccines are distributed.
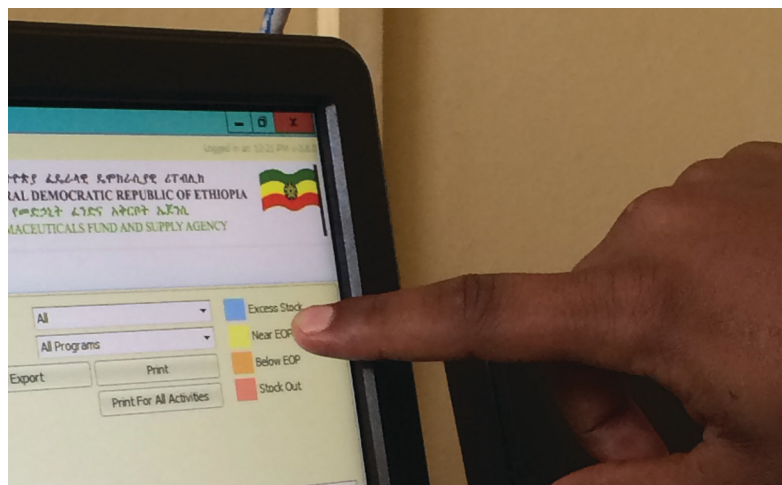
THE TRANSITION

Starting in 2014, the responsibility for the vaccine supply chain was transi-tioned from the Federal Ministry of Health (FMOH) to the Pharmaceuticals Fund and Supply Agency (PFSA), an autonomous FMOH agency responsible for the entire essential medicine supply chain. This shift consolidated the national vaccine supply chain with the supply chain for essential medicines, creating potential efficiencies but also bringing new challenges. A national transition is a massive undertaking, and is being implemented in a phased approach to minimize disruption and make sure vaccines are available at the point of care when they're needed.

Availability of quality, real time data on vaccine supply and demand at the national, regional, and lower levels has been critical to supporting improved efficiencies in how vaccines are managed.

A team of logistics and immunization experts from the FMOH, PFSA, John Snow Inc. (JS)I, World Health Organization (WHO), UNICEF and Clinton Health Access Initiative (CHAI), with support from the Bill & Melinda Gates Foundation, provided support to the transition process. JSI contributed valuable expertise in logistics management information systems (LMIS), having developed and implemented a comprehensive inventory manage-ment system and LMIS for essential medicines over the past decade.

As part of the transition process, the team looked to the LMIS already in place to manage the essential medicines and other health commodities distributed by PFSA. Rather than introduce a vertical vaccine management information system, it was decided to adapt the existing system to vaccines. Within the existing Health Commodities Management Information System (HCMIS) Warehouse Edition, an HCMIS Vaccines module was created to manage stock on hand, expiration dates, and other key metrics. At PFSA Center and Hubs, this enhanced HCMIS Warehouse Edition is being rolled out, while the HCMIS Vaccines module is being introduced at cold rooms.

HCMIS ENHANCES VISIBILITY OF VACCINE SUPPLY CHAIN DATA

Before the transition, HCMIS Warehouse Edition was only in use at the PFSA Center. Once the vaccines were issued from the Center to the Regional Health Bureaus and lower levels of the system, there was no automated system or systematic stock management practices for vaccines. He faced the challenge of a system managed using paper records and bin cards which take time to review and analyze. An accurate assessment of stock on hand could require walking into a warehouse and doing a manual count: inconvenient and time consuming, particularly at the large Regional and Central cold rooms. Now, stock trends, and related analytics that can quickly identify potential stockouts and other problems are available on an electronic dashboard within the HCMIS.

The HCMIS was originally developed by JSI in Ethiopia for managing essential medicines data under the USAID | DELIVER PROJECT. The warehouse version for essential medicines and other health commodities is deployed across the entire PFSA network of warehouses at 14 center and hub locations, soon to expand to 18. In addition, a health facility version of the HCMIS is currently in use in over 500 hospitals and health centers. As part of the past two years of the transition, JSI has worked with PFSA on three key activities centered on integrating vaccine management into the HCMIS:

1. **Upgrading** the system with vaccine specific features,

2. **Deploying** the system for vaccine management in cold rooms, and

3. **Strengthening dashboards** and reports to provide data for decision making.

Now, the vaccine module within the system is in place at the national level and is being rolled out at the new regional hubs, where transactions are logged and summary dashboards make metrics about vaccine stock data easily accessible. The module includes several vaccine specific features including fields to capture vaccine vial monitor status, and whether distribution is for campaign or routine purposes.

Taking into account connectivity challenges, the system is designed so transactions can be managed on or offline; when a connection is available, the transactional data is transmitted to a central data repository. The dash-board will update with data from the transactions logged in the system when an internet connection is available, and provide close to real time data.

The JSI team who manage the development and implementation of the HCMIS in partnership with PFSA have received very positive feedback from users for having stock data visibility just a mouse click away.

For more senior managers, "the dashboard is designed to include meaningful metrics that share actionable data and can support decision making," said Beza Bogale, JSI Manager for the HCMIS team.

BEFORE THE TRANSITION, VACCINE STOCKS WERE MANAGED WITH

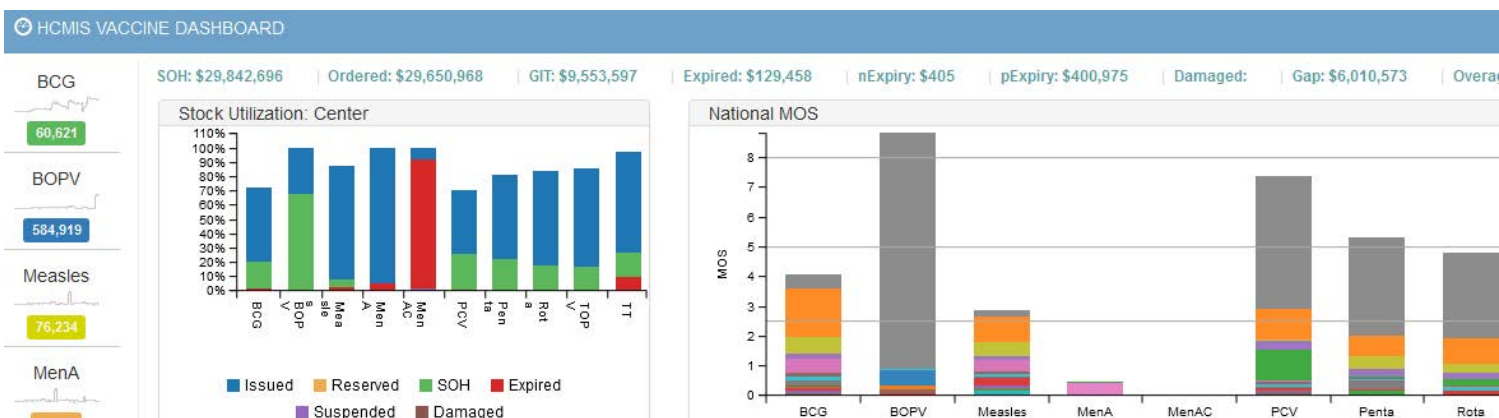Paper Records   Manual Counts

NOW, VACCINE STOCK DATA IS VISIBLE THROUGH THE HCMIS DASHBOARD

Dashboard

WHICH SUPPORTS **BETTER PLANNING** AND STREAMLINES THE PROCESS OF MANAGING AND DISTRIBUTING VACCINE.

HCMIS VACCINE DASHBOARD

BCG — 60,621
BOPV — 584,919
Measles — 76,234
MenA

SOH: $29,842,696 | Ordered: $29,650,968 | GIT: $9,553,597 | Expired: $129,458 | nExpiry: $405 | pExpiry: $400,975 | Damaged: | Gap: $6,010,573 | Over...

Stock Utilization: Center

National MOS

Issued | Reserved | SOH | Expired
Suspended | Damaged

SEEING THE IMPACT OF VISIBILE STOCK DATA

Having a simple, easy-to-use electronic system for managing vaccine logistics has already had a big impact at the national and regional levels, and is now being introduced at the woreda level in Tigray Region.

At the FMOH, the vaccine data from the HCMIS is routinely used for forecasting and supply planning and to estimate how much vaccine to supply to lower levels, said Tesfaye Tsigu Dejene, EPI Logistics Coordinator at FMOH. *"The big breakthrough [within the transition] is working on the HCMIS to review vaccine related metrics."* At PFSA, the system provides visibility integrated into the system for essential medicines. Building on an existing tool creates a seamless experience for the logistics staff managing transactions within the system.

The Bahir Dar and Mekelle PFSA Hubs are both actively using the HCMIS vaccine dashboards and managing transactions within the system. In Bahir Dar, Abdissa Mengesha Tumie is the PFSA Hub Manager, responsible for vaccines being distributed to six zones where more than 9 million people live. His team is using the HCMIS as part of their overall efforts to improve stock visibility and ensure his team knows where vaccine stocks are located throughout the region at any point in time. Abdissa views the HCMIS as a crucial tool for his team as they manage vaccine stocks by monitoring expiry dates—easily visible on a dashboard—and strengthening their ability to use data.

At the Mekelle PFSA Hub in Tigray, the Stock and Distribution Manager saw huge benefit in the transition, including the huge time savings and improved ability to see stockouts in the HCMIS. The HCMIS has recently been rolled out to the Mekelle Hub woredas, where EPI Officers are now using the system to manage the receipt and distribution of vaccines from the woreda health offices to their health centers and health posts.
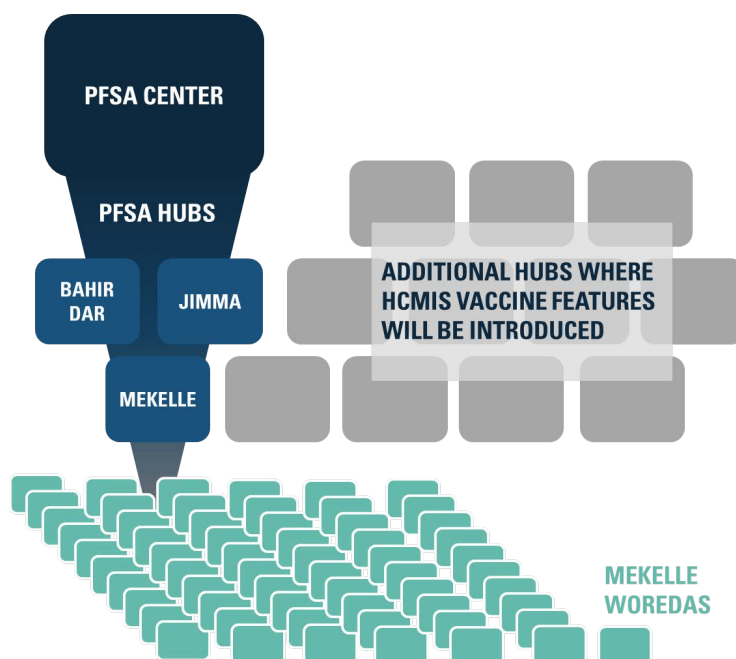
One woreda EPI Officer, who has just started to use the system, said *"The HCMIS is simple and nice to use – it updates the data every time there is a transaction."* Seifu Shiferaw, a Woreda Health Office Health Officer and Stock Manager, now saves time each month in generating reports and order forms and managing the supply by using the HCMIS, as you *"just have to click and you know the stock status."*
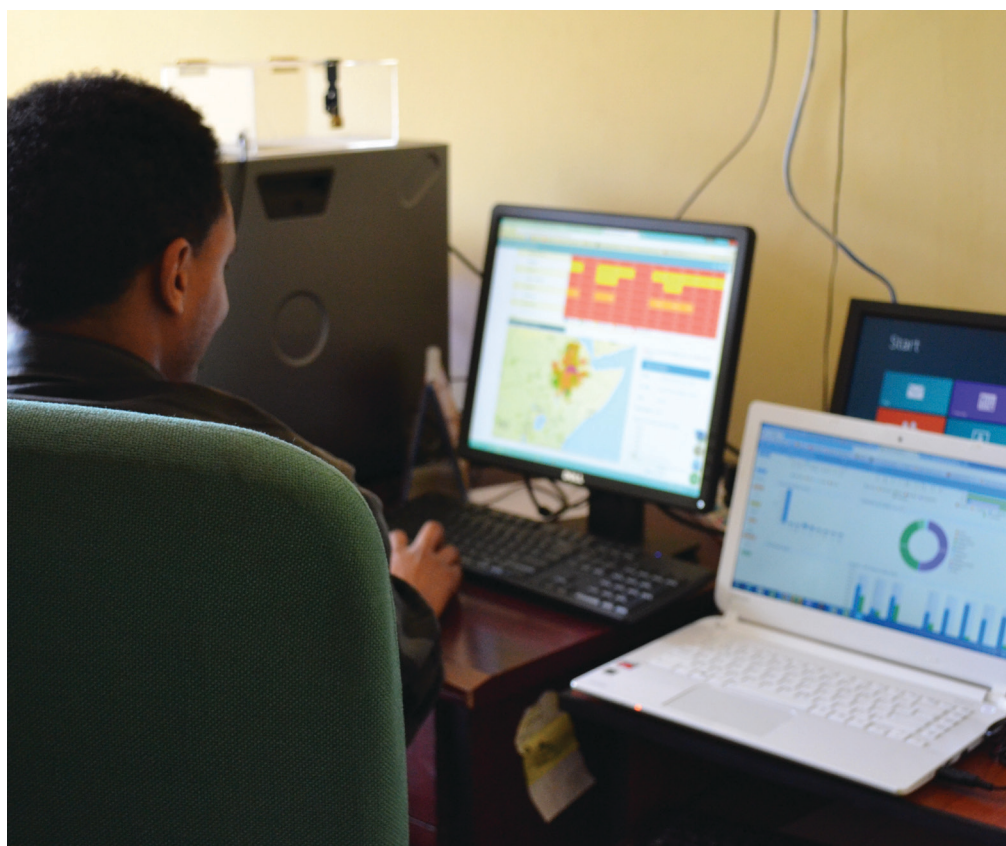
As of September 2015, the vaccine stock management features of the HCMIS have been rolled out at three of the 14 PFSA Hubs and are being introduced in 61 woredas served by the Mekelle Hub in Tigray Region.

Depending on the results of woreda deployment in Tigray, a decision will be made on whether or not to deploy the system nationally to all woredas.

PFSA CENTER

PFSA HUBS

BAHIR DAR | JIMMA

MEKELLE

ADDITIONAL HUBS WHERE HCMIS VACCINE FEATURES WILL BE INTRODUCED

MEKELLE WOREDAS

An HCMIS user at the Mekelle PSFA Hub demonstrates how to use the HCMIS dashboard to review stock data.

Various data visualizations, including maps, graphs and color coded tables, help key decision makers at the PFSA Hubs manage stock levels and make decisions every day.

Dashboards are customized based on the needs of the HCMIS user, including special views for each PFSA Hub and woreda.

LOOKING FORWARD

With the HCMIS in place and dashboards with timely data available to decision makers, the biggest opportunities moving forward are in promoting the active use of the tool by key managers and supporting the continued roll out to lower levels of the system.

Being able to see where vaccine is overstocked or in danger of a stockout or vaccine vial monitoring status change across cold rooms at a glance is powerful information; continued invest-ment in change management and support to decision makers at national and hub PFSA and FMOH teams is valuable to support sustained use of the tool. One of the national team members said, *"We need the follow up activities to these two years very much. Vaccine is a very sensitive commodity –the challenge it will bring is highly critical,"* referring to the potential for disruptions in the supply chain to be detrimental to immunization programs at lower levels.

In Mekelle, where the system has been introduced at the woreda level, userse shared their need for continued on the job training and support. The JSI HCMIS development and management team reiterated the same need: introducing the HCMIS at the woreda level brings additional challenges related to computer literacy and analytical capacity. Continued support around the introduction of the system at new levels will ensure consistent and correct use of the tool for stock management.