Impact of Electronic Logistics Information System on HIV Service Delivery in Zambia

W. Nicodemus, C. Opit, W. Bomett, J. Sikazwe

AIDSFree, JSI Research & Training Institute, Inc., Lusaka, Zambia

22nd International AIDS Conference • Amsterdam, The Netherlands • 23–27 July 2018

Poster #PEE683

Background

The Zambian Ministry of Health faced many challenges in managing procurement and distribution of medical products and supplies. Long lead times, stockouts, and general lack of efficiency characterized the in-country supply chain.

Description

In 2014, United States Agency for International Development (USAID) implementing partners began working with the Zambian government to pilot and scale up an electronic logistics management information system (eLMIS). This open-source software facilitates data collection in low-infrastructure environments for review, aggregation, analysis, and forecasting by incorporating a wide range of systems (electronic medical records, warehouse management systems) and enabling data visibility from point of origin to point of delivery. eLMIS has two editions: Central Edition (CE) and Facility Edition (FE). The eLMIS CE has been deployed to seven countries, while eLMIS FE has been deployed to 520+ service delivery points across all 10 provinces of Zambia.

Impact

- **Improved reporting rates:** Reporting rates[1] across all four program areas have increased since eLMIS replaced the stand-alone desktop application Supply Chain Manager (SCMgr) three years ago. The midline evaluation report[2] showed that the reporting rate has increased by 10 percentage points for laboratory commodities; 3 points for antiretroviral drugs; 20 points for HIV test kits; and 10 points for essential medicines.
.

Reporting Rates by Commodity Area

- **Data accuracy:** Data validation[3] in the electronic system has completely eliminated the arithmetic errors common in the manual logistics system. With the increased scale-up of eLMIS FE, facilities deployed with the application have seen improved accuracy and timeliness[4] in inventory management compared to those without the application.

Aggregate FE Reporting Rates for Q1 and Q2, FY 2018

- **Increased supply chain visibility:** The system has drawn awareness to supply chain challenges and has prompted timely decision-making as reflected below:

"At a click of a button, I can already see what is happening in all health facilities throughout the country. As a ministry, we do not have adequate resources to buy drugs that will only go to waste, therefore, we need to use what we have responsibly. I am excited to note that the system is able to track information because our mandate as a ministry is to provide commodities at the right time. Being able to track information with eLMIS will help us do this."
— Dr. Jabbin Mulwanda, Permanent Secretary, Health Services, Ministry of Health, Lusaka

"The system is very resourceful and makes my work very easy. I didn't know I could see expired products in my district, and now am able to. The system will now help us redistribute commodities evenly between overstocked facilities and stocked out or understocked facilities."
— Dr. Stephen Shanjalika, District Health Director, Mazabuka

Pharmacist Tibalenge Mwanza uses the eLMIS at Chilenje Level 1 Hospital in Lusaka.

Emergency Orders Reported in eLMIS

- **Reduced stockout:** Stockout rates for key HIV and AIDS tracer commodities have consistently declined for both FE and non-FE users, the result of improved stock availability at the central level and other developments. Increased visibility in logistics data at all levels of the supply chain and the increased use of eLMIS for decision-making, for example, have allowed managers to redistribute stock within nearby facilities.

Stockout Comparison: FE vs. All Sites, Tenofovir/Lamivudine/Efavirenz (TLE)

Stockout Comparison: FE vs. All Sites, Determine HIV Test Kits

eLMIS Facility Edition Deployed Sites by Province, September 30, 2018

LEGEND
FE Sites (576)

Time it takes for health facility data to reach the central level

More than 15 days
With manual logistics systems

Less than 1 day
With eLMIS

Lessons Learned

Through eLMIS, Zambia has achieved measurable improvements in logistics management, according to the eLMIS midline evaluation, including:[5]
- Increased visibility of supply chain operations resulting in broader involvement of user groups for supply chain decision-making
  - User sessions in eLMIS increased by 149 percent between May 2015 and January 2018.
- Increased throughput of health commodities to support World Health Organization universal test-and-treat strategy (UNAIDS 95-95-95 goals):
  - Increased use of HIV test kits by 141 percent and ARVs by 254 percent between the start of 2015 and end of 2016.
- Improved health care service delivery resulting in reduced missed treatments and better patient adherence to treatments.
  - Expired products at sites reduced by 80 percent between March 2016 and February 2017.
  - ARV availability at sites increased by 20 percent since 2015.
- Potential reduction in supply chain supervision costs:
  - Targeted supervision visits conducted to easily identifiable problem sites based on insights from data.
  - Fostering of a cohesive experience among implementing partners, leading to improved quality and lower costs of intervention.

Conclusions/Next Steps

Electronic information systems require allocation of resources and time to achieve sustainability and attain the full change management maturity model. There is a need to continue cultivating reliance on data for decision-making. Data are widely used to guide procurement and routine operational decisions, but not yet for supervision and policy development. The technology and implementation experience from Zambia will benefit neighboring countries with similar challenges.

References

1. Machinyise, D.M. "Using Systems for Data-Driven Decision Making of RH Commodities." Evidence for Impact Research Symposium, Lusaka, Zambia, 20-22 March 2018. Lusaka, Zambia: USAID's AIDSFree Project.
2. Opit, C. 2018. *eLMIS Evaluation Report*. Lusaka, Zambia: USAID's AIDSFree Project.
3. Reports in http://elmis.medstore.co.zm.
4. Tembo, K. "How Interoperability Improved Data for Supply Chain Decision-Making in Zambia." 10th Conference on ICT4D, Lusaka, Zambia, 8-10 May 2018. Lusaka, Zambia: USAID's AIDSFree Project.
5. Bomett, W. 2017. "Impact of Electronic Information Systems on HIV Service Delivery in Zambia." 19th ICASA GHSC Conference, Abidjan, Nigeria, 4-9 December 2017. Abidjan, Cote d'Ivoire: USAID's AIDSFree Project.

Benefits of eLMIS

Generate cost savings by eliminating books and couriers

Simplifies data gathering, reporting, and authorization through commodity integration

Improves data quality and timeliness

Increases accountability by improving data visibility to manager

Reduces workload for health facility staff and logisticians

Provides access to real time and historical data for more informed decision-making

Can adapt to changes in existing and future logistics systems

Developed to interface with other e-tools supporting health initiatives