Logistics Management Information Systems (LMIS)

Lisa Hare, John Snow, Inc.
PSM WG Meeting, November 19, 2012
Presentation Overview

- Definition and function
- Challenges
- Examples of LMIS
  - Zimbabwe Informed Push System: AutoDRV
  - SMS-based: c-stock and ILS Gateway
  - Open LMIS and eLMIS in Tanzania and Zambia
What is a LMIS?

A logistics management information system (LMIS) is a system of records and reports – whether paper-based or electronic – used to aggregate, analyze, validate and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain.

LMIS data elements include stock on hand, losses and adjustments, consumption, demand, issues, shipment status, and information about the cost of commodities managed in the system.
LMIS in the supply chain

- Links the different levels in the system through information
- Provides information each needs to perform their supply chain role

Source: John Snow, Inc.
Common challenges

- Poor recordkeeping: incomplete or not updated stock and consumption records
- Poor reporting: late, incomplete and poor quality reports
- Data not moving up or down the system: facilities not submitting to districts, districts not sending reports to central, central not providing feedback to districts and facilities
- Data not used for decision making
Existing LMIS
Zimbabwe Informed Push (ZIP) system

- Manages malaria products: artemisinin-based combination therapy (ACTs) and rapid diagnostic tests with tuberculosis products and primary health care packages.
- Managed by the Ministry of Health and Child Welfare and the National Pharmaceutical Company, with support from UNICEF, the USAID | DELIVER PROJECT, and Crown Agents Zimbabwe.
- Started as a pilot in August 2009.
- Delivery team comprises a district pharmacy manager (team leader), truck driver, and dispatch assistant.
- Delivery teams visit every health facility in the country each quarter.

Advantages of ZIP

- Facilities do not place orders; the delivery team uses software to determine the quantities of products used and what they need.
- National-level consumption and stock on hand data are rapidly available for decisionmaking; no data entry required.
- Stockouts of ACTs have been significantly reduced.
- Only need to train team leaders (65 people), not the facility staff (1,300 people).

Step 1. At the warehouse, the delivery team—
- receives and signs for products to be delivered to the facilities
- picks up the laptop they will use to enter facility data.

Step 2. The delivery team arrives at the facility and—
- conducts physical counts for each product
- asks facility staff whether there have been any days out of stock, or any type of adjustment (expiries, transfers)

Step 3. The delivery team leader enters the physical counts (and any adjustments or days out of stock) into the software (AutoDRV) on the laptop

Step 4. The software calculates the quantity required

Step 5. The delivery team leader delivers the quantity required; facility staff sign acknowledgement of receipt.

Step 6. The delivery team returns to the warehouse and—
- returns laptop
- submits all paperwork
- returns any excess stock.

Step 7. The data from laptops are downloaded into the Top Up software, which is used to generate reports for the quantities of products delivered, products consumed, and stock levels.
Basic Design Features

- Uses basic GSM phones already-owned by HSAs allowed rapid uptake of the system
- Collects minimum logistics data needed – SOH and receipts
- Nags to remind HSAs to report and alerts to notify higher levels of unresolved stock issues
- Presents the data in simple, easy to read reports
District, Zonal, and Central staff access HSA logistics data via a dashboard.

Health Center supplies the HSA based on SMS message.

HSA sends SMS with SOH each month.

The database calculates MOS and resupply quantities, reporting rates, number and duration of stock outs, displayed on the dashboard.
cStock: Reports

SC managers can monitor stock levels, stockouts and respond immediately.
Tanzania: ILS Gateway

- SMS-based system using providers own phones
- Reinforces rather than replaces Tanzania’s paper-based system
- Reminds health workers to complete R&R forms
- Collects stock status for 20 products
- Transmits emergency orders
- Evaluation results
  - 97% increase in reporting rates & adherence to reporting groups
  - 93% improvement in inventory management
  - 45% increase in product availability

The ILSGateway is a mobile health (mHealth) solution that tracks 20 essential medicines, along with family planning and malaria products. This mobile phone-based reporting system is not duplicative but rather reinforces and supports the MOHSW’s existing paper-based logistics system used to report on essential health products. ILSGateway is constantly being evaluated and improved with routine M&E.
ILS Gateway: Reports

- Alerts
  - 2 facilities have reported not submitting their R&R form as of today.
  - 3 facilities did not respond to the SMS asking if they had submitted their R&R forms.
  - 4 facilities did not respond to the SMS asking if they had received their delivery.
  - 6 facilities have not reported their stock levels for last month.
  - TUMBI HOSPITAL is stocked out of Intrauterine Contraceptive Device.
  - TUMBI HOSPITAL is stocked out of Progestin Only Pill.

- R&R Submission Summary (September 2011)
  - 29% (2) Haven't Submitted
  - 29% Submitted On Time
  - 29% Didn't Respond
  - 19% Haven't Submitted

- District Summary
  - 14 Facilities
  - Group A: Submitting (2 of 7 submitted)
  - Group C: Processing (0 of 3 forms sent to MDS)
  - Group B: Deliveries (2 of 4 delivered)

- Product Availability Summary
  - Lead Time
A collaboration of domain experts in logistics and supply chains, eHealth information systems, software development for low-resource settings, and process improvement.

http://openlmis.org/
Specific objectives are to:

- Provide a repository of tools, product and project assessments, and other information to promote a collaborative approach for LMIS solutions;
- Encourage the reuse of proven components and methods;
- Encourage the use of international standards in supply chain and health informatics;
- Encourage seamless interoperability and flow of information between supply chain layers;
- Create LMIS applications that are integrated with other health information system domains; and
- Improve critical decision-making in order to address the dynamic health service requirements of low-income communities
An effective logistics management information system (LMIS) should ensure that adequate quantity and quality of health commodities are always available at the point of service to meet patient demand. The eLMIS must provide integrated access to:

- Accurate, timely & routine consumption data
- Real-time logistics management capabilities covering point of origin to point of consumption
- Demand forecasting, capacity planning & modeling based on consumption
Zambia and Tanzania collaborate on design and develop together. Testing and deployment are handled separately by each country. Support may be shared or separate country systems may develop localized support plan.
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<th>Tanzania eLMIS Team</th>
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<td><strong>Requirements Analysis Phase</strong></td>
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<td>6) Software Requirements Specification</td>
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<td>7) Functional Requirements Document</td>
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<td>15) System Integration Test Report</td>
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<td>16) Training Plan</td>
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<td><strong>Deployment &amp; Maintenance Phase</strong></td>
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**Outputs**

Joint Outputs
Single Country Outputs

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- 2) System Development Plan
- 3) Project Schedule
- 4) Configuration Management Plan
- 5) Risk Management Plan
- 6) Software Requirements Specification
- 7) Functional Requirements Document
- 8) Use Cases
- 9) Requirement Traceability Matrix
- 10) System Design Document
- 11) Data Dictionary Document
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- 15) System Integration Test Report
- 16) Training Plan
- 17) System Installation Procedure
- 18) System User Manual
- 19) System Ops & Maintenance Document
- 20) Application Source Code
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- 25) Quarterly Production Support Report

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Tanzania eLMIS: Conceptual function model

Requisitions

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Orders

Shipments

Service Delivery Point

District

Central Medical Store

Warehouse Management System
Conclusion

- LMIS structures exist, but are not fully functional
- Movement to integrate across program areas
- Various options that could be adapted
- eLMIS: data warehouses that drawn multiple sources of data
- OpenLMIS: a resource sharing, normative partnership