OpenLMIS Features Overview

OpenLMIS

OpenLMIS is a powerful, open source, electronic logistics management information system (LMIS) purpose-built to manage health commodity supply chains. It was built in 2011 as an alternative solution to paper based national supply systems, and today it automates logistics processes in over 11,000 health facilities across Africa. OpenLMIS is used to manage data and logistics for all major health programs, including vaccines and HIV/AIDS. OpenLMIS has been proven to:

Reduce Stockout Rates
OpenLMIS improves health supply chain performance and access to medicines and supplies. For example, in Mozambique public health stockout rates dropped from 19 percent to 5 percent one year after deployment of OpenLMIS.

Save Health Workers' Time
With OpenLMIS, routine reporting of supply chain data and order calculations are reduced from several hours to less than one minute.

Promote Alignment
With 100 percent of deployments done in close partnership with national ministries of health, OpenLMIS' implementations are aligned with country health priorities and connected to adjacent information systems.

Improve Data Visibility
Providing timely, demand-driven access to the right information enables informed decision making and optimizes the supply chain.

General Benefits of OpenLMIS

- ✓ Open Source—no licensing fees, countries contribute to core code base
- ✓ Active public community for resources and continued learning
- ✓ Open documentation and implementer guidance (**readthedocs**, **wiki, Implementer Toolkit**)
- ✓ Simple deployment utilizing Docker and Docker-Compose
- ✓ Easy upgrades
- ✓ Data auditability and security
- ✓ Highly configurable to country context

## Integrations & Interoperability

- ✓ GS1 support for product catalogs
- ✓ Product Catalog Management Tool (PCMT) for Product Master Data
- ✓ OpenLMIS data flows to DHIS2
- ✓ Epicor for warehousing and ERP-related functions
- ✓ Track patient-level stock movements with OpenSRP integration
- ✓ Cold Chain Equipment (CCE) monitoring via Nexleaf integration

OpenLMIS Features

Requisitions
Use stock data to generate orders for a configurable approval process
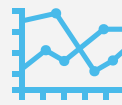
Analytics & Reporting
Use and display data with intuitive visualization that support decision-making

Order Fulfillment
Fulfill and ship orders based on stock on hand and send a Proof of Delivery from the ordering facility.

Mobile Integration
Connects dispensing and supply information at the point of care through an integration with OpenSRP.

Stock/Inventory Management
Captures inventory data and stock movements to provide an overview of full stock availability.
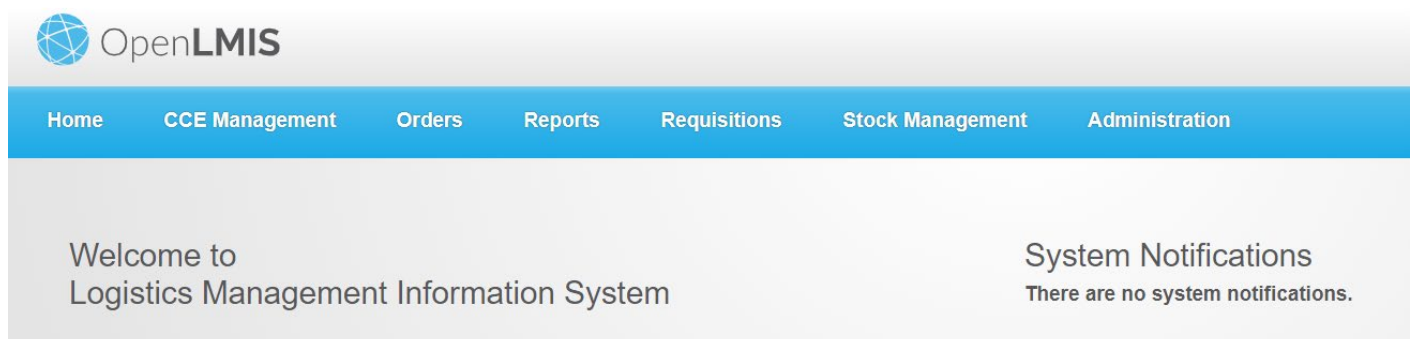
Equipment (CCE)
Track cold chain equipment inventory, functional status and receive realtime alerts on device temperature.

OpenLMIS offers a host of features that are all interlinked to provide seamless data exchange and optimize data visibility and analytics. All of the features can be used in conjunction with each other or there is an option to de-activate any features that are not relevant. OpenLMIS is a highly configurable system allowing individual countries to specify who in their supply chain is using each feature and how (based on country supply chain structure, in-country approvals, program types, internet connectivity, etc.). OpenLMIS also allows for countries to configure their own role-based access criteria, so that different types of users have access to certain features. For example, the ability to review and approve Orders may only be given to senior level staff.

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OpenLMIS

| Home | CCE Management | Orders | Reports | Requisitions | Stock Management | Administration |

Welcome to
Logistics Management Information System

System Notifications
There are no system notifications.

OpenLMIS login screen showing feature options

OpenLMIS Version 3 Feature List

System Administration

Provides control to specified 'super users' over the administrative functions of OpenLMIS, including role based access. Our advanced System Administration functions are what allows OpenLMIS to be configurable to different country contexts, and accommodate all health system and supply chain structures.

- ✓ Multiple translations (Spanish, French, Portuguese)
- ✓ Configure supply lines and approvals structure
- ✓ Set up users and roles, for "role-based access" to the system
- ✓ Email & SMS notifications
- ✓ Add/edits products, facilities
- ✓ Bulk data upload
- ✓ Change program settings

Requisitions

Also referred to as 'Assisted Ordering', the Requisition services allows lower level facilities to request stock from higher levels, usually District or Central warehouses. Stock requisitions can be calculated a) based on consumption or b) based on estimated need. When a Requisition is approved, it is converted to an "Order" (see Order Fulfillment service below). The Requisition and Order Fulfillment functions work hand in hand to create a routine ordering cycle for facilities to obtain new stock. Data from Requisitions flows back and forth from the Stock Management feature to update stock quantities in real time.

- ✓ Configurable requisition templates
- ✓ Stock-based requisitions
- ✓ Intermittent offline support
- ✓ Multiple supply lines
- ✓ Conversion to order
- ✓ Program-based approval pipelines
- ✓ Automatic quantity calculations (AMC, ISA)
- ✓ Emergency requisitions
- ✓ Support for vaccine commodities and workflows
- ✓ Price display for requisition

Order Fulfillment

Users at local or national warehouses use this function when they receive and approve a Requisition—the approved requisition (see Requisition section above) is converted into an 'Order'. Orders can be fulfilled internally within OpenLMIS or externally with integrations to an outside ERP or WMS. The order fulfillment cycle is completed when the requesting facility physically receives their Order and confirms receipt via the Proof of Delivery. The Proof of Delivery data is transferred to Stock Management in order to update stock quantities in real time.

- ✓ Internal order fulfillment within OpenLMIS
- ✓ Order fulfillment through external system (receive shipment information from an external ERP or WMS)
- ✓ Aggregate order fulfillments
- ✓ Proof of delivery
- ✓ Conversion of units to packs
- ✓ Price display of order prior to approval

Stock Management

Offering benefits to users at all levels of the supply chain, Stock Management allows ongoing, real-time accounting of the current stock on hand and consumption levels. It records stock transactions, such as issues (debit), receipts (credit), and a variety of adjustments (+/-). Data from other features of OpenLMIS seamlessly flow into Stock Management to enable automatic updates to stock quantities and consumption figures. It can auto populate order quantities to allow '1-Click Ordering' to save health workers time.

✓ Facility-level stock quantity and consumption tracking

✓ Support for vaccine commodities

✓ Lot and expiry-level tracking

✓ Detailed stock card information (adjustments, consumption, issuing)
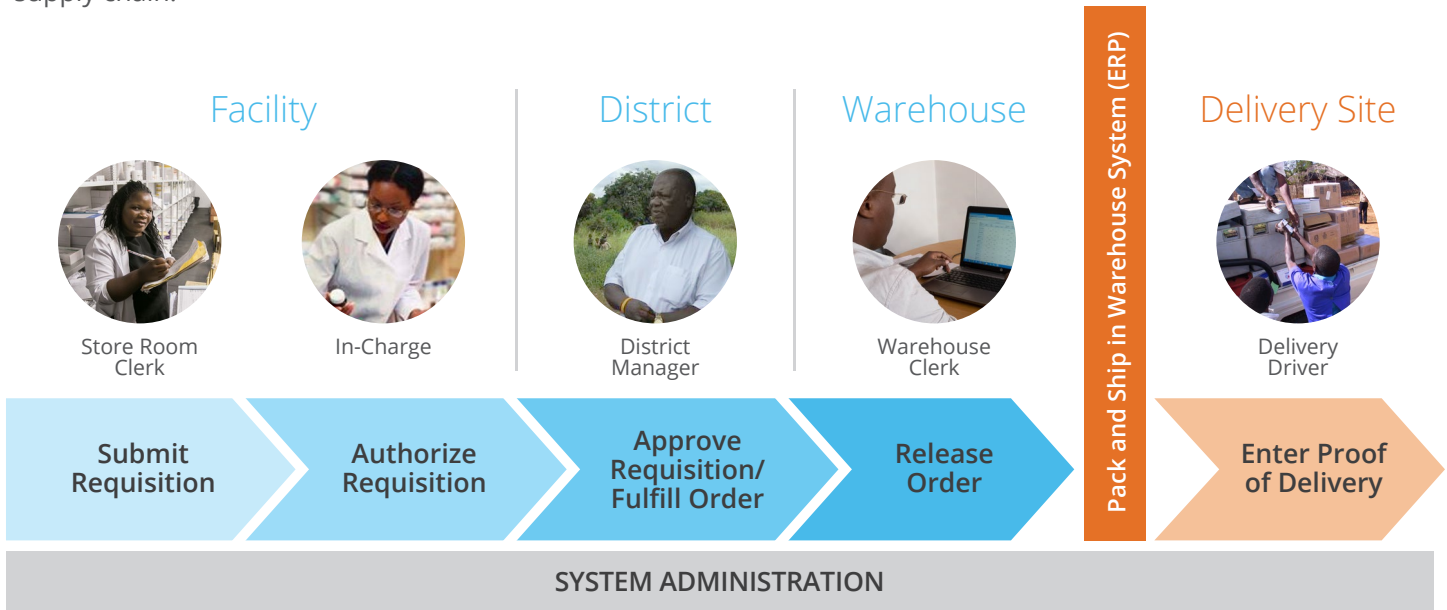
Cold Chain Equipment Tracking

This feature was designed specifically for vaccine programs to track the status of their Cold Chain Equipment (CCE) and receive notifications when there are breakdowns. Through our Nexleaf integration, vaccine fridges can be equipped with a device that monitors its temperature and sends a signal to OpenLMIS when the temperature falls out of normal range to trigger repairs.

✓ Basic facility-level equipment tracking including operational status

✓ Cold chain equipment status monitoring

✓ Integration with Nexleaf for CCE temperature monitoring

OpenLMIS Business Process

The below image outlines an example business process flow, showcasing how the Requisition and Order Fulfillment features are linked to create a seamless product ordering cycle involving users at varying levels of the supply chain.

Facility		District	Warehouse	Pack and Ship in Warehouse System (ERP)	Delivery Site
Store Room Clerk	In-Charge	District Manager	Warehouse Clerk		Delivery Driver
Submit Requisition	Authorize Requisition	Approve Requisition/ Fulfill Order	Release Order		Enter Proof of Delivery

SYSTEM ADMINISTRATION

OpenLMIS Reporting & Data Visualizations

One of the principal benefits of using OpenLMIS 3.x is the ability to use and customize reporting dashboards to track key indicators. Data visualizations are built upon a tool called SuperSet, which is integrated within OpenLMIS. Different users can be granted varying levels of access levels of permissions to SuperSet. It is recommended that most users be given read-only access, while user administrators can create, define, and edit public versions of charts and other data visualizations.

Dashboards for Routine Data Monitoring

Each dashboard provides a snapshot key data points for the below listed topics. The reports are extremely simple to modify in terms of look and feel (no developers required!) so the appearance of graphs, styles of charts and layouts of the dashboards can be modified for a particular implementation's preference. Easily configurable filter boxes allow users to drill down to specific data by location, product type, or time frame. Below we have listed some of possible data that can be displayed in each dashboard (each implementation can choose what to include, highlight or de-emphasize).

List of Reporting Dashboards and Data Display Options

1) Reporting Rate and Timeliness

- Names and/or % of facilities reporting 'Late', 'On time', or 'No report received'
- Filter by Region, District, and Time Period. Or see lists of all facilities who reported late, on time, or did not report
- Display Reporting Rates by district in a country map
- Search for a specific facility to learn their reporting status

2) Stock Status

- Which products are Overstocked, Under-stocked, Adequately stocked, or Stocked out
- Changes in Stock Status over time (increases/decreases in Stockouts, for example). Track % of facilities by type of Stock Status over time
- For this and other dashboards a Reporting Rate graph is shown on same screen to provide context for denominator (if a facility has not reported then they would not be included in denominator)
- Stockout trends by program; months of stock available by geography
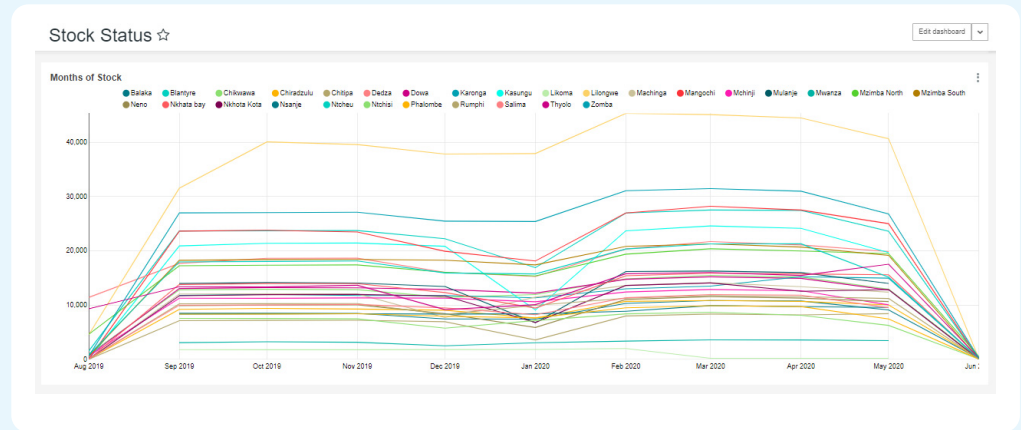
3) Stockouts

- Stockout Rates over time (filter by geographic region, specific facilities, specific products/program)
- Option to include a benchmark line in the line graph, to easily display performance against a specific target (as per the red line below)
- Highlight 'Most Stocked Out' districts, products, or facilities
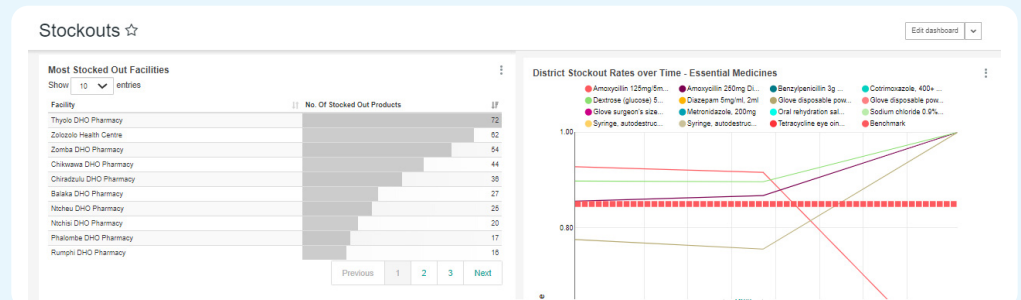
4) Consumption

- Logistics Summary Report shows data on the stock levels at the start and end of the reporting period, consumption, receipts, adjustments, and ordered quantity
- The primary indicator for this dashboard is Total Consumption (Adjusted or Absolute), which can then be filtered by product, geography, facilities
- Option to highlight 'Most Consumed Products' or consumption trends over time

Total Adjusted Consumption per Facility
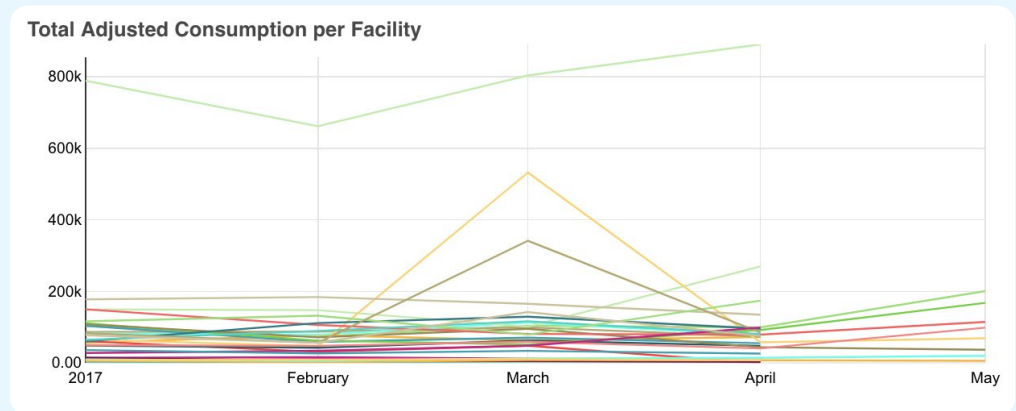
5) Adjustments

- Compare positive vs negative adjustments made
- Breakdown most popular reasons for adjustments (ie: expiries, damage, mathematical error, transfer of stock in/out, etc.)
- Highlight geographies/facilities who make more adjustments than others

6) Orders

- Emergency vs regular orders
- Order timeliness
- Estimated order value

Order Timeliness

Between 10th - 20th · After 20th · Before 10th

Before 10th: 12%
After 20th: 19%
Between 10th - 20th: 70%

Reporting Rate

Reported · Did not report

Reported: 98%
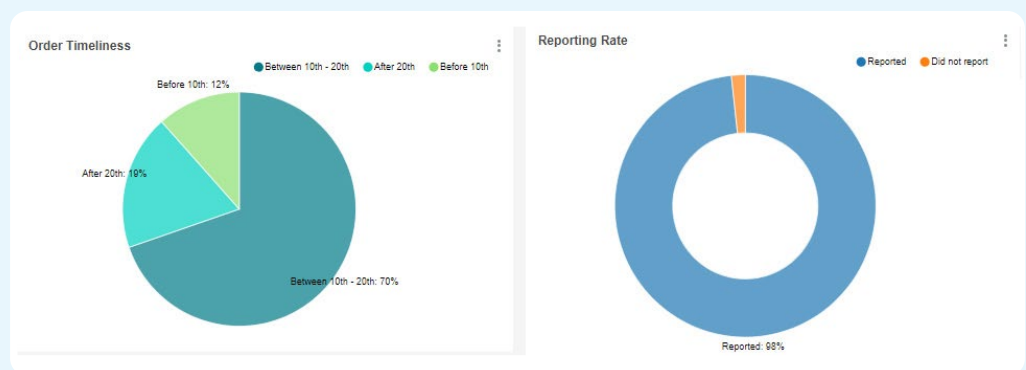
7) Administrative Reports

- For users with admin access, update list of facilities, codes, products, and districts

Advanced Analytics for Strategic Decision Making

To detect trends over a longer range of time, system 'power users' have additional capabilities to display higher level data in different formats like charts, line graphs, heat maps, box whisker charts (48 visualization types possible!). Any of the below types of graphs are available for users to choose from.

Some of the Options for Displaying Advanced Analytics

Area Chart	Time-series Bar Chart	Big Number with Trendline	Big Number	Box Plot	Bubble Chart
Bar Chart	Filter Box	Histogram	Line Chart	Pie Chart	Pivot Table
Table	Time-series Table	Word Cloud	deck.gl Arc	deck.gl Geojson	deck.gl Grid
deck.gl 3D Hexagon	deck.gl Multiple Layers	deck.gl Path	deck.gl Polygon	deck.gl Scatterplot	deck.gl Screen Grid
Partition Chart	Sunburst Chart	Treemap	Country Map	MapBox	World Map
Bullet Chart	Calendar Heatmap	Chord Diagram	Time-series Percent Change	Dual Line Chart	Event Flow

Additional OpenLMIS Reporting Visualization Resources:

- YouTube demo video of the OpenLMIS Reporting Capabilities
  Watch video >

- OpenLMIS Reporting Dashboard wiki page with detailed description and screen shots of all dashboards
  Visit wiki page >

Hosting Requirements

Hosting is possible either locally or in the cloud. Size and capacity of the server will depend largely on the size of the implementation (number of users, facilities, etc.) Below are the specific requirements, using **Amazon Web Services as an example:**

- ✓ A DNS provider for your domain name (e.g. test.openlmis.org).
- ✓ A SSL certificate from AWS Certificate Manager
- ✓ A ELB that can route to/from the OpenLMIS instance and serve the ACM SSL certificate
- ✓ An EC2 Application Server Instance (m4.large - 2vCPU, 8GiB memory, 30GB EBS store)
- ✓ A RDS Database Server Instance:
  - For local development, QA, and small private demos: use Ref Distro's included database or a db.t2.micro
  - For CD, limited public demos, limited UAT: db.t2.medium
  - For medium and larger deployments as well as production: db.t2.large or larger
- ✓ A VPC for your EC2 and RDS instances, with appropriate security group
- ✓ Amazon SES with either the domain (w/DKIM) verified or a specific from-address

Learn More

OpenLMIS
OpenLMIS Implementation

Getting Started Guide

Implementing any new electronic logistics management information system (LMIS) is a long term commitment that takes significant time and effort at all phases of the project. Ministries of Health and other stakeholders should use this guide to understand the OpenLMIS software implementation process, including key steps in planning, rollout, resources required, and critical success factors.

Every implementation of OpenLMIS will be slightly different, therefore you may find that certain information in this guide doesn't apply or that you prefer to follow steps in an alternate order. With any OpenLMIS implementation, be flexible to be successful!

1 | OpenLMIS Implementation   openlmis.org

Questions?
For inquiries or to request a demonstration, email **info@openlmis.org**

Getting Started Guide
To learn how to implement OpenLMIS and the many considerations for preparing for a successful deployment, consult our Getting Started Guide at **https://openlmis.org/block/getting-started-guide/**

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