Improving Pakistan's Vaccine Supply Chain for Better Health Outcomes

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Background

After a measles outbreak in 2012, the government of Pakistan asked the U.S. Agency for International Development (USAID) to enhance the logistics management information system (LMIS) for Pakistan's Expanded Programme on Immunization (EPI).

Challenges in the Existing Vaccine Supply Chain

- Fragmented EPI supply chain
- Lack of data visibility and data quality
- No routine linkage of pipeline data to forecasting and procurement
- Inaccurate immunization coverage data
- No routine system for inventory management
- High vaccine wastage
- Heavy burden of paper work and lack of human resource capacity
- No up-to-date cold chain equipment inventory
- Extended time lag from problem identification to correction
- Lack of accountability

When policymakers and program managers needed data on vaccines received, consumed, or in stock, they were confronted with mountains of paper.
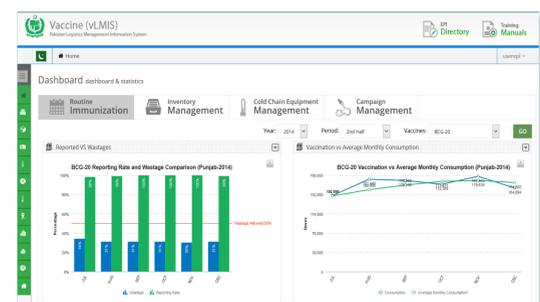
Methodology

The vLMIS was modeled on the web-based LMIS for contraceptives and tuberculosis medicines designed by the USAID | DELIVER PROJECT and scaled up nationwide in 2012. The system increased the availability of contraceptives at Pakistani health facilities from as low as 25 percent prior to 2009 to 85 percent in 2014. Deployed in January 2014, the vLMIS is being used in 54 Polio high risk and other priority districts and is being scaled up to cover other geographic areas (see figure 1).

The vLMIS tracks four essential aspects of vaccine supply chain management: inventory management, routine immunization consumption, cold chain equipment management, and campaign consumption. The inventory and routine immunization components in the existing contraceptive LMIS were enhanced to accommodate vaccines, while new modules were developed for cold chain and campaign management (see figure 2).

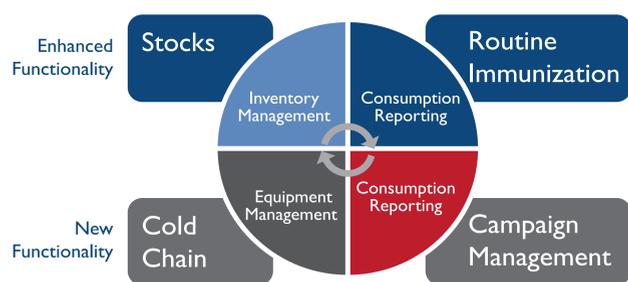**Figure 1. Map of Districts Using vLMIS**

Data is stored in a central database and can be accessed by data consumers through web-based dashboards and data entry screens. EPI staff from various supply chain tiers report directly into the web-based system (see figure 3).

Figure 3. Web-based vLMIS
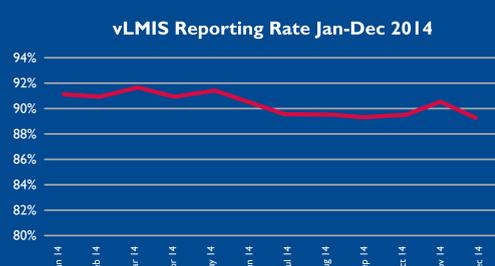

Support Provided by the USAID | DELIVER PROJECT

- System design, development, implementation, and supportive supervision
- More than 2,000 public sector officials trained in using vLMIS
- Distribution of computer hardware at reporting sites.

Figure 2. The Four Components of the vLMIS

Enhanced Functionality

Stocks — Inventory Management

Routine Immunization — Consumption Reporting

New Functionality

Cold Chain — Equipment Management

Campaign Management — Consumption Reporting

EPI staff in Punjab gain vLMIS skills from a project-trained master trainer.

Results

The vLMIS enables program managers, supply chain personnel, storekeepers, and health personnel to manage the vaccine supply chain and access up-to-date logistics information for evidence-based decision-making. Since the launch of vLMIS in January 2014, EPI facility-level reporting rates have remained constant around 90 percent, reflecting ownership of the system by the Government (see figure 4).

Figure 4. EPI Facility-Level vLMIS Reporting Rate (%)

vLMIS Reporting Rate Jan-Dec 2014

Conclusion

The vLMIS has benefited the EPI program significantly by providing up-to-date information about vaccines and other immunization program products, as well as cold chain equipment in 54 priority districts. With real-time data, managers can more accurately forecast needs and plan procurements, and policymakers can make better decisions, contributing to increased access to vaccines and supplies and better vaccine coverage, while minimizing wastage.

vLMIS – Better insight through data