Improving national commodity visibility and tracking using the Pharmaceutical Information Portal

Context

Stock status visibility is critical for making appropriate decisions at all levels of the supply chain. The Ministry of Health Uganda (MOH) has long wanted a consolidated national health supply chain database to facilitate supply chain oversight.

The Pharmaceutical Information Portal (PIP) is currently the MOH’s one-stop data repository and business intelligence system for all pharmaceutical and supply chain information. The USAID/Strengthening Supply Chain Systems Activity (SSCS) has improved the functionality of the PIP including the

- Public health emergency commodity management including ordering and reporting through the emergency electronic management information system
- Product data master management using the National Product Catalog
- Supply chain e-learning platforms
- Dynamic contact listing for supply chain leadership positions (i.e., District Health Officers, Management Medicines Supervisors, Biostatistician)
- Library for supply chain management documents and publications
- National online warehouse stock status dashboard
- Real-time medicines management supervision reporting using the structured Supervision, Performance Assessment and Recognition Strategy (SPARS) system

The PIP is now the go-to place for all supply chain information needs and it is improving national commodity visibility tracking and tracing information used by all stakeholders.

Activity Impact

The PIP has enabled visibility in the national health supply chain through:

- Number of health facilities opening stock status for the PIP increased from 350 in 2018 to 1,147 in 2021.
- Complete stock status reporting by health facilities improved from 7% (474/6,474) in 2020 to 45% (3,210/7,084) in 2021.
- Digital Supply Chain Self-Assessments conducted at 78 health facilities.
- 407 supply chain staff completed supply chain e-learning modules in the PIP.
- Visibility of both warehouses and facility stock status by all key stakeholders now informs their routine decision making.

Facilitators

- Buy-in from MOH: MOH led the identification of PIP systems requirement and functionality needs.
- Innovative system development: PIP development was highly iterative among the development, users, and other stakeholders, which allowed streamlined products to be developed on a rolling basis.
- Collaboration with US government implementing partners: SSCS Activity leveraged capabilities and synergies from other US government partners, such as USAID/Strategic Information Technical Support (SITS), to develop and roll out PIP products.
- Early stakeholder engagement and involvement: National stakeholders were engaged from inception (i.e., systems requirements and design) which ensured ownership and the comprehensive compilation of user needs.

Linkages of the PIP to various data systems: Linkages of the PIP to various data sources like D4S2 for WHIS (Uganda) reports, facility eLMIS systems and control warehouse management information systems increased utility of the PIP as the one-stop data source for stock tracking.

Challenges

- Limited skills at MOH, information, communication, and technology department affected the transition process.
- Malware attack affected PIP availability and electronic logistics management information (eLMIS) system data syncing.

Lessons Learned

- MOH or government-led development: MOH DPNM and DHI led PIP development. This was critical for local ownership and guarantee continuity in systems enhancements and user support at all levels of the supply chain.
- Leveraging US partners’ health systems strengthening, supply chain, and data and information capabilities fast-tracked development of certain PIP components such as the online stock status reporting. At the national level, the partners supported districts and facilities to capture data and use the PIP database.

Evidence

- Samples of the PIP online data analytic and visualization products are presented below:

Activity Description

The PIP implementation journey is described below:

Planning (2010–2011)

- Developed the concept for a pharmaceutical and supply chain data warehouse.
- Developed systems requirements and architectural designs in collaboration with MOH Department of Pharmaceuticals and Natural Medicines (DPNM) and Department of Health Information (DHI).
- Recruited technical experts to develop Uganda’s first supply chain data warehouse.
- MOH DPNM and DHI led PIP development. This was critical for local ownership and guarantee continuity in systems enhancements and user support at all levels of the supply chain.

Development and testing (2013–2014)

- Developed first PIP prototype in 2013 with initial focus on data aggregation, development of reports, user acceptance tests with key stakeholders, and revisions based on stakeholder feedback.
- Functionality enhancements and transition to MOH (2014–2019)

- MOH identified PIP functionality and system requirements related to product data master management, public health emergency commodity management, online warehouse stock status dashboards, and e-learning.
- Enhanced PIP hardware capacity to meet the new system requirements.
- Capacitated MOH staff to maintain PIP functionality.
- Transitioned the PIP hardware infrastructure to the MOH Department of Health Information and Information Technology Unit (DHI).

Enhanced data analytics and visualization (2019 to date)

- Improved data analytics for existing reports.
- Improved graduation tracking in the reporting using GPS.
- Planned upgrade of PIP infrastructure and renewal of current licenses.

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Leveraging US partners’ health systems strengthening, supply chain, and data and information capabilities fast-tracked development of certain PIP components such as the online stock status reporting. At the national level, the partners supported districts and facilities to capture data and use the PIP database.

Early and sustained stakeholder engagement: involving all major supply chain stakeholders from the beginning ensured that the PIP meets their needs and is adopted into routine decision making.

User-centered design: Prioritizing user-centered design principles was critical in PIP development. The continuous need to assess PIP data resulted in enhancements such as mobile data-enabled interfaces to ease and scale-up access.

Strong potential: Great opportunity remains to further enhance PIP including automation of supply chain situation alerts based on artificial intelligence.