Technology and digital health innovation
In collaboration with Sabin Vaccine Institute

Driving impact with smart immunisation supply chains

▲ Smart supply chains supported targeted vaccine delivery in Ghana.

Technology transforms immunisation supply chains through real-time visibility, enabling data-driven decisions that address persistent vaccine access inequities in marginalised communities. Supply Chain Visibility (SCV) is having data to view transactions in the supply chain and measure its performance. Electronic Logistics Management Information Systems (eLMIS) provide the digital foundation that makes SCV possible through digitisation and connectivity. eLMIS improves data quality through automated capture, validation and user-friendly interfaces while streamlining workflows like automatic order calculations and approvals. Together, these complementary components generate predictive analytics to prevent stockouts, optimise forecasting, eliminate distribution delays and improve health outcomes for vulnerable populations whilst reducing waste and missed opportunities for zero-dose children.

SCV and eLMIS benefits

Enhanced decision-making through integrated intelligence.
Organisations achieve comprehensive situational awareness by merging real-time operational data with historical analytics. Managers can view current conditions, identify patterns and forecast scenarios, enabling informed strategic decisions that balance immediate operational needs with long-term supply chain optimisation.

Proactive risk management and compliance.
This combination creates early warning systems that identify potential disruptions, stockout risks and wastages while documenting responses for compliance. Real-time visibility supports standardised reporting systems, generating auditable trails of risk identification and mitigation, essential for immunisation and health supply chains that require operational efficiency and regulatory compliance.

Streamlined operations with reduced manual overhead.
Automated data flow from visibility sensors to management information systems eliminates manual entry and reduces human error. Real-time events trigger responses in inventory management, customer notifications and supplier communications, creating seamless operations.

Collaborative ecosystem management.
Integrated systems enable synchronised relationships among suppliers, manufacturers, distributors and customers, who access relevant information through standardised interfaces. All stakeholders work from the same accurate, real-time data, reducing conflicts and enhancing supply chain performance.

Working together, SCV through eLMIS ensures vaccines reach the right places at the right time, so when zero-dose children are identified, vaccines are available to immunise them.

- Real-time tracking
- Targeted deployment
- Demand forecasting
- Performance monitoring

▲ Bakari Shemagembe, the local Assistant Medical Officer, and his team setting up an immunisation tent.

How can you optimise your eLMIS for lasting impact?

Infrastructure considerations	Design eLMIS for areas with limited internet access by incorporating offline capabilities or hybrid data collection models. Ensure reliable power sources and functionality in remote regions
Ensure interoperability	Leverage existing interoperable systems for seamless data exchange across platforms, such as linking to the DHIS2 logistics module to reduce stockouts and enhance health outcomes.
Capacity strengthening and training	Develop context-specific training and mentorship programmes that consider the varying educational backgrounds of healthcare workers.
System design and scalability	Plan for expansion, promote integrated solutions to achieve economies of scale, reduce costs and ensure local ownership
Data utilisation and decision-making	Ensure the system not only collects data but also generates actionable insights to improve service delivery and inform health policies. Foster a culture of data-driven decision-making among healthcare workers.
Monitoring and valuation frameworks	Adapt monitoring and evaluation frameworks to include relevant indicators such as community engagement and healthcare access. Establish systems for regularly reviewing performance data and incorporating feedback into system improvements and training.
Collaboration with partners	Collaborate with global health organisations for resources, expertise and best practices. Facilitate knowledge sharing among countries with successful eLMIS implementations.
Financial sustainability	Conduct cost-effectiveness studies to highlight the value of the eLMIS in achieving health outcomes. Involve local health departments in development to foster accountability and commitment.

Country spotlights

The following examples demonstrate how countries have leveraged eLMIS systems to enhance the efficiency of vaccine logistics, improve data management and increase immunisation coverage. Success in these countries often stems from strong government commitment, stakeholder engagement and continuous monitoring and evaluation processes.

	System	Success
Ethiopia	The Electronic Vaccine Management System is part of a broader health information system that digitally tracks vaccines from central stores to health facilities, monitoring stock and wastage.	Strengthened order management and reduced stockouts by improved data visibility and data quality at the Woreda's (districts).
India	The Electronic Vaccine Intelligence Network (eVIN) delivers real-time data on vaccine stocks and storage temperatures at immunisation points across India.	Improved visibility into the vaccine supply chain minimised stockouts and ensured vaccine integrity through better temperature monitoring.
Nigeria	The National Primary Health Care Development Agency has launched the eLMIS to streamline vaccine supply chains, ensuring comprehensive tracking of distribution and inventory management integrated with health information systems.	Efforts reduced stockouts of the Meningococcal Conjugate Vaccine and decreased expiries, boosting the efficiency of regular immunisation and vaccination campaigns across various states.
Ghana	The Ghana Integrated Logistics Management Information System (GhiLMIS) coordinates demand and supply chain processes, while the Vaccine and Immunisation Logistics Management Information System oversees vaccine logistics, including inventory, forecasting and reporting for immunisation programmes.	As an integrated system across programs, GhiLMIS has helped Ghana to manage its systems and data more cost-effectively. Thanks to GhiLMIS, Ghana now enjoys near-perfect stock visibility at the district level, and this will soon extend to the facility level.

This product was produced by the Zero Dose Story Generation Consortium, led by Sabin Vaccine Institute. Sabin is a leading advocate for expanding vaccine access and uptake globally, advancing vaccine research and development, and amplifying vaccine knowledge and innovation.

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