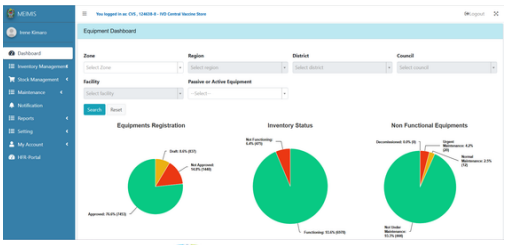
Rapid Response and Repair (R3): Strengthening Cold Chain Equipment Management in Tanzania

Background

A Human-Centered Design (HCD) assessment conducted by the Ministry of Health Tanzania in collaboration with inSupply Health, JSI, and ThinkPlace identified several systemic weaknesses in the management and maintenance of cold chain equipment. Key challenges included the absence of a standardized digital platform for tracking inventory and maintenance activities, limited visibility of cold chain equipment assets and equipment functionality across different levels of the health system, inadequate documentation of preventive and corrective maintenance activities, delayed reporting and response to equipment breakdowns, and limited use of maintenance and inventory data for planning and decision-making.

Project Overview

The Rapid Response and Repair (R3) Project was implemented by the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG) and the Ministry of Health, through the Immunization and Vaccine Development (IVD) Programme. Led by a consortium of three organizations inSupply Health, Ideas in Action, and CREMES International, The project was funded by Gavi through NexLeaf Analytics. As implementers in the project, inSupply Health focuses on strengthened CCE management, maintenance, and visibility across Tanzania. Between May 2025 and June 2026, the project digitized CCE inventory and CCE maintenance, integrated a CCE module into the national Medical Equipment and Infrastructure Management Information System (MEIMIS), and integrated CCE management data into routine data review meetings and enabling data-driven decision-making, ensuring more reliable immunization service delivery.



The R3 Project was designed to address systemic weaknesses in CCE management—including limited visibility, fragmented maintenance, and limited data utilization. The primary objectives were:

- **System Standardization**: Establish a standardized national system for CCE inventory and maintenance management by digitizing workflows within the national Medical Equipment and Infrastructure Management Information System (MEIMIS).
- **Visibility & Accountability**: Improve real-time visibility of CCE assets and maintenance activities across all levels of the health system.
- **Data-Driven Decision Making**: Promote routine use of system-generated data for planning, performance monitoring, and evidence-based decision-making among immunization officers
- **CCE Troubleshooting and Maintenance**: To strengthen the capacity of health workers to effectively manage, maintain, and troubleshoot cold chain equipment through the dissemination of the R3 troubleshoting and maintenance manual which provides standardized, step-by-step guidance for preventive and corrective maintenance, equipment troubleshooting, inventory management, and use of the MEIMIS CCE Management module

Methodology

The project utilized a user-centered, multi-phase approach to ensure sustainability and government ownership:

- **HCD-Approach**: Solutions were co-created using Human-Centered Design (HCD) research, ensuring the CCE Management Module addressed real operational bottlenecks.
- **System Integration**: Rather than creating a standalone platform, the project embedded CCE management functionality directly into the existing, government-owned MEIMIS platform.
- **Training of Trainers (ToT)**: A national pool of certified facilitators was established across all geographical zones to minimize reliance on external partners and ensure long-term capacity retention.

- **Phased Scale-up:** The project executed a structured roll-out: (1) ToT Phase, (2) Pilot Phase (4 regions,4 councils, 8 health facilities) (3) Nationwide Scale-up reaching all 26 regions and 184 councils.
- **Data Use Integration:** CCE performance indicators were integrated into the existing IMPACT Teams data review framework to institutionalize routine performance monitoring.

Key Achievements & Impact

The project achieved significant penetration into the national health system:

- **National Reach**: Successfully trained 9,056 healthcare workers across all 26 regions and 184 councils
- **Facility Coverage:** 8,131 (93%) of public and private health facilities registered in the MEIMIS CCE module.
- **Inventory Registration:** 9,730 CCE units entered the system; 7,453 (76.6%) approved for management.
- **Maintenance Performance:** 399 maintenance requests recorded, with 254 completed and 105 spare parts utilized.
- **Equipment Health:** 93.6% of approved CCE units are currently functional and tracked in real-time.
- **Formal Transition:** The system has been formally handed over to the Ministry of Health and PO-RALG, ensuring long-term institutionalization within national frameworks.

Challenges

Implementation faced hurdles across three phases:

- **Pilot Phase:** Participants exhibited varying levels of digital literacy, necessitating individualized mentorship; technical issues (login errors/slowness) were exacerbated by limited developer bandwidth for MEIMIS enhancements.
- **Scale-up:** Shared training servers were overloaded during concurrent regional training, causing system lag; administrative delays occurred in user account creation due to inactive email addresses.
- **Post-Scale-up & System-Related**:
  - **Data Gaps**: Missing historical equipment data (serial numbers, installation dates).
  - **User Management:** Incomplete facility coverage, incorrect mapping of facilities to councils, and widespread misassignment of system roles.
  - **Structural Limitations**: The current MEIMIS architecture does not support cross-level stock issuance (spare parts), centralized approval dashboards for supervisors, or easy tracking of replaced accessories like RTMDs

Recommendations

- **Technical Upgrades:** Develop offline/mobile functionality to support low-connectivity areas and enable cross-level spare parts issuance.
- **Support Pathways:** Establish a dedicated national-level support pathway for facilities to troubleshoot access issues directly.
- **Leadership & Accountability:** Continue engaging subnational leadership through IMPACT Team meetings to keep CCE oversight as a standing agenda item.
- **System enhancement and integration:** From time to time, system enhancement and integration with VIMS to user-friendly Transition fully to MEIMIS as the primary platform, while maintaining manual documentation for spare parts until system upgrades are complete.
- **System Accuracy:** Regularly update equipment reference lists to include new models and correct facility-to-council mapping.

Conclusion

The R3 Project demonstrated the importance of digital systems in strengthening cold chain equipment (CCE) management. By integrating the CCE module into the government-owned MEIMIS platform, the project improved equipment visibility, standardized maintenance workflows, and strengthened data-driven decision-making. Institutionalization of CCE data into routine data reviews through IMPACT Teams, can establish a sustainable approach to CCE management. These improvements contribute to better equipment performance, improved vaccine potency, and more reliable immunization service delivery across Tanzania.

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