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Immunization Programmes That Leave No One Behind

Understanding the cold chain maintenance system in Niger: Human-centered design to identify innovative solutions

Wendy Prosser,[a] Nicole Danfakha,[a] Brittany Thurston,[b] Aminta Gueye,[b] Samira Matan, [b] Cheikh Tidiane, [b] Emily Kitts,[a] Ibrahim Alkassoum, [a] Yannick Agui,[a] Abdoulaye Brah-Bouzou,[a] Harouna Dembo,[c] Mata Garba [c]

[a] JSI/MOMENTUM; [b]ThinkPlace; [c] Immunization Program/MOH Niger || contact: wendy_prosser@jsi.com

BACKGROUND

- Cold chain equipment (CCE) maintenance (preventive and corrective) is important to ensure the equipment functions and protects the quality of vaccines.
- Common documented challenges include unavailability of funds, lack of spare parts, unknown costs, and insufficient CCE data.
- Different maintenance models, such as outsourcing, fall short of performance and a sustainable solution.

SPECIFIC AIMS & OBJECTIVES

This activity used a human-centered design (HCD) approach to achieve two objectives:

- Objective 1: Understand the entrenched obstacles that limit a reliable and functioning cold chain maintenance system.
- Objective 2: Design a forward-thinking managed CCE maintenance system.

METHODS

- In-depth interviews with 23 participants in two regions of Niger (Feb/Mar 2023):
  - Cold chain technicians and managers from the maintenance division of MOH.
  - Immunization officials (region, district).
  - Health facility in-charge or immunization nurse.
  - Financial managers (region, district).
- "How Might We" questions to guide the co-creation workshops (April 2023):
  - Virtual with global stakeholders (14).
  - In-person with research participants (20).
  - Validation meeting with key leaders (30).

RESULTS: INSIGHTS AND SYNTHESIS

Three themes emerged from data collection and synthesis:

Theme 1: Agility of the System and Optimization of Available Resources	• Dependence on external partners for maintenance of cold chain creates a system that is rigid, slow, and unable to respond quickly. • Communication between key actors involved in CCE maintenance lacks structure and clarity. • The absence of clear guidelines on how to effectively use temperature data contributes to inefficient use of financial resources.
Theme 2: Prioritizing Cold Chain	• Effective collaboration across stakeholders involved in CCE at each level of the system is key to increase local staff empowerment and to ensure that equipment received is useful and adapted to the context. • Prioritization of cold chain training requires dissociating it from general vaccination training in order to tailor training needs.
Theme 3: Knowledge Sharing Across the System	• There is a misalignment between decision makers and cold chain staff about expectations for knowledge sharing and training. • Limited understanding of roles and responsibilities, and the link between different roles leads to limited sharing of information and overuse of human resources.

RESULTS: CO-CREATION AND IDEATION

Participants prioritized four innovative solutions to CCE maintenance:

ONLINE PLATFORM
To connect people and track and share knowledge across regions.

REGIONAL MAINTENANCE SUPER STAR
Using games and friendly competition to motivate health facility staff to value maintenance. These competitions can be offline and online (leveraging the platform).

REAL-TIME/REMOTE TRACKING SYSTEM
A system to remind the people in charge of maintenance of tasks and activities they must follow to ensure equipment is well maintained.

BAYREY (a local word for "knowledge")
Various material formats and content on cold chain maintenance best practices, challenges, and technical knowledge.

CONCLUSIONS

This study took a unique HCD approach to engage with people directly involved in CCE maintenance to more deeply understand challenges with the current system and create space to identify innovative solutions that are tailored to the context. The results of this study demonstrate that, when given the opportunity, stakeholders can identify potential solutions that have not been part of the typical approaches to a maintenance system. The next step of this process will be to prototype a concept, implement, learn, and revise the approach. This makes the case for using a HCD approach to design more tailored solutions to address global health challenges.

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