Medical devices are critical to maternal, neonatal, and child health (MNCH) services

Medical devices play an essential role in the prevention, diagnosis, and treatment of health conditions facing mothers and newborns in low- and middle-income countries. Devices like ultrasound machines, blood pressure devices, X-ray machines, and bubble continuous positive airway pressure (bCPAP) devices are critical to providing effective facility-based care for vulnerable populations, especially women and children.

However, medical devices have unique characteristics that make them difficult to manage effectively, particularly in low-resource settings. First, devices often serve multiple clinical uses across different health programs—complicating ownership and funding responsibilities. Many devices are also challenging to own and manage, requiring extensive training, ongoing preventive maintenance, and reliable supply of specialized parts and accessories. Finally, many devices are deeply interwoven with other health system capabilities. A diagnostic device, for example, is of little use unless paired with effective systems to treat the diagnosed condition.

The need to address these challenges is becoming increasingly critical. As countries experience rising life expectancy and a shift toward noncommunicable disease burden, demand is growing rapidly for device-intensive services like life support and chronic disease management. There is also an expectation that this growing need will be met with domestic rather than donor resources as countries move up in income status. Strengthening access to medical devices is therefore a critical area for health system investment.

Market Dynamics for MNCH Medical Devices project

PATH, with support from the Bill & Melinda Gates Foundation, is leading the Market Dynamics for MNCH Medical Devices project (MD4MD) to diagnose crosscutting market issues that impede access to MNCH medical devices. This project is part of the PATH Market Dynamics Program’s Access to Medical Devices portfolio, which manages a variety of investments that are focused on improving reliable supply and use of essential medical devices in low- and middle-income countries.

Project snapshot

**Goal:** To diagnose key barriers that impede access to MNCH medical devices and prioritize potential solutions to address these barriers.

**Key objectives:**

1. *Conducting country-specific medical device inventories* to quantify current device availability.
2. *Performing rapid landscaping and market analyses* for eight high-priority medical devices to diagnose and understand barriers to access.
3. *Evaluating and piloting equipment management systems* to identify effective strategies for managing ongoing equipment operation and maintenance.

**Focus countries:** Burkina Faso, Indonesia, Kenya, Malawi, and Senegal.

**Duration:** December 2020 to May 2022.

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1 The eight focus MNCH medical devices for the MD4MD project are manual blood pressure cuffs, X-ray devices, app-based ultrasound, portable ultrasound, electric bCPAP devices, neonatal bag-and-mask resuscitators, infusion devices, and point-of-care hemoglobin devices.
**Key objectives and activities**

**Conducting country-specific medical device inventories**

As a key starting point for evaluating access to medical devices, PATH will collect data on the current availability and functionality of all major medical devices across a representative sample of health facilities in the five focus countries. The goal of these device inventories will be to quantify important data points like the current breadth of device types and models, key gaps in access, and the overall proportion of functional equipment. The project team will incorporate and build upon any existing device inventories, using supplemental data collection activities to ensure quality and completeness.

**Performing rapid landcasing and market analyses**

In parallel with the baseline device inventories, PATH will also conduct rapid market landscapes for the eight focus devices within the context of the five priority geographies to identify potential barriers to access along each device’s pathway from manufacturer to patient. These market landscapes will assess topics like:

- **Supply and distribution**: Who are the key manufacturers and distributors in focus countries? Can they meet demand from health facilities in all geographies?
- **Procurement and financing**: Who are the main buyers and what key challenges do they face?
- **Regulations and policy**: Do country guidelines adequately reflect device needs and use cases?
- **Service delivery**: Do facilities have adequately trained staff and required accessories?
- **Maintenance and repair**: Do providers have trained technicians and access to spare parts?

Learnings from these rapid market landscapes will be critical to identifying and prioritizing subsequent interventions.

**Evaluating and piloting equipment management systems**

Conducting manual, one-off device inventories is time-intensive, expensive, and an ineffective way of maintaining updated data for ongoing decision-making.

To strengthen equipment inventory and decision-making processes in the long term, PATH aims to understand what is required to design and implement an equipment management system. Key activities will include:

- **Mapping current equipment management systems**, including processes for maintaining and repairing devices and supply chains for critical parts and accessories.
- **Gathering feedback from medical device users** to better understand gaps/challenges with the current system and co-create potential future-state solutions to address those challenges.

PATH will work with key stakeholders to implement solutions identified through these activities, including supporting the procurement of equipment management services, advising implementation planning efforts, and facilitating the streamlining of processes, tools, and training materials.

**Synthesizing learnings and prioritizing future areas for investment**

Finally, PATH recognizes the need to provide MNCH stakeholders with a clear path forward to address the barriers identified throughout this project. Thus, PATH will engage in extensive, collaborative discussions with key stakeholders to translate project learnings into a set of actionable recommendations—summarizing and disseminating them in a publicly available report. These recommendations—drawing upon the insights from the device inventories, rapid landscapes, and pilot equipment management systems—will support the identification and prioritization of future areas for health investment.

Through these recommendations, PATH aims to provide a road map for increasing availability and use of critical medical devices, and ultimately improving access to effective MNCH health services.

**For questions or additional information:**

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