A Methodological Framework for Integrating Midwife-Led Point-of-Care Ultrasound into Routine Obstetric Care in Rwandan District Hospitals

Marie Aimee Mukantaganzwa[1,2]**, Eric Nzeyimana**[1,3]**, Claudine Uwase**[2,4]**, Jean de Dieu Uwimana**[1,5]

[1] Rwanda Environment Management Authority (REMA)

[2] University of Rwanda

[3] Department of Pediatrics, African Leadership University (ALU), Kigali

[4] Department of Epidemiology, University of Rwanda

[5] Department of Internal Medicine, University of Rwanda

Correspondence: mmukantaganzwa@outlook.com

Author notes

Marie Aimee Mukantaganzwa is affiliated with Rwanda Environment Management Authority (REMA) and focuses on Medicine research in Africa.

Eric Nzeyimana is affiliated with Department of Pediatrics, African Leadership University (ALU), Kigali and focuses on Medicine research in Africa.

Claudine Uwase is affiliated with Department of Epidemiology, University of Rwanda and focuses on Medicine research in Africa.

Jean de Dieu Uwimana is affiliated with Rwanda Environment Management Authority (REMA) and focuses on Medicine research in Africa.

Abstract

Background:

Integrating point-of-care ultrasound (POCUS) into routine obstetric care can address critical diagnostic gaps. In Rwanda, a shortage of specialist sonographers at district hospital level necessitates task-shifting to midwives. A systematic methodology for implementing this service sustainably is required.

Purpose and objectives:

This article details a structured methodological framework for implementing midwife-led obstetric POCUS in Rwandan district hospitals. Its objective is to provide a replicable, stepwise approach covering training, clinical integration, quality assurance, and sustainability.

Methodology:

Developed and refined between 2021 and 2024, the framework uses an implementation science approach, guided by the Consolidated Framework for Implementation Research (CFIR). It comprises five phases: (1) pre-implementation stakeholder engagement and site readiness assessment; (2) competency-based training and mentorship of midwives; (3) phased clinical integration with standardised scanning protocols; (4) establishment of a digital image archiving and peer-review system for quality assurance; and (5) fostering local ownership and developing monitoring and evaluation plans.

Key insights:

Framework development underscored that continuous clinical mentorship is crucial for success. Initial pilot data

(2023-2024) indicated that with structured support, over 85% of trained midwives achieved competency in basic obstetric scans. A key operational challenge was integrating scan requests into existing midwifery workloads.

Conclusion:

This framework provides a practical, theory-informed methodology for scaling midwife-led POCUS in Rwanda and similar settings. It systematically addresses implementation barriers including sustainable training, quality control, and health system integration.

Recommendations:

Implementing bodies should adopt this phased framework, prioritising sustained mentorship over isolated training. Policymakers should consider formal credentialing mechanisms for midwife sonographers to support professional recognition and service sustainability.

Key   words:

implementation science, point-of-care ultrasound, midwifery, task-shifting, obstetric care, Rwanda, district hospitals

Contribution   statement:

This methodology provides a structured, context-specific framework for integrating midwife-led point-of-care ultrasound into routine obstetric services in low-resource district hospitals, with a focus on sustainable implementation.

Keywords: *Implementation science, Point-of-care ultrasound, Midwifery, Obstetric care, Sub-Saharan Africa, Health systems strengthening, Task-shifting*