

Effect of Preventive Maintenance of Medical Equipment in Maternity and Neonatal Units in Rwanda

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Abstract

Introduction: Functioning equipment and preventive maintenance are essential components of quality care provision. Despite investment in life-saving equipment, an assessment done in 2020 in maternity and neonatal units in seven districts in Rwanda, showed 16% was not fully functional and there was no maintenance plan. This action research evaluates the impact of introducing preventive maintenance for maternity and neonatology equipment at the hospital level.

Methods: The intervention was conducted in 16 hospitals from 2020 to 2022. The activities included the introduction of preventive maintenance for equipment in maternity and neonatal units, the update of the equipment inventory, the training and mentorship of technicians. The main outcome was evaluated by the percentage of functional equipment before, during, and after the intervention.

Results: The percentage of hospitals with preventive maintenance implemented increased from 0% in 2020 to 63% in 2021, to 84% in 2022, and 88% in 2023. The rate of hospitals with updated equipment inventories increased from 9% to 61%, 63%, and 89%. Finally, the main outcome, the percentage of functional equipment increased from 84% in 2020 to 90% in 2021, 92% in 2022 and 96% in 2023. The budget spent on emergency repair was reduced significantly (from 118 859 in 2021 euros to 978) euros in 2024, this is due to the fact that implementing preventive maintenance was taken seriously.

Conclusion: Establishing a culture of preventive maintenance is critical to reduce the risk of equipment failure, minimize disruptions to patient care, improve patient outcomes, and help maintain the overall efficiency and effectiveness of healthcare. This shows that implementing preventive maintenance increases the number of functional equipment at health facilities, and significantly decreases the budget spent on corrective maintenance (or so-called emergency repair). However, training and continued mentorship are required to initiate and preserve good practice. Although this action research focused on medical equipment used in Maternity and Neonatology, it could be generalized to all hospital services.