

Mobile labs in outbreak response: Lessons from north-south collaboration for pandemic response in West Africa

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Introduction

West Africa continues to face recurring outbreaks of Lassa fever and other infectious diseases, hindered by limited diagnostic capacity. To address this, the Irrua Specialist Teaching Hospital (ISTH) collaborated with the Bernhard Nocht Institute for Tropical Medicine (BNITM) to establish a mobile laboratory facility in 2013. This report describes the contributions and challenges of mobile laboratory deployment during outbreak response. The mobile laboratory was deployed to Sierra Leone during the 2014-2016 Ebola outbreak, COVID-19 pandemic in Delta State (2020-2022), and Lassa Fever outbreak in Northern Nigeria (2023). Key metrics analyzed include deployment time, samples tested, and turnaround time reduction.

Methods

During the Ebola outbreak, the mobile laboratory team tested over 8,000 patients in Sierra Leone. In Delta State, over 11,000 patients were screened and tested for COVID-19. In Kaduna, Nigeria, over 200 patients were tested for Lassa Fever in 2023.

Results

Deployment occurred within 24-72 hours of official requests, reducing turnaround time from 7-12 days

to 24 hours. This facilitated prompt triage, timely treatment, and early discharge of patients who tested negative, enabling swift containment of outbreaks. The mobile laboratory enhanced diagnostic capacity with accurate on-site testing, improved response times, and strengthened collaboration between national and international health partners.

Conclusion

Mobile diagnostic laboratories represent a scalable, rapid-response tool for enhancing outbreak control efforts across West Africa and beyond. The collaborative model with BNITM demonstrates the value of strong regional and international partnerships in outbreak preparedness and response. The ISTH mobile laboratory facility plays a critical role in infectious disease response strategy, showcasing its flexibility, adaptability, and effectiveness in responding to complex public health emergencies.