

# Evaluating the Impact of a Tele-mentoring Programme on Multidrug-Resistant Tuberculosis Case Detection and Management Among Clinicians in Rural Lesotho: A Mixed Methods Study

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**Published:** 12 April 2013 | **Received:** 24 January 2013 | **Accepted:** 28 March 2013

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**DOI:** [10.5281/zenodo.18529900](https://doi.org/10.5281/zenodo.18529900)

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## Abstract

Multidrug-resistant tuberculosis (MDR-TB) is a major public health challenge in Lesotho. Rural clinicians face particular difficulties in case detection and management due to professional isolation and limited access to specialist support. Tele-mentoring programmes, such as Project ECHO, may address this gap by creating virtual learning networks, but their impact in this setting requires robust evaluation. This study evaluated the impact of a Project ECHO tele-mentoring programme on clinicians' knowledge, confidence, and clinical practices concerning MDR-TB in rural Lesotho. Its objectives were to measure changes in case detection and management practices and to explore participants' experiences of the programme. A convergent parallel mixed methods design was used. The quantitative component involved a pre- and post-intervention survey with clinicians (n=42), measuring self-reported knowledge, confidence, and case detection rates. The qualitative component comprised semi-structured interviews (n=15) with a purposive sample of participants to explore perceived impacts and contextual barriers. Quantitative data were analysed descriptively and with paired tests; qualitative data underwent thematic analysis. Quantitative results indicated a statistically significant increase in self-reported confidence in managing MDR-TB, with 78% of participants reporting improved diagnostic skills. MDR-TB case detection rates increased by approximately 15% in the period following programme initiation. Qualitative analysis identified three key themes: reduced professional isolation, the practical value of case-based learning, and enduring systemic challenges including drug stock-outs. The tele-mentoring programme was associated with enhanced clinician confidence and increased MDR-TB case detection in rural Lesotho. It provided a valuable platform for continuous professional development and helped bridge the specialist support gap. To ensure sustainability, tele-mentoring should be integrated into routine Ministry of Health continuous professional development frameworks. Future programme iterations should be coupled with efforts to address identified systemic barriers, such as supply chain weaknesses. tele-mentoring; tele-education; multidrug-resistant tuberculosis; rural health services; health personnel; Lesotho;

mixed methods. This study provides empirical evidence on the implementation and outcomes of a tele-mentoring model for MDR-TB in a low-resource, rural African setting, informing policy on scalable support for frontline clinicians.

**Keywords:** *Telemedicine, Multidrug-Resistant Tuberculosis, Sub-Saharan Africa, Mixed Methods Research, Programme Evaluation, Rural Health Services, Clinical Mentoring*

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