

A Systematic Review of Methodological Frameworks for Evaluating the Cost-Effectiveness of Public Health Surveillance Systems in Rwanda: Evidence from Randomised Field Trials

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ABSTRACT

Background: Public health surveillance is a cornerstone of effective health systems, yet rigorous economic evaluations of such systems in low-resource settings are scarce. Rwanda has implemented several innovative surveillance programmes, but a synthesis of methodological approaches for assessing their cost-effectiveness is lacking.

Purpose and objectives: This systematic review aims to identify, appraise, and synthesise methodological frameworks used in randomised field trials to evaluate the cost-effectiveness of public health surveillance systems in Rwanda.

Keywords: *public health surveillance, cost-effectiveness analysis, randomised controlled trials, methodological frameworks, sub-Saharan Africa, economic evaluation, Rwanda*

Article Highlights

- Systematic review finds only three qualifying randomised field trials from Rwanda.
- Substantial heterogeneity in cost inclusion across studies limits comparability.
- No study incorporated productivity losses or dynamic transmission modelling.
- High uncertainty in results, with one ICER spanning all cost-effectiveness quadrants.

Core Analytical Model

The primary synthesis model was the incremental cost-effectiveness ratio (ICER): $ICER = (C_1 - C_0) / (E_1 - E_0)$, where C and E denote costs and effects for intervention and comparator groups.

This review underscores the critical need for standardised methodological frameworks in this field.

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