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A Randomised Field Trial for the Methodological Evaluation and Optimisation of Public Health Surveillance Systems in Senegal

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ABSTRACT

Background: Public health surveillance systems are critical for disease control, yet methodological frameworks for their empirical evaluation and optimisation in low-resource settings remain underdeveloped. Current assessments are often retrospective and descriptive, lacking rigorous experimental designs to quantify the causal impact of system modifications on operational efficiency.

Purpose and objectives: This protocol details a randomised field trial to methodologically evaluate and optimise surveillance systems in Senegal. The primary objective is to measure efficiency gains from a redesigned data capture and reporting protocol against the standard system. Secondary objectives include assessing the cost per complete report and the timeliness of outbreak signal detection.

Keywords: *Public health surveillance, Health systems research, Randomised controlled trial, Sub-Saharan Africa, Senegal, Operational research, Evaluation methodology*

Article Highlights

- Cluster-randomised controlled trial across 60 Senegalese health facilities.
- Primary outcome: proportion of complete weekly surveillance reports submitted.
- Pre-specified analysis to detect a 15-percentage-point

Core Methodological Contribution

Introduces a rigorous experimental design—a randomised field trial—to evaluate public health surveillance systems, shifting the paradigm from retrospective, descriptive assessment.

improvement in completeness. • Designed to generate robust evidence for actionable system optimisation.	*This article details a study protocol; empirical results are forthcoming.*