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# Evaluating the Field Performance of a Typhoid Fever Rapid Diagnostic Test in Paediatric Outpatient Settings in Freetown, Sierra Leone: A Critical Review

**Fatmata Bangura**[1], **Samuel T. Macauley**[2], **Ibrahim Sesay**[2]

[1] Department of Public Health, Njala University

[2] Ernest Bai Koroma University of Science and Technology

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**Correspondence:** fbangura@yahoo.com

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**Author notes**

*Fatmata Bangura is affiliated with Department of Public Health, Njala University and focuses on Medicine research in Africa.*

*Samuel T. Macauley is affiliated with Ernest Bai Koroma University of Science and Technology and focuses on Medicine research in Africa.*

*Ibrahim Sesay is affiliated with Ernest Bai Koroma University of Science and Technology and focuses on Medicine research in Africa.*

## Abstract

Typhoid fever is a substantial public health burden in sub-Saharan Africa, particularly for children. In resource-limited settings such as Sierra Leone, diagnosis often depends on clinical suspicion, which can lead to the overuse of antimicrobials. Rapid diagnostic tests (RDTs) present a potential alternative, but their performance in endemic paediatric outpatient settings requires rigorous assessment. This review critically appraises the literature on the field performance of a specific typhoid fever RDT used for febrile children in outpatient departments in Freetown, Sierra Leone. It aims to synthesise evidence on its diagnostic accuracy, operational feasibility, and influence on clinical management. A systematic search of electronic databases and relevant organisational websites was performed. Studies and reports evaluating the RDT's performance against blood culture as a reference standard in the specified setting were included. Data on sensitivity, specificity, and user experiences were extracted and analysed thematically. The RDT demonstrated consistently high specificity (exceeding 95% in most assessments) but variable and often suboptimal sensitivity, with some reports indicating figures below 60%. This low sensitivity poses a risk of missing true cases. Operational challenges, including inadequate staff training and supply chain weaknesses, were frequently reported as barriers to effective implementation. The high specificity of the RDT is offset by its low and inconsistent sensitivity, which restricts its utility as a standalone diagnostic tool for paediatric typhoid fever in this context. Its current performance profile is unlikely to substantially improve clinical decision-making or reduce inappropriate antimicrobial use. Further research to improve RDT sensitivity or develop alternative rapid diagnostics is required. Presently, the test should be used cautiously, with its role clearly defined within integrated febrile illness management algorithms. Parallel priorities include strengthening laboratory capacity for blood culture and investing in comprehensive healthcare worker training. typhoid fever, rapid diagnostic test, paediatric, outpatient, Sierra Leone, diagnostic accuracy, sensitivity, specificity, febrile illness This review consolidates and critically evaluates existing evidence on the field performance of a typhoid RDT in a

specific, high-burden paediatric outpatient setting, providing essential insights for clinicians, programme planners, and policymakers in similar resource-limited contexts.

**Keywords:** *Typhoid fever, Rapid diagnostic test, Paediatrics, Sub-Saharan Africa, Diagnostic accuracy, Outpatient department, Sierra Leone*

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