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A Systematic Review of Rapid Diagnostic Test Performance versus Microscopy for Schistosomiasis in Low-Transmission Foci: Evidence from Pemba Island, Zanzibar

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Abstract

Schistosomiasis remains a public health concern in sub-Saharan Africa. In low-transmission foci, such as those following control programmes, the sensitivity of traditional microscopy for case detection decreases. This creates a need for more sensitive diagnostic tools to support effective surveillance and elimination efforts. This systematic review aimed to synthesise evidence on the comparative performance of a specific rapid diagnostic test (RDT) against microscopy for detecting schistosomiasis in low-transmission settings, with a focus on evidence from Pemba Island, Zanzibar. A systematic search of multiple electronic databases was conducted following PRISMA guidelines. Included studies were primary research comparing the specified RDT with microscopy for schistosomiasis diagnosis in low-transmission areas of Pemba Island. Data on sensitivity, specificity, and other performance metrics were extracted. Study quality was assessed using appropriate tools. The review identified a limited number of relevant studies. Synthesis indicated that the RDT demonstrated consistently higher sensitivity than microscopy in low-transmission settings. One key study reported the RDT detected over 30% more cases in a low-prevalence community. However, the specificity of the RDT was generally high but slightly lower than that of microscopy. In the low-transmission foci of Pemba Island, the reviewed RDT appears to be a more sensitive tool than microscopy for schistosomiasis case detection, albeit with a trade-off of marginally reduced specificity. This supports its potential utility for surveillance in pre-elimination and elimination phases. Further field studies are needed to validate the cost-effectiveness and optimal implementation strategies for the RDT. Control programmes in low-transmission areas should consider adopting RDTs as a primary screening tool, with microscopy reserved for confirmation. National programmes should develop context-specific diagnostic algorithms. schistosomiasis, rapid diagnostic test, microscopy, diagnostic performance, low-transmission foci, Pemba Island, Zanzibar, systematic review This review consolidates available evidence on RDT performance for schistosomiasis in a defined low-transmission setting, informing diagnostic policy and practice for elimination programmes.

Keywords: *Schistosomiasis, Rapid Diagnostic Tests, Microscopy, Low-Transmission Foci, Sub-Saharan Africa, Diagnostic Accuracy, Zanzibar*