



A Review of Insecticide-Treated Durable Wall Lining Efficacy for Malaria Control in the Flood-Prone Regions of Barotseland, Zambia

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Abstract

Malaria remains a significant public health burden in Zambia, particularly in the flood-prone regions of Barotseland. Seasonal flooding compromises conventional vector control methods, such as insecticide-treated nets and indoor residual spraying, by damaging infrastructure and creating extensive mosquito breeding sites. This necessitates the evaluation of supplementary, durable interventions. This review aims to critically synthesise existing evidence on the effectiveness of insecticide-treated durable wall lining (ITWL) for malaria control specifically within flood-prone communities of Barotseland, Zambia. It seeks to assess its impact on malaria incidence and its operational suitability in this context. A systematic literature review was conducted. Peer-reviewed articles, grey literature, and programme reports were identified through searches of electronic databases and relevant organisational websites. Studies were included if they reported on the deployment or evaluation of ITWL in malaria control, with a focus on sub-Saharan Africa and, where available, Zambia or similar ecological settings. The review found that ITWL demonstrates potential as a supplementary intervention in flood-prone areas due to its physical durability and sustained insecticidal effect. It may provide continuous protection when other methods are compromised. Some evidence indicates a reduction in malaria incidence in intervention communities, but the evidence base specific to Barotseland is limited. Insecticide-treated durable wall lining presents a promising supplementary tool for integrated malaria vector control in Barotseland. Its resilience offers a potential advantage over more transient methods during seasonal floods. Further implementation research is needed within Barotseland to generate local evidence on efficacy and cost-effectiveness. Programme planning should consider

ITWL as part of a multi-component strategy. Community engagement is essential to ensure acceptability and correct installation. malaria, vector control, insecticide-treated wall lining, flooding, Barotseland, Zambia, public health intervention. This review consolidates the available evidence on a specific intervention for a challenging ecological setting, informing future research and policy for malaria control in flood-prone regions of Zambia.

Keywords: *malaria control, insecticide-treated materials, vector control, Barotseland, public health, environmental health, Zambia*

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