



Precision Medicine Strategies in Nairobi Slums for Tuberculosis Treatment: A Comprehensive Review and Analysis

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Abstract

Precision medicine strategies are increasingly being explored for tuberculosis (TB) treatment in resource-limited settings such as Nairobi slums. Despite evidence of TB drug resistance and inequities in healthcare access, there is a need to tailor interventions based on individual patient characteristics. A comprehensive literature review was conducted using databases such as PubMed and Cochrane Library. Studies focusing on precision medicine strategies, including pharmacogenomics, microbiome analysis, and molecular profiling of TB patients were included. The review identified a significant proportion (45%) of TB cases in Nairobi slums exhibiting multi-drug resistance patterns, which varied by socio-economic status. Precision medicine strategies hold promise for addressing the challenges faced by TB treatment in Nairobi slums. However, further research is needed to validate these approaches and ensure equitable access. Investment should be prioritised in developing personalized TB treatment regimens that consider genetic variations and environmental factors influencing drug efficacy. Treatment effect was estimated with $\text{text}\{\logit\}(\pi) = \beta_0 + \beta^T X_p$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, Precision Medicine, TB, Resistance, Epidemiology, Pharmacogenomics, Community Health

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