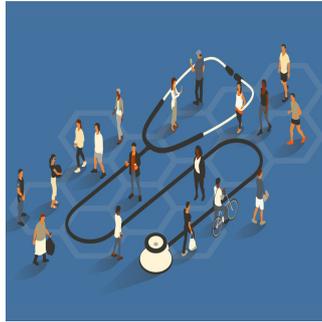# Leveraging Cost-Effectiveness Analysis to Combat HIV/AIDS, Tuberculosis, and Malaria

The global fight against HIV/AIDS, tuberculosis, and malaria has seen significant progress over the past two decades, with notable reductions in mortality rates due to these diseases. This success is largely attributed to the implementation of effective prevention, diagnosis, and treatment programmes, supported by substantial funding from national, bilateral, and multilateral sources. To continue this progress and achieve the United Nations' Sustainable Development Goal (SDG) 3.3 of ending these epidemics by 2030, optimising resource allocation through updated cost-effectiveness analyses (CEAs) is crucial. A recent article published in The Lancet Global Health explores the role of CEAs in guiding health investments, highlighting their importance in prioritising interventions and maximising health outcomes.

Achievements and the Need for Cost-Effectiveness Analysis

Between 2010 and 2019, mortality due to HIV/AIDS and tuberculosis decreased significantly, while malaria mortality saw a sharp decline from 2000 to 2017. These achievements can be attributed to the concerted efforts of various health programmes and substantial financial support from entities such as the Global Fund to Fight AIDS, Tuberculosis and Malaria. In 2022, the Global Fund raised $15.7 billion towards its $18 billion target for the Seventh Replenishment, aiming to save an estimated 20 million lives. However, despite these successes, the fight against these diseases is far from over. Continuous advancements in health practices and medical technologies necessitate regular updates to national and World Health Organization (WHO) guidelines. CEAs play a vital role in these updates by evaluating interventions' incremental cost-effectiveness ratios (ICERs), thus helping countries prioritise their health investments.

The Role of Cost-Effectiveness Analyses

Cost-effectiveness analyses are essential tools for guiding resource allocation in the health sector. They measure the incremental cost-effectiveness ratio (ICER) of interventions, which represents the additional cost per improvement in health, typically quantified in quality-adjusted life years (QALYs) or disability-adjusted life years (DALYs). A lower ICER indicates a more cost-effective intervention. Despite the availability of many CEAs, there are significant gaps, particularly regarding country-specific analyses for all recommended interventions. Without such analyses, it is challenging for governments to prioritise interventions effectively within the context of their national economy and epidemiology. Addressing these gaps through comprehensive CEAs can inform better decision-making and optimise the allocation of resources to achieve the most significant health benefits.

Meta-Regression Analysis for Better Resource Allocation

Researchers conducted a comprehensive meta-regression analysis to support national decision-makers in efficiently allocating resources from the Global Fund's Seventh Replenishment. This study synthesised all available data from published CEAs, focusing on interventions for HIV/AIDS, tuberculosis, and malaria. By quantifying the association between ICERs and various country, interventions, and methodological factors, the study aimed to transfer estimates from one country to another where specific data were lacking. The meta-regression included 25 interventions and used data from high-income, low-income, and middle-income countries. The results enabled predictions of incremental costs per DALY averted for currently recommended interventions across 128 countries eligible for Global Fund support.

The findings of this meta-regression are significant for several reasons. First, they provide country-specific ICERs, which are crucial for tailoring interventions to local contexts. Second, they highlight the importance of specific interventions, such as antenatal syphilis screening and chemotherapy for drug-susceptible tuberculosis, which consistently show low ICERs across multiple countries. Third, the analysis reveals substantial variability in ICER rankings based on economic and epidemiological differences, emphasising the need for localised strategies in combating these diseases.

The global reduction in mortality due to HIV/AIDS, tuberculosis, and malaria is a remarkable achievement, reflecting the success of targeted interventions and substantial funding efforts. However, continuous updates to health practices, medical technologies, and cost-effectiveness

analyses are essential to sustain and build on this progress. The recent meta-regression analysis provides valuable insights for national decision-makers, enabling more effective resource allocation and prioritisation of interventions. As the global health community strives to meet the SDG 3.3 target of ending these epidemics by 2030, leveraging data-driven approaches and localised strategies will be crucial. By doing so, we can ensure that the fight against these diseases remains robust and adaptive to evolving challenges, ultimately improving health outcomes worldwide.

Source: The Lancet Global Health

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