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A cost effectiveness analysis of pulmonary tuberculosis case finding strategies among high risk communities in Kampala, Uganda

Anthony Ssebagereka[1], Stevens Kisaka[1] and **Juliet Sekandi[2]**
[1]Makerere university School of Public Health, Uganda
[2]University of Georgia, USA

Introduction: Tuberculosis (TB) is a major global health risk in Sub-Saharan Africa. Passive Case Finding (PCF) is limited due to delays in case detection. Active case finding (ACF) strategies including Household Contact Investigation (HCI) and Enhanced Case Finding (ECF) have been alternatively proposed to improve TB case detection, but little is known about their cost-effectiveness. We assessed the cost-effectiveness of PCF+ECF+HCI combination compared to PCF only for TB case detection among high-risk communities in Kampala from provider's perspective.

Methods: Data on costs and yield of TB cases for PCF only and a combination of PCF+ECF+HCI was collected among adults in highly-congested areas of Kampala over 12 months. Costs were adjusted to US$ for the 2015 annual average. The main outcome was the Incremental Cost Effectiveness Ratio (ICER) representing the cost to detect an additional TB case. The decision threshold used was three times Uganda's GDP (US$ 2089). One-way sensitivity analysis was done to assess uncertainty of the ICER around key variables.

Results: Based on Uganda TB program data, 4,755 pulmonary TB cases from 12,298 presumptive TB cases were identified through PCF alone. PCF+ECF+HCI combination yielded 5,120 cases from 12,915 presumptive cases. The average cost per patient for PCF and PCF+HCI+ECF was US$ 895.8 and US$ 4909.9 respectively. The cost of detecting one additional TB case was US$ 8211.8 using PCF+ECF+HCI compared to using PCF only. In one-way sensitivity analyses, the ICER was most sensitive to number of household contacts screened, number of TB cases identified through ECF and probability of having chronic cough.

Conclusion: From the provider's perspective, PCF+ECF+HCI was costlier and had a marginally higher yield of TB cases than PCF only, but it was not a cost-effective strategy. In settings with minimal resources, low-cost approaches to improving household contact screening and enhanced case finding might add value to passive TB case detection.

e: assebagereka@gmail.com