Investing in drug-resistant tuberculosis household contact management and preventive treatment

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Preventing tuberculosis infection from progressing to tuberculosis disease is a crucial component of the goal to eliminate tuberculosis. When deciding on the use of tuberculosis preventive therapy among household contacts, policy makers regularly ask questions, such as whether tuberculosis preventive therapy is effective, safe, and feasible in a programme setting and what it will cost. For contact management and tuberculosis preventive therapy for multidrug-resistant and rifampicin-resistant tuberculosis, studies from high-income and low-income countries have shown feasibility, safety, and effectiveness.[1–4] However, there is scarce information on the cost of tuberculosis preventive therapy for multidrug-resistant and rifampicin-resistant tuberculosis. In *The Lancet Global Health*, Peter Dodd and colleagues[5] show that household contact management strategies are cost-effective even in low-income and middle-income countries, which has important policy implications for achieving the END TB Strategy goals.

Dodd and colleagues evaluated the global effect and costs of screening child household contacts of patients with multidrug-resistant and rifampicin-resistant tuberculosis and compared tuberculosis preventive therapy regimens given to groups who are at high risk of developing tuberculosis disease. The results showed that tuberculosis preventive therapy given to children younger than 15 years is cost-effective in preventing new tuberculosis cases and associated mortality in most countries. However, a regimen with levofloxacin was more cost-effective than delamanid.[5]

This model assumes that child household contacts will complete the entire care cascade without loss at any point. The care cascade pathway includes undergoing contact evaluation to exclude tuberculosis disease, being eligible for tuberculosis preventive therapy, prescription of tuberculosis preventive therapy, and initiating and completing tuberculosis preventive therapy. The results show that cost-effectiveness was partly driven by diagnosing people who have co-prevalent multidrug-resistant tuberculosis. Diagnosing tuberculosis in children is not easy due to non-specific tuberculosis symptoms and inability of children to produce sputum for testing; therefore, it is crucial to invest in and study improved diagnostic tools and practices for increased access to and availability of diagnostic services in close proximity to the community.[6] Studies from urban and rural programmatic settings have shown that many children will not be able to access clinics for contact screening and tuberculosis preventive therapy due to financial barriers and time constraints.[7] A programme might need to include patient enablers and multipronged approaches, such as household visits or mobile evaluation laboratories, to decrease patient loss through the cascade. However, the effect and cost-effectiveness of these strategies will need to be evaluated. Some of these additional costs can be offset by accounting for reduced disease transmission in the future.

An essential consideration for the tuberculosis preventive therapy completion rate is drug choice and treatment duration. WHO recommends fluoroquinolone-based preventive treatment on a case-by-case basis for household contacts of patients with multidrug-resistant tuberculosis, as was modelled in this study.[8] However, given the resistance to fluoroquinolones in low-income and middle-income countries, modelling newer tuberculosis drugs, such as bedaquiline and delaminid, for preventive treatment was fitting. An ongoing randomised controlled trial (NCT03568383) will provide valuable information on shortened treatment duration with delaminid, but increased research on its safety, efficacy, and associated cost will be required.[9] Experience from the preventive treatment of drug-sensitive tuberculosis has previously established that short treatment in children increases completion rates.[10] Additionally, providing psychosocial and counselling support to contacts will most likely improve treatment adherence, especially as most contacts are symptom free and in good health and therefore do not want to take a treatment for 6 months. Integrating enhanced literacy programmes on tuberculosis preventive therapy for both contacts and health-care providers will strengthen household contact management and tuberculosis programmes.

Most national tuberculosis programme guidelines include contact tracing, but preventive treatment

for multidrug-resistant and rifampicin-resistant tuberculosis is retained only as operational research. The evidence generated by Dodd and colleagues' analysis is timely for the global tuberculosis community and local and international decision makers to add preventive treatment for multidrug-resistant and rifampicin-resistant tuberculosis into tuberculosis programmes. This addition is especially needed because countries have committed to giving tuberculosis preventive therapy to 30 million contacts at the UN High-Level Meeting on Ending TB by 2022. Although substantial gains have been made in providing preventive treatment to people living with HIV, less than 1 million contacts received tuberculosis preventive therapy in 2020, with negligible coverage for preventive treatment for multidrug-resistant and rifampicin-resistant tuberculosis.[11]

This model provides a framework for decision makers in countries to understand the benefit and costs associated with these interventions and shows that household contact management for multidrug-resistant and rifampicin-resistant tuberculosis is cost-effective. Dodd and colleagues have emphasised the inherent risks of morbidity and mortality from tuberculosis and the benefits of household contact management and giving preventive therapy for multidrug-resistant and rifampicin-resistant tuberculosis, preventing up to 6000 multidrug-resistant and rifampicin-resistant episodes in children. Results from this modelling study will support WHO in providing a strong recommendation and seeking support from donor or global communities to invest in preventive treatment to bring about a change for children who still lose their lives from a preventable and curable disease.

We declare no competing interests.

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