Economic aspects of shortening the duration of tuberculosis treatment

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With the currently recommended 6-month anti-tuberculosis therapy (ATT), 85% of people with drug-sensitive tuberculosis could be cured.[1] However, this regimen still requires four medications and a minimum of 6 months of therapy. Long duration of treatment and drug-related toxicity leads to drug fatigue and non-compliance. Recurrence, community transmission, and acquired drug-resistance are all risks associated with premature treatment discontinuation, especially for drug-resistant tuberculosis, which requires more intensive treatment and longer duration.[2] The prevailing cost of treatment constrains available resources in low-income and middle-income countries, and thus shorter regimens for both drug-susceptible and drug-resistant tuberculosis are vital.

Efforts are underway to shorten ATT duration and mode of administration to reduce drug toxicity, improve adherence, and improve the quality of life of people with tuberculosis.[2] Ongoing clinical studies are centred around treatment shortening of all-oral ATT regimens. Several new chemical entities from different therapeutic classes have yielded promising outcomes from late preclinical or early clinical testing. Studies are investigating new drug combinations with unique mechanisms of action against drug-resistant tuberculosis.[3] Consistent efforts to mitigate the burden of treatment for drug-resistant tuberculosis has resulted in shorter regimens.[4,5]

In this context, with an aim to address the evidence gap on the economic implications of a standardized shorter regimen for resource-poor settings, Theresa S Ryckman and colleagues[6] did a modelling study using an ingredients-based approach. They estimated prices at which new regimens for rifampicin-susceptible and rifampicin-resistant tuberculosis treatment would be cost neutral or cost effective compared with standards of care in India, the Philippines, and South Africa.[6] The study showed that improved regimens to treat tuberculosis could yield substantial cost savings, achieving net cost-neutrality even with higher drug costs. These findings underscore the shortening of duration as an important contributor towards treatment cost saving, even against improved standards of care. From the cost perspective, the study by Ryckman and colleagues[6] suggests that shortened duration yielded the most savings for both rifampicin-sensitive and rifampicin-resistant tuberculosis in these three countries. The shorter duration was the most important driver of medium-term savings with novel regimens, followed by increased treatment adherence.

Gomez and colleagues[7] did an economic evaluation study in four countries (Bangladesh, Brazil, South Africa, and Tanzania) with a decision analytic model to compare the cost-effectiveness of a hypothetical 4-month regimen to the standard-of-care 6-month regimen.[7] They found that a 4-month non-inferior first-line tuberculosis treatment was probably cost saving in all countries except Bangladesh. In middle-income nations such as South Africa and Brazil, where the cost of providing health care is higher, this benefit was more evident. In shortened regimens, adherence to tuberculosis treatment was a crucial factor in determining cost-effectiveness and was highly dependent on drug pricing.[8]

Although estimates suggest a higher return for every US dollar invested in reducing tuberculosis incidence,[8] still more evidence is needed globally to devise cost-effective interventions for tuberculosis elimination. It is important that the study by Ryckman and colleagues[6] highlights that shortening tuberculosis treatment duration could be an important strategy to achieve the tuberculosis elimination goals together with sufficient economic gains.

We declare no competing interests.

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