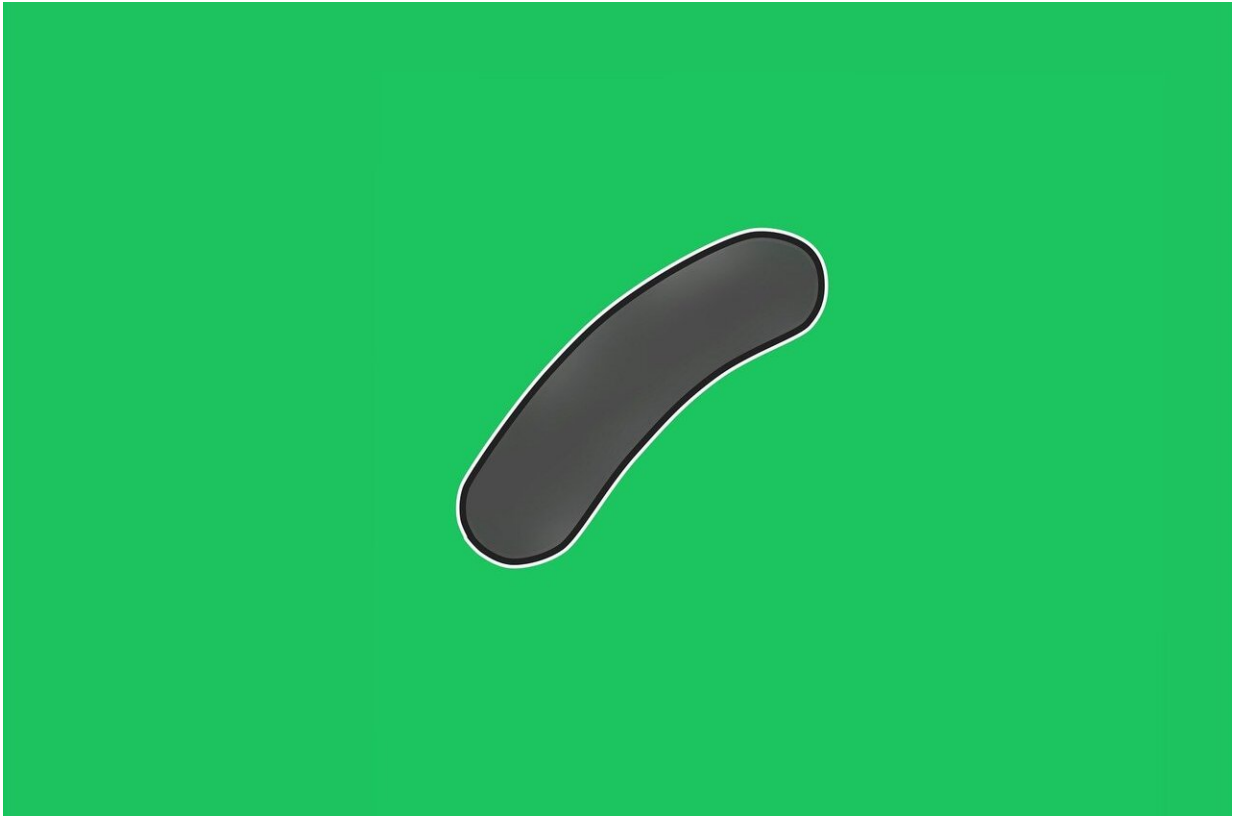


Reviewing molecular tests for tuberculosis

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A potential game-changer in the tuberculosis epidemic was how the tuberculosis community viewed rapid molecular tests for tuberculosis and tuberculosis drug resistance. This was 12 years ago, with the launch of Xpert MTB/RIF, which gives results in less than two hours, simultaneously diagnosing tuberculosis and testing if the bacteria have

rifampicin resistance, a type of drug-resistant tuberculosis. Multidrug-resistant tuberculosis is caused by resistance to at least both rifampicin and isoniazid, the two most effective first-line drugs used to treat tuberculosis.

Yet, [diagnostic tests](#) only have an impact on health if they are put to use in a correct and timely manner. To ensure diagnostics are accessible and utilized, we need to understand the views of recipients and providers who have used these tests, and a new qualitative evidence synthesis review published in the *Cochrane Database of Systematic Reviews* pulls together all relevant research to date on Xpert MTB/RIF and similar tests. The authors also wanted to understand the implications of the review findings on effective implementation and health equity.

Rapid molecular tests have been shown to be accurate in diagnosing [tuberculosis](#) and rifampicin resistance and are recommended by the World Health Organization as the initial test in people with presumptive tuberculosis, replacing sputum microscopy, a test from the 19th century. These tests have many benefits, including the fact that they do not require well-equipped laboratories and skilled personnel, and can be carried out in community health settings, nearer to where people live. This is particularly relevant in low- and middle-income countries, settings with a high burden of tuberculosis.

Examining the evidence from 32 included studies, the review author team identified aspects of these tests that users valued most and challenges to realizing those values. People with tuberculosis valued an accurate diagnosis (knowing what is wrong with me), avoiding delays, and keeping diagnostic-associated cost low. Similarly, [healthcare providers](#) valued test accuracy and confidence in results (which helps in starting treatment), rapid results, and keeping cost to people seeking a diagnosis low. In addition, providers valued diversity of sample types (for example, gastric aspirate specimens and stool in children) and

ability to detect drug resistance early. Laboratory professionals appreciated the improved ease of use compared to microscopy and increased staff satisfaction.

Reported challenges included reluctance to test for tuberculosis owing to stigma or cost concerns; health system inefficiencies such as poor quality of specimens, difficulty in transporting specimens, lack of sufficient staff or equipment, increased workload for providers, inefficiencies in integrating the test into clinic routines and clinicians relying too much on the test result at expense of their own experience with diagnosing tuberculosis; as well as implementation processes hampered by insufficient data about real-life situations, lack of inclusion of all relevant stakeholders (local decision-makers, providers or people seeking a diagnosis), and conflicts of interest between donors and people implementing the tests.

"The findings reveal a fundamental paradox between supporting technological innovations but not in parallel investing in health system infrastructure strengthening. The view that these low-complexity diagnostics are a solution to overcome deficiencies in laboratory infrastructure and lack of skilled professional is misleading.

Implementation of new diagnostic technologies, like those considered in this review, will need to tackle the challenges identified in this review including weak infrastructure and systems, and insufficient data on ground level realities prior and during implementation, as well as problems of conflicts of interest in order to ensure quality care and equitable use of resources," stated Nora Engel, lead author of the review.

The review authors called for future research to examine the implications of repurposing diagnostic infrastructure and equipment for COVID-19 and the issue of competition for diagnostic resources more generally.

More information: Nora Engel et al, Rapid molecular tests for tuberculosis and tuberculosis drug resistance: a qualitative evidence synthesis of recipient and provider views, *Cochrane Database of Systematic Reviews* (2022). [DOI: 10.1002/14651858.CD014877.pub2/full](https://doi.org/10.1002/14651858.CD014877.pub2/full)

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