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Xpert MTB/RIF for rapid detection of rifampicin-resistant *Mycobacterium tuberculosis* from pulmonary tuberculosis patients in Southwest Ethiopia

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ABSTRACT

Objective/background: Accurate and rapid detection of drug-resistant strains of tuberculosis (TB) is critical for early initiation of treatment and for limiting the transmission of drug-resistant TB. Here, we investigated the accuracy of Xpert MTB/RIF for detection of rifampicin (RIF) resistance, and whether this detection predicts the presence of multidrug resistant (MDR) TB in Southwest Ethiopia.

Methods: Smear- or culture-positive sputa obtained from TB patients with increased suspicion of drug resistance were included in this study. GenoType MTBDRplus line-probe assays (LPAs) and Xpert MTB/RIF tests were performed on smear-positive sputum specimens and on cultured isolates for smear-negative specimens. We performed routine drug-susceptibility testing using LPA as the reference standard for confirmation of RIF and isoniazid (INH) resistance.

Results: First-line drug-susceptibility results were available for 67 *Mycobacterium tuberculosis* complex-positive sputum specimens using the LPA test, with our preliminary results indicating that 30% (20/67) were MDR-TB, 3% (2/67) were RIF monoresistant, 6% (4/67) were INH monoresistant, and 61% (41/67) were susceptible to both RIF and INH. Relative to routine RIF-susceptibility testing (LPA), Xpert MTB/RIF detected all RIF resistance correctly, with 100% sensitivity and 97.8% specificity and a positive-predictive value of 95.7%. Of the 23 RIF-resistant strains according to Xpert MTB/RIF, 87% (20/23) were resistant to both RIF and INH (MDR), 8.7% (2/23) were RIF monoresistant, and 4.3% (1/23) were sensitive to RIF according to the LPA test. A high proportion of RIF resistance was documented among patients previously categorized as failure cases (50%, 10/20), followed by relapse cases (31.6%, 6/19) and defaulters (28.6%, 2/7).

Conclusion: Xpert MTB/RIF was highly effective at identifying RIF-resistant strains in smear- or culture-positive samples. RIF resistance based on Xpert MTB/RIF results could be used to estimate MDR and allow rapid initiation of MDR-TB treatment in regions with high levels of drug-resistant TB.

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Conflict of intrest

The author declare that they have no conflict of interest.

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