Use of Xpert MTB/RIF and Xpert MTB/RIF Ultra on GeneXpert 10-colour instruments

WHO POLICY STATEMENT

2021

World Health Organization

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Abbreviations and acronyms

AIDS	acquired immunodeficiency syndrome
Ct	cycle threshold
DR-TB	drug-resistant tuberculosis
FIND	Foundation for Innovative New Diagnostics
GTB	Global TB Programme
GXP	GeneXpert instrument
GXP6	GeneXpert 6-colour instrument
GXP10	GeneXpert 10-colour instrument
HIV	human immunodeficiency virus
MTB	*Mycobacterium tuberculosis*
MTBC	*Mycobacterium tuberculosis* complex
PQ	prequalification
RIF	rifampicin
SRL	WHO TB Supranational Reference Laboratory
TAG	Technical Advisory Group
TB	tuberculosis
Tm	melting temperature
Ultra	Xpert MTB/RIF Ultra
USA	United States of America
WHO	World Health Organization
XDR	extensively drug-resistant

WHO policy statement

Introducing improved, rapid and more accurate diagnostic tools[1] is critical to achieving the global targets towards ending the tuberculosis (TB) epidemic. The World Health Organization (WHO) recommended the use of Xpert® MTB/RIF and Xpert MTB/RIF Ultra (Ultra) (Cepheid, Sunnyvale, United States of America [USA]) for the detection of TB and rifampicin-resistant TB in 2010 and 2017, respectively.[2] Both tests are widely implemented as initial tests for patients with presumptive TB and are performed on GeneXpert instruments with 6-colour optics. In 2021, WHO recommended the class of low complexity automated nucleic acid amplification tests (NAATs) to detect resistance to amikacin, ethionamide, fluoroquinolones and isoniazid.[3] The first-in-class test is the Xpert MTB/XDR (Cepheid, Sunnyvale, USA). In contrast to the Xpert MTB/RIF and Ultra, this test requires an instrument with 10-colour optics and cannot be performed on the existing 6-colour instrument systems. The performance of Xpert MTB/RIF and Ultra on the new GeneXpert 10-colour instruments has not been independently assessed. Having a single instrument that could be used to detect TB and resistance to first-line and second-line drugs would simplify workflow and facilitate implementation.

To evaluate the evidence on the performance of Xpert MTB/RIF and Xpert Ultra on GeneXpert 10-colour instruments, WHO convened a meeting of the Technical Advisory Group (TAG) on Tuberculosis Diagnostics and Laboratory Strengthening on 5–6 October 2021.[4] This document provides background information and describes the available evidence and discussions by the TAG.

Following review of the evidence and advice from the TAG, WHO makes the following policy statements:

1. Xpert MTB/RIF and Ultra cartridge performance on the GeneXpert 10-colour instrument is comparable to that of the GeneXpert 6-colour instrument for detection of TB and rifampicin resistance.
2. Current WHO recommendations for Xpert MTB/RIF and Ultra cartridge use on GeneXpert 6-colour instruments are also valid for their use on GeneXpert 10-colour instruments.

The guidance provided should facilitate procurement and uptake of these technologies and improve patient care. The statements above should be read in the context of the remarks and implementation considerations detailed in this report. In addition, further research questions are proposed that seek to address data gaps and inform models to improve effective implementation of the tests. The current WHO recommendations on the use of the Xpert MTB/RIF and Ultra on the GeneXpert 6-colour instrument and the use of the Xpert MTB/XDR on the GeneXpert 10-colour instrument are unchanged and remain valid. All products recommended by WHO are automatically eligible to be included in the