

Xpert MTB/RIF for people living with HIV

TB is the most common presenting illness and the leading cause of death among people living with HIV (PLHIV) including among those taking antiretroviral therapy (ART). An estimated 1.1 million PLHIV developed TB in 2013 and 360,000 died as a result. For more information on TB/HIV, visit www.who.int/tb/challenges/hiv/en

PLHIV have a 29-fold increased risk of TB compared to HIV-uninfected people. Because diagnosis of TB among PLHIV is particularly challenging, there is delay in detection of TB and subsequent treatment. As a result, HIV-related TB deaths are a significant public health problem in high HIV-prevalent settings*. Moreover, localized epidemics of HIV associated MDR-TB and XDR-TB cause extremely high mortality. Therefore early diagnosis and prompt treatment of both TB and drug-resistant TB among PLHIV is essential.

DIAGNOSING TB AMONG PLHIV

Sputum smear microscopy has a particularly low sensitivity for detecting TB among PLHIV. This is because people in later stages of HIV infection and with compromised immune systems often release fewer organisms into their sputum, at concentrations below the threshold for visual detection under a microscope. For PLHIV with a negative smear microscopy result but who are still presumed to have TB, bacterial culture has been the only diagnostic option. However, culture can only be undertaken at central level laboratories, and results are generally available after a number of weeks or months. TB culture is therefore not good enough for PLHIV, who need a speedy TB diagnosis and prompt treatment.

Xpert MTB/RIF should thus be made widely available as the initial diagnostic test in HIV clinics and HIV-prevalent* settings, as it is a rapid, simple and highly sensitive TB diagnostic tool that can easily be deployed close to the point of patient care.

SUMMARY OF WHO RECOMMENDATIONS ON XPERT MTB/RIF FOR PLHIV

1. Xpert MTB/RIF should be used rather than conventional microscopy, culture and DST as the initial diagnostic test in **adults and children suspected of having HIV-associated TB** or of having MDR-TB (strong recommendation).
2. Xpert MTB/RIF should be used in preference to conventional microscopy and culture as the initial diagnostic test for CSF specimens from patients **suspected of having TB meningitis** (strong recommendation).
3. Xpert MTB/RIF may be used as a replacement test for usual practice (including conventional microscopy, culture or histopathology) for testing specific **non-respiratory specimens** (lymph nodes and other tissues) from patients suspected of having extrapulmonary TB (conditional recommendation).

THE ROLE OF XPERT MTB/RIF IN THE CASCADE OF CARE FOR PLHIV

PLHIV should be screened for TB symptoms at each visit to a health facility or each encounter with a health care worker.

- Adults and adolescents living with HIV who report any one of the following symptoms: **current cough, fever, weight loss or night sweats** may have active TB and should be evaluated for TB and other diseases.
- Children living with HIV who have any one of the following symptoms: **poor weight gain, fever, current cough or contact history with a TB case** may have TB and should be evaluated for TB and other conditions.
- If the evaluation shows any of the above, PLHIV should be **tested** for active TB, **preferably by Xpert MTB/RIF**.

* HIV-prevalent settings: where the adult HIV prevalence rate among pregnant women is $\geq 1\%$ or HIV prevalence among tuberculosis patients is $\geq 5\%$.

EVIDENCE ON USE OF XPERT MTB/RIF FOR DETECTING TB IN PEOPLE LIVING WITH HIV

Xpert MTB/RIF:

- **is sensitive and specific** for the detection of pulmonary TB when used as the initial diagnostic test in adults presumed to have HIV-associated TB. It detects 79% of the pulmonary TB cases among PLHIV, which is far superior to smear microscopy.
- **increases case detection** of TB by around 45% compared with microscopy among PLHIV enrolling in ART in South Africa.
- **improves the quality of rapid TB diagnosis** among PLHIV by providing bacteriologically confirmed diagnosis in 36 – 75% of pulmonary TB patients who are smear-negative.
- **facilitates earlier diagnosis and reduces time-to-initiation of TB treatment**, especially for smear-negative pulmonary TB and at decentralized clinics in areas of high HIV prevalence.
- improves sensitivity, timeliness of detection of **rifampicin resistance** in adults and children living with HIV. Use of Xpert MTB/RIF to detect TB among PLHIV thus facilitates timely drug susceptibility testing (DST) for detection of MDR-TB or XDR-TB and treatment initiation with the correct drug regimen.
- is **feasible even when performed by non-technical personnel** at point of care settings.
- **reduces the indirect costs** incurred by TB patients compared to smear microscopy by more than 50%
- Modeling studies suggest that inclusion of Xpert MTB/RIF in the TB diagnostic algorithm for PLHIV is **cost-effective** with a cost of US\$959 per disability adjusted life-year (DALY) averted over 10 years in a southern Africa setting compared with smear microscopy.

However, like any diagnostic tool, Xpert-MTB/RIF may be unable to impact TB morbidity and mortality, unless the test is embedded into a supportive and efficient health care system.



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WHAT IS XPERT MTB/RIF?

Xpert MTB/RIF is a fully-automated molecular test for the rapid and simultaneous detection of TB and rifampicin resistance that has the potential to revolutionize and transform TB care and control. It provides accurate results in less than two hours, has minimal biosafety and training requirements, and can be housed in non-conventional laboratories.



For more information, see:

- [Policy update: Xpert MTB/RIF assay for the diagnosis of pulmonary and extrapulmonary TB in adults and children](#)
- [Xpert MTB/RIF implementation manual: technical and operational 'how-to': practical considerations](#)
- [Factsheet on Xpert MTB/RIF](#)