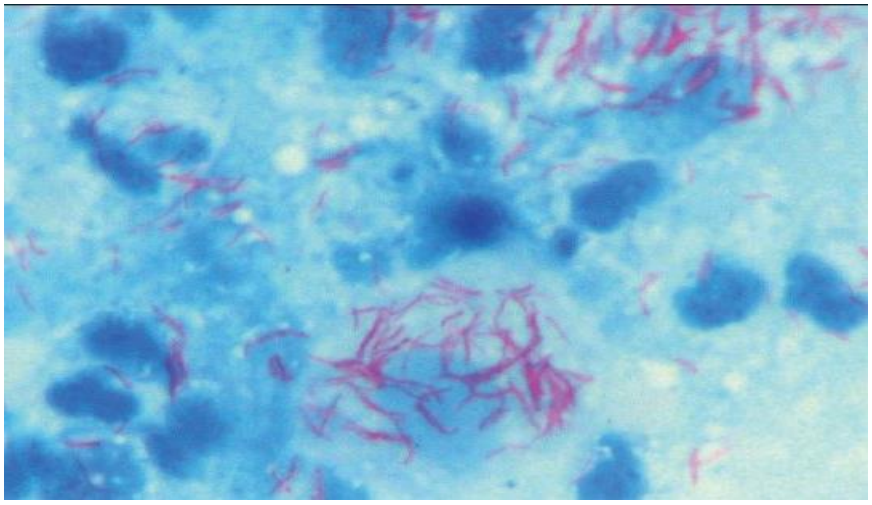
Tuberculosis Testing Guidelines – 2016



INTERPATH LABORATORY

Tuberculosis (TB), caused by the "acid-fast" microorganism, *Mycobacterium tuberculosis* (*Mtb*), continues to be a significant public health problem, causing an estimated 1.5 million annual deaths worldwide. In 2016, new guidelines were published giving recommendations for the laboratory diagnosis of active TB disease and latent TB infection (LTBI) (see reverse for more details). Of note, it is now recommended that an interferon-gamma release assay (IGRA) be performed instead of a tuberculin skin test (TST) on individuals 5 years of age or older and that meet the following criteria:

- **Are likely to be infected with *Mtb*,**
- **Have a low or intermediate risk of disease progression,**
- **It has been decided that testing for LTBI is warranted,**
- **Have a history of BCG vaccination**
- **Are unlikely to return to have a TST read.**

Interpath Laboratory offers an IGRA called the T-SPOT®.TB

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Mycobacterium tuberculosis

Tuberculosis (TB) is caused by the rod-shaped bacterium, *Mycobacterium tuberculosis* (*Mtb*). *Mtb* continues to be a significant pathogen and public health threat, particularly in the developing world. The World Health Organization (WHO) estimates that in 2014 there were 8.6 million new cases and 1.5 million deaths due to TB[1].

Active versus Latent TB

In the United States alone, an estimated 11 million people are infected with *Mtb*. In the absence of any clinical symptoms, this is known as latent TB infection (LTBI). Only about 5% of individuals with LTBI will develop active TB in their lifetime. However, the WHO estimates that 500,000 of new TB cases in 2014 involved multi-drug resistant TB (MDR-TB) or extensively drug resistant TB (XDR-TB)[2], organisms that are becoming increasingly resistant to anti-TB antibiotics. Thus, it is of extreme importance to accurately diagnose and treat those that have TB, the majority of which will have LTBI.

Of course, when a patient presents with TB-like symptoms, a full clinical and laboratory diagnosis should be performed. However, due to emerging drug resistance, it is also vitally important that we detect and prophylactically treat patients, when warranted, with LTBI.

Diagnostic Tests for Active TB

The diagnosis and management of active TB relies heavily on accurate laboratory diagnostics and is vital both to the health of the individual patient and in the control of the spread of disease at the local, national and global levels. Below are the recommended diagnostic tests for active TB:

- *Acid-fast staining (test #4204)*. It is recommended that 3 consecutive first morning sputum specimens be collected for acid-fast staining (70% sensitive).
- *Nucleic acid amplification testing (NAAT) (test #3165)*. It is recommended that a NAAT be performed on the initial respiratory specimen from a patient with high suspicion of having active disease.
- *Culture (test #4204)*. It is recommended that both liquid and solid culture be performed: liquid culture is more rapid and more sensitive than solid culture (89% vs. 76%); solid culture safeguards against false positives due to contamination, and is a more useful medium when performing subsequent drug susceptibility testing.

Diagnostic Tests for LTBI

It is now recommended[2] that an interferon-gamma release assay (IGRA) be performed instead of a tuberculin skin tests (TST) on individuals 5 years or older that meet the below criteria:

(1) are likely to be infected with *Mtb*
(2) have a low or intermediate risk of disease progression
(3) it has been decided that testing for LTBI is warranted
(4) either have a history of BCG vaccination or are unlikely to return to have a TST read

An IGRA works by taking a sample of white blood cells (WBCs) from an individual and determining whether or not these WBCs will respond to *Mtb* by releasing the immune stimulatory molecule, interferon-gamma. When WBCs readily release interferon-gamma, it indicates that they have been previously exposed to *Mtb*. Interpath Laboratory offers an IGRA called the T-SPOT®.TB test (test #2860). See https://www.youtube.com/watch?v=lkHmyC5C84A for more details.

References

1. World Health Organization. Global tuberculosis report 2015. Geneva, Switzerland: WHO, 2015.
2. D. M. Lewinsohn, et al. Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children. Clin Infect Dis. 2016 Dec 8; ciw694. (**Hyperlink**)