

Screening for Latent Tuberculosis Infection (LTBI)

Video Transcript

This program is presented by the Global Tuberculosis Institute and is based on recommendations from the Centers for Disease Control and Prevention. This is the first in a series of videos for primary care providers. In this video, you'll learn about screening for latent tuberculosis infection, also called LTBI. Other videos discuss diagnosing and treating latent TB infection and monitoring patients on treatment.

Background

Tuberculosis, also called TB, is caused by *Mycobacterium tuberculosis* and is spread from person to person through the air. People who are ill with pulmonary or laryngeal TB disease can spread infectious particles into the air when they cough, sneeze, shout, laugh or sing. Infection occurs when another person inhales these particles, and they reach the alveoli of the lungs, where an immune response is initiated.

Although these people have viable TB bacteria in their body, the bacteria are inactive. As long as the bacteria remain contained by the immune system these individuals have latent TB infection. They cannot spread the infection to others. However, there is a risk that if untreated, the bacteria will overcome the body's immune defenses and multiply causing the person to become ill with TB disease. Since there is a risk that people with LTBI will develop TB disease later in life, it is important to identify those at risk for LTBI, test them, and treat those who are infected. Treating LTBI prevents infected people from developing TB disease and becoming infectious to others, and thus helps prevent transmission of the disease.

While people with TB disease, also sometimes called active TB, are sick and often present with symptoms, people with latent TB infection are not sick, and do not have signs or symptoms of TB disease. Thus, latent TB infection doesn't show any of the clinical, radiographic or bacteriologic evidence of TB disease. People with signs and symptoms of TB disease should be evaluated for the disease, rather than evaluated for LTBI.

The World Health Organization estimates that about one-quarter of the world's population is infected with TB bacteria and CDC estimates that up to 13 million people in the United States have latent TB infection.

Because primary care providers, especially those in community settings, may encounter people who are at high risk of TB infection and disease, they play a vital role in preventing and eliminating TB.

Whom to Test for Latent TB Infection

Since there is no test that will tell us whom with latent TB infection will progress to active TB, focus your testing on persons with an increased risk of infection and/or those with medical risk factors that increase the risk of progression to disease if infected. Remember, identifying and treating LTBI prevents TB disease.

Let's first talk about people at increased risk for acquiring TB infection. There are 3 situations that put people at an increased risk of being infected with TB bacteria.

- First, people who are close contacts of someone with infectious TB.

Test these individuals for TB infection.

- Second, people who were born, lived in, or have had significant travel to places with an increased TB prevalence are at increased risk for acquiring TB infection. This includes countries other than the US, Canada, Australia, New Zealand, or in northern or western Europe. Non-U.S.-born persons account for 70 percent of all TB cases in the US.

Test these individuals for TB infection and consider periodic testing for those with continued risk of exposure, such as travel to countries with an increased TB prevalence. Consider local TB epidemiology when deciding whom to test in your area.

- Finally, people who live or work in certain places where there is risk for TB transmission may be at increased risk for infection. This includes homeless shelters or correctional facilities where high-risk persons reside or gather.

Consider contacting the health department to understand local trends and epidemiology, including who is at risk in your area. Test these individuals and consider periodic testing for those with continued exposure.

Now, let's talk about those who have an increased risk of progressing from LTBI to TB disease if they are infected. In this case, there are several situations that may increase a person's risk

- Immunosuppression, including people with HIV infection, those on or about to start TNF-alpha inhibitors or prolonged treatment with corticosteroids, and organ transplant recipients.

Test people before they start immunosuppressive therapy, such as TNF-alpha inhibitors. Test people for TB when they are diagnosed with HIV. For people living with HIV who are at high risk of repeated or ongoing exposure to people with infectious TB disease, periodic testing for TB infection is recommended. Consider periodic testing for others with immunosuppression who are at risk for repeated or ongoing exposure, based on medical history and local epidemiology

Retest people with advanced HIV infection and a CD4 count of less than 200 who have a negative test for TB infection and do not have any indications for empiric LTBI treatment, such as recent exposure to someone with infectious TB disease, AFTER they initiate antiretroviral therapy and attain a CD4 count of 200 or greater. This can help ensure that the initial test was a true negative result.

- People **without** a history of documented appropriate TB treatment whose radiographs show abnormalities that look like fibrotic scarring also have an increased risk of progression to TB disease. *Test these individuals for TB infection. They could have old healed TB, but active TB disease should be excluded.*

There are other situations that should be considered when deciding who to test, since they increase a person's risk of progression to TB disease *if* they are infected with the TB bacteria. Asking a few simple questions will help to assess a person's risk for TB infection and help determine who should be tested. Check the resources list for a sample risk assessment tool.

- Certain other health conditions increase the risk of progression to TB disease. Periodic testing may be warranted in people with these conditions who are at risk for continued exposure.
- Children under 5 years of age are also at high risk if infected, because they can progress to TB disease very quickly, and the disease can be severe.

In 2016, the US Preventive Services Task Force recommended screening for LTBI in populations at increased risk as an Essential Health Benefit of the Affordable Care Act with a "B" rating, to be covered without copays or deductibles. The USPSTF recommendation includes persons born in or former residents of countries with increased TB prevalence and persons who live in or have lived in high-risk congregate settings, such as homeless shelters or correctional facilities.

You may be asked to test people who are not necessarily at increased risk, such as daycare center workers, teachers, and US-born students. Use a risk assessment tool to determine who should be tested.

When starting a new job in a health care setting, individuals should receive a TB risk assessment, a symptom screen, and baseline testing for TB infection. Serial testing, such as annual testing, is *not* recommended unless there is known exposure or ongoing transmission. The decision to perform TB testing after baseline should be based on the person's risk for TB exposure at work or elsewhere since that person's last test.

Providing TB Education

Provide education on latent TB infection to individuals at the time of testing, and later when discussing the results of their test. Ask them what they know about TB, so you can tailor your education to correct misconceptions or address barriers to testing and treatment.

Be sure to respect cultural and ethnic perceptions of infection and disease and present the education in the context of their belief systems especially as it relates to the need to take medication when healthy and feeling well, BCG vaccination, and its perceived effect on test results. This vaccine isn't given in the US but is used in many parts of the world where TB is common to protect infants and young children from serious complications of TB disease. However, its effectiveness wanes over time. Be sure to explain that a history of BCG vaccination is *not* a reason to forgo testing for TB infection.

Clearly explain the difference between LTBI and TB disease *and* the risk factors for acquiring TB infection and developing disease when you are assessing people for risk of TB infection. There is often stigma and shame associated with TB, especially among people from countries where TB is endemic, so you should clearly describe how TB is spread and that anyone can get TB. Emphasize that those with LTBI cannot spread the disease to others.

Explain the person's specific risk factors for infection or progression and that by getting tested for LTBI and taking treatment if infected, people can protect themselves, their families, and their communities.

Testing Methods

There are 2 approved testing methods available to detect TB infection in the US, interferon-gamma release assays, also called IGRAs, and Mantoux tuberculin skin test, also called the TST. These tests will be discussed in more detail in the video on diagnosis.

Remember, a positive test for TB infection tells only if a person has been infected with TB bacteria. It doesn't tell whether the person has latent TB infection or has progressed to TB disease, which requires a clinical evaluation that includes a chest x-ray and physical exam.

Thank you for viewing this video on screening for latent TB infection, which is the first in a series. The other videos discuss diagnosis, treatment, and monitoring those on treatment. For more information and the additional resources mentioned in this video, visit this website:

globaltb.njms.rutgers.edu/