



## Testing & Diagnosis

Tuberculosis (TB) is a disease that is spread through the air from one person to another. There are two kinds of tests that are used to determine if a person has been infected with TB bacteria: the tuberculin skin test and TB blood tests.

A positive TB skin test or TB blood test only tells that a person has been infected with TB bacteria. It does not tell whether the person has [latent TB infection](/tb/topic/basics/default.htm) (LTBI) or has progressed to [TB disease](/tb/topic/basics/default.htm). Other tests, such as a chest x-ray and a sample of sputum, are needed to see whether the person has TB disease.



**Tuberculin skin test:** The TB skin test (also called the Mantoux tuberculin skin test) is performed by injecting a small amount of fluid (called tuberculin) into the skin in the lower part of the arm. A person given the tuberculin skin test must return within 48 to 72 hours to have a trained health care worker look for a reaction on the arm. The health care worker will look for a raised, hard area or swelling, and if present, measure its size using a ruler. Redness by itself is not considered part of the reaction.

The skin test result depends on the size of the raised, hard area or swelling. It also depends on the person's risk of being infected with TB bacteria and the progression to TB disease if infected.

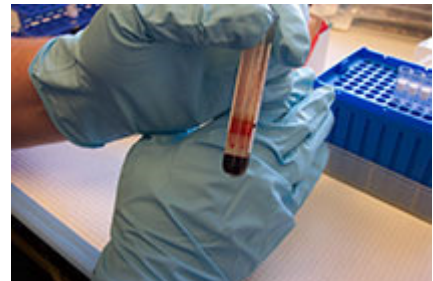
- **Positive skin test:** This means the person's body was infected with TB bacteria. Additional tests are needed to determine if the person has latent TB infection or TB disease. A health care worker will then provide treatment as needed.
- **Negative skin test:** This means the person's body did not react to the test, and that latent TB infection or TB disease is not likely.

**TB blood tests:** TB blood tests (also called interferon-gamma release assays or IGRAs) measure how the immune system reacts to the bacteria that cause TB. An IGRA measures how strong a person's immune system reacts to TB bacteria by testing the person's blood in a laboratory.

Two IGRAs are approved by the U.S. Food and Drug Administration (FDA) and are available in the United States:

1. QuantiFERON®–TB Gold In-Tube test (QFT-GIT)
2. T-SPOT®.TB test (T-Spot)

- **Positive IGRA:** This means that the person has been infected with TB bacteria. Additional tests are needed to determine if the person has latent TB infection or TB disease. A health care worker will then provide treatment as needed.



- **Negative IGRA:** This means that the person's blood did not react to the test and that latent TB infection or TB disease is not likely.

IGRAs are the preferred method of TB infection testing for the following:

- People who have received [bacille Calmette–Guérin \(BCG\)](/tb/publications/factsheets/prevention/bcg.htm) (</tb/publications/factsheets/prevention/bcg.htm>). BCG is a vaccine for TB disease.
- People who have a difficult time returning for a second appointment to look for a reaction to the TST.

There is no problem with repeated IGRAs.

## Who Should Get Tested for TB

TB tests are generally not needed for people with a low risk of infection with TB bacteria.

Certain people should be tested for TB bacteria because they are more likely to get TB disease, including:

- People who have spent time with someone who has TB disease
- People with HIV infection or another medical problem that weakens the immune system
- People who have symptoms of TB disease (fever, night sweats, cough, and weight loss)
- People from a country where TB disease is common (most countries in Latin America, the Caribbean, Africa, Asia, Eastern Europe, and Russia)
- People who live or work somewhere in the United States where TB disease is more common (homeless shelters, prison or jails, or some nursing homes)
- People who use illegal drugs

## Testing for TB in BCG-Vaccinated Persons

Many people born outside of the United States have been [BCG-vaccinated](/tb/publications/factsheets/prevention/bcg.htm) (</tb/publications/factsheets/prevention/bcg.htm>).

People who have had a previous BCG vaccine may receive a TB skin test. In some people, BCG may cause a positive skin test when they are not infected with TB bacteria. If a TB skin test is positive, additional tests are needed.

IGRAs, unlike the TB skin tests, are not affected by prior BCG vaccination and are not expected to give a false-positive result in people who have received BCG.

## Choosing a TB Test

The person's health care provider should choose which TB test to use. Factors in selecting which test to use include the reason for testing, test availability, and cost. Generally, it is not recommended to test a person with both a TST and an IGRA.

## Diagnosis of Latent TB Infection or TB Disease

If a person is found to be infected with TB bacteria, other tests are needed to see if the person has TB disease.

TB disease can be diagnosed by medical history, physical examination, chest x-ray, and other laboratory tests. TB disease is treated by taking several drugs as recommended by a health care provider.

If a person does not have TB disease, but has TB bacteria in the body, then latent TB infection is diagnosed. The decision about treatment for latent TB infection will be based on a person's chances of developing TB disease.

## Diagnosis of TB Disease

People suspected of having TB disease should be referred for a medical evaluation, which will include


- Medical history,
- Physical examination,
- Test for TB infection (TB skin test or TB blood test),
- Chest radiograph (X-ray), and
- Appropriate laboratory tests

See [Diagnosis of TB \(/tb/publications/factsheets/testing/diagnosis.htm\)](/tb/publications/factsheets/testing/diagnosis.htm) (Fact sheet) for more information about TB diagnosis.

## Related Links

- [State TB Control Offices \(/tb/links/tboffices.htm\)](/tb/links/tboffices.htm)

## For Patients

- [TB – General Information \(/tb/publications/factsheets/general/tb.htm\)](/tb/publications/factsheets/general/tb.htm) (Fact sheet)
- [Testing for Tuberculosis \(TB\) \(/tb/publications/factsheets/testing/tb\\_testing.htm\)](/tb/publications/factsheets/testing/tb_testing.htm) (Fact Sheet – PDF  [\(/tb/publications/factsheets/testing/tb\\_factsheet.pdf\)](/tb/publications/factsheets/testing/tb_factsheet.pdf) 306kb)
- [What You Need to Know About the TB Skin Test !\[\]\(2da321c3dc978a55192cb9c452297973\_img.jpg\)](/tb/publications/pamphlets/tb_skin_test.pdf) [\(/tb/publications/pamphlets/tb\\_skin\\_test.pdf\)](/tb/publications/pamphlets/tb_skin_test.pdf) (Pamphlet – PDF 202k)
- [Questions and Answers About TB \(/tb/publications/faqs/default.htm\)](/tb/publications/faqs/default.htm)

## For Health Care Providers

- [Nationwide Shortage of Tuberculin Skin Test Antigens: CDC Recommendations for Patient Care and Public Health Practice \(http://emergency.cdc.gov/HAN/han00345.asp\)](http://emergency.cdc.gov/HAN/han00345.asp)
- [What's New in Blood Testing for TB Infection? \(http://www.medscape.com/viewarticle/738519\) !\[\]\(a724a4a68298d6dff85fe378e838a60a\_img.jpg\)](http://www.medscape.com/viewarticle/738519)  [\(http://www.cdc.gov/Other/disclaimer.html\)](http://www.cdc.gov/Other/disclaimer.html) (video)
- [Testing and Diagnosis Fact sheets \(/tb/publications/factsheets/testing.htm\)](/tb/publications/factsheets/testing.htm)
- [Testing and Diagnosis Guidelines \(/tb/publications/guidelines/testing.htm\)](/tb/publications/guidelines/testing.htm)
- [TB Testing MMWRs \(/tb/publications/reportsarticles/mmwr/mmwr\\_testing.htm\)](/tb/publications/reportsarticles/mmwr/mmwr_testing.htm)
- [Education and Training Products \(/tb/education/default.htm\)](/tb/education/default.htm)
  - [Tuberculin Skin Testing \(/tb/publications/factsheets/testing/skintesting.htm\)](/tb/publications/factsheets/testing/skintesting.htm) (fact sheet)

- [Tuberculosis and Pregnancy \(/tb/publications/factsheets/specpop/pregnancy.htm\)](/tb/publications/factsheets/specpop/pregnancy.htm) (fact sheet)
- [Mantoux Tuberculin Skin Testing Materials \(/tb/education/mantoux/default.htm\)](/tb/education/mantoux/default.htm)
- [General information about TB blood tests \(/tb/topic/testing/bloodtest.htm\)](/tb/topic/testing/bloodtest.htm)
- [Interferon-Gamma Release Assays \(/tb/publications/factsheets/testing/igra.htm\)](/tb/publications/factsheets/testing/igra.htm) (fact sheet)
- [TB Drug and Skin Testing Solution Shortages \(/tb/programs/tbdrugshortages.htm\)](/tb/programs/tbdrugshortages.htm)

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