

Tuberculosis

Q What is tuberculosis?

A TB, or tuberculosis, is a disease caused by bacteria called *Mycobacterium tuberculosis*. It is spread from person to person through the air. TB usually affects the lungs. TB can also affect other parts of the body, such as the brain, kidneys or the spine.

TB bacteria become active if the immune system can't stop them from growing. The active bacteria begin to multiply in the body and cause TB disease. Some people develop TB disease soon after becoming infected, before their immune system can fight the TB bacteria. Other people may get sick later, when their immune system becomes weak for some reason.

Babies and young children often have weak immune systems. People infected with HIV, the virus that causes AIDS, have very weak immune systems. Other people can have weak immune systems, too, especially people with any of these conditions:

- substance abuse
- diabetes mellitus
- silicosis
- cancer of the head or neck
- leukemia or Hodgkin's disease
- severe kidney disease
- low body weight
- certain medical treatments (such as corticosteroid treatment or organ transplants)

Q What are the symptoms of tuberculosis?

A Symptoms of TB depend on where in the body the TB bacteria are growing. TB bacteria usually grow in the lungs. TB in the lungs may cause:

- a bad cough that lasts longer than 2 weeks
- pain in the chest
- coughing up blood or sputum (phlegm from deep inside the lungs)

Other symptoms of TB disease are:

- weakness or fatigue
- weight loss
- no appetite
- chills
- fever
- sweating at night

Q How is TB spread?

A TB is spread through the air from one person to another. The bacteria are put into the air when a person with TB disease of the lungs or throat coughs or sneezes. People nearby may breathe in these bacteria and become infected. When a person breathes in TB bacteria, the bacteria can settle in the lungs and begin to grow. From there, they move through the blood to other parts of the body, such as the kidney, spine, and brain.

TB in the lungs or throat can be infectious. This means that the bacteria can be spread to other people. TB in other parts of the body, such as the kidney or spine, is usually not infectious.

People with TB disease are most likely to spread it to people they spend time with every day. This includes family members, friends, and coworkers.

How Is TB disease treated?

A People with TB disease, need to take several different drugs for at least six months, even if they start feeling well after only a few weeks of treatment. . This is because there are many bacteria to be killed. Taking several drugs as prescribed will do a better job of killing all of the bacteria and preventing them from becoming resistant to the drugs. TB disease can almost always be cured with medicine.

People with TB of the lungs or throat, are probably infectious. They need to stay home from work or school so that they don't spread TB bacteria to other people. After taking their medicine for a few weeks, they will feel better and may no longer be infectious to others. Their doctor or nurse will tell them when they can return to work or school.

Having TB should not stop a person from leading a normal life. When they are no longer infectious or feeling sick, they can do the same things they did before they had TB. The medicine that they are taking should not affect their strength, sexual

function, or ability to work. If they take their medicine as their doctor or nurse tells them, the medicine will kill all the TB bacteria. This will keep them from becoming sick again.

Q What is Directly Observed Therapy (DOT)?

A Directly observed therapy (DOT) is a way that patients are administered their medication. Patients on DOT will meet with a health care worker every day or several times a week. They will meet at a mutually agreeable place. This can be the TB clinic, at home or work, or any other convenient location. DOT helps in several ways. The health care worker can help persons remember to take their medicine and complete their treatment. This means they will get well as soon as possible. With DOT, they may need to take medicine only 2 or 3 times each week instead of every day. The health care worker will make sure that the medicine is working as it should. This person will also watch for side effects and answer questions you have about TB.

Even if a person is not getting DOT, they must be checked at different times to make sure everything is going well. They should see their doctor or nurse regularly while they are medicine. This will continue until they are cured.

Q What Is Multidrug-Resistant TB (MDR TB)?

A When TB patients do not take their medicine as prescribed, the TB bacteria may become resistant to a certain drug. This means that the drug can no longer kill the bacteria.

Drug resistance is more common in people who:

- have spent time with someone with drug-resistant TB disease
- do not take their medicine regularly
- do not take all of their prescribed medicine
- develop TB disease again, after having taken TB medicine in the past
- come from areas where drug-resistant TB is common (Southeast Asia, Latin America, Haiti, and the Philippines)

Sometimes the bacteria become resistant to more than one drug. This is called multidrug-resistant TB, or MDR TB. This is a very serious problem. People with MDR TB disease must be treated with special drugs. These drugs are not as good as the usual drugs for TB and they may cause more side effects. Also, some people with MDR TB disease must see a TB expert who can closely observe their treatment to make sure it is working.

People who have spent time with someone sick with MDR TB disease can become infected with TB bacteria that are resistant to several drugs. If they have a positive skin test reaction, they may be given preventive therapy. This is very important for people who are at high risk of developing MDR TB disease, such as children and HIV-infected people.

What is TB infection?

 TB infection is detected by the administration of a tuberculin skin test on the arm. A single needle is used to put some testing material, called tuberculin, under the skin. In two or three days, a nurse or a doctor will check to see if there is a reaction to the test. The test is "positive" if a bump about the size of a pencil eraser or bigger appears on the arm. This bump means a person probably has TB infection. A chest X-ray is done to see if someone with a positive skin tests (TB infection) also has TB disease.

People who are infected with TB do not feel sick, do not have any symptoms and have a normal chest X-ray cannot spread TB. However, they may develop TB disease at some time in the future. People with TB infection but are not yet sick can take medicine so that they will never develop TB disease.

How can a person get tested for TB?

 A TB skin test is the only way to detect TB infection. People can get a skin tested at the health department or at their doctor's office. Not everybody is at the same risk for TB infection and, therefore, do not to be tested. However, persons should get tuberculin skin tested if they:

- have spent time with a person with infectious TB
- they have HIV infection or

another condition that puts them at high risk for TB disease

- think they might have TB disease
- are from a country where TB disease is very common (most countries in Latin America and the Caribbean, Africa, and Asia, except for Japan)
- inject drugs
- live somewhere in the U.S. where TB disease is common (most homeless shelters, migrant farm camps, prisons and jails, and some nursing homes).

If a person has a positive reaction to the skin test, a doctor or nurse may do other tests to see if TB disease is present. These tests usually include a chest x-ray and a test of the phlegm people cough up. Because the TB bacteria may be found somewhere besides the lungs, a doctor or nurse may check the blood or urine, or do other tests. Persons with TB disease need to take medicine to cure the disease.

If a person has recently spent time with someone with infectious TB, the skin test reaction may not be positive yet. The person may need a second skin test 10 to 12 weeks after the last time they spent time with the infectious person. This is because it can take several weeks after infection for one's immune system to be able to react to the TB skin test. If the reaction to the second test is negative, the person probably does not have TB infection.

Many people who have TB infection never develop TB disease. In these people, the TB bacteria remain inactive for a lifetime without causing disease. But in other people, especially people who have weak immune systems, the bacteria become active and cause TB disease.

What if a person has been vaccinated with BCG?

BCG is a vaccine for TB. This vaccine is not widely used in the United States, but it is often given to infants and small children in other countries where TB is common. BCG vaccine does not always protect people from TB.

Persons who were vaccinated with BCG, may have a positive reaction to a TB skin test. This reaction may be due to the BCG vaccine itself or to a real TB infection. But one's positive reaction probably means that they have TB infection if:

- The skin test reaction is large
- the BCG vaccination was administered many years ago (because the BCG reaction gets smaller over time)
- the person has ever spent time with a person with infectious TB
- someone in the person's your family has had TB
- the person is from a country where TB disease is very common (most countries in Latin America and the Caribbean, Africa, and Asia, except for Japan)

Q What people with TB infection and are at risk of developing TB disease

A Many people who have TB infection never develop TB disease. But some people who have TB infection are more likely to develop TB disease than others. These people are at high risk for TB disease. They include:

- people with HIV infection
- people in close contact with a person who has infectious TB
- people who became infected with TB bacteria in the last 2 years
- babies and young children
- people who inject drugs
- people who are sick with other diseases that weaken the immune system
- elderly people

Q How is TB infection treated?

If a person has TB infection (a positive skin test reaction, without the presence of TB disease) and they are in one of these high-risk groups, they need to take medicine to keep from developing TB disease. This kind of treatment is called preventive therapy. Also, if they are younger than 35 and have TB infection without disease, they may benefit from preventive therapy even if they are not in a high-risk group.

People who have TB infection but do not receive preventive therapy need to know the symptoms of TB. If they develop symptoms of TB disease later on, they should see a doctor right away.

A single medication is usually used for preventive therapy. It kills the TB bacteria that are inactive in the body. If a person takes their medicine as prescribed, preventive therapy will keep them from ever developing TB disease.

Most people must take preventive therapy for at least 6 months. Children and

people with HIV infection need to take preventive therapy for a longer time.

Sometimes people are given preventive therapy even if their skin test reaction is not positive. This is often done with infants, children, and HIV-infected people who have recently spent time with someone with infectious TB disease. This is because they are at very high risk of developing serious TB disease soon after they become infected with TB bacteria.

It is important that people take all the pills prescribed for them so that their preventive therapy is effective. Persons starting on preventive therapy need to see their doctor or nurse on a regular schedule. He or she will check on how they are doing. Very few people have serious side effects to INH. However, patients should report side effects to their doctor or nurse right away.

What if a person has HIV infection?

A person can have TB infection for years without any signs of disease. But if that person's immune system gets weak, the infection can quickly turn into TB disease. Also, if a person who has a weak immune system spends time with someone with infectious TB, he or she may become infected with TB bacteria and quickly develop TB disease.

Because HIV infection weakens the immune system, people with TB infection and HIV infection are at very high risk of developing TB disease. All HIV-infected people should be given a TB skin test to find out if they have TB infection. If they have TB infection, they need preventive therapy as soon as possible to prevent them from developing TB disease. If they have TB disease, they must take medicine to cure the disease. TB disease can be prevented or cured in people with HIV infection.