

What is tuberculosis?

Tuberculosis is a bacterial disease caused by *Mycobacterium tuberculosis*. TB usually affects the lungs but it can also affect other parts of the body such as the brain, lymph nodes, kidneys, bones, joints, larynx, intestines or eyes. TB outside the lungs is referred to as extrapulmonary TB.

What is the difference between tuberculosis infection and tuberculosis disease?

There are generally two stages of TB infection, one where the bacteria can be spread and can cause illness and one where the bacteria is in a person's body, but is not causing disease and cannot be spread.

People with **TB infection** have TB bacteria in their bodies but they are not sick because the bacteria are not active. These people do not have symptoms of TB disease and they cannot spread the bacteria to others. However, they may develop TB disease in the future. They are often prescribed treatment to prevent them from developing TB disease.

People with **TB disease** are sick from TB bacteria that are active, meaning that they are multiplying and destroying tissue in their body. They usually have symptoms of TB disease. People with TB disease of the lungs or throat are capable of spreading their illness to others. They are prescribed drugs that can treat TB disease.

Tuberculosis infection may result after close contact with a person who has tuberculosis disease. Tuberculosis **infection** is determined by a significant reaction to the Mantoux skin test with no symptoms of tuberculosis, and no TB bacteria found in the sputum. Tuberculosis **disease** is characterized by the appearance of symptoms, a significant reaction to a Mantoux skin test and identification of TB bacteria.

To spread the TB bacteria, a person must have **TB disease**. Having **TB infection** is not enough to spread the bacteria. Tuberculosis may last for a lifetime as an infection, never developing into disease. However, individuals with TB infection are at considerable risk of developing TB disease, particularly during the first year after acquiring the infection. Additionally, individuals with weakened immune systems such as persons infected with HIV are at high risk of developing TB disease if TB infection is untreated.

Who is at risk for tuberculosis?

Tuberculosis can affect anyone. People infected with TB bacteria have a 10% lifetime risk of developing TB disease. However, persons with compromised immune systems, such as people living with HIV, malnutrition or diabetes, or people who use tobacco, have a much higher risk of developing TB disease.

What are the symptoms of tuberculosis?

The symptoms of TB include a low-grade fever, night sweats, fatigue, unexplained weight loss of ten pounds or greater and a persistent cough. Some people may not have obvious symptoms.

How soon do symptoms appear?

Evidence of infection (a positive skin test) may occur from two to 10 weeks after exposure. The most hazardous period for developing TB disease is usually within six to 12 months after infection, but can be

longer, occurring much later in life.

How is tuberculosis spread?

The bacterium causing tuberculosis is spread through the air. When a person infected with TB coughs, sneezes, speaks or sings the bacteria is put into the air. These germs can stay in the air for several hours depending on the environment. Prolonged exposure to the tuberculosis is normally necessary for infection to occur.

When and for how long is a person able to spread the disease?

A person with TB disease may remain contagious until he/she has been on appropriate treatment for several weeks. It is important to note that a person with TB infection, but not disease, **cannot** spread the infection to others, since there are no TB bacteria in the sputum.

How is a person diagnosed?

The presence of acid-fast-bacilli (AFB) on a sputum smear or other specimen often indicates TB disease. Acid-fast microscopy is easy and quick, but it does not confirm a diagnosis of TB because some acid-fast-bacilli are not *M. tuberculosis*. Therefore, a culture is done on all initial samples to confirm the diagnosis. A positive culture for *M. tuberculosis* confirms the diagnosis of TB disease. Culture examinations should be completed on all specimens, regardless of AFB smear results.

What is the treatment?

People with active TB disease must complete the prescribed course of medicine, which usually involves three to four drugs for six to 12 months. It is important that people who have TB disease finish the medicine and take the drugs exactly as prescribed by their doctor. If they stop taking the drugs too soon they can become sick again. If they do not take the drugs correctly, the bacteria that are still alive may become resistant to those drugs. TB that is resistant to drugs is harder and more expensive to treat.

TB infection (LTBI) is usually treated with isoniazid (INH). The exact medication plan must be determined by a physician.

What can be the effect of not being treated for tuberculosis?

If you have active TB disease, in addition to spreading the disease to others; an untreated person may become severely ill or die.

If you have TB infection, you have a 10 percent chance of developing active disease over the course of your lifetime if you remain untreated. The chance of developing TB disease increases if you develop diabetes, are immunocompromised, have HIV, have a gastric by-pass or require prolonged use of corticosteroids or other immunosuppressive agents.

Does past infection make a person immune?

Tuberculosis can be caught and cured more than once. It is very important that people who have TB disease finish the medicine, taking the drugs exactly as prescribed. If they stop taking the drugs too soon, they can become sick again. If the drugs are not taken correctly, the TB bacteria that are still alive may become resistant to those drugs.

Should children or others be excluded from child care, school, work or other activities if they have tuberculosis?

Yes. Infants, toddlers and school-age children should be excluded until it can be determined they are no longer infectious. Children with tuberculosis disease can attend school or child care if they are receiving therapy. They can return to regular activities as soon as effective therapy has been instituted, adherence to therapy has been documented and clinical symptoms have diminished.

Children with TB infection can participate in all activities whether they are receiving treatment or not. As always, respiratory etiquette is recommended.

What can be done to prevent the spread of tuberculosis?

The most important way to stop the spread of tuberculosis is to cover the mouth and nose when coughing, and to take the prescribed medicine as directed. Persons with disease should be excluded from school, day care or the work place until the sputum is negative (about 2-4 weeks after the beginning of treatment). All household and close contacts of a person with active TB disease should be screened using the Mantoux skin test or an interferon-gamma release assay (IGRA) blood test for evidence of infection. All contacts with evidence of infection should be evaluated by a physician for disease. High risk populations should be TB skin tested.

Additional Information:

Additional information is available by calling the North Dakota Department of Health at 800.472.2180.

This disease is a reportable condition. As mandated by North Dakota law, any incidence of this disease shall be reported to the North Dakota Department of Health.

Resources:

American Academy of Pediatrics. [Section 3, Summaries of Infectious Diseases]. In: Kimberlin DW, Brady MT, Jackson MA, Long SS eds. *Red Book: 2015 Report of the Committee on Infectious Diseases*. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2015: [805-831]

Centers for Disease Control and Prevention: www.cdc.gov/tb/default.htm

