

Tuberculosis (TB)

What is tuberculosis?

Tuberculosis or TB is a disease that is caused by a bacterium called *Mycobacterium tuberculosis*. The bacteria usually attack the lungs, but TB bacteria can attack any part of the body, such as the kidney, spine, and brain. If not treated properly, TB disease can be fatal.

Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection (LTBI) and active TB disease.

Difference Between Latent TB Infection and TB Disease	
A Person with Latent TB Infection	A Person with Active TB Disease
<ul style="list-style-type: none"> • Has no symptoms 	<ul style="list-style-type: none"> • Has symptoms that may include: <ul style="list-style-type: none"> - a bad cough that lasts 3 weeks or longer - pain in the chest - coughing up blood or sputum - weakness or fatigue - weight loss - no appetite - chills - fever - sweating at night
<ul style="list-style-type: none"> • Does not feel sick 	<ul style="list-style-type: none"> • Usually feels sick
<ul style="list-style-type: none"> • Cannot spread TB bacteria to others 	<ul style="list-style-type: none"> • May spread TB bacteria to others
<ul style="list-style-type: none"> • Usually has a positive skin test or blood test result indicating TB infection 	<ul style="list-style-type: none"> • Usually has a positive skin test or blood test result indicating TB infection
<ul style="list-style-type: none"> • Has normal chest x-ray and a negative sputum smear 	<ul style="list-style-type: none"> • May have an abnormal chest x-ray or positive sputum smear or culture
<ul style="list-style-type: none"> • Needs treatment for latent TB infection to prevent active TB disease 	<ul style="list-style-type: none"> • Needs treatment to treat active TB disease

How is tuberculosis spread?

TB bacteria are put into the air when a person with TB disease of the lungs or throat coughs, sneezes, speaks, or sings. These bacteria can stay in the air for several hours, depending on the environment. Persons who breathe in the air containing these TB bacteria can become infected; this is called latent TB infection.

Tuberculosis is not spread by:

- shaking someone's hand
- sharing food or drink
- touching bed linens or toilet seats
- sharing toothbrushes
- kissing

What are the symptoms of tuberculosis?

The general symptoms of TB disease include feelings of sickness or weakness, weight loss, fever, and night sweats. The symptoms of TB disease of the lungs also include coughing, chest pain, and the coughing up of blood. Symptoms of TB disease in other parts of the body depend on the area affected. People who have latent TB infection do not feel sick, do not have any symptoms, and cannot spread TB to others.

Are certain people at risk of getting tuberculosis?

Persons who are at higher risk for exposure to or infection with *M. tuberculosis* include:

- close contacts of persons known or suspected to have TB
- foreign-born persons, including children from areas that have a high TB prevalence
- residents and employees of high-risk group settings (such as hospitals, homeless shelters, correctional facilities, nursing homes)
- some medically underserved, low-income populations as defined locally
- populations, defined locally as having an increased prevalence of TB (such as Asians and Pacific Islanders, Hispanics, African Americans, Native Americans)
- infants, children, and adolescents exposed to adults in high-risk categories
- persons who inject illicit drugs; any other locally identified high-risk substance users
- healthcare workers who serve high-risk clients

Approximately 10% of all TB-infected persons (without HIV) will develop TB disease sometime in their life. For persons whose immune systems are weak, especially those with HIV infection, the risk of developing **TB disease** is much higher than for persons with normal immune systems.

Generally, persons at higher risk for developing TB disease fall into two categories:

- persons who have been recently (newly) infected with TB bacteria (see above)
- persons with medical conditions that weaken the immune system

Medical conditions that weaken the immune system include:

- HIV infection
- silicosis
- severe kidney disease
- organ transplants
- medical treatments, such as corticosteroids or organ transplant
- specialized treatment for rheumatoid arthritis or Crohn's disease
- substance abuse
- diabetes mellitus
- low body weight
- head and neck cancer

Treatment for latent TB infection (LTBI):

People with latent TB may develop TB disease in the future. They are often prescribed treatment to prevent them from developing active TB disease. Because there are fewer bacteria in a person with latent TB infection, treatment is much easier. Usually, only one drug is needed to treat latent TB infection. The medicine usually taken for the treatment of latent TB infection is called isoniazid (INH). INH kills the TB bacteria that are in the body. INH for nine months is the preferred regimen. Children and people with HIV infection may need to take INH for a longer time.

Treatment for active TB Disease:

A person with active TB disease has a large amount of TB bacteria in the body. TB disease can be treated by taking several drugs for 6-12 months. It is very important that people who have TB disease finish the medicine, and take the drugs exactly as prescribed. If they stop taking the drugs too soon, they can become sick again; if they do not take the drugs correctly, the germs that are still alive may become resistant to those drugs. TB that is resistant to drugs is harder and more expensive to treat.

How can tuberculosis be prevented in the healthcare setting?

All healthcare settings need an infection control program designed to ensure prompt detection, airborne precautions, and treatment of persons who have suspected or confirmed TB disease. Policies and procedures for TB control should be developed, reviewed periodically, and evaluated for effectiveness to determine the actions necessary to minimize the risk for transmission of TB.

The TB infection control program should be based on a **three-level hierarchy** of control measures. The first two control levels of the hierarchy minimize the number of areas in the healthcare setting where exposure to *M. tuberculosis* may occur, but do not eliminate the risk in those few areas where exposure to *M. tuberculosis* can still occur.

The **first level of the hierarchy—administrative measures**—affects the largest number of persons and is intended primarily to reduce the risk of uninfected persons being exposed to persons who have TB disease. These measures include, but are not limited to, the following activities:

- assigning responsibility for TB infection control in the healthcare setting
- conducting a TB risk assessment of the healthcare setting
- developing and instituting a written TB infection-control plan to ensure prompt detection, airborne precautions, and treatment of persons who have suspected or confirmed TB disease
- coordinating efforts with the local and/or state health department

The **second level of the hierarchy** is the use of **environmental controls** to prevent the spread and reduce the concentration of infectious droplet nuclei in ambient air, such as placing the TB patient in a negative pressure isolation room.

The **third level of the hierarchy** is the use of **respiratory protective equipment** in situations that pose a high risk of exposure to *M. tuberculosis*. Use of respiratory protection equipment can further reduce risk for exposure of HCW to infectious droplet nuclei that have been expelled into the air from a patient with infectious TB disease.

CDC guidelines for preventing the transmission of Mycobacterium tuberculosis in healthcare settings are available at: <http://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf>.

For more information regarding tuberculosis, visit the following resources:

- www.cdc.gov/tb/
- <http://www.cdc.gov/tb/topic/infectioncontrol/default.htm>
- <http://www.cdc.gov/tb/publications/factsheets/prevention/ichcs.htm>
- <http://www.cdc.gov/tb/publications/factsheets/prevention/rphcs.htm>