



Tuberculosis: An Overview

General Information

What is TB?

Tuberculosis (TB) is a disease caused by bacteria that are spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, kidneys, or spine. A person with TB can die without treatment.

What are the symptoms of TB?

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.

How is TB spread?

TB bacteria are put into the air when a person with TB disease of the lungs or throat coughs, sneezes, or speaks. These germs can stay in the air for several hours, depending on the environment. Persons who breathe in the air containing these TB germs can become infected; this is called latent TB infection. People with TB disease are most likely to spread the germs to people they spend time with every day, such as family members or coworkers, since it usually takes prolonged exposure to someone with TB disease for someone to become infected.

Latent TB Infection vs. TB Disease

What is latent TB infection?

Persons with latent TB infection do not feel sick, do not have any symptoms, and cannot spread TB bacteria to others. They have TB bacteria in their bodies, but do not have TB disease, which is both symptomatic and infectious (see below). The only sign of latent TB infection is a positive reaction to the tuberculin skin test or TB blood tests. However, not everyone infected with TB bacteria becomes sick. Without treatment, about 5 to 10 percent of infected persons will develop TB disease at some time in their lives.

What is TB disease?

In some people, TB bacteria overcome the defenses of the immune system and begin to multiply, resulting in the progression from latent TB infection to TB disease. Some of those people develop TB disease soon after infection (within the first two years), while others develop TB disease later if their immune system becomes weak, such as those who are also infected with HIV. Persons with TB disease may spread TB bacteria to others. Persons suspected of having TB disease should be referred for a medical evaluation and additional tests.

TB in the United States

How many cases of TB occur in the U.S.?

Latent TB Infection: Based on the most recent nationally representative data available, CDC estimates more than 11.2 million people in the U.S., or about 4 percent of the total population, have latent TB infection.¹

TB Disease: The most recent data show that a total of 10,521 cases of TB disease were reported in the U.S. in 2011 (3.4 cases per 100,000 population) — an all-time low. Foreign-born individuals (Figure 1) and racial/ethnic minorities (Figure 2) are most affected.²

Figure 1. TB Cases by National Origin, 2011

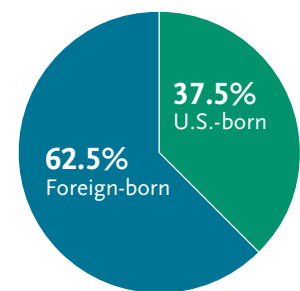
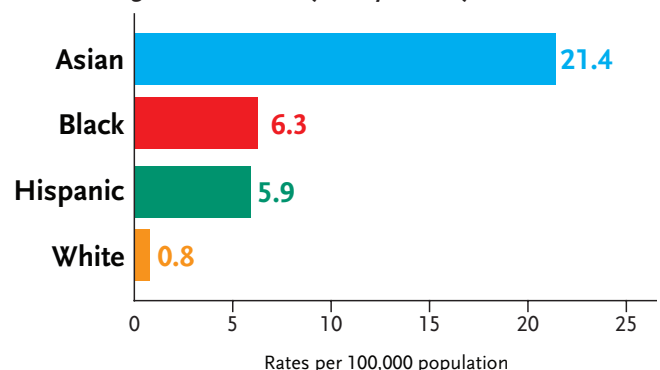


Figure 2. TB Rates by Race/Ethnicity, 2011



1 Bennett DE et al. *Am J Respir Crit Care Med.* 2008 Feb 1;177(3):348-55.

2 CDC. Tuberculosis Trends — United States, 2011. *MMWR.* 2012 March 23.



Drug-Resistant Tuberculosis

What is multidrug-resistant tuberculosis (MDR TB)?

Multidrug-resistant TB is TB that is resistant to at least two of the best anti-TB drugs, isoniazid and rifampin. These drugs are considered first-line drugs and are used to treat all persons with TB disease. MDR TB accounted for 1.3 percent (109 cases) of all TB cases in the U.S. in 2010, the most recent year for which complete resistance data are available.

What is extensively drug resistant tuberculosis (XDR TB)?

Extensively drug-resistant TB is a relatively rare type of MDR TB. XDR TB is defined as TB which is resistant to isoniazid and rifampin, as well as resistant to any fluoroquinolone and at least one of three injectable second-line drugs (i.e., amikacin, kanamycin, or capreomycin). Because XDR TB is resistant to first- and second-line drugs, patients are left with treatment options that are much less effective. In 2011, there were four reported cases of XDR TB in the U.S.

How does drug resistance happen?

Resistance to anti-TB drugs can occur when these drugs are misused or mismanaged. Examples include when patients do not complete their full course of treatment; when health-care providers prescribe the wrong treatment, the wrong dose, or length of time for taking the drugs; when the supply of drugs is not always available; or when the drugs are of poor quality. Individuals with drug-resistant TB disease can also transmit the resistant strain of the disease directly to others.

TB Treatment

How is latent TB infection treated?

Treating latent TB infection is essential to controlling and eliminating TB in the U.S., because it substantially reduces the risk that the infection will progress to TB disease. Certain individuals with latent TB infection, such as those with weakened immune systems (due to HIV, a recent organ transplant, or other reasons) and persons recently infected with TB bacteria, are at increased risk of developing TB disease, and every effort should be made to ensure those persons begin — and complete — the entire course of treatment for latent TB infection.

For decades, the standard treatment regimen for latent TB infection has consisted of 6 to 9 months of daily isoniazid. Although this regimen is very effective, ensuring that

those who need treatment both begin and complete the lengthy isoniazid regimen is challenging. However, a new regimen that can significantly shorten and simplify the course of treatment for latent TB infection has proven as effective as daily isoniazid in a large multinational trial. CDC recently issued guidelines on the use of this new treatment option, which cuts the doses required for treatment from 270 daily doses (9 months) of isoniazid alone to just 12 once-weekly doses of rifampin and isoniazid together. The 12-dose regimen adds to other current latent TB infection treatment options and does not replace those treatment options. CDC is currently working to increase awareness of this new regimen among health care providers for use in treating patients with latent TB infection.

How is TB disease treated?

Treatment of TB disease requires multiple medications that must be taken for 6 to 9 months depending on the regimen selected. (For information on specific treatment regimens, see CDC's TB Treatment Guidelines: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5211a1.htm>.)

It is critical to ensure that individuals with TB disease successfully complete the prescribed treatment regimen in order to prevent the development of drug resistant disease. To maximize the likelihood of completion of therapy, treatment management plans emphasize “directly observed therapy,” in which a health care professional observes the patient taking the prescribed medications. CDC also recommends that each patient's management plan be individualized to include measures that may facilitate adherence to the drug regimen, such as social service support, housing assistance, and referral for treatment of substance abuse.

Immunization

Is a TB vaccine available?

BCG (bacille Calmette-Guerin), is a vaccine for TB disease; however, the vaccine does not always protect people from getting TB. Because BCG is used in many countries with a high prevalence of TB, many foreign-born persons living in the U.S. have been BCG-vaccinated. However, BCG is not generally recommended for use in the United States because of the low risk of TB infection, variable effectiveness of the vaccine against TB in the lungs, and known interference between the vaccine and the TB skin test.

If you are a member of the news media and need more information, please visit www.cdc.gov/nchhstp/Newsroom or contact the News Media Line at CDC's National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (404-639-8895 or NCHHSTPMediaTeam@cdc.gov).