

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 attacks the lungs, but it can also attack and damage any part 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 coughing up 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. Individuals 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?

Individuals 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 test. However, not everyone infected with TB bacteria becomes sick. Without treatment, about 5 to 10 percent of infected individuals will develop TB disease at some time in their lives. Some individuals have a greater risk of developing TB disease if infected.

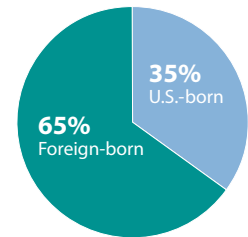
What is TB disease?

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. Without treatment, the bacteria continue to multiply and destroy the body's tissue. Some 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 individuals with diabetes or those who are also infected with HIV. Individuals with TB disease may spread TB bacteria to others. Individuals suspected of having TB disease should be referred for a medical evaluation and additional tests. If not treated properly, TB disease can be fatal.



TB in the United States

Figure 1. Proportion of TB Cases by National Origin, 2013



How many cases of TB occur in the United States?

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

TB Disease: The most recent data show that a total of 9,588 cases of TB disease were reported in the United States in 2013 (3.0 cases per 100,000 population) — an all-time low. Foreign-born individuals (Figure 1) and racial/ethnic minorities (Figure 2) are most affected.²

Drug-Resistant Tuberculosis

What is multidrug-resistant tuberculosis (MDR TB)?

Multidrug-resistant TB is TB disease 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 recommended for treatment of all individuals with drug-susceptible TB disease. MDR TB accounted for 1.2 percent (86 total cases) of TB cases in the United States with drug-susceptibility testing completed in 2012, the most recent year for which complete drug-susceptibility results are available.²

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. Two cases of XDR TB were reported in the United States in 2013.²

How does drug resistance happen?

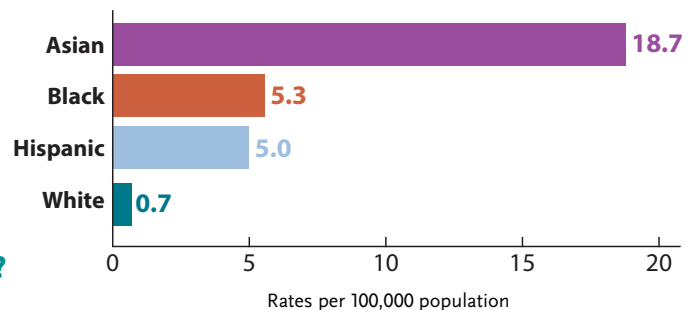
Resistance to anti-TB drugs can occur when these drugs are misused or mismanaged. Examples include when patients do not complete their full course of treatment; when health-care providers prescribe the wrong treatment, dose, or length of time for taking the drugs; when the supply of drugs is not always 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 United States, 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, diabetes, a recent organ transplant, or other reasons) and individuals recently infected with TB bacteria, are at increased risk of developing TB disease, and every effort should be made to ensure those individuals begin — and complete — the entire course of treatment for latent TB infection.

Figure 2. TB Rates by Race/Ethnicity, 2013



For decades, the standard treatment regimen for latent TB infection consisted of six to nine 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. In December 2011, CDC issued guidelines on the use of this new treatment option, which cuts the doses required for treatment from 270 daily doses (nine months) of isoniazid alone to just 12 once-weekly doses of rifapentine and isoniazid together. The 12-dose regimen adds to other current latent TB infection treatment options and does not replace those treatment options.

How is TB disease treated?

Treatment of TB disease requires multiple medications that must be taken for six to nine months (or longer for drug-resistant TB) depending on the regimen selected.

Treatment for drug-resistant TB is complex, long, challenging, and expensive. It can disrupt lives and have serious, potentially life-threatening side effects. These severe economic and human costs are underscored by a recent CDC study, which found that treatment for the most resistant of cases averages approximately half a million dollars per patient, including the direct cost of treatment and productivity losses faced by patients while undergoing treatment. Patients face the inability to work, long and frequent hospitalizations, home isolation and even death. Medications can also lead to severe health problems, such as damage to the kidneys, liver, or heart; loss of vision or hearing; and changes in behavior or mood (including depression or psychosis).³ (See [TB Drug Resistance in the U.S.](#))

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 individuals living in the United States 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).

¹ Bennett DE, Courval JM, Onorato I, et al. Prevalence of Tuberculosis Infection in the United States Population: The National Health and Nutrition Examination Survey, 1999-2000. *Am J Respir Crit Care Med.* 2008 Feb 1;177(3):348-55.

² CDC. Trends in Tuberculosis – United States, 2013. *MMWR* 20 March 2014. Available at: www.cdc.gov/mmwr.

³ Marks S, et al. Treatment Practices, Outcomes, and Costs of Multidrug Resistant and Extensively Drug Resistant Tuberculosis in the United States. *Emerg Infect Dis* 2014; 20(5).