TB elimination would have widespread health, economic, and social benefits for our country. Ending TB in the United States requires maintaining and strengthening current TB control priorities while increasing efforts to identify and treat latent TB infection among high-risk populations. CDC invests $17 million in epidemiological and clinical research, and approximately $80 million to support health departments in all 50 states, 8 cities, Washington D.C., Puerto Rico, the Virgin Islands, and the U.S.-affiliated Pacific Islands. These programs:

- investigate and report every case of TB disease,
- identify contacts and provide treatment to prevent future TB cases,
- genotype TB bacteria and test for drug resistance, and
- ensure provision of medical care, laboratory testing, and other services to achieve complete cure of TB patients to halt further transmission.

U.S. TB control efforts have prevented up to 319,000 TB cases and saved up to $14.5 billion, including costs from TB deaths, between 1995 and 2014. The U.S. has fewer cases of TB diagnosed each year than most other countries around the world. However, even though the number of TB cases reported annually in the U.S. has decreased in the past two decades, progress in eliminating TB has stalled.

More than 80 percent of TB cases result from long standing untreated latent TB infection. People with latent TB infection have been infected with TB germs but do not feel sick, do not have symptoms, and cannot spread TB to others. If their TB germs become active and multiply, they can develop TB disease. CDC estimates that up to 13 million people in the U.S. have latent TB infection. CDC estimates that about 14 percent of U.S. TB cases with genotype data are attributed to recent transmission from someone who is actively sick with TB disease.

Eliminating TB in the United States requires a dual approach: increase testing and treatment among people at high risk for having latent TB infection, and continue aggressive case finding and treatment for active TB disease. For example, in case finding, public health workers locate and evaluate people who had been in prolonged close contact to someone with active TB disease. Annually, U.S. public health workers evaluate more than 100,000 TB contacts. Health departments usually carry out these contact investigations locally, however large or complicated investigations can overwhelm local resources. Upon request, CDC deploys teams to work alongside state public health workers to stop TB. For example, the State of Georgia requested assistance in investigating an outbreak of drug-resistant TB among people experiencing homelessness. CDC provided additional funding, personnel to address staffing gaps, on-the-ground assistance, and advanced molecular detection technologies to identify related cases. Outbreak-associated drug-resistant TB cases decreased from 24 in 2014 to five in 2016. In 2016, the overall TB case count in Fulton County (GA) was 44 – the fewest since the 1980s.

Health departments also rely on CDC funding and technical assistance to ensure that TB patients receive medical care and evaluation, laboratory testing, and other services needed to finish the lengthy (6- to 12-month) course of TB therapy. Incomplete treatment can allows bacteria to become drug-resistant, the patient could relapse or die, and TB can spread to other family and community members. In the U.S., 97 percent of patients with TB disease complete therapy thanks to this patient-centered approach. However, with decreasing numbers of TB cases, not all U.S. health care professionals are familiar with TB diagnosis and treatment. To make sure adequate expertise is available, CDC funds four TB Centers of Excellence for Training, Education, and Medical Consultation.
CDC Improves the Ability to Diagnose, Prevent, and Treat TB

CDC funds the TB Trials Consortium, a partnership of research institutions to conduct clinical trials, to improve TB treatment by making it shorter and less toxic for patients. CDC-funded studies concluded that a shorter treatment regimen for latent TB infection—12 once-weekly doses of isoniazid and rifapentine (3HP)—is as effective as nine months of isoniazid. Use of the shorter regimen results in over 75 percent of people completing treatment, as opposed to a 30 to 64 percent completion rate for the longer treatment regimen. This innovation will help the U.S. move closer toward TB elimination, because completing treatment for latent TB infection cuts the risk of progression to active TB disease by 90 percent. CDC also funds a partnership of academic institutions and TB control programs, the TB Epidemiologic Studies Consortium (TBESC), to identify ways to expand testing and treatment for latent TB infection in the U.S. In 2016, TBESC began working with public and private primary care providers to help patients understand their risk for latent TB infection and link them to care.

CDC’s TB laboratory serves as the National Tuberculosis Reference Laboratory – a source for innovation that advances the nation’s understanding of drug resistance in TB and employs advanced molecular techniques to improve disease surveillance and outbreak detection.

CDC’s TB Molecular Detection of Drug Resistance (MDDR) service analyzes TB isolates and patient samples for DNA changes associated with drug resistance. While traditional testing methods require doctors and patients to wait for weeks to find out whether a patient had drug-resistant TB, this service provides results in only a few days, allowing patients to start on effective treatment sooner and reducing infectious periods. Health departments use this information to identify appropriate treatment regimens for contacts to patients with drug-resistant TB.

CDC uses advanced molecular detection methods for disease surveillance and outbreak detection. By creating a national, searchable genotyping database, epidemiologists can identify groups of genotype-matched TB cases that are found close together geographically, regardless of state or county borders. CDC and state scientists work together to more closely examine these “hotspots” where extensive TB transmission is occurring.

Using whole-genome sequencing, scientists can obtain a much more detailed view of TB DNA, which enables them to find closer matches to genetically related cases. Whole-genome sequencing provides valuable information to help identify potential transmission links. This can be especially useful in investigating outbreaks among people who may not be able to name contacts – for example, if they have spent intermittent time in shelters or other congregate settings. In 2017, epidemiologists and medical officers from CDC and Minnesota used whole-genome sequencing data to investigate an outbreak of MDR TB cases in a recreational center for seniors. The data enabled Minnesota’s health department to distinguish cases associated with the outbreak from unrelated ones, which helped in developing different approaches to prevention in the community.

CDC Stops Transmission and Prevents Drug Resistance

Currently, approximately one percent of U.S. TB cases are multidrug-resistant, but each case is expensive to treat and patients often experience harsh side effects from the drugs. CDC strives to prevent the development of drug resistant TB by helping to ensure completion of TB treatment without interruption. CDC funds state and local health departments to provide TB care through directly observed therapy, the most effective strategy to ensure adherence to treatment. Additionally, CDC works closely with the National TB Controllers Association and the U.S. Food and Drug Administration to identify national manufacturing shortages or sudden spikes in drug costs. CDC maintains a small stockpile of TB drugs to ensure that patient treatment will not be interrupted in the event of a nationwide shortage of critical TB drugs.

For More Information, please visit CDC’s TB program online: https://www.cdc.gov/tb