

## TUBERCULOSIS (TB)

Tuberculosis (TB) is one of the world's major causes of illness and death. Approximately, one-third of the world's population is currently infected with the bacterium that causes TB and 5% to 10% of those infected will become sick at some point during their lifetime. The World Health Organization (WHO) estimates that there were 13.7 million people living with TB in 2007.

Tuberculosis is a bacterial infection caused by *Mycobacterium tuberculosis*. The disease usually affects the lungs (referred to as pulmonary TB), but can spread to other parts of the body (referred to as extra-pulmonary TB) in serious cases.

In most people who become infected with the TB bacterium, the pathogen remains dormant—this is called “latent TB” infection. People with latent TB infection have no symptoms, don't feel sick, and cannot spread TB to others. However, the TB bacteria can remain in the bodies of those with latent TB and can become “active TB” disease at a later point in time – usually due to a weakened immune system – if treatment is not received. People with active TB often exhibit symptoms such as coughing, fatigue, chills, and fever. TB is contagious only in its active form and can be passed onto others by coughing, sneezing, or spitting.

Although a health concern worldwide, TB is especially problematic in developing countries where poverty, overcrowding and other diseases and viruses—particularly HIV—help facilitate its spread. About 85% of all new TB patients are in Africa, Southeast Asia and the Western Pacific. While the greatest share of new TB cases occur in Southeast Asia (34%), almost as many occur in Africa (31%). Additionally, Africa Even though more than a third of all new TB cases occur in Southeast Asia has the highest per capita incidence (new cases) and deaths rates in the world, as well as the greatest number of TB-related deaths.

The HIV epidemic is the principal reason for the resurgence of TB since the 1980s, particularly in the developing world. In 2007, one in four TB deaths was estimated to be HIV-related. An estimated 79% of co-infections occurred in Africa, the region hardest hit by HIV. HIV and TB are so closely connected that the terms “co-epidemic” or “dual epidemic” are often used to describe their synergistic relationship. When someone is infected with HIV, his or her immune system becomes compromised, significantly increasing the likelihood of acquiring new TB infection. HIV also can facilitate both the progression of latent TB infection to active TB and the relapse of the disease in previously treated patients.

Although responsible for considerable morbidity and mortality worldwide, TB can be successfully prevented, treated and controlled, even if someone is HIV-positive. The internationally recommended strategy for TB control is DOTS, or “directly observed therapy short-course,” which aims to decrease TB-related morbidity, prevent TB deaths, and decrease TB transmission. Under DOTS, once patients are diagnosed with infectious TB, health workers or trained volunteers supervise them as they take the full course of medications. In 2006, the WHO estimated that 85% of TB positive cases in DOTS programs were successfully treated.

Expanding access to DOTS and ensuring patient adherence to therapy are critical because if medications are not taken as prescribed, the bacteria responsible for TB can become resistant to treatment. TB that is resistant to two of the most effective first-line antibiotic therapies is called multi-drug resistant TB (MDR-TB). Although MDR-TB can be treated by second-line antibiotic therapies, it is significantly more expensive, takes much longer, (up to two years), and can cause severe side effects. Rates of MDR-TB are highest in India, China, and the former Soviet republics. In recent years, a new and much more virulent type of MDR-TB has emerged called extensively drug resistant TB or XDR-TB. In addition to not being responsive to first-line TB drugs, patients with XDR-TB are also resistant to second-line antibiotic therapies, making the condition extremely difficult, if not impossible, to treat. Although XDR-TB remains relatively rare as compared to non-drug-resistant TB or MDR-TB, it presents an increasing global threat to TB control efforts.

With the rise of HIV/TB co-infection and growth of drug-resistant strains of TB, international recognition of the seriousness of TB has grown, with various organizations and donor agencies attempting to curb the spread of the disease. Two institutions that have made important strides in alleviating the worldwide burden of TB are the Stop TB Partnership and The Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). The Stop TB Partnership is a network of over 1,000 public and private organizations including international agencies, governmental and non-governmental organizations, research institutions, and donor organizations that aim to strengthen social and political support for stopping the spread of TB. The Stop TB Partnership focuses on DOTS expansion, reducing the impact of HIV-TB co-infection, the prevention of MDR-TB, and the development of new drugs, vaccines, and diagnostic procedures. The Global Fund is an independent, multilateral, grant-making organization and a major financier for TB prevention, control, and treatment programs in low- and middle- income countries. Together the Global Fund and the Stop TB Initiative have helped coordinate global TB control efforts and ensure that they remain a priority in the international arena.

The United States, through PEPFAR, the President's Emergency Plan for AIDS Relief, first launched in 2003 and reauthorized by Congress in 2008, also provides significant funding for global TB efforts directly to countries and through contributions to the Global Fund. The Bill & Melinda Gates Foundation, a private, philanthropic organization, also has established major global TB initiatives, supporting efforts to develop rapid TB diagnostics, more effective TB treatments, TB vaccines and the acceleration of access to new TB tools.

#### ADDITIONAL RESOURCES

Kaiser Family Foundation. *Global Health* website, TB Factsheet, <http://www.kff.org/globalhealth/7883.cfm>

Kaiser Family Foundation. *Global Health* website, TB FAQs, <http://globalhealth.kff.org/Diseases/TB/TB-FAQs.aspx>

World Health Organization. *Global tuberculosis control – epidemiology, strategy, financing* (2009), [http://www.who.int/tb/publications/global\\_report/en/index.html](http://www.who.int/tb/publications/global_report/en/index.html)

World Health Organization. *Tuberculosis Fact Sheet* (March 2007), <http://www.who.int/mediacentre/factsheets/fs104/en/>

USAID, [http://www.usaid.gov/our\\_work/global\\_health/id/tuberculosis/](http://www.usaid.gov/our_work/global_health/id/tuberculosis/)

U.S. Centers for Disease Control and Prevention. <http://www.cdc.gov/tb/default.htm>

Stop TB. *About the Stop TB Partnership*, <http://www.stoptb.org/>

The Global Fund to Fight AIDS, Tuberculosis and Malaria. *Fighting Tuberculosis*, <http://www.theglobalfund.org/en/tuberculosis/>

Bill & Melinda Gates Foundation. [http://www.gatesfoundation.org/GlobalHealth/Pri\\_Diseases/Tuberculosis/](http://www.gatesfoundation.org/GlobalHealth/Pri_Diseases/Tuberculosis/)

PEPFAR. <http://www.pepfar.gov/pepfar/press/81964.htm>

Center for Global Health Policy, IDSA, <http://www.idsaglobalhealth.org/>

Aeras, <http://www.aeras.org/home/home.php>

Global Alliance for TB Drug Development. <http://www.tballiance.org/home/home.php>