



The Global Tuberculosis Epidemic

June 2010

Tuberculosis (TB) is an airborne, infectious disease caused by bacteria which primarily affect the lungs. While both preventable and curable, TB remains one of the world's major causes of illness and death and in 1993, the World Health Organization (WHO) declared TB to be a global health emergency:

- One-third of the world's population, or two billion people, carry the TB bacteria, more than 9 million of whom become sick each year with "active" TB which can be spread to others. "Latent TB" disease cannot be spread.^{1,2}
- TB disproportionately affects people in resource-poor settings, particularly those in Asia and Africa.^{2,3} More than 90% of new TB cases and deaths occur in developing countries, posing significant challenges to the livelihoods of individuals and developing economies as TB primarily affects people during their most productive years.^{2,3}
- DOTS, "directly observed treatment, short-course", is the internationally recommended strategy to control TB. DOTS aims to decrease TB-related morbidity, prevent TB deaths, and decrease TB transmission. These efforts have shown some promising signs: TB incidence, prevalence, and mortality rates appear to have declined in recent years while case detection and treatment rates have increased (the number of people living with TB has increased, but it is largely due to population growth).³
- Still, many challenges remain. Poor health systems, limited laboratory capacity for case detection, treatment barriers and complications (unreliable drug supply, patients not completing treatment, or prescribing errors), TB and HIV co-infection, and the emergence of drug-resistant TB pose serious threats to global TB control.

- Twenty-two countries are considered "high-burden countries (HBCs)," accounting for approximately 80% of new TB cases each year; most HBCs are in Africa and Asia. India, China, South Africa, Nigeria, and Indonesia have the highest number of new TB cases in the world.
- In 2008, the global TB incidence rate was 139 per 100,000 population, down from a peak of 143 per 100,000 in 2004.
- Global TB prevalence (164 per 100,000 population) and death rates (20 per 100,000 population) are also on the decline.
- The global case detection rate under DOTS programs was 61% in 2008, short of the global target of 70%. Yet, the treatment success rate (87%) exceeded the global target of 85% in 2007.
- If current trends remain, the internationally-agreed upon targets of the UN Millennium Development Goals (MDGs) to halt and reverse the incidence of TB by 2015, appear to be within reach. The additional MDG targets—halving TB prevalence and death rates by 2015—may be within reach in some regions, although not in Africa or Europe.

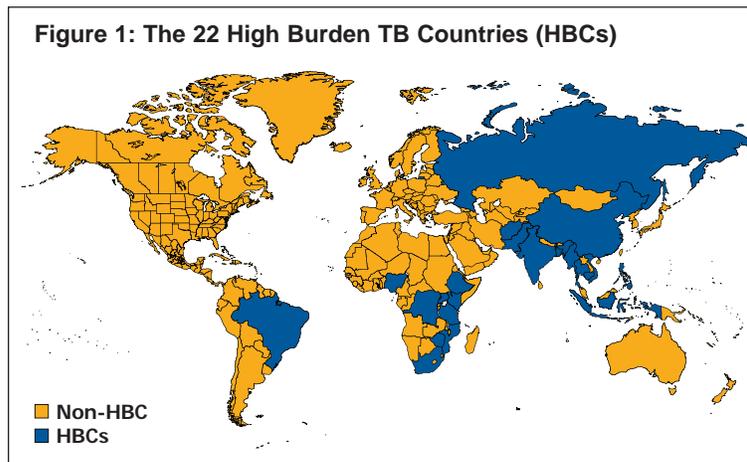


Figure 2: TB Incidence, Prevalence and Deaths by Region, 2008^{3,4}

WHO Region ⁵ (# of HBCs)	Incidence		Prevalence		Deaths	
	No. in thousands (%)	Per 100,000 Pop	No. in thousands	Per 100,000 Pop	No. in thousands	Per 100,000 Pop
Global Total (22)	9,369 (100%)	139	11,096	164	1,324	20
Africa (9)	2,828 (30%)	351	3,810	473	385	48
Americas (1)	282 (3%)	31	221	24	29	3.2
E. Mediterranean (2)	675 (7%)	115	929	159	115	20
Europe (1)	425 (5%)	48	322	36	56	6.3
South-East Asia (5)	3,213 (34%)	183	3,806	216	478	27
Western Pacific (4)	1,946 (21%)	109	2,008	112	262	15

Current Global Snapshot^{1,3}

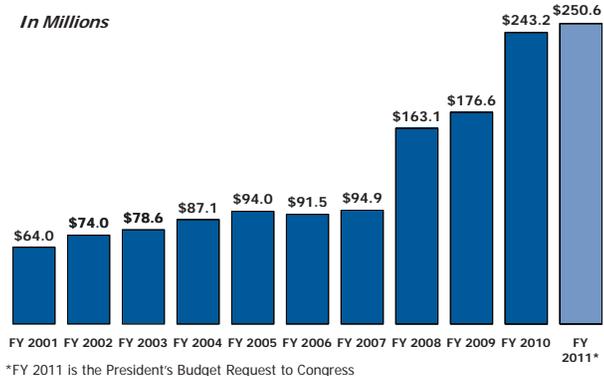
TB is found in every country in the world, but the majority of TB cases are concentrated in developing countries, particularly those in Asia and Africa.

- In 2008, an estimated **11.1 million** people were living with (active) TB, including 9.4 million new cases. There were an estimated **1.8 million** TB deaths in 2008, including 500,000 deaths that were HIV-positive.

- **Africa.**³ With 3 million new TB cases, Africa accounts for almost a third of the global total, and has the highest incidence and prevalence rates of any region (see Figure 2). Thirteen of the 15 countries with the highest incidence rates in the world, and 9 of the 22 HBCs, are in Africa. In 2008, Africa's case detection rate was the lowest in the world.
- **Americas.**³ The Americas is one of least affected regions in the world, with the lowest TB incidence and prevalence rates, and only one HBC—Brazil. The region's case detection rate was the second highest in the world, although its treatment success rate (82%) was below the 85% global target.
- **Eastern Mediterranean.**³ There were 675,000 new TB cases in the Eastern Mediterranean in 2008. Despite significant recent increases in case detection rates, the region's 2008 rate (58%) was still below the global rate (61%). There are 2 HBCs in the Eastern Mediterranean—Afghanistan and Pakistan.
- **Europe.**³ Europe, with 425,000 new TB cases in 2008, ranks low in incidence and prevalence rates (just above the Americas). Europe has the highest case detection rate (79%), but the treatment success rates in Europe were the lowest recorded since 1998; by 2007, it had the lowest treatment success rate (67%) of any region. Additionally, in the Russian Federation, only HBC in Europe, the treatment success rate was lower than all other HBCs in 2007.

- **South-East Asia.**³ With 3.2 million new TB cases, South-East Asia is the second most affected region in the world, as measured by incidence and prevalence rates. Despite these high numbers, case detection rates (65%) and treatment success rates (88%) were both higher than the global rates. South-East Asia is home to 5 HBCs, four of which (Bangladesh, India, Indonesia, and Myanmar) have met global treatment targets.
- **Western Pacific.**³ With 1.9 million new TB cases in 2008, the Western Pacific accounts for 21% of global cases—China accounted for the majority in the region (1.3 million). Case detection (70%) and treatment success (92%) rates were among the highest of any region. There are 4 HBCs in the region—Cambodia, China, the Philippines, and Viet Nam—all of which have met global treatment targets.

Figure 3: U.S. Government Funding for Global TB, FY 2001-FY 2011⁴



TB & HIV

TB and HIV are frequently referred to as co- or dual-epidemics due to their high rate of co-infection.⁶ HIV weakens the immune system, increasing the likelihood that an individual will become infected and develop active TB, and since the 1980s has been largely responsible for the resurgence of the TB epidemic.^{1,6,7} Additionally, TB is harder to diagnose and progresses more rapidly in someone with HIV.⁶ As a result, TB is a leading cause of death among people with HIV, especially in developing countries.^{1,2,6}

- An estimated 1.4 million of the 9.4 million new TB cases were also HIV-positive in 2008.³
- 78% of co-infections were in Africa, the region hardest hit by HIV. South Africa alone accounted for 32% of the total number of HIV-positive TB cases in the Africa region.³
- Of the 1.8 million people who died from TB in 2008, an estimated 500,000 were HIV-positive.³

Drug Resistant TB

Drug-resistant TB has emerged as a major challenge facing TB-control efforts. The number of drug-resistant TB cases has risen in recent years, and resistant cases have been identified across the world.^{1,8} There are two forms of drug-resistant TB: multidrug-resistant TB (**MDR-TB**), which fails to respond to standard first line drugs and, extensively drug-resistant TB (**XDR-TB**), which fails to respond to both first and second line drugs.² MDR-TB and XDR-TB result from inconsistent or partial treatment, incorrect prescribing, and/or shortages or interruptions in the drug supply chain.¹

- In 2008, there were an estimated 440,000 cases of MDR-TB.⁸ As of March 2010, XDR-TB had been reported in 58 countries and territories.⁸ In an outbreak in South Africa, 52 out of 53 people infected with XDR-TB died within an average of 3 weeks of being diagnosed.⁹
- The highest numbers of MDR-TB were found in India, China and the Russian Federation.^{8,10} In some areas of the former Soviet Union, more than 20% of new cases were MDR-TB.¹⁰
- Treatment of MDR-TB and XDR-TB can take much longer, be much more expensive, and have more side effects than standard TB treatment.⁸

The U.S. Government Response

- The U.S. government's involvement in global TB efforts was relatively limited until the late 1990s. USAID, the lead government agency on international TB control, first began its program in 1998.^{11,12} Over time, U.S. efforts to address TB have expanded and funding has increased. The 2003 passage of the President's Emergency Plan for AIDS Relief (PEPFAR),¹³ explicitly included TB in its mandate, authorizing bilateral funding to address the disease (although no funding amounts were specified) and multilateral support to the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), an independent, international financing institution created in 2001, which in turn provides grants to countries to address TB (as well as HIV and malaria). In 2004, USAID announced an expanded TB response plan¹² and in 2008, the reauthorization of PEPFAR included specific funding levels for TB (\$4 billion over 5 years).¹⁴
- In 2009, President Obama introduced a 6-year Global Health Initiative (GHI), proposing \$63 billion for a broader, global health agenda and coordination across the U.S. government's global health portfolio, including TB. Most recently, in March 2010, USAID released a new TB strategy, as required by PEPFAR reauthorization, detailing the specific goals, targets, and role of the U.S. government's efforts to address TB within the GHI.¹⁵
- The U.S. government's TB programs, carried out primarily by USAID, are focused in 40 "priority" countries including 18 of the 22 HBCs.¹⁵ Cumulative U.S. government funding for TB between FY 1998 and FY 2010, most of which is provided through USAID, was nearly \$1.2 billion.⁴ The FY 2011 budget request for TB is \$250.6 million (see Figure 3).⁴ CDC provides technical support to USAID and the U.S. also provides significant funding for TB research.¹⁶

The Global Response to TB

- In 1982, the WHO and the International Union Against Tuberculosis and Lung Disease (IUATLD) sponsored the first "World TB Day". Yet, attention to TB by the international community did not increase until more recently, in part due to the relatively recent availability of DOTS, first introduced and recommended as the global strategy for TB control in the mid-1990s. Since then, new coalitions, initiatives, and funding mechanisms have emerged. The Stop TB Partnership, an international network of public and private entities working to eliminate TB, was created in 1998; the WHO is a lead agency in the partnership and serves as its Secretariat. Other expanded efforts include: the UN MDG targets adopted by all nations in 2000 to halt and reverse TB incidence, prevalence, and deaths by 2015; the inclusion of TB as one of three diseases targeted by the Global Fund; and the 2006 launch of WHO's renewed "Stop TB Strategy."¹⁷
- Funding for TB has risen significantly, although a gap remains. Since its inception, the Global Fund has approved more than \$3 billion in grants to TB related initiatives and over \$230 million to TB-HIV efforts in more than 100 countries.¹⁸ The private sector, including foundations and corporations, has also played an increasing role, particularly The Bill and Melinda Gates Foundation which has committed more than \$835 million to TB to date, with additional funding provided to the Global Fund.¹⁹ Still, the total cost to implement The Global Plan to Stop TB over a 10 year period (2006-2015) is estimated to be \$56 billion compared to a global financial commitment for TB control during this period of \$25 billion, leaving a funding gap of \$31 billion.²⁰

¹ WHO. *Tuberculosis, Fact sheet No. 104*; March 2010.

² WHO. *Tuberculosis Facts – 2009 Update*; December 2009.

³ WHO. *Global Tuberculosis Control 2009 – Epidemiology, Strategy, Financing; March 2009*; Global Tuberculosis Control 2009 – A Short Update to the 2009 report; December 2009.

⁴ Kaiser Family Foundation Analysis.

⁵ WHO region definitions: www.who.int/whr/2004/annex/topic/en/annex_member_en.pdf.

⁶ UNAIDS. *Frequently asked questions about Tuberculosis and HIV*; http://data.unaids.org/pub/factsheet/2006/tb_hiv_qa.pdf.

⁷ WHO. *Status Analysis: Impact of AIDS on TB*; 2005.

⁸ WHO. *Multidrug and extensively drug-resistant TB (M/XDR-TB): 2010 Global Report on Surveillance and Response*; March 2010.

⁹ WHO. *The Global MDR-TB & XDR-TB Response Plan: 2007-2008*; 2007.

¹⁰ WHO. *Fact sheet: MDR-TB and XDR-TB: 2010 Report*; March 2010.

¹¹ USAID. *Fast Facts, Tuberculosis*; February 2009.

¹² USAID. *Expanded Response to Tuberculosis*; September 2004; updated, January 2009.

¹³ U.S. Congress. Public Law No: 108-25; May 27, 2003.

¹⁴ U.S. Congress. Public Law No: 110-293; July 30, 2008.

¹⁵ USAID. *Lantos-Hyde United States Government Tuberculosis Strategy*; March 2010.

¹⁶ Families USA Foundation. *The World Can't Wait: More Funding Needed for Research on Neglected Infectious Diseases*; December 2008.

¹⁷ WHO. *The Stop TB Strategy*; March 2006.

¹⁸ The Global Fund to Fight AIDS, Tuberculosis and Malaria: www.theglobalfund.org/programs/search/?lang=en.

¹⁹ Personal communication, Bill & Melinda Gates Foundation, February 2009.

²⁰ The Stop TB Partnership. *The Global Plan to Stop TB (2006-2015)*; January 2006.