A Global Health Initiative

FACT SHEET

Updated March 2008

Investing in Global Health Research: Tuberculosis

Tuberculosis (TB) is caused by a bacterial infection that usually attacks the lungs, causing severe coughing and chest pain. TB is spread primarily through coughing and sneezing, and although the disease is curable, it can be fatal. One in three people worldwide have latent tuberculosis, an inactive form of the disease that develops into active TB in 1 in 10 people. Tuberculosis is becoming increasingly difficult to treat and control due to the rapid spread of drug-resistant strains of the bacteria.

Tuberculosis Is Not a Disease of the Past

In the nineteenth century, tuberculosis killed one in four people in the United States and Europe.[1] TB is far less common in these regions today, and as a result, many people believe that TB epidemics are a thing of the past. That belief is incorrect—this often-fatal disease continues to devastate countries around the world.

According to the largest-ever survey on the global spread of drug-resistant TB, multi-drug-resistant TB (MDR-TB) is present at the highest rates ever recorded, and in most parts of the world, efforts to control the spread of the disease are insufficient. Even worse, newly emerging extensively drug-resistant TB (XDR-TB), a virtually incurable form of the disease, threatens to reverse years of progress in TB control.

Is Tuberculosis a Threat to the United States?

- **TB Risk Factors Are Increasing in the United States**

  Certain risk factors, including the spread of HIV/AIDS, travel patterns, and an increased number of residents in long-term care facilities, have increased exposure and vulnerability to TB infection and have reversed previous gains in TB control.[2] In 2006, there were about 14,000 cases of active TB reported in the U.S.[3] And while the number of *new* cases of TB in the U.S. has declined since 2004, the incidence of drug-resistant TB among some groups has been on the rise for several years. Drug-resistant TB is one of the main factors that has hampered the complete elimination of TB in the U.S.

- **Globally, TB Is on the Rise Again**

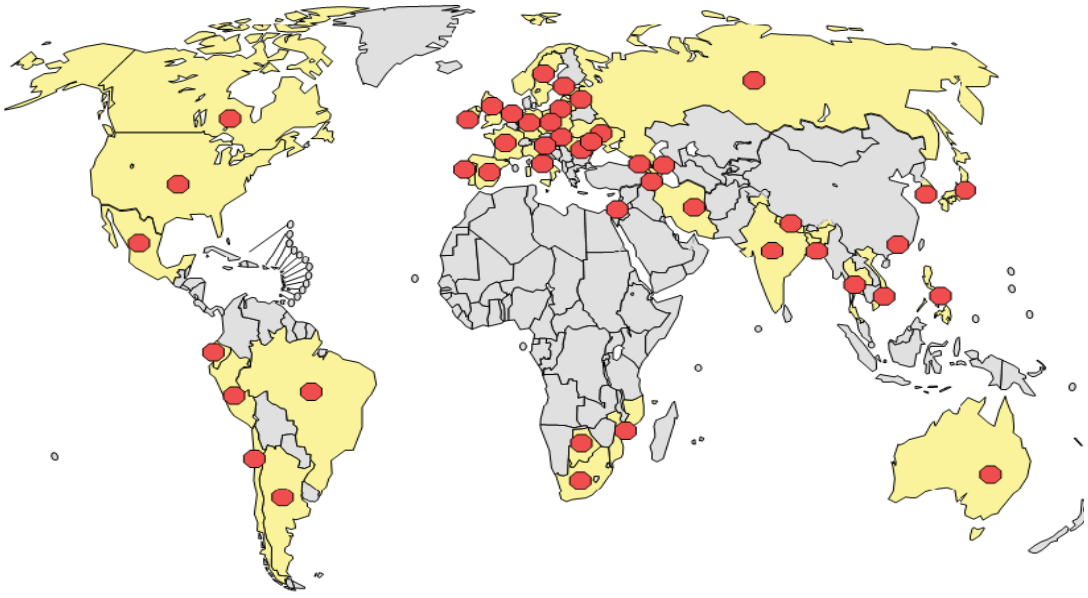
  HIV infection is the most common trigger that converts TB from its latent form to active, transmittable TB. Thus, HIV promotes the spread of TB, while TB infection, in turn,

speeds up the spread of HIV in the body. Because of this interaction between HIV and TB, TB is most prevalent in sub-Saharan Africa and Southeast Asia, where HIV infection is widespread. However, TB is also on the rise in other parts of Asia and Eastern Europe.

A recent surveillance report by the Centers for Disease Control and Prevention (CDC) indicates that the TB public health threat is increasing worldwide. Extensively drug-resistant strains of TB (XDR-TB)—strains that are resistant to an increasing number of second-line drugs used to treat multidrug-resistant tuberculosis (MDR-TB)—have been identified on six continents. It is therefore imperative that we develop effective treatments and a new vaccine to completely eradicate TB, before it becomes entirely untreatable.[4]

While the increase in international travel and migration has brought the global community closer together, it has also facilitated the globalization of infectious diseases and drug-resistant microbes. Large metropolitan areas are at particular risk of developing outbreaks, even in industrialized countries. The combination of new humanitarian crises, interactions with HIV infection, and resistance to treatments has made TB a major global health challenge, as well as a real and direct threat to our nation's health.

Extensively Drug-Resistant TB (XDR-TB) Found in 45 Countries, 2007



Source: World Health Organization (WHO), *Anti-Tuberculosis Drug Resistance in the World* (Geneva:WHO, 2008).

Tuberculosis around the World

- Two billion people—one third of the world's population—are infected with a latent form of tuberculosis.[5]
- Last year, an estimated 9 million people developed active TB, and 2 million died from the disease. The most likely casualties are the poor, the sick, and the malnourished—mostly women and children.[6]
- In the last decade, incidences of TB have increased by 20 percent, and if current trends continue, 36 million more people will die from the disease by 2020.[7]
- Strains of TB have evolved that are resistant to conventional drugs, and the World Health Organization has determined that multi-drug resistant TB (MDR-TB) is already present in 109 countries.[8] Extensively drug-resistant TB (XDR-TB) has been found in 45 countries.
- TB robs developing countries of $12 billion a year, amounting to between 4 and 7 percent of their gross domestic product.[9]

Aren't There Treatments for Tuberculosis?

- **Today's TB Treatments Are Not Powerful Enough to Get the Job Done**
  Two million people die every year from TB. The drugs we currently use to treat TB are clearly inadequate. These drugs are more than 40 years old and are only minimally effective against the disease. The current vaccine for tuberculosis, the BCG (Bacillus Calmette-Guérin) vaccine, was introduced in 1921 and has limited efficacy, especially in adults.[10]

  Currently, people infected with TB must undergo a course of treatment that lasts six to eight months. Developing a treatment that works in a shorter amount of time would not only relieve people's suffering more quickly, but it would also help prevent the evolution of more multi-drug resistant strains of TB.

What Can the United States Do?

- **We Cannot Afford to Be Complacent**

  "Now is not the time to cut spending for TB programs. There is a huge reservoir of tuberculosis throughout the world, including the United States, where an estimated 9 million to 14 million people carry latent tuberculosis. Tuberculosis also is becoming increasingly resistant to standard TB drugs, resulting in multi-drug resistant tuberculosis that is about as lethal, albeit much more slowly, as SARS and avian flu."

  – Norman H. Edelman, Chief Medical Officer, American Lung Association

In the 1970s, after noticing significant declines in TB infection rates, Congress cut TB funding, putting TB research and development at a near standstill. These funding cuts weakened the TB health infrastructure to the extent that, when an outbreak occurred in New York City in the late 1980s, doctors and health officials were not prepared to deal with the disease and its resistance to existing drugs. Later on, in the 1990s, another TB outbreak hit New York City, costing taxpayers $1 billion in surveillance, treatment, and containment expenses.[11]

- **Invest in Modern Treatments**
  TB infections are on the rise here and around the world. Increased funding is necessary to develop a more effective vaccine, tools to accurately diagnose TB, and a shorter course of treatment that is compatible with AIDS medications.

  Only 5 percent of the 16 million people infected with TB worldwide have the means to pay for treatment. Because the market for TB drugs is not very lucrative, private industry has little incentive to invest in the drugs and vaccines that would be powerful enough to eradicate the disease.[12] For this reason, it is necessary for the U.S. government to increase funding for TB research and development through the National Institutes of Health (NIH). Funding is especially important to push promising new vaccine candidates into clinical trials. The estimated need comes to $900 million in TB research spending per year over 10 years.[13] In 2007, NIH spent $166 million on TB research.[14]

  With additional funding and continued collaboration within the international community, there is every reason to be optimistic that more effective and convenient drugs and vaccines can be developed and that TB will once and for all cease to be a threat to the world's health.

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[1] D. Epstein, *Tuberculosis: The Captain of All These Men is Death* (Washington: Pan-American Health Organization, 1996).

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[6] Stop TB Partnership, *2006 Tuberculosis Facts* (Geneva: WHO, 2006).

[7] World Health Organization (WHO), *Factsheet No. 104: Tuberculosis* (Geneva: WHO, 2002).

[8] Stop TB Partnership, *2006 Tuberculosis Facts*, op.cit.

[9] The Global Fund to Fights AIDS, TB and Malaria, *HIV/AIDS, Tuberculosis and Malaria: The Status and Impact of Three Diseases* (Geneva: The Global Fund, 2006).

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