The United States is unprepared for a tuberculosis epidemic

by Colin Lowry

The tuberculosis epidemic continues to spread rapidly worldwide, killing 3 million people a year and actively infecting about 8 million. The World Health Organization has estimated that 1.7 billion people may be latently infected by the tuberculosis bacterium. The spread of HIV has also contributed to the spread of new multi-drug-resistant strains of TB, as people latently infected by TB become active cases once their immunity is destroyed by AIDS.

However, until recently, tuberculosis was portrayed as a problem only for the underdeveloped countries of the Third World. The attitude of many U.S. government officials was that the population of the United States were immune to the tuberculosis epidemic, and that our public health programs provided sufficient protection. In the past six months, that attitude has started to give way to a stark realization that the threat to the U.S. population from TB is more serious than ever.

Now, the Surgeon General, the head of the Centers for Disease Control's (CDC) Tuberculosis Control Program, and many other health professionals are sounding the alarm that the nation is unprepared to deal with another epidemic of tuberculosis. What has them so scared? First, multi-drug-resistant tuberculosis (MDR-TB) is spreading with amazing speed. In 1997, it was reported in 35 countries, and in 1999, had spread to 104 countries. MDR-TB is often incurable, and is lethal in 60% of cases that are treated properly with expensive second-line antibiotics. MDR-TB patients who do not have access to these second-line drugs, and are given only standard treatment antibiotics such as isoniazid and rifampin, have a mortality rate of near 95%.

Second, Federal and state funding for TB control programs is decreasing, and the cuts have left what little remains of the public health infrastructure totally inadequate to deal with an outbreak of TB and its drug-resistant strains. In an interview with the *Washington Times* on Jan. 5, Dr. Kenneth Castro, head of the CDC Tuberculosis Control Program, said, "There is no question that our funding is insufficient. We can't do what needs to be done with the resources allocated."

Lessons from Russia

The explosion of tuberculosis and the emergence of MDR-TB in Russia since 1991 serves as a frightening reminder of what happens when an industrialized nation has its health-care system destroyed, and the nutrition and living standards of its population slashed to the bone. From 1991 to 1994, the TB incidence rate increased 47%, and the death rate jumped 87%. With the dismantling of most of the hospital systems in the same period, severe drug shortages led to incomplete treatment of TB patients, often with substandard drugs. In the overcrowded Russian prisons, the MDR-TB strains found the perfect breeding ground, and today the infected population of the prisons has reached saturation levels, whereby every one of the 1.1 million prisoners has been exposed to TB. Each year, one-fourth of Russian prisoners are released, spreading the deadly MDR-TB strains to the rest of the population. In some areas of Russia, 10% of TB cases are resistant to at least two drugs. In the Baltic countries, MDR-TB accounts for about 20% of all TB cases.

It is now estimated that at least 100,000 cases of MDR-TB exist in Russia. There are no second-line drugs available to treat these cases, and so the strains, nicknamed "Gulag," are steadily spreading westward. Added to this, is the rapidly spreading HIV epidemic in Russia, which is now estimated to be doubling every year. HIV and TB co-infection is a deadly combination, as TB is the number-one killer of HIV-infected persons worldwide. Also, HIV-infected persons are very susceptible to TB infection, and therefore can serve as a reservoir for the spread of lethal MDR-TB.

Will TB strike again?

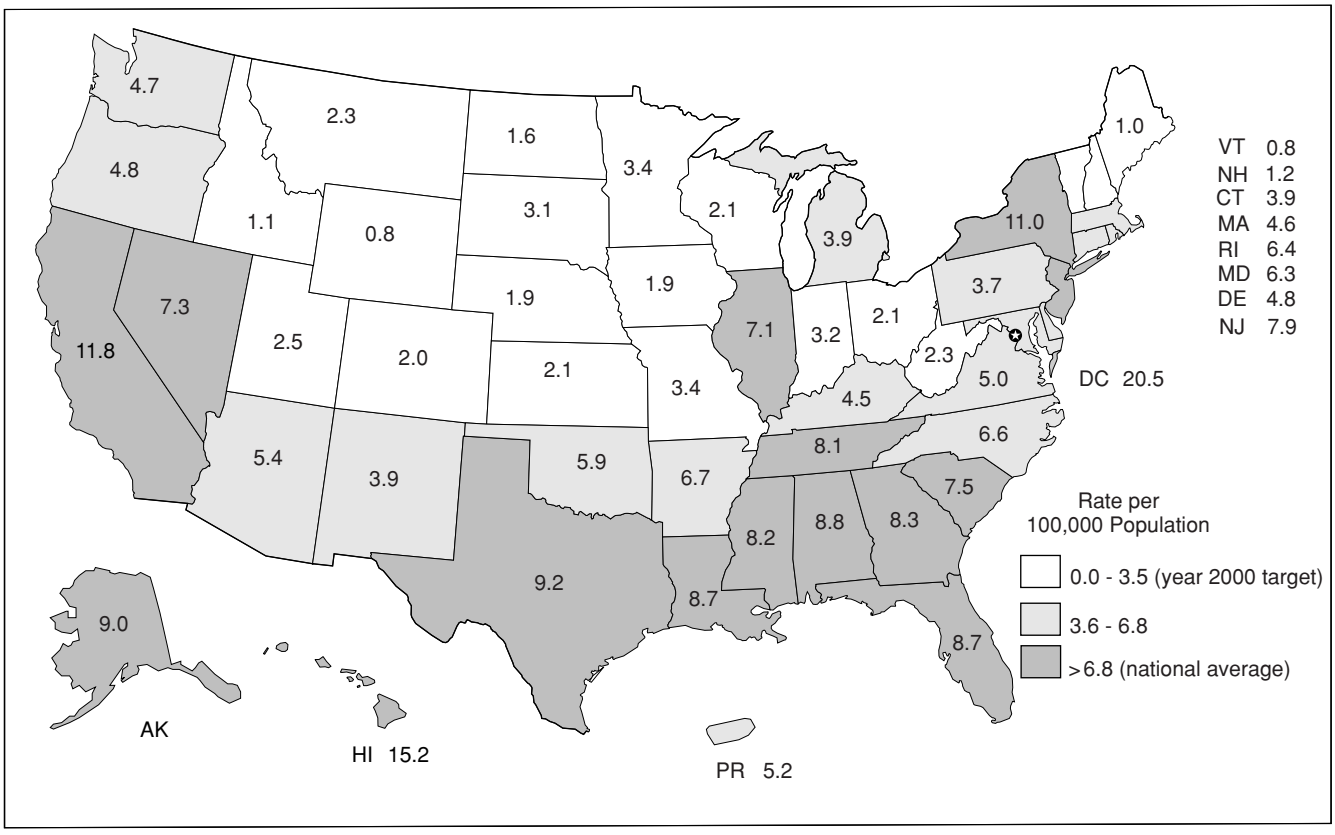
While many in the United States may still say that "it couldn't happen here," they may have forgotten what happened in New York City in the late 1980s, when MDR-TB and HIV showed just how dangerous and costly it is to dismantle the public health system.

In the 1950s, with the advent of new classes of antibiotics, and the building of public clinics and hospitals designed to treat tuberculosis, the number of cases steadily declined, by 74% from 1953 until 1985. In 1985, cases began to rise again, in part due to the dismantling of much of the public health system which is the primary defense against a TB epidemic. As the national incidence rates decreased in the 1970s, funding for the public health clinics and TB control bureaus was cut back. The epicenter of the resurgence of TB and the new MDR-TB in 1985 was New York City.

The resurgence of TB in New York City started in the

FIGURE 1

Tuberculosis case rates in the United States, 1998



Source: Centers for Disease Control, Atlanta, Georgia.

early 1980s, accompanied by the rise in HIV-AIDS cases. In 1983, MDR-TB was discovered as a serious problem when about 10% of TB patients were found to be resistant to cure by standard antibiotics. In 1985, TB's resurgence was strongly associated with three groups, HIV-infected persons, poor and homeless people, and prisoners. By 1988, the number of public clinics for TB had declined from 24 to only 8, and the public health and chest clinics within municipal and voluntary hospitals had been eliminated. Also, the staff of the New York Bureau of Tuberculosis Control had been reduced by two-thirds over the years since the 1960s.

By 1989, the dual epidemics of HIV and tuberculosis had overwhelmed the city's crumbling public health system, by which time, less than half of the discovered cases of MDR-TB were being cured. Between 1985 and 1992, the number of cases of TB had tripled, and the MDR-TB rate had doubled, to 23% of all cases. In the Manhattan neighborhood of Harlem, the TB incidence rate was 222 per 100,000 population, a percentage higher than many Third World countries at the time. The national TB incidence rate increased by 20% from 1985 to 1992, led by the outbreak of 20,000 cases in New York. By 1991, New York City had 61% of the nation's MDR-TB cases within its boroughs.

The CDC responded to help the city quell the epidemic, and sent hundreds of TB specialists, and millions of dollars in aid. The New York Bureau of Tuberculosis Control was re-staffed, and its budget rose to $40 million a year. The epidemic peaked in 1992, and in 1993, began a steady decline. When it was over, the costs of the TB epidemic in New York were estimated at more than $1 billion, which includes money spent rebuilding some of the city's TB control programs, and renovating some hospitals and prisons, such as Riker's Island.

A scene in Manhattan. The homeless are a breeding ground for drug-resistant tuberculosis, as they lack access to medical care and are difficult for TB control officers to track down.

The current threat

Since 1993, the TB control efforts have been largely successful, reducing the number of TB cases in the United States by 31%. In 1998, the average national incidence rate was 6.8 cases per 100,000, a record low. However, MDR-TB cases are still a threat, remaining at about 1% of all cases in the United States. What really has health professionals worried, is that the TB control programs are being cut back again, while the TB epidemic is raging internationally.

In October 1999, the Harvard School of Public Health issued a study, "The Global Impact of Drug-Resistant Tuberculosis," which found MDR-TB spreading faster than expected, and the response to the epidemic inadequate. In hot spots of the TB epidemic, such as Argentina, China, India, the Dominican Republic, and Russia, 7-22% of cases are MDR-TB. Considering that only about 60% of all TB cases are ever diagnosed, the scope of the epidemic is larger than reported.

Dr. Lee Reichman, director of New Jersey's National Tuberculosis Center, said in an interview with the Dec. 12 *Washington Times* that a new TB epidemic "can't not happen in the United States unless someone does something about it." Dr. Reichman said that treating MDR-TB cases in other countries "ought to be seen as a national defense program." He and other doctors who took part in the Harvard School of Public Health study think that the best way to deal with MDR-TB is to treat it in countries around the world, because once it gains a foothold here, it will be too late to stop it. Dr. Barry Bloom, Dean of the Harvard School of Public Health, told the *Washington Times,* "I don't want to be hysterical. I don't want to say each of us is threatened. But there is no place from which we are disconnected when dealing with infectious diseases like TB. . . . We have had a half-dozen cases of persons on planes being infected. A major risk factor is breathing."

MDR-TB can spread through the air in tiny droplets of moisture when an infected person coughs. The cost of treating MDR-TB patients can range from $20,000 to $250,000, and treatment may be required for up to two years. In the United States, the incidence of MDR-TB has increased in persons of foreign origin, and among HIV-infected individuals. The data on HIV and TB co-infection have only been kept since 1993, and are not complete. From these data, of people 25-44 years old reported to be infected by TB, 21% are also infected by HIV.

It is not hard to see that the same factors which contributed to the resurgence of TB, and MDR-TB in New York in the late 1980s, are actually present in many areas of the nation. Today, there are a much larger number of people living with HIV, and more of these people are already infected by TB. In the prison population of the United States, the rate of HIV infection is six times higher than the national rate. During 1995-96, there have been several outbreaks of TB in prisons in California and Texas. Also, as the epidemic gets worse in other areas of the world, higher percentages of immigrants will bring MDR-TB in with them.

At a time of increased threats from MDR-TB, the nation's TB control programs are being scaled back. The budget for the National Tuberculosis Center has been trimmed down. The New York City TB control budget was gutted by 30% this year, and in Massachusetts, the state program was cut by 10%. In the Southeastern states, Georgia's TB control budget was cut by 10%, and Florida by 5%. Three years ago, the National Science and Technology Council released a statement saying that "the national and international system of infectious disease surveillance, prevention, and response is inadequate to protect the health of U.S. citizens." So far, the warnings have gone unheeded, and there is very little recognition politically of the danger the MDR-TB epidemic poses.

The majority of the U.S. Congress sees no need for increasing funds for TB control. Rep. Constance Morella (R-Md.) is one of a handful of legislators alarmed by the cuts in TB control. She told the *Washington Times* on Jan. 5: "There has been no realization that we have this new strain of tuberculosis and that it is prevalent and infecting those in this country as well as in other nations. There is no understanding that it is so much more cost-effective to pay for the treatments that will prevent it from spreading, than it is to try and cure it when it spreads."

So far, no actions have been taken by the U.S. government to deal with the TB threat. Will it take an outbreak of MDR-TB worse than that in New York City a decade ago to wake them up?