A GEOGRAPHY OF TUBERCULOSIS

After years of declining tuberculosis (TB) worldwide, the disease is on the rise again. In 1990 there were an estimated 7.5 million cases of and 2.5 million deaths from TB, according to the World Health Organization. As many as 90 million new cases and 30 million deaths are estimated for 1990-99.

These statistics probably surprise most Americans—particularly those more than 50 years of age. Major efforts by local health departments to diagnose and treat cases of TB among U.S. school age children in the middle of the century led to hopes of eradicating the disease. In recognition of the increasing threat of TB, however, the Bill and Melinda Gates Foundation recently donated $25 million to speed up the development of a vaccine for children.

Such optimism, however, denied three facts that affect the world geography of TB today. First, millions of AIDS patients with immune system deficiencies have become susceptible to tubercle bacilli, the bacteria that cause the disease. Second, some TB bacteria have developed a tolerance to one or more of the five drugs used to treat it. And, thirdly, international travel has made quarantining any disease virtually impossible.

TB is a lung-scarring disease that usually comes from breathing air containing tubercle bacilli. These bacteria are expelled through coughs and sneezes of tuberculosis patients. Generally, a single exposure is not sufficient to transmit the disease, but transmission is greatly enhanced by prolonged exposure in confined quarters.

Persons with normal immune systems can often overcome the disease in its early stages, but it may leave the lungs scarred. In about five percent of the cases, it will spread into the lymphatic system and bloodstream and can become fatal. Diminished immune systems in babies, the elderly and the AIDS-infected make them among the most susceptible.

Prior to modern medicine, tuberculosis was common around the world and a major cause of death. For example, one-quarter of European deaths during the 19th century were attributable to the disease. During that century, patients were placed in a sanitarium, where bed rest, fresh air and light exercise were the only prescription. Those unable to overcome the infection naturally died a slow death.

Today, there are five modern drugs used to treat TB patients. Because some of the TB bacteria have become resistant to one or more of the drugs, however, a combination of at least two different drugs are normally used to treat patients. The treatment is a daily regimen lasting 9 to 12 months. Bacterial drug resistance generally is an evolutionary effect created when TB patients fail to take their full treatment regimen. Such a lengthy regimen makes it difficult follow up with patients to ensure their cures.

World air travel often introduces new strains of diseases to susceptible populations. For example, Hawaii has the highest incidence of TB in the United States, according to Dr. Jessie Wing, chief of the state’s Tuberculosis Control Program. She attributes to Hawaii’s attraction for international visitors and immigrants the fact that 82 percent of TB-infected people there are foreign-born.

But other variables account for most of the countries with the highest TB rates. Overcrowding in homes and workplaces associated with poverty in developing countries also increase the likelihood of people contracting the disease.

An article in the Journal of the American Medical Association (Jan.18, 1995) describes the epidemiology of TB and reviews estimates of its incidence and mortality around the world. The authors noted that only 3.8 million of the estimated 7.5 million cases of TB were reported in 1990 and 49 percent were in Southeast Asia.

African countries routinely underreport disease incidence to the World Health Organization. As a single example, TB incidence is soaring in Malawi, an East African country. Between 1985 and 1995, Malawi’s TB cases have increased from 5,000 per year to 25,000. Dr. Felix Salaniponis, head of Malawi’s program to combat TB, blames a rise in multi-drug resistant TB cases on increasing AIDS incidence and smuggled or stolen TB drugs sold to patients by street vendors.

Hot spots of drug resistant TB strains are popping up around the world. The Canadian Broadcasting Company recently reported (1999) that Estonia has the world’s highest rate of multidrug-resistant TB at 18 percent of that country’s cases. The Centers for Disease Control in Atlanta reported on efforts to control the outbreak of 24 TB patients in Buenaventura, Colombia, who were unresponsive to drug treatment.

Tuberculosis is a killer. According to TB Alert, an international charity organization, TB may now be killing 3 million per year, rising to an estimated 4.5 million by 2005.

And that is Geography in the News, March 31, 2000.

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