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## Tuberculosis: "The Captain of All These Men of Death"

### By Daniel Epstein



Fidel Hiraheta has tuberculosis. He is gaunt and weak, and can barely sit up in bed. He manages to tell a visiting health worker that his chest "hurts very badly" before taking the pills she has brought him. Hiraheta, 35, is from El Salvador and made a living working in construction in a suburb of Washington, D.C. He's not sure how he was infected, but now he knows he is too sick to work and must take pills for six months, until the holes in his lung heal.

The person who brings Hiraheta his medicine every day, and makes sure he takes it, is Sonia Salazar, an outreach worker for the Arlington County Health Department. She wears a mask because he is still contagious. Watching the patient take TB medicine, part of the WHO-recommended course of directly observed treatment, is necessary so patients do not stop the treatment as soon as they feel better. A 38-year-old native of Bolivia who visits some 12 TB patients daily to make sure they take their pills, Salazar works with a nurse epidemiologist, Charlotte Carneiro, in an innovative local health program run entirely by nurses with a multicultural staff.

We have 25 active cases and more than 700 patients with TB infection from many countries," Carneiro says. They see, test, and give medicines to patients born in Latin America, Africa, and Asia as well as those from the United States. "We work with many refugees, and we can help provide them with food and shelter, if they need it. We don't deny service to anyone," she adds.

Arlington County, where 25% of the population is foreign-born and where 88% of the tuberculosis cases are foreign-born, is a "high impact area for tuberculosis," Carneiro notes, and a microcosm of the global tuberculosis situation.



Charlotte Carneiro says Arlington County is a microcosm of the global TB situation.

### One-Third of the World Infected

Tuberculosis infects about a third of the world's population, and 30 million people are expected to die from the disease in the next decade. It kills more adults each year than AIDS, diarrhea, malaria, and other tropical diseases combined. TB can be transmitted in the air; you could catch it from a sick person coughing next to you in your home or office, or on a plane, bus, or train.

In the Western Hemisphere, as in other parts of the world, the disease is in every country, and it respects no national borders. Despite effective drugs, TB remains a very serious problem in the countries of the Americas, where more than 1,100 people get sick and some 200 people die from TB every day. Most are working adults.

Recently, an international group of experts on infectious diseases, such as TB, AIDS, malaria, dengue, yellow fever, cholera, and various viruses, concluded that early warning of and rapid response to infectious disease threats are needed. The group, convened by the Pan American Health Organization, recommends better surveillance, improved communications, more research, and more resources for health systems in developing countries to combat them.



Fidel Hiraheta receives TB medication from Sonia Salazar under a county health program of directly observed treatment.

"The threat of tuberculosis is real to each of us, and affects the world's most vulnerable groups, including women and children, as well as the wealthiest communities," according to Dr. David Brandling-Bennett, PAHO's Deputy Director.

To make matters worse, TB rates may rise owing to breakdowns in public health spending, the growth of slums and poor rural communities with abysmal living conditions, the rise of HIV, and increased travel.

TB can be stopped, but it takes dedication. People with TB must be identified, receive the right drugs, and continue taking them long enough to kill the bacteria--usually six to eight months. However, less than half of the infectious TB cases are being treated today, though the treatment is inexpensive--as little as US\$13 per person. The World Bank's 1993 report, Investing in Health, concluded that TB control

"is among the most cost-effective of all interventions," and recommended that resources for it be doubled.

## "Consumption" Killed One in Every Four People

In historical terms, tuberculosis was the greatest killer ever known to mankind. Accounts of TB were found in the writings of ancient Egyptians and in those of Hippocrates, and it was called "The Captain of All These Men of Death" by English writer John Bunyan. At its peak in the U.S., it killed one in every four people. Known as "consumption" because its victims wasted away, TB killed many famous people, including Latin American Liberator Simon Bolívar in 1830.



A patient in Haiti arranges with her health worker to receive a dose of TB drugs.

In 1882, Robert Koch, a German doctor with a laboratory in his living room, discovered the rod-shaped tubercle bacillus, helping demystify TB and contributing to the acceptance of the theory that germs cause disease.

But as the disease reached near-epidemic proportions in the rapidly urbanizing societies of Europe and North America, varied treatments, ranging from opium to rest in sanatoriums, remained ineffective. The medical world was obsessed with finding a way to cure the most severe public health problem of its day.

In the 1940s, a soil microbiologist named Selman Waksman who had never been to medical school and his assistant, Albert Schatz, found an organism in the throat of a chicken that stopped the growth of TB bacteria. This was streptomycin. In the following decades, other powerful antibiotics were discovered which killed the bacteria, and Scottish scientist Sir John Crofton initiated the practice of giving patients a combination of multiple drugs which cured more than 90% of TB cases.

Countries developed active national TB programs and immunized people with the BCG vaccine, which prevents severe forms of childhood illness. Public health systems began testing everyone for TB and treating the ones who tested positive. The death rates dropped tremendously, and the sanatoria began closing their doors. They weren't needed anymore. TB could be cured by drugs. Medicine thought it had won the battle.

## Victory Cry Was Premature

Microbes are ingenious and often evolve new strategies to defeat drugs. People with TB don't always follow their complete course of treatment. Countries become complacent, trusting that TB is all but disappearing.

In the 1970s and 1980s, many TB programs suffered cuts, either due to overconfidence or economic difficulties. The epidemic of AIDS and HIV weakened the natural defenses of many HIV-positive people and increased their susceptibility to TB. Poverty, homelessness, travel, and migration combined to increase the number of people exposed to TB. And new strains of TB appeared which were resistant to one or more of the main drugs used, posing new dangers.



TB can be transmitted in the air by a cough or a sneeze.

TB rates began to rise again. In the U.S., where cases had been declining at 6% a year, the decline stopped in 1985 and cases began to increase. It is estimated that 15 million people in the U.S. are infected with the TB germ. In Denmark, TB rose 20% between 1986 and 1992, and in Spain cases jumped 28% in just two years.

Today, nine countries in the Americas face severe case rates of more than 85 cases per 100,000 persons. These include Bolivia, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Paraguay, and Peru. Case rates in Haiti, Bolivia, and Peru are on a par with the worst-hit countries of Africa and Asia. At least 12 nations still face serious rates of more than 25 cases for every 100,000 persons. And more than half of the estimated 400,000 cases in Latin America occur in Brazil, Peru, and Mexico.

In 1993, the World Health Organization took the unprecedented step of declaring tuberculosis a "global health emergency." The problem has never been worse than it is in 1996. Worldwide, less than two-thirds of the expected cases are detected each year--and these TB sufferers are at high risk of spreading the disease and of dying. To compound this problem, drug shortages, inefficient use of resources, and inadequate treatment practices result in less than 70% of diagnosed cases being cured--the rest may continue to spread TB, including its deadly drug-resistant forms.

## Few Are Aware of TB's Magnitude

The TB situation faced by Latin America is serious. But few are aware of the size and severity of the TB problem, and its social and economic impact. Apart from suffering shortages in drug supplies, TB programs in some areas are outdated, and unable to supervise therapy. Laboratory networks often lack staff and equipment. And there is not enough money to hire and train local staff who must take over as health systems decentralize.

PAHO is working to help improve awareness of the TB problem, and of the recommended cost-effective control strategy. It is also working for effective TB case detection and treatment and to mobilize additional resources for the countries to ensure they can mount successful, sustainable programs.

## Room for Optimism

There is still hope. Despite longtime indifference and neglect, there is a highly cost-effective global TB control strategy known as directly observed treatment, short course, or DOTS, which works in poor communities as well as wealthy ones. Health workers make sure patients take their drugs for six months until the TB bacteria are killed.



In San Pedro Sula, Honduras, a nurse reviews a TB patient's history.

Peru and Nicaragua are two recent examples that show how this works. By garnering high-level political support, and applying the DOTS strategy, control programs in these countries are improving their patient cure rates, reducing their burden of disease, and documenting their results.

In Peru, more than 70,000 infectious TB cases have been fully treated since 1991, and case rates are beginning to decline. In Nicaragua, assistance from the International Union against Tuberculosis and from Norway helped to reorganize its control program in the late 1980s and finance drugs and supplies. Today, the Nicaraguan government pays for the drugs, and local health posts throughout the country are curing TB patients.

The basic foundation for TB control is in place in most countries of the Americas, despite problems in implementation and sustainability. Clear priorities and realistic objectives must be set in each country to move toward the global TB control targets for the year 2000: detect at least 70% of all infectious cases and cure 85% of them.

According to Brandling-Bennett, "Our long history of fighting this deadly disease, and our recent successes, provide many lessons for those working on preventing the emergence and/or reemergence of other diseases. I hope the greatest lesson, however, is that we can find solutions as long as we have the political will."

By applying the measures currently available, half of the expected TB deaths worldwide in the next decade could be avoided. But if the disease continues to be ignored in some countries, and problems with programs, drug resistance and co-infection with HIV are not resolved, TB could become an expensive or even incurable disease for future generations.

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