

## MEDICINE

# Tuberculosis Still A Menace

About 35,000,000 Americans are infected with tuberculosis, while throughout the world more than 3,000,000 persons will probably die of it this year, Faye Marley reports.

► MORE THAN 10,000 persons a year are still dying from tuberculosis in the United States in spite of new drugs that can arrest the disease.

The world picture is much blacker—more than 3,000,000 a year are dying from TB—but even in this country, Public Health Service officials say it will take another generation before TB can be wiped out.

The problem is largely one of finding new cases and checking up on old ones to be sure the tubercle bacillus is not again active. But some types of TB infection are resistant to certain drugs.

The National Tuberculosis Association estimates that about 35,000,000 Americans are infected with TB germs and that in the next five years about 250,000 persons will develop active tuberculosis.

## TB Tests Recommended

Sources of infection are frequently unknown, but tuberculin tests should be made routinely. Any time that a member of the family or a close contact is known to have TB, tests and possibly BCG vaccination should be done.

A school bus driver in New York State, for example, was found to have active tuberculosis, and the state health department conducted a survey of the entire school to find out which children might be infected.

After testing 3,667 of the school children, it was found that 60 children who had not even been exposed to the active case reacted positively. Another 85 pupils among the exposed 266 were also infected.

The drug most often used in treating TB because it is nontoxic and can be given by mouth is isoniazid, alone or in combination with other drugs. In this school situation, the treatment recommended for most of the infected children consisted of isoniazid alone or with para-aminosalicylic acid (PAS), or with both PAS and streptomycin. All children who reacted positively to the tuberculin tests were X-rayed to show the extent of damage done by TB germs.

Regardless of known contacts, all children and young adults should have a regular tuberculin test, and if the test is positive, they should have an annual X-ray.

Older persons, among whom the largest number of TB cases are now being found, should have a chest X-ray as part of a regular physical examination every year or two. A chest X-ray may also reveal other chest ailments.

The U.S. Public Health Service has been conducting a study of some 60,000 to 70,000 persons from Alaska to Puerto Rico and all states between to prove whether or not isoniazid is effective as a preventive of human tuberculosis. A report on the findings is expected in 1962.

There is no tuberculosis vaccine suitable for everyone, although BCG (bacillus Calmette-Guerin), the one most widely used since its discovery in France more than 30 years ago, does give some protection. It is of no use to those already infected, of course. This is one of the objections to a country-wide vaccination program.

Considerable research is going on with killed vaccines in the hope that one may be found that will not interfere with tuberculin sensitivity.

## BCG Cancels Tuberculin Test

BCG is a suspension of living cells of an authentic strain of the bacillus of Calmette and Guerin. This vaccine cancels out permanently the effectiveness of the tuberculin test, by which it can be determined whether or not an individual is infected with TB.

Even though not infected, a person shows a positive reaction to the tuberculin test after vaccination with BCG.

In England a vole bacillus isolated from a mouse-like field vole by Dr. A. Q. Wells of Oxford has been used along with BCG in vaccination for TB.

Dr. Stuart H. Willis, director of the North Carolina State Tuberculosis Sanatorium, with headquarters at Chapel Hill, has been working on a new vaccine with University of North Carolina collaborators. This is to have field trials in Haiti.

In the U.S., authorities agree that BCG should be given to those who run the greatest risk of infection. This means physicians, nurses and medical students; patients and employees in mental hospitals as well as inmates and workers in prisons.

Persons living where the TB rate is high, and especially if there is or has been TB in the house, should be vaccinated.

Tuberculosis was the leading cause of death in the U.S. in 1905. Improved sanitation, milk pasteurization and treatment of cases were responsible for gradual lessening of the death rate as the century wore on. But new drugs in recent years have made the public complacent. TB is still the leading cause of death in the U.S. from infectious diseases.

Dr. Edward T. Blomquist, chief of the tuberculosis branch, U.S. Public Health Service, has pointed out that many tuberculosis hospitals have closed or been converted to other purposes.

This has been interpreted by the public to mean that TB services can be decreased, and in a great many communities tuberculosis patients are getting inadequate treatment or none at all.

"They remain as much of a potential problem in public health as were the patients on hospital waiting lists in pre-chemotherapy days," Dr. Blomquist said.

The Public Health Service and the National Tuberculosis Association are attempting to be realistic in their approach to the

(Continued on page 365)



**FOSSIL ANKLE JOINT**—The fossil ankle joint shown on the right, found near Gainesville, Fla., is believed to be evidence of the largest flightless bird the world has ever known. It is twice as large as the ankle on the left belonging to the rhea of southern South America.

## TB Still a Menace

(Continued from page 358)

TB problem. Volunteers are needed to help find all the infected persons who should be getting treatment, they point out.

There is no expectation that TB will be or can be stamped out, even in this country, within the next ten years.

A committee appointed by the Public Health Service has stated one goal—that by 1970 there shall be not more than 10 persons per 100,000 population with TB. The 1959 national rate was 33 per 100,000.

Because some states and communities already have achieved the goal of 10 per 100,000, the committee suggested at least a ten percent average annual decline in new active case rates for the next ten years as a national goal.

The community goal should be control of the spread of infection to the point where not more than one percent of the 14-year-olds in the U.S. react to tuberculin testing. This would indicate a high rate of controlling the spread of tubercle bacilli, the committee pointed out.

Even then, tuberculosis may still remain a significant problem in certain segments of the older population who may develop disease because of infection acquired in earlier years.

Tuberculosis is not like diphtheria or polio—diseases in which lifetime immunity can be guaranteed. It is an insidious illness that creeps up without warning symptoms and one that can come again many years after it has been arrested.

If a tuberculin test is positive, further tests and X-rays will determine whether or not the patient requires hospitalization. Full recovery will probably mean about 18 months, but in the majority of cases the disease will be inactive in about nine months. The patient is usually no longer infectious after six months of drug and hospital treatment.

Even one month in the hospital, if used by a patient to learn how to take care of himself, will be worth a great deal in educating him in understanding what is needed to arrest or cure tuberculosis.

In nearly 15 years of tests with anti-tuberculosis drugs, the Public Health Service has found that isoniazid is the most feasible for treatment.

The U.S. Public Health Service first began evaluating TB treatment in 1947 when it acted as the central office for a control study of streptomycin. Congress had made special funds available for testing this antibiotic, which was the first to show marked anti-tubercular activity in the test tube and in animals.

Shortly after streptomycin was introduced, PAS became available in this country. This afforded a comparison with streptomycin, and the two drugs together became the standard treatment for hospitalized TB patients in the U.S.

Then in March, 1952, isoniazid made its dramatic appearance. Thousands of patients have been treated with isoniazid alone and in combination with both other drugs. The treatment of choice has been isoniazid plus

PAS, with streptomycin to be used later if necessary.

Two other drugs tested by the Public Health Service were found to have toxic reactions. Cycloserine, for example, was found to have such severe side effects that Public Health Service decided against a large-scale trial with patients who showed promise of recovery.

Pyrazinamide, however, has been tried out in combination tests with both isoniazid and streptomycin. Because it may cause acute liver damage in some patients, pyrazinamide was used for only 16 weeks at a time. Further trials are needed to show how safe this drug is.

Other drugs continue to be tested in all parts of the world. At the sixteenth international tuberculosis conference in Toronto, Canada, numerous new drugs were reported successful in animal tests and in some clinical trials.

Dr. Taha M. Gomaa of Cairo, Egypt, United Arab Republic, reported in Toronto that tuberculosis is still considered one of his country's major health problems. About 10 in every 1,000 of the whole Egyptian population has the disease.

The World Health Organization's highest death rates for tuberculosis in 1957-1958, the latest year for which figures have been reported, are in the following five places in the order given: The Philippines, Hong Kong, Formosa, Portugal and Poland.

Among the ten leading causes of death, WHO lists TB last in Canada, and does not list it at all for the U.S.

This discussion of tuberculosis has been confined entirely to the most common form—TB of the lungs. Pulmonary tuberculosis is the form that dominates all others, and it leads all other kinds of TB as a cause of death.

The lung is the usual place where the disease begins, and it is from the pulmonary lesion that infection spreads to other organs such as the spleen, kidneys, liver, ear, to the genital tract and to the central nervous system, to name the most common.

It is also from the lung infection that the tubercle bacillus is spread in a community.

• Science News Letter, 81:358 June 9, 1962

## Questions

**ASTRONOMY**—What is the most widely accepted theory regarding the origin of life on earth? p. 359.

**RADIOLOGY**—What mineral has been found to give protection against radiation? p. 366.

**SPACE**—What method is used to protect the heart reflex system of bedridden patients? p. 355.

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