

THE ABC OF TUBERCULOSIS

BY JOSEPH D. WASSERSUG, M.D.

TUBERCULOSIS ranks only seventh as a cause of death in the United States, but sixty thousand people — the population of an average city — die of the disease every year. In four years, the number of deaths is greater than the combined fatalities of all past wars fought by this country. Most important of all, tuberculosis is today the greatest killer of young people. It kills or incapacitates people at the most productive period of their lives. About one-third of all tuberculosis deaths annually occur in women between the ages of twenty and thirty, and every year about twenty thousand women of child-bearing age are victims.

War stimulates this disease. Preliminary reports from large American cities show again, as they did in the last war, a small but definite increase in the tuberculosis death rate. Crowding, poor nutrition, overwork and fatigue are the prevailing conditions during wartime and these are the conditions which favor the spread of this scourge.

People who have lived in rural areas and have never been exposed to the disease are now moving to crowded industrial communities; women war-workers live in cramped quarters and work long hours. Under such conditions, tuberculosis may again become the menace it was before modern methods of control began to curb its excesses.

Tuberculosis control is based on the fundamental fact that it is a germ disease. There is only one cause for tuberculosis and that is the *tubercle bacillus*. Tuberculosis is not inherited. A run-down condition does not cause tuberculosis, although it may predispose to it. A common cold or bronchitis does not turn into tuberculosis, although tuberculosis in its early stages may mimic a cold. There can be no tuberculosis without the tuberculosis germ. Tuberculosis comes only from other cases of tuberculosis. A child may acquire the disease by intimate contact with its mother or father, but it doesn't inherit the disease through the blood stream or through the germ cells. There may

be more than one case of tuberculosis in a given family, but that is because of the close contacts which prevail in a family group. Since the foundation for the prevention and treatment of tuberculosis rests on the fact that it is a germ disease, this point cannot be stressed too often or too strongly.

The small, deadly microbe which causes tuberculosis is most commonly spread from person to person by coughing, and by the improper disposal of germ-laden sputum. In many cases of tuberculosis, thousands of tubercle germs are present in each droplet of sputum and they can be disseminated widely by coughing. The relative or friend with the chronic cough who so often affectionately kisses Junior or Sister Sue may be transmitting, unknowingly, his germs to the person he loves. Sleeping with an individual who has tuberculosis, or using common dishes, helps spread the disease. Since cows are also susceptible to tuberculosis and can be diseased, drinking unpasteurized milk obtained from cows that have not been tuberculin-tested presents a certain danger, although this danger is not so great today. Food may become contaminated accidentally through handling by a tuberculous person with germs in his sputum, but this,

too, is an infrequent source of trouble.

Since the cause of the disease is known and the ways in which it is spread are clearly demonstrable, it should be theoretically simple to wipe out tuberculosis completely. And yet, it has been a very difficult task. Under present conditions, especially where there have been large shifts of population to new industrial areas, the task has even grown in magnitude. One reason for the difficulty — and perhaps the most important reason — lies in the fact that tuberculosis attacks a person stealthily and insidiously and the disease may be fairly far advanced before any definite symptoms make their appearance. Thus, there are people who unknowingly have the disease and spread their germs to others. Tuberculosis may be likened to a fifth columnist who may do serious damage quietly for a long time before he is found out. For detecting such sabotage, the X-ray is the FBI of medicine.

An X-ray of the chest is really the only reliable way of detecting tuberculosis, since it may be impossible to tell by the way you feel whether or not you have the disease. In some cases, X-rays taken of apparently normal individuals leading apparently normal lives reveal tuberculosis of the lungs. Tubercu-

losis may be detected by the X-ray examination in earlier stages than the physician can detect it by the stethoscopic examination. The Army and Navy realizes this important fact and practically every inductee in the armed services gets a chest X-ray. Many large war industries know this, too, and they require negative chest X-rays as a prerequisite for getting a job.

A chest X-ray is all the more important if you have suspicious symptoms. Complaints such as weight loss, fatigue, lack of pep, or a chronic cough are very suspicious. If you are tired and worn out and have no appetite, you would be wise to have your doctor examine you and get a chest X-ray before you spend any money on well-advertised vitamins. If you have a persistent cough and raise more or less sputum, have pleurisy pains or feel feverish in the afternoon, have night sweats or spit up blood, a chest X-ray is imperative. The earlier the disease is diagnosed and treated, the better the chance for complete recovery. The chance of cure is better than 90 per cent if the disease is caught early.

II

In addition to X-rays, doctors have other aids in diagnosing tuber-

culosis. One is a sputum examination and the other is the tuberculin test. Tuberculin, the substance used in this test, is a mixture of the products of tubercle bacilli growing in a special laboratory culture. It is sterile and does not contain any tubercle germs or other harmful substances. When an individual first becomes infected with the tubercle bacillus, a sensitivity to tuberculin develops in that individual. If a minute quantity of tuberculin is then injected into the skin (or even applied on the skin in many cases) there results in these sensitized persons an area of redness or swelling at the site of inoculation. If the tuberculin test is negative, it is almost absolutely certain that the tested individual does not have tuberculosis — and never had it. Yet, if the tuberculin test is positive, it does not necessarily mean that the tested individual has tuberculosis any more than the vaccination scar means that the person is suffering from smallpox. It means merely that, at some time or other, the germ became lodged in the tissues and set up a reaction within them. The spot in which the germ landed may be microscopic in size; it may be entirely healed and never give rise to symptoms. The chief value of the test, then, is that if it is nega-

tive, it means "no tuberculosis" at the time of testing in practically every case.

In children, a positive test has more significance. The test is of less value in adults than in children because the great majority of adults have a positive tuberculin test. Most of us at some time have inhaled or swallowed tubercle germs and they have become lodged in our lungs or in our lymphatic glands, but we have overcome them by our natural powers of resistance. The majority of individuals have a high resistance and do not become ill with tuberculosis, and in many such cases, even the most thorough examination would not disclose any evidence of disease. However, children with a positive tuberculin test should be watched carefully for signs of tuberculosis. All children with a positive tuberculin test should have a chest X-ray and other diagnostic studies may be indicated in individual cases.

The basis for the modern treatment of tuberculosis is rest. In spite of the remarkable advances in the development of disease-fighting chemicals during the past few decades, there is still no known chemical or drug that can be taken to cure tuberculosis. The treatment for tuberculosis is complete rest — mental and physical rest — prefer-

ably in a sanatorium. Next in importance to rest is an adequate, well-balanced, nutritious diet. Forced feedings are not necessary and may be unwise. Climate plays only a minor role in treatment. Some patients with tuberculosis show vitamin deficiencies, but eating large doses of various vitamins does not cure tuberculosis. Many vaccines and sera have been tried in tuberculosis, but not one has conclusively demonstrated any beneficial effect. The current sulfa drugs — such as sulfanilamide, sulfathiazole, or sulfapyridine — have no curative action on tuberculosis. Recently, a new member of this sulfa group called "promin" has shown some encouraging preliminary results, but its value has not yet been proved.

Recovery from tuberculosis can often be aided and accelerated by the use of modern surgical methods. A variety of surgical operations have been devised that help in the treatment by putting the diseased lung at rest. In some cases, air can be injected into the chest cavity between the lung itself and the chest wall and the lung thereby compressed. The compressed lung is put to rest and kept at rest by repeated air injections into the chest cavity at regular intervals. Another type of operation that is

commonly employed is called the "phrenic nerve crush." The phrenic nerve is a long nerve which runs down each side of the neck to the diaphragm, the most important single muscle of respiration. As it runs down the neck, the nerve can be exposed by a simple operation and crushed. In this way, the nerve impulse is blocked to the diaphragm on the side of the diseased lung and motion of the diaphragm on that side ceases and the lung rests. In more advanced cases, an operation known as a "thoracoplasty" may be performed. In this operation, the size of the chest is decreased by the removal of several ribs and the softer structures underlying the ribs are allowed to fall inward. Thus, any holes or cavities eaten into the lung by the disease may often be closed and enabled to heal faster than would be possible by bed rest alone.

III

Here are two cases which illustrate some present-day concepts in the diagnosis and treatment of tuberculosis.

Case 1: M. S., an eight-year-old schoolgirl, had a slight cough which lasted the greater part of one winter. She appeared run-down and played less actively than

other children of her own age. Occasional night sweats had been noted for one month. On examination, the child appeared undernourished and was 10 per cent underweight. Chest examination was entirely negative. A tuberculin patch test, however, was positive and an X-ray of the chest was taken. This revealed pulmonary tuberculosis of the childhood type. The child was sent to a sanatorium, where she improved almost at once and was discharged at the end of ten months. She had gained eleven pounds in weight.

A search was made in the meantime to discover the source of this child's tuberculosis. The family history was stated to be entirely negative. The family milk supply was from a tuberculin-tested herd and was pasteurized. Both parents were examined and their chest X-rays were negative. More detailed questioning revealed that the child frequently stayed at the house of a maternal grandmother. Examination and X-ray of this grandparent revealed far-advanced tuberculosis. She had been coughing for many years, but had diagnosed her condition as "chronic bronchitis" and had never sought medical advice for it before.

Case 2: N. B., a twenty-three-year-old registered nurse, com-

plained of fatigue of six months' duration. She felt she had been working too hard and, to gain back her pep, she had taken tonics and vitamins without any improvement. For six weeks, she had a slight hacking cough and expectoration every morning, which she attributed to sinus trouble. The day before she was examined she spit up a small quantity of bright red blood. Examination of her chest was entirely negative. The X-ray, however, showed a small area of disease near the top of her right chest. A sputum examination showed tubercle germs. She was sent to a sanatorium where she was given bed rest and pneumothorax treatment. She improved gradually. In eight months she was allowed out of bed and in thirteen months she was discharged from the sanatorium. She continued to receive pneumothorax treatments and was able to return to work one year later, her disease apparently arrested.

The following seven rules will serve as a practical guide in guarding yourself and your family against tuberculosis in the hard years of war that are now upon us.

1. Be certain that you obtain adequate rest and eat a well-balanced, nutritious diet. Insist that the milk you drink be pasteurized

and obtained from tuberculin-negative cows.

2. Demand that individuals who have tubercle germs in their sputum be hospitalized or segregated in a sanatorium. Members of the family of a person with tuberculosis, or others who have had intimate contact with that person, should have a chest X-ray to determine whether they, too, have tuberculosis.

3. Early suspicious symptoms should not be neglected. See your doctor and have a chest X-ray.

4. Persons engaged in the handling of children — schoolteachers, domestics and nurses — should have at least one chest X-ray. Individuals engaged in certain hazardous trades, such as stone-cutting, should be checked-up at regular intervals.

5. Children should have a tuberculin test at some time between the ages of eleven and eighteen, and if the tuberculin test is positive, an X-ray is indicated. In special instances, the tuberculin test is of particular value at other ages.

6. Continue to give moral and financial support to your local anti-tuberculosis association. Buy Christmas seals.

7. If tuberculosis is found on examination, get prompt treatment. Earlier discovery means quicker recovery.



POETRY

FATHER AND SON

BY STANLEY KUNITZ

Now in the suburbs and the falling light
I followed him, and now down sandy road
Whiter than bone-dust, through the sweet
Curdle of fields, where the plums
Dropped with their load of ripeness, one by one.
Mile after mile I followed, with skimming feet,
After the secret master of my blood,
Him steeped in the odor of ponds, whose indomitable love
Kept me in chains. Strode years; stretched into bird;
Raced through the sleeping country where I was young,
The silence unrolling before me as I came,
The night nailed like an orange to my brow.

How should I tell him my fable and the fears,
How bridge the chasm in a casual tone,
Saying, "The house, the stucco one you built,
We lost. Sister married and went from home,
And nothing comes back, it's strange, from where she goes.
I lived on a hill that had too many rooms:
Light we could make, but not enough of warmth,
And when the light failed, I climbed under the hill.
The papers are delivered every day;
I am alone and never shed a tear."

At the water's edge, where the smothering ferns lifted
Their arms, "Father!" I cried, "Return! You know
The way. I'll wipe the mudstains from your clothes;
No trace I promise will remain. Instruct
Your son, whirling between two wars,