other employees. We also feel that these should be picked for their neatness, mental alertness, physical condition, age, and conscientious dependability. Much also depends upon the type of patient, his mental capacity, alertness, intelligence and his cooperation. Conceding this, we feel that incidence of infection with modified contagious technique is no greater and possibly even less than in the general population.

Early Diagnosis of Tuberculosis

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Tuberculosis, despite the knowledge and results obtained in the past fifty years, still remains one of our major problems in the field of medicine. It is hoped that the following suggestions, many of which are based on an experience of some thirty-five years in this field, may be helpful.

As it is not always easy to make a diagnosis of tuberculosis, and this paper deals with the pulmonary type only, the first requisite is, especially in obscure conditions, always to bear in mind the possibility of tuberculosis, even if for no other reason than to rule it out. With careful attention to every detail, it is quite possible to make the diagnosis from symptoms alone, even before the physical signs are present. It is well to remember that certain races seem prone to the disease, especially the Negro and the Chinese.

The first requisite in the diagnosis is a carefully taken history, both family and personal. A history of tuberculosis in the family, and especially of contact, is always important. The home conditions: cleanliness; ventilation; deficiency of sunlight; financial status; over work, both physical and mental; and occupation, have a bearing. Attacks of fever, transitory in type, especially if attended by malaise; one or more attacks of pleurisy; repeated attacks of bronchitis, especially if unilateral; and frequent colds are always suspicious.

The symptoms of early tuberculosis are indefinite and usually extend over a more or less protracted period. The first warning may be the coughing up of blood, varying in quantity, and often following some form of exertion, such as running. A slight cough, not always short or dry, with or without expectoration, may be the first warning; this may be constant or intermittent. Should there be expectoration, a sputum examination is indicated and should be repeated, as one examination, even if negative, does not necessarily rule out tuberculosis. One should remember that it is possible to have tuberculosis even with a negative sputum. There are disturbances of the circulation, with rapid pulse and pallor.

A rectal temperature is usually more reliable than an oral one. You may find catarrhal attacks starting as a cold in the head and working downward into the lungs, resulting in a bronchitis, with a more or less protracted course. This tendency may exist for months before tuberculosis is suspected and the bacilli appear. Such cases, especially when accompanied by a tuberculosis history, are most suspicious. There may be pain over the affected area, either constant or intermittent, usually neuralgic or rheumatic in type, with a consequent diagnosis of neuralgia or rheumatism. This pain is usually the result of a localized pleurisy and is considered diagnostic by some writers. In this connection, it is always well to bear in mind the possibility of lung cancer. Lung cancer is considerably more common than we have been led to believe in the past. Whenever there is severe pain and dyspnoea, out of all proportion to the x-ray and physical findings in the chest, and it cannot be explained in any other way, cancer of the lung should be seriously considered, if for no other reason than to rule it out.

The next step in importance is the type of breathing present, as there are depressions above or below the clavicle or clavicles. The affected side lags on deep inspiration and expansion is restricted; ordinarily, a
limitation of excursion at the bases on the affected side can be noticed.

After this follows percussion of the chest. In this connection, with practice, one can close his eyes and his ears and map out the impaired area, or areas, by the feeling under the finger. There is a resistance over the impaired area readily transmitted to the finger. Over affected areas the percussion note is duller and the resonance diminished, or in some instances slightly higher and with a tympanic note.

The determination of the respiratory note is the next step. It may be the rough vesicular type, or it may be a weak vesicular type, or a combination of both. Rough respiration is the earliest sign and is present even before percussion reveals any evidence of change. Weak respiration comes next in importance. In this connection care should be exercised to eliminate nasal occlusion or the plugging of a bronchus. At times, the respiration is jerky—always a suspicious sign. It is only when we have contraction that we get a sharpened inspiration accompanied by a prolonged and sharpened expiration. The respiration may be loud or soft or a combination of the two. Diminished respiration at the apex, in the young, unless due to nasal occlusion or a plugged bronchus, means activity; in the adult, a healed lesion. Rales, if present, are usually heard in more or less advanced cases. In the early cases they consist of a simple click, at the extreme end of inspiration, or persistent fine crepitations, or they may even take the type of a sharp groan or whine. All these are constant and are heard at the end of inspiration or the beginning of expiration and on and after cough. This rule may be safely followed, rales which on repeated examination are constantly to be heard and are limited to a definite area, are quite indicative of tuberculosis. Increased whispered voice heard over these areas is another important sign.

Sputum examinations, as mentioned earlier in this paper, repeated if necessary, are always indicated whenever there is expectoration, with or without cough. If this procedure is followed, many cases of tuberculosis will be detected early which otherwise might have gone on to a stage where recovery would be difficult or impossible.

X-rays of the chest are of valuable assistance and should always be made, if possible, as a routine procedure. In this connection may I say, that if one will discount his physical findings by at least a third, that is, if he will consider that there is a third more affected area in the chest than his physical findings reveal, he will check very closely, if not absolutely, with the x-ray. Otherwise, to his dismay, he will find the x-ray reveals considerably more involvement than was brought out on examination and, as a result, much more alarm accrues to the patient.

Tuberculin tests in doubtful cases are valuable adjuncts and for the best results, should be carried out only by those qualified in their use. All positive reactors should have a chest x-ray as well, since a tuberculin test tells one of the presence of tuberculosis somewhere in the body, but not always where.

In summary, the early diagnosis of tuberculosis can only be made from a careful correlation of all data obtainable by a meticulous examination and then only when so arranged that it spells TUBERCULOSIS.