

# A TUBERCULOSIS SERVICE FOR CHILDREN

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OUR increasing knowledge of tuberculosis in children is opening up a highly specialized field. It is becoming evident in tuberculosis clinics that a separate service is needed to deal with the diagnosis and care of tuberculous children. And it is also apparent that to deal with these problems effectively tuberculosis in the child must be considered not only as it relates to the child proper but also as it affects, or is affected by, its family situation. Frequently the intensive, costly care given to the individual child has failed to accomplish lasting results because the family situation has been ignored.

In order effectively to safeguard the tuberculous child, it is necessary to know whether or not there are other cases of tuberculosis in the family group and how great the risk of further exposure to infection will be if the child remains in the group. The complexity of family situations in cases of tuberculosis in children may be graphically illustrated by charts such as those given below. These are based on data gathered in the tuberculosis clinic services for adults and children at the Bellevue-Yorkville Health Center over a period of years.

In the first, a young mother, nineteen years of age, was referred to the tuberculosis clinic for adults by the nurse in the baby health station. She had had a pneumonia from which she did not seem to recover completely, although she was well enough to care for her two young children and bring them to the baby station. On examination she was found to have an extensive tuberculous lesion with a sputum loaded with tubercle bacilli. She was hospitalized immediately and

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her two children, who attended the infant and preschool clinics, were referred to the children's tuberculosis service for consultation. The six-month-old infant, who three months earlier had had a negative X-ray, now showed a fairly extensive parenchymal lesion. He was hospitalized but died three months later. The two-year-old girl had a pleural effusion. She also was hospitalized and later sent for sanatorium care. The other members of the family were then examined. The maternal grandmother, who was apparently in good health, was found to have a moderately advanced lesion. The other children of the family were also infected and one child has developed a lesion which is probably tuberculous. Simply to have removed the acute case in this family would not have been sufficient to safeguard the other members, and further plans for the children must be influenced by the presence in the home of another case. (See p. 266.)

In the second illustration, a boy of five years was given a routine intradermal tuberculin test in the preschool clinic. This was positive and the X-ray findings were suspicious, although the child seemed fairly well. He was carefully observed and a diagnosis of tuberculosis was finally established. It was found that his brother was infected but had no demonstrable lesion. Both children were transferred to the children's tuberculosis service for observation and both subsequently developed definite tuberculous lesions. The fifteen-month-old baby became ill and died in Bellevue Hospital of a bronchopneumonia which was thought to be tuberculous in origin, although it could not be proved as no autopsy was permitted. After much questioning it was found that the boy's father, then dead, had been an open case of tuberculosis in the home for some time, no precautions having been observed. After the death of the baby the mother finally consented to be examined and was found to have a

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THE HEALTH COMMISSIONER  
COMMENTS

FOUR years ago when I took office as Commissioner of Health, the service rendered by the City of New York to children exposed to tuberculosis or suffering from tuberculosis, was on a very low plane, approximately one-fifth of the contacts being examined and the physical examinations made usually by men unskilled in childhood tuberculosis. Not any of the children were tuberculin tested or X-rayed.

Today, we are examining close to 90 per cent of the contacts. They are all tuberculin tested and those who give a positive reaction are X-rayed.

The dissatisfaction which I felt and gave expression to four years ago, has apparently borne fruit and stirred us out of our lethargy. Had it not been that we had such a well-equipped "laboratory" as Bellevue-Yorkville, it would have been more difficult to have initiated these new procedures.

The well-organized plan which Dr. Barnard presents fully justifies the efforts we have made to put new life in the attack upon tuberculosis and I am glad to have this opportunity of expressing my satisfaction and of complimenting her and the staff of the Bellevue-Yorkville Health Center on the fine work which has been done.

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*Commissioner of Health, City of New York*

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quiescent minimal lesion. She was placed under clinic supervision and taught to take proper precautions. The five-year-old boy has had a period of country care and the mother has learned to take excellent care of him at home so that he is making good progress toward healing his lesion. Under clinic supervision and with intelligent care at home, the eight-year-old boy has handled his infection very well and is in excellent condition. (See p. 267.)

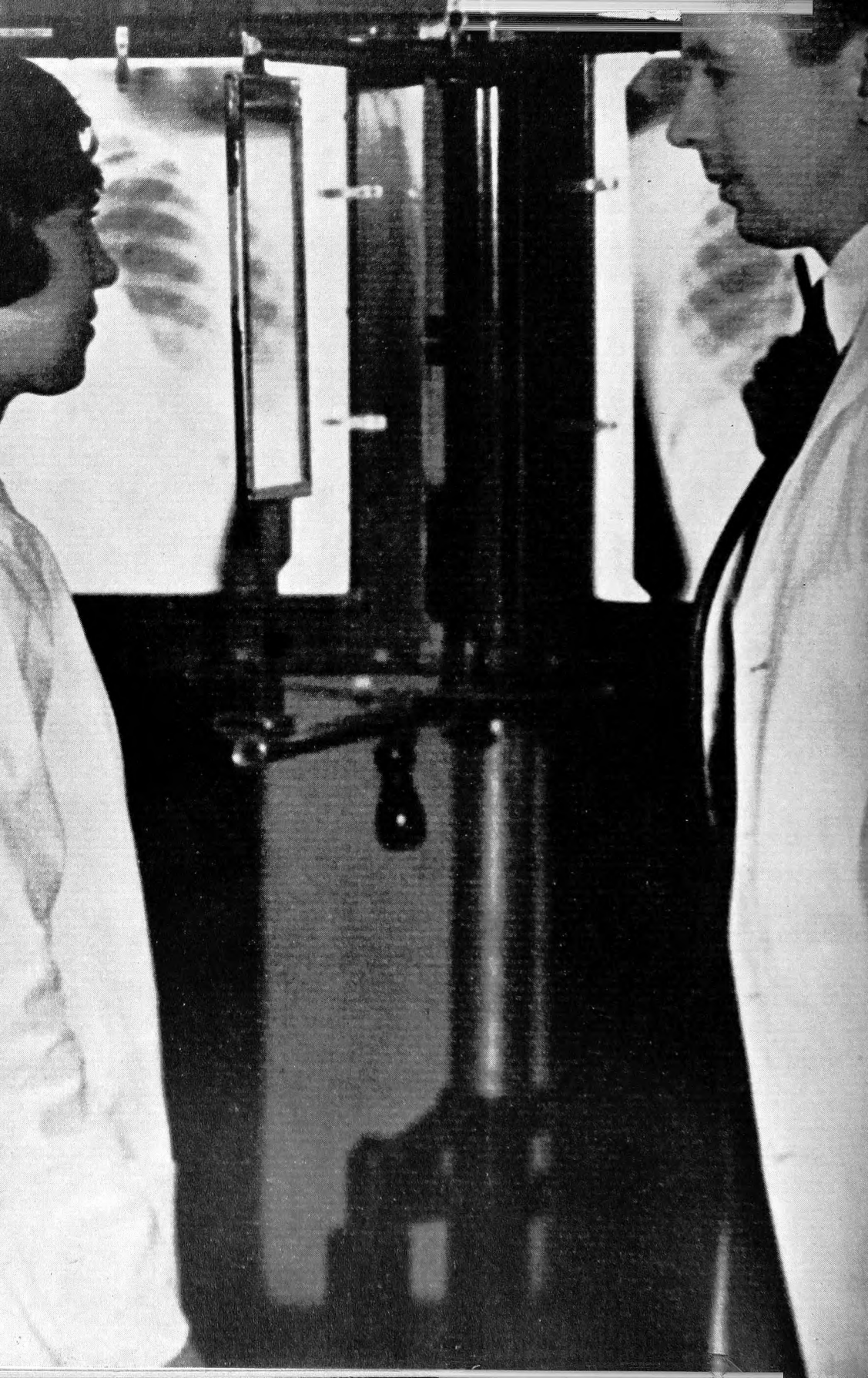
If tuberculous children are to be cared for intelligently, not only must the clinic view the problem as a family situation but the family must also be educated to a similar viewpoint. In this manner only may the cooperation of the family be secured.

In an acute illness, family plans can usually be changed or set aside with comparatively slight inconvenience. It is an entirely different matter, however, when the

family is required to readjust its routine to so chronic an illness as tuberculosis. After the immediately necessary care, such as hospitalization or sanatorium treatment, has been arranged for, the most important problem is to safeguard the family group from further infection. This may necessitate removing the source of infection from the family, or establishing adequate precautions, or removing the younger members of the group from the home. Whatever the solution, it involves definite readjustment of family relationships. Then a workable family regime must be established which will safeguard the tuberculous child without stigmatizing him. Without guidance, a family, through its eagerness to do everything possible for the sick child, may go to the extreme of allowing him to tyrannize the group. It is not unusual to find the tuberculous child receiving more than his share of food and attention while the other children in the family begin to slip below par physically and emotionally because they must give up at all times to the child who is considered ill.

Careful integration of the children's and adults' tuberculosis services is necessary in order to give the doctors and nurses a well-rounded view of the whole problem. Each service should act in a consultant capacity for contacts referred from the other service. Records should be easily available so that they may be studied in family units. A similar relationship should be maintained between the children's tuberculosis service and the general pediatrics service. Just as children need to be referred to the tuberculosis service for specialized diagnosis and care, so the pediatrics department can often be of assistance in evaluating the significance of and in correcting other defects found in tuberculous children. It is impossible to treat tuberculosis in a child as an entity apart from his general condition.





It was on such conceptions as those given above that a children's tuberculosis service was established in 1930 as a separate unit in the Bellevue-Yorkville Health Center, and what follows is based on the experience accumulated in operating this service. A children's tuberculosis service must have four objectives in view:

1. To screen out the children with tuberculosis and to determine the significance of their lesions.
2. To plan adequate care for them, including finding the source of their infection and breaking the contact.
3. To educate the families to regard tuberculosis as a family problem and to help them make adequate plans to deal with it.
4. So to record and assemble all data that they will be available for use in further studies of the general problem.

The children's tuberculosis clinic should offer diagnostic service to children from several sources. Child contacts of patients in the adult tuberculosis service should be referred as a matter of routine to the children's service for examination. Not only is it of importance to detect all tuberculosis in this group, but also through these examinations to gain a picture of the general health problems with which the family must deal. Social agencies, school physicians and nurses will wish to refer to this clinic children who present suspicious symptoms or history of exposure. And the child hygiene services will constantly use this special service for consultation. Routine tuberculin tests, followed by X-ray examination of the positive reactors, in the infant and preschool groups will screen out a number of children who should be referred for further consultation on diagnosis and care. Although a well-organized and integrated tuberculosis service for children is costly, it will show very definite results both in controlling the disease in children and as a method for case finding among

the adult contacts. When funds are limited, experience indicates that the two groups showing the most significant lesions, needing the most intensive care, and giving the best results are the preschool and the adolescent.

In order to render the work of the clinic most effective, it is of prime importance that the diagnostic procedures of the clinic should be carefully standardized and of high technical quality. Each child should receive (1) a complete pediatric examination, (2) an intradermal tuberculin test, and (3) a flat and oblique X-ray. On these data, in conjunction with a careful history and an understanding of the home conditions of the child, will be based the disposition of the case. Because it is impossible to separate tuberculosis in a child from his general condition, the physician in charge of this service should be a competent pediatrician. The child's nutrition, its other defects, and its daily habits all enter into the clinical picture and the physician must be able to evaluate them. In addition he must be able to evaluate the signs and symptoms which make him suspect the presence of a tuberculous lesion, and this is by no means easy. The tuberculous children seen in clinics are rarely acutely ill and on physical examination often do not present any definite signs. The slight elevation of temperature frequently found in these cases might come from any one of a dozen causes and its origin cannot usually be determined in one or two clinic visits. We must rely for our diagnoses on several items. The tuberculin test, if positive, tells us that the child is harboring living tubercle bacilli in his body but the test gives us no information as to their number, their virulence, or their location. The X-ray film may show very definite lesions in the parenchyma and tracheo-bronchial nodes but requires considerable skill and experience in interpretation. A history of intimate or prolonged exposure to tuberculosis is of considerable significance but it is often



difficult to obtain an accurate record from patients of the clinic type. The symptoms are usually rather vague, the most important being fatigability and failure to gain weight. Only when the picture is clearly defined and all other causes such as chronic upper respiratory infections, nutritional disorders, or poor hygiene have been ruled out, is one justified in making a diagnosis of tuberculosis. This requires essentially an alert and experienced diagnostician.

Experience indicates that the children examined fall into several general groups. A large number prove to be non-tuberculous and may be discharged, or, if there are other defects to be corrected, may be referred for follow-up to the child hygiene clinic for that age group. However, children known to be in contact with tuberculosis should be examined periodically as long as that hazard persists. Another group consists of those having positive tuberculin reactions but no demonstrable lesions and no known source of infection. Beyond the necessary correction of defects, little need be done for these children except to establish such a relationship with the clinic that, should symptoms appear subsequently, the child will return to the clinic for reexamination. These children should also receive a yearly examination.

A third group consists of children who have positive tuberculin reactions without demonstrable lesions but who are known to be in contact with a source of tuberculous infection. To these more close supervision should be given, and they should be examined and X-rayed every six months up to and through adolescence. Meanwhile every effort should be made through the adult tuberculosis service to control the source of infection so that it shall not be a menace. If this cannot be done it may sometimes be necessary to break the contact by removing the child from the home. Finally, there will be left a comparatively small group of children who are diagnosed

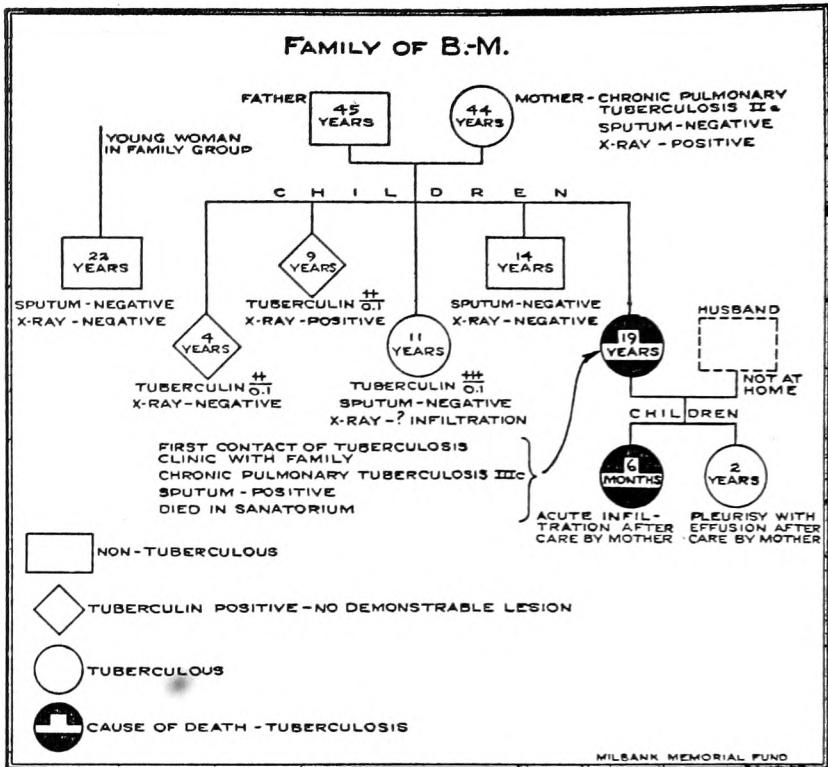


Fig. 1. An illustration of the extent of tuberculosis within a family group and the need of protecting the child in the tuberculous household.

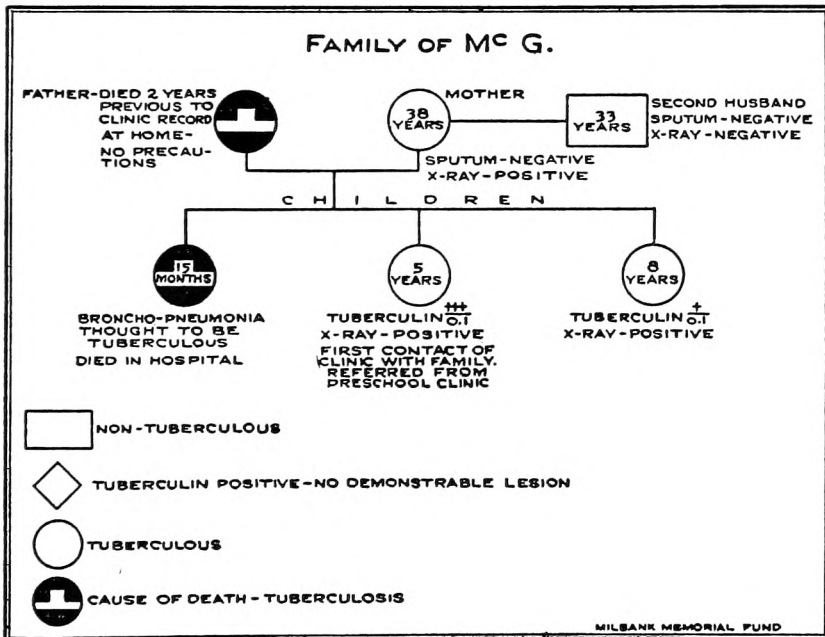
as tuberculous or who need further study to determine the actual cause of their condition, and it is on this group that the clinic service should be concentrated.

Experience again indicates that the tuberculous children may be divided, for purposes of care, into several general groups. Some cases with acute, active lesions need immediate hospitalization and it should be possible to refer them directly to a children's tuberculosis service in a hospital. An official affiliation between the clinic service and a hospital ward service will save much time and avoid expensive re-duplication of effort. It will also be easier in many cases to secure the consent and cooperation of the family, if the child

is to be cared for by an allied group with which the mother feels she already has some contact. The clinic physician should be able to follow the case in the hospital and, if the child recovers sufficiently to be able to return home, it should be returned to the supervision of the original clinic. In many cases, of course, the child is referred by the hospital for a period of sanatorium care before returning to the clinic. In either event the clinic should establish some method of exchange of records so that pertinent interval data may be added to the clinic record.

Another group of cases may be referred directly to sanatoria without first being hospitalized, and this type of care should be arranged through the clinic. It may be that a period of supervised care in improved surroundings will give

Fig. 2. A second illustration of the extent of tuberculosis within a family group and the need of protecting the child in the tuberculous household.



the child the extra margin of safety which will enable him to overcome his infection. Or it may be necessary to remove the child from contact with a source of infection in the home and thus to safeguard him against receiving an additional dose of tubercle bacilli which may be too great for him to resist.

It is possible to secure such care for children from six to twelve years of age, but the difficulty of securing proper care for younger age groups, particularly infants, and for adolescents is a very serious handicap to the work of the clinic. The preschool and adolescent groups present an especially difficult problem since it is in them rather than in the six-to-twelve-year-old group that significant lesions requiring institutional care seem to be found most frequently. The preschool children need more supervision in an institution and they require assistance in taking care of themselves, in dressing and undressing. They are also more liable to minor illnesses. Adolescent girls who have begun to menstruate are ineligible for children's institutions and yet they are not sufficiently mature mentally to make a suitable adjustment in the sanatorium for adults.

The third and by far the largest group of tuberculous children can be cared for by clinic supervision, if the cooperation of the family can be secured. Experience shows that children of the school age group handle tuberculous lesions remarkably well and that intelligent home care is usually sufficient. At this age the child's life has become fairly well stabilized. He has established routines of work and play, eating, sleeping, et cetera, and he has become accustomed to discipline in his school life. In most schools there is sufficient medical inspection and care so that a child who is falling below par is noticed and sent for examination.

There are several reasons why it seems better to keep these children at home, if it can be safely done, than to

institutionalize them. All too often a child is sent for six months to an institution and then is returned to his family who know nothing about caring for him properly. In a short time he loses the benefit derived from his stay in the institution by the neglect or improper care he receives at home.

Loss in school time should also be considered carefully, for the education of their children is an earnest matter with most families. Although institutions endeavor to provide school facilities, it is difficult for a child to keep up with his class in a city school if he has been away for several months. Being dropped back in school arouses the resentment of the parents and handicaps the child by taking him away from his normal age group. It would seem better to expend some time and money in educating the family so that the child might with safety remain at home and continue his school life without endangering his health. It may be necessary for a child whose general condition is below par and who may have difficulty in healing his tuberculous lesion, to be placed in a special class where he will be given extra rest and nourishment and medical supervision. However, most children with the usual type of childhood tuberculosis will be able to follow a regular school program if the parents will cooperate by giving them proper care during the time spent outside the school. This is a problem which the family must face frankly and handle intelligently over a considerable period of time without letting it stigmatize the child or set him apart from his group.

Both the doctor and nurse must consider with the mother the problems of diet, hygiene, adequate rest and sleep, suitable recreation, and the carrying on of a normal school program. They must be sure not only that the mother understands the reasons for the new regime, but that it is so planned that it will be possible of attainment in her particular

circumstances. This implies a friendly personal relationship between the clinic personnel and the mother, and sufficient visiting in the home by a nurse to gain a knowledge of existing conditions. The mother must also understand the necessity of protecting the child from further exposure to tuberculosis and of continued medical supervision.

The responsibility of regular attendance at the clinic must be placed on the mother and on the child himself as soon as he is old enough to understand its importance. In order to secure the cooperation of the child, the clinic must be a friendly place to which he will enjoy going. Books and simple games relieve him of the tedium of waiting. The doctor can accomplish a great deal more with a child who comes in for examination in a relaxed and friendly mood than he can with one who has become irritable or fearful. Much depends on securing for such a clinic doctors and nurses who are genuinely interested in children and understand their interests and problems.

Experience indicates that the cooperation of the mothers in bringing their children to the clinic regularly is proportional to the amount of service which they receive from the clinic. A sympathetic individual conference with the mother will help her to understand the reasons for the doctor's recommendations and the necessity for returning at a stated time. A mother who brings her child to the clinic because she wants to, values the service received and gets more from that clinic visit than if she simply comes because a nurse asks her to do so. Although such individual conferences in the clinic are time-consuming, they help to save home-nursing visits for delinquents, thus releasing nursing time for a more productive type of visit.

It is particularly hard to hold the adolescent group who need supervision most. They begin to escape from parental

authority, to resent being treated as children, and to feel stigmatized by attending the clinic. In some foreign families the marriageability of the girls is impaired if it becomes known that they attend the clinic, and every effort is made by the parents to avoid any mention of tuberculosis. Adolescence often is a period of increased stress and strain in the daily lives of the children. They may go into high school with increased academic work and additional social responsibilities, or they may have to adjust to industrial life. In either case they need guidance and supervision until they are safely established in adult life. It sometimes happens in the clinic that the personnel who do particularly fine work with younger children fail entirely in their dealings with the older children. One solution may be to have a flexible age group, say from twelve to twenty, served by different personnel who have a sympathetic interest in children of those ages.

It is easy in a busy clinic to fall into the habit of examining the children coming in for periodic supervision rather perfunctorily. This may have disastrous results, for children can develop serious lesions with comparatively few symptoms. The danger is particularly great if the child is in contact with a case of tuberculosis. Only careful physical examinations and periodic X-rays will safeguard these children. Two cases from our clinic may be cited in illustration. A boy of thirteen, contact to two cases at home, was followed for some time in the clinic. He showed only a positive tuberculin reaction, but no demonstrable lesion. He returned to the clinic after a seven-month interval feeling well and in apparently as good health as before, but an X-ray taken routinely showed an acute, adult type of lesion throughout half of one lung field, requiring immediate hospitalization. A girl of about the same age reported to the clinic every four months, but, since she was gaining normally and seemed so well, she

was not X-rayed for fifteen months. Then it was found that an adult type of lesion with a cavity had developed and it was necessary to hospitalize her and institute pneumothorax.

The cost of periodic X-rays is a considerable item but a necessary one. After the status of a case is well established, the less expensive paper films should be adequate for follow-up. Fluoroscopy has the great disadvantage of not giving a permanent record for comparison at the next examination.

One must not forget also that if these children attend the tuberculosis clinic regularly they probably will not attend other clinics. The responsibility for the correction of other defects must rest with the tuberculosis service. A child may have an apparently healed primary focus or a small amount of calcium in the tracheobronchial nodes that are potential sources of danger; but he may also have carious teeth, diseased tonsils, or poor nutrition and hygiene habits which need more immediate attention.

The care of these children during acute intercurrent illnesses must also be a matter of concern to the tuberculosis clinic. Many clinic children go to hospitals for care during an acute illness and these hospitals are accustomed to exchange records with the clinics. There are a considerable number of children, however, who remain under clinic supervision for a chronic disease like tuberculosis, whose families employ a private physician for the care of any acute illness. That physician should feel perfectly free to call upon the clinic for its findings, and the clinic records and X-rays should be open to him at any time.

The care of the tuberculous child is not complete unless, wherever possible, the source of infection is found and contact broken, for it is a well-established fact that repeated doses of tubercle bacilli are a definite menace to the child. All contacts of a child with a tuberculous lesion should be



examined and X-rayed. If this proves impossible, at least a specimen of sputum should be examined for each contact. Sometimes an unrecognized case of active tuberculosis is discovered, but often the source of infection is found to be an older member of the family with a chronic cough or "bronchitis" which proves to be a fibrotic tuberculous lesion with a positive sputum. The examination of adult contacts is particularly worth while in working with the younger age groups. In a city like New York the school child has so many possible contacts with tuberculosis that the source of infection often lies outside the home. The infants and preschool children, however, have a much more limited circle of contacts, and it is often possible to find the source of infection with comparative ease. When the source of infection has been found, the contact must be broken if the child is to be safeguarded. The manner of doing this will vary with the individual case. It may be that the adult can be sent to a sanatorium or, in other cases, it may be necessary to remove the children from the home. In a few cases, if the intelligent cooperation of the family can be secured, the institution of rigid precautions in the home may be sufficient.

From our accumulated experience of about two years, we feel convinced that for the proper handling of the problem of tuberculous infection and disease in children, a separate, adequately equipped clinic, staffed with competently trained and experienced medical and nursing personnel is essential. Also, that in order to secure effective care for tuberculous children, the problem must be viewed and dealt with essentially from the angle of the family, every effort being made to secure the intelligent and understanding cooperation of the parents and adult members of the group.