# THREE YEARS' EXPERIENCE IN THE UPPER HARLEM CHEST CLINIC[1]

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THE diagnostic clinic performs an important function in the program for the control of tuberculosis. It is concerned with the discovery and supervision of cases of the disease in the community which it serves. This report describes some results of the work of the Upper Harlem Chest Clinic of the New York City Health Department during the clinic's first three years of operation, from April 1, 1939 to March 31, 1942. At the time this study was made the Upper Harlem Chest Clinic served a population of approximately 66,000 in the part of Harlem formerly included in Health Areas 7 and 8.[2]

When the Upper Harlem clinic was opened a special study of tuberculosis was started in Area 8. The special study is being carried on by the Bureau of Tuberculosis of the Department of Health, the Community Service Society, and the Milbank Memorial Fund. Its main objective is to describe as completely as possible the problem of tuberculosis among Negroes in this area and to point the way toward improvement in the control of the disease.

Dr. Herbert R. Edwards, Director of the Bureau of Tuberculosis, is the medical director of the study. The medical staff of the tuberculosis clinic, under the direction of Dr. Neville C. Whiteman, is

[1] From the New York City Department of Health, the Community Service Society, and the Milbank Memorial Fund.

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[2] From Census Tract Data on Population and Housing, New York City, 1940. Bureau of the Census, U. S. Department of Commerce.

provided by the Department of Health. The Community Service Society provided the nursing and clerical staffs of the clinic from April 1, 1939 until December 1, 1941 and nursing supervision until October 1, 1942. Since that time the entire staff of the tuberculosis clinic has been provided by the Department of Health.[3]

The diagnostic clinic is concerned with the supervision of known cases of tuberculosis and the discovery of new cases of the disease. In addition to the regular diagnostic service, the Upper Harlem Chest Clinic includes in its activities a Consultation Service for the use of private practitioners wishing to refer cases for a diagnosis of tuberculosis.

The examination of persons who have had household or familial exposure to reinfection tuberculosis is recognized as an important procedure in case finding. As a preliminary to the discussion of the work of the clinic it is of interest to see how completely the examination of family contacts is being accomplished in Harlem. Table 1 shows the proportion of family contacts examined in 227 families in Area 8. These are families in which the index case had active

Table 1. Number of persons in 227 tuberculous families who had a clinic examination for tuberculosis—Area 8 Upper Harlem.[1]

| Age Groups | Per Cent Examined | Total Population[2] | Number Examined |
|---|---|---|---|
| All Ages | 80.7 | 696 | 562 |
| 0- 4 | 84.1 | 44 | 37 |
| 5-14 | 88.5 | 174 | 154 |
| 15-24 | 82.2 | 146 | 120 |
| 25+ | 78.9 | 313 | 247 |
| Unknown | | 19 | 4 |

[1] The 227 families are those in which the index case (active reinfection tuberculosis) was a member of the family.

[2] Index cases are excluded.

[3] The nursing and clerical staffs of the tuberculosis clinic were under the supervision of Miss Clara R. Price, R.N., until her retirement in September, 1941. Miss Jean South, R.N., succeeded Miss Price as supervisor of the nursing and clerical staffs. Miss Beatrice Benson, R.N., of the Community Service Society, was the supervising nurse at the clinic.

reinfection tuberculosis and was a member of the family. Eighty per cent of the exposed population had an examination for tuberculosis. Table 2 shows the same sort of data for a similar group of 115 families selected from other areas of Harlem. In this group of families, 77 per cent of the contacts had a clinic examination. Examinations by age show that in both groups attention is being given to the importance of the young adult for case finding. These samples are believed to be representative of the total tuberculous families in the areas from which they were drawn, and it may be concluded that the accomplishment indicates satisfactory work on the part of the nursing service and the clinics in obtaining examination of family contacts.

During the three-year period studied, 3,465 persons had one or more examinations at the Upper Harlem Chest Clinic; 396, or 11 per cent of the total, were persons referred by private practitioners to the Consultation Service. Eighty-five per cent of the persons examined in the diagnostic clinic were negative for tuberculosis; the remainder had a diagnosis of tuberculosis, either primary infection or the reinfection type of disease. Unnecessary visits to the clinic were at a minimum level; there were 1.5 visits per examination.

Table 2. Number of persons in 115 tuberculous families who had a clinic examination for tuberculosis.[1]

| Age Groups | Per Cent Examined | Total Population[2] | Number Examined |
|---|---|---|---|
| All Ages | 77.0 | 387 | 298 |
| 0– 4 | 80.0 | 35 | 28 |
| 5–14 | 89.0 | 127 | 113 |
| 15–24 | 80.1 | 73 | 59 |
| 25+ | 64.6 | 147 | 95 |
| Unknown | | 5 | 3 |

[1] A sample of families selected from *Lower Harlem*, *Harlem Hospital District*, and *Area 7 in Upper Harlem*. In each of the 115 families the index case (active reinfection tuberculosis) was a member of the family.

[2] Excluding index cases.

## Supervision of Tuberculosis Cases and Contacts

*Supervision of Tuberculosis Cases.* The policy of the clinic with respect to intensity of supervision of the diagnosed case can be shown by the frequency of examination of patients. Table 3 shows the average number of examinations per year of observation for cases of reinfection tuberculosis, for primary infection, and for active cases of pleurisy. Active cases were examined most frequently; those of the reinfection type tuberculosis were examined on the average four times a year; primary infection cases which were active were examined on the average three times a year. Arrested cases and healed primary cases were examined less frequently, the former every six months and the latter about once a year. Active cases of pleurisy had the same frequency of examination as did cases of active reinfection tuberculosis. This seems a wise procedure in view of the difficulty in establishing whether an active pleurisy is tuberculous or non-tuberculous. The most significant point brought out by the table is the fact that greatest emphasis is being

Table 3. Average annual number of clinic examinations for cases of the reinfection type, primary infection tuberculosis, and cases of active pleurisy[1]—Upper Harlem Chest Clinic.

| Diagnoses During First Period of Supervision | Total Cases | Years of Observation | Number of Re-examinations | Average Number of Examinations per Year of Observation |
|---|---|---|---|---|
| Reinfection Tuberculosis | | | | |
| Active | 164 | 144 | 621 | 4.3 |
| Arrested | 174 | 186 | 405 | 2.1 |
| Primary Infection | | | | |
| Active | 36 | 29 | 94 | 3.3 |
| Healed (0–14 Yrs. of Age) | 102 | 82 | 110 | 1.3 |
| Pleurisy | | | | |
| Active | 25 | 220 | 50 | 4.6 |

[1] Based on cases having more than one examination at Upper Harlem Chest Clinic.

placed upon the supervision of cases most in need, that is, cases with active disease.

Hospitalization of the active case is an important procedure in the supervision and control of tuberculosis. Data are available for Area 8 showing that this type of care was recommended by the clinic physician for seventy-seven active cases during the three-year period. Hospital care was obtained for 75 per cent of these cases. Most of the difficulty in hospitalizing cases arose with some of those who had had a previous admission to a hospital because of tuberculosis and did not wish to return for further treatment.

Although the lesion of primary infection does not present as great a risk of illness and death as does the reinfection type tuberculosis, the supervision of active primary infection was given careful attention in Upper Harlem because it is generally believed that primary infection tuberculosis is a less benign disease in the Negro than in the white person. Bed rest at home was recommended for all cases where there was a slight daily elevation of temperature. These cases were visited once a week by the public health nurse until the temperature was normal.[4] The mother of the child was taught how to keep a daily chart of the temperature and was also instructed as to the type of care the child needed. Hospitalization was recommended for one case, a child with whooping cough superimposed upon active primary infection. Hospitalization was also recommended for a patient with extensive lesions of active primary infection. Hospital care was obtained for both. During the three years studied there were no cases in which subsequent development of reinfection type disease was observed, and at last observation approximately 50 per cent of the cases were classified as having healed lesions of primary infection.

*Supervision of Contacts.* Clinic supervision of contacts consists largely of examinations for tuberculosis. The Bureau of Tubercu-

[4] Special nursing visits to cases of active primary infection under supervision at home were made in the Upper Harlem Area because of the special study of tuberculosis.

| Classification of Examination | Per Cent | | | Number of Examinations | | |
|---|---|---|---|---|---|---|
| | Total | Including X-Ray of Chest | No X-Ray | Total | Including X-Ray of Chest | No X-Ray |
| First Examinations | 100.0 | 98.0 | 2.0 | 2,328 | 2,282 | 46 |
| Re-examinations | 100.0 | 93.2 | 6.8 | 1,165 | 1,086 | 79 |

Table 4. Proportion of clinic examinations including an x-ray of the chest. (Cases negative for tuberculosis.)—Upper Harlem Chest Clinic.

losis considers the use of the x-ray as a most essential part of the examination. Its frequency of use can, therefore, be taken as one measure of the quality of the examination. Table 4 shows, for persons whose diagnosis was negative for tuberculosis, the proportion of clinic examinations which included an x-ray of the chest. The examinations are classified according to "first examination" and "reexaminations." Ninety-eight per cent of all first examinations included an x-ray of the chest. Since reexamination of persons negative on first examination is for the purpose of case finding, an x-ray is an essential part of the reexamination. It is gratifying to note that 93 per cent of the reexaminations also included an x-ray of the chest. These data reveal a high standard of clinic work.

Not all persons negative on first examination were designated by the clinic physician as needing reexamination at a later date. The general criteria for recommending reexamination for negative cases are age and unusual exposure conditions in the family.[5] Out

[5] The standards for supervision of contacts are as follows:

*Contacts.* Contacts should be divided into three major groups for the purpose of supervision: infants (0-3 years of age), children (3-12 years of age), adolescents and adults (above 12 years of age).

Infant contacts should be tuberculin tested and radiographed on admission. If negative, they should be retested every six months as long as they remain in contact with a source case. If Mantoux is positive, they should be x-rayed every six months. This program is to be followed until the infant reaches the third year of age.

After completing their initial examination, unless there is evidence of a reinfection or

(Continued on page 154)

of the total 2,328 persons, 737, or 32 per cent, were given appointments for subsequent examinations. The average period of observation for the 737 persons was eighteen months; they had an average of 1.6 examinations per person; in other words, those needing supervision for case finding were examined on the average once a year.

## Case Finding

The discovery of new cases is an important function of the diagnostic clinic. The discussion of the results of this procedure will be limited to those achieved in the clinic population of Area 8. Because of the special study, more precise data on the source of the clinic population of that area are available, thus permitting the computation of accurate rates for the various groups served. The clinic population of Area 8 can be divided into three groups: (1) persons from families where there was or had recently been an active case of reinfection tuberculosis, the majority of whom had been known to be sputum positive at some time; (2) persons from families where there was a known case of arrested reinfection tuberculosis but no active cases, the majority of these arrested cases had no history of illness from the disease; and (3) persons who

an active primary lesion, all children three years of age or over are to be discharged from further supervision. Supervision after the age of twelve is to be resumed only on the basis of a continued exposure to a case of open pulmonary tuberculosis within a period of two years prior to the time the child has reached the age of twelve years. Supervision of children with a history of marked exposure to an open case at any time in childhood may also be resumed at the above age. The open case may reside in the home or may not be in the household but in close and intimate association with the child.

*All new contacts above the age of twelve are to be followed at intervals of six months as long as they remain in contact with an open case of pulmonary tuberculosis and for a period of two years after the termination of the last known exposure if tuberculin positive.*

Under certain circumstances exceptions from the generally applicable standards of supervision may have to be made. For example, unusual exposure conditions in the family, the presence of clinical tuberculosis in both parents or in several other members of the immediate family, would indicate the necessity of prolonged and careful supervision of the contacts, particularly those of adolescent and young adult age. It will be the responsibility of the physician to exercise individual discretion and proper judgment in the disposition of such exceptional cases.

From "Standards for Supervision of Contacts and Diagnosed Cases of Tuberculosis," set up by the Bureau of Tuberculosis of the New York City Department of Health.

referred themselves for a clinic examination or who were referred by various agencies. A fourth group which may be compared with those just described is composed of persons referred by private practitioners to the Consultation Service.

Table 5 shows the rate of case finding for each of the groups. In the period studied, the most productive group for discovery of undiagnosed active cases was the one composed of persons referred

Table 5. New cases of active reinfection tuberculosis discovered in four population groups[1]—Upper Harlem Chest Clinic.

| Age Groups | Contacts to Active Reinfection Tuberculosis | Contacts to Arrested Tuberculosis | Persons Referred for Examination for Other Reasons | Persons Referred to the Consultation Service |
|---|---|---|---|---|
| | RATE PER 100 | | | |
| All Ages | 3.0 | 0.4 | 2.0 | 5.3 |
| 0–14 | 0.7 | 0 | 0 | 0 |
| 15–39 | 4.7 | 0.9 | 2.7 | 7.3 |
| 40+ | 3.1 | 0 | 6.1 | 5.5 |
| | NUMBER OF CASES OF ACTIVE REINFECTION TUBERCULOSIS | | | |
| All Ages | 26 | 1 | 16 | 21 |
| 0–14 | 2 | 0 | 0 | 0 |
| 15–39 | 18 | 1 | 11 | 16 |
| 40+ | 6 | 0 | 5 | 5 |
| | NUMBER OF PERSONS EXAMINED | | | |
| All Ages | 855 | 266 | 782 | 396 |
| 0–14 | 274 | 78 | 292 | 68 |
| 15–39 | 385 | 113 | 408 | 218 |
| 40+ | 196 | 75 | 82 | 110 |

[1] All population groups are from Health Area 8 with the exception of persons referred to the consultation service; the latter patients came from various areas of Harlem.

for diagnosis by private practitioners; next in order were persons recently exposed to active reinfection tuberculosis; their rates, five and three per one hundred, respectively, were both considerably higher than the rate for any other group. The group least productive of new cases was that composed of persons from families where there was an arrested case of tuberculosis. It is of interest also to note that reinfection tuberculosis was rarely found at ages under 15 years. Out of a total of 712 children in all four groups, only two cases were discovered. These were in the group exposed to active reinfection tuberculosis in the family.

It is apparent from Table 5 that the age distribution of the populations in the four groups are not strictly comparable because of a relatively low proportion of children under 15 years of age in the population referred to the Consultation Service. When the data are restricted to persons over 14 years of age, however, the relationship between the rates of case finding in the various groups remains substantially the same.

The new active cases of reinfection tuberculosis discovered through clinic examination in Upper Harlem were chiefly early cases in the minimal stage of the disease. Sixty-two per cent were classed as minimal, 33 per cent as moderately advanced, and only 5 per cent were considered as in an advanced stage when the first diagnosis was made. Cases in the moderately advanced and advanced stages of the disease were found chiefly among persons who referred themselves for examination because of illness or who were referred by an agency because of symptoms suspicious of tuberculosis.

Careful supervision of the patient with active primary infection may lessen the risk of its subsequent development into reinfection type tuberculosis; therefore the discovery of such cases is important. Table 6 shows the case-finding rates for both active and healed primary infection for two groups of population under 15 years of age. Active primary infection was found much more frequently among children with recent exposure to tuberculosis in the family

| Classification as to Activity of Disease | Rate per 100 | | Number of Cases | |
|---|---|---|---|---|
| | Contacts to Active Reinfection Tuberculosis | Other Groups[1] | Contacts to Active Reinfection Tuberculosis | Other Groups[1] |
| Primary Infection | | | | |
| Active | 8.4 | 1.1 | 23 | 4 |
| Healed | 15.7 | 12.4 | 43 | 46 |
| Number Examined | | | 274 | 370 |

[1] Contacts to arrested tuberculosis and persons referred for examination for other reasons —all persons are from Health Area 8.

The difference between the rates for active primary infection 7.3±1.7 is four times its standard error.

Table 6. Cases of primary infection tuberculosis discovered in two groups of children under 15 years of age—Upper Harlem Chest Clinic.

than among children examined in clinic for other reasons. Even though the rates are based on small numbers, the difference between them is statistically significant and cannot be attributed to chance variations of sampling. On the other hand, lesions classified as healed primary infection were found with about equal frequency in both groups of children. Nine out of a total of twenty-three cases of active primary infection discovered in this group were cases which developed under clinic supervision. The nine cases were negative when first examined and lesions of primary infection were noted on a subsequent examination after an interval of from two months to a year. These results indicate clearly that as far as children under 15 are concerned, the group most in need of attention is that composed of contacts to reinfection tuberculosis.

## Recurrence of Illness Among Arrested Cases

The reactivation of tuberculous lesions among arrested cases is a problem of considerable concern to the administrator of measures for the control of the disease. Siltzbach has shown the risk of recurrence of illness for patients at the Altro Workshops to be

related to sputum status before and after admission to Altro.[6] At the end of five years 18 per cent of the patients with the most favorable status, minus-minus sputum, had had a recurrence of illness. With the data available from the Upper Harlem clinic it is impossible to present precise recurrence rates for arrested cases. To do so would require observation of cases from the time that arrest of active disease was first noted; for the Harlem cases observation must of necessity start with the beginning of supervision of the arrested case by the Upper Harlem Chest Clinic. Even with this limitation it is possible to present data of interest and value dealing with the recurrence of illness for arrested cases under clinic supervision in Area 8.

The patients with a diagnosis of arrested tuberculosis can be divided into two groups: (1) those having a history of illness from tuberculosis with subsequent arrest of the disease, and (2) those having no history of illness from tuberculosis. In the first group there were sixty cases and in the second there were eighty cases.[7] All were supervised by the Upper Harlem Chest Clinic. Table 7 shows the recurrence of illness for the two groups of

Table 7. Recurrence of illness from tuberculosis among arrested cases supervised by Upper Harlem Chest Clinic.[1]

| Class | History of Illness | |
|---|---|---|
| | Known Illness from Tuberculosis | No Illness and No Hospitalization for Tuberculosis |
| Recurrence of Illness from Tuberculosis | | |
| Rate per 100 Person-Years | 17.7 | 2.0 |
| Number of Cases | 13 | 2 |
| Number of Person-Years Under Clinic Observation | 73.3 | 100.6 |

[1] Shortest period of supervision was four months, longest period of supervision was three years.

[6] Siltzbach, Louis E.: The Sheltered Workshop in the Rehabilitation of the Tuberculous. The Milbank Memorial Fund *Quarterly*, January, 1943, xxi, No. 1, pp. 80-101.

[7] None of the arrested cases was under twenty-two years of age.

patients. The shortest period of supervision was four months and the longest possible period of supervision was three years. The population is expressed in person-years under clinic observation. There is a marked difference in the rates of recurrence in the two groups. Those patients having a history of a known illness from tuberculosis had a risk of recurrence slightly more than eight times the risk for cases with no history of an illness from tuberculosis.

These data may have implications of importance to the physician responsible for the supervision of arrested cases. The clinic supervision of the cases in both groups was similar as to frequency of examinations. Those with no history of a recognized illness from tuberculosis probably need considerably less supervision than do cases in the other group. With greater use of x-ray surveys for case finding the problem of the kind of supervision needed by persons discovered to have old arrested tuberculous scars in their lungs will be of increasing importance. The data presented here suggest that a history of recognized illness from tuberculosis is one criterion which may be used to distinguish arrested cases needing close clinic supervision. That the Bureau of Tuberculosis of the Department of Health is aware of the problem is seen by the recently revised standards for the supervision of cases of arrested tuberculosis. They are as follows:[8]

> *Chronic Pulmonary Tuberculosis—Arrested.* Cases of arrested pulmonary tuberculosis should be observed at intervals of *six months* or less, if indicated. If their condition remains stationary for a period of not less than eighteen months after the diagnosis of arrest has been made, they may be classified as "apparently cured."
>
> *Chronic Pulmonary Tuberculosis—Apparently Cured.* For practical purposes cases of apparently cured pulmonary tuberculosis may be divided roughly into the following two categories:
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> A. Patients with a relatively recent record of an active lesion subsequently becoming stable, who have been under observa-

[8] "Standards for Supervision of Contacts and Diagnosed Cases of Tuberculosis," set up by the Bureau of Tuberculosis of the New York City Department of Health.

tion for the required period of time to be classified as "apparently cured."

B. Patients presenting apparently well-healed lesions at the time of their initial examination, with no known history or record of active disease in the past. These are generally cases discovered on the basis of a routine chest x-ray.

Patients falling into the *first* group (A) should be observed at intervals of *six months* for a minimum period of three years after the case has been classified as apparently cured. In many cases longer periods of supervision may be indicated. The decision will depend on the character of the lesion, its extent, and the age of the patient, with the emphasis on the adolescent and young adult persons.

Cases falling to the *second* group (B) may often be classified as apparently cured on the basis of the initial examination or after a brief follow-up observation in the clinic to determine the stability of the lesion. The decision as to the necessity of further supervision of cases of this type should be made after consideration of the following factors: age, race, character and extent of the lesion.

In general, persons over the age of 35 years presenting apparently well-healed lesions of a purely fibrotic or fibro-calcific type and of *minimal extent,* in the absence of a significant history or symptoms, are not in need of long-term routine clinic supervision and may be discharged. *All others* should be observed at intervals of six months in accordance with the principles outlined for those included in group (A).

In discontinuing routine clinic supervision of any diagnosed case of pulmonary tuberculosis, it is essential to instruct the patient as to the necessity of prompt examination should he develop significant symptoms suggestive of reactivation of the disease.

On the whole, the data presented in this report indicate that a high standard has been set up by the Bureau of Tuberculosis for the work of its clinics and that the standard is being well maintained in the Upper Harlem Chest Clinic. Careful supervision is being given to diagnosed cases; hospitalization for cases needing such care has been obtained to a considerable extent; and case-finding procedures which have been tested by experience are being successfully put into effect.