

THE X-RAY IN TUBERCULOSIS CASE FINDING¹

PRELIMINARY REPORT OF X-RAY SURVEYS OF 20,000 INDIVIDUALS ON HOME RELIEF IN TWO DISTRICTS OF NEW YORK CITY, 1933

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VITAL statistics for New York City by small areas, recently made available, have brought forcibly to the attention of those concerned with tuberculosis control the wide variation in tuberculosis mortality in different sections of the City. Although the tuberculosis death rate for New York City dropped from 69.4 in 1931 to 62.9 in 1932, there were several "sore spots" where the rates were from three to six times that for the City as a whole. For example, in the Central Harlem Section, the rate in 1932 was 250. In this district the population is predominantly negro, with extremely crowded housing conditions and a low economic status, recently much accentuated by the general depression. There are in New York City approximately 44,908 Porto Ricans who tend to live in colonies, one of which is in the East Harlem area. Among Porto Ricans in New York City, the average tuberculosis death rate in 1930-1931 was 434 compared with 69 for the City as a whole. Two other areas with unusually high tuberculosis death rates are in Brooklyn (Red Hook-Gowanus and Williamsburg-Greenpoint). In all of these "sore spots," the same general conditions prevail—low economic status, poor and crowded housing facilities, and certain racial elements in the population—all of which conditions are generally associated with a high prevalence of tuberculosis. It is evident from the high tuberculosis death rate that there must be among these groups much undiscovered tuberculosis and many unknown foci of

¹This paper was read before the National Tuberculosis Association at its annual meeting held in Toronto, Canada, in June, 1933.

infection urgently in need of control. In view of the general limitation of budgets and public health facilities at this time, the problem of further work in these areas is a serious one.

In December, 1932, an opportunity presented itself, not only to render a definite community service, but also to study a new method of dealing with the problem of tuberculosis by making a rapid X-ray survey of between ten and eleven thousand individuals from sections of the City where death rates are high and where the Porto Rican and negro groups predominate. This survey, under the direction of Dr. Shirley W. Wynne, Commissioner of Health of New York City, was carried out as one of the work projects for medical and nursing service, under an appropriation by the State Temporary Emergency Relief Administration. Supervision was furnished by members of the staff of the Department of Health, but the rest of the personnel (medical, nursing and clerical) were taken from doctors, nurses, and others applying for assistance.² Since it was stipulated that the individuals who were to be included in the survey were to be taken from those receiving home relief, the family lists of Relief Precincts 23 and 24 were utilized for the survey. These precincts, which correspond roughly to the East Harlem and Central Harlem health areas, were chosen because:

1. Judging from the high tuberculosis mortality rates, a high prevalence of tuberculosis might be expected;

²The Milbank Memorial Fund also cooperated in this project by a grant of funds and the contribution of the additional services of Dr. Margaret W. Barnard and Dr. Israel Steinberg. The analysis and tabulation of the data have been made by the Research Division of the Fund. Grants were also made by the National Tuberculosis Association and certain individuals. Appreciative acknowledgment is made to Miss Jane Hoey, assistant director of the Welfare Council, who acted as liaison officer between the State and City relief administrators and the Department of Health, and to Dr. Max Soletsky, Miss Josephine Kieber and Miss Mary V. Scott of the Department of Health staff, for their assistance in the supervision of the project.

2. The population includes a high percentage of negroes and Porto Ricans;
3. So large a proportion of the population is on home relief that a group selected from relief lists would probably be fairly representative of the area.

All members, ten years of age and over, of families taken from relief lists were asked to report for this examination. No particular authority could be exercised over this group, but it was expected that they would respond to notification by relief inspectors. This method was not at all successful and the families were then notified by postal cards with somewhat better results. It was not, however, until a group of nurses made home visits and explained to the families that this examination was being made by the Department of Health that the people really responded.

The newly developed Powers' method for rapid X-ray survey was used. This company has developed a comparatively inexpensive paper film in roll form and a series of synchronized units of procedure, which made it possible to take X-rays of large numbers of individuals in a short time. It was possible to make the exposures at a rate of four per minute, and a rate of 150 an hour could be sustained without difficulty. The company furnished all necessary equipment and personnel for the X-ray procedure, and delivered to the organization the developed films in roll form at a set price per capita. Approximately 11,000 were X-rayed in six weeks time.

The developed films were delivered to the Bellevue-Yorkville Health Demonstration, where they were interpreted by Dr. Marion Franklin Loew and several assistants. Each film was read independently by two people and any differences of opinion were referred to Dr. J. Burns Amberson, Jr. as consultant. It took about eight weeks to complete the

reading of the films, which were then cut and distributed to the follow-up clinics.

The diagnoses were classified primarily from an administrative viewpoint, rather than clinical, so that the follow-up clinics might be started as soon as possible. Cases were cleared with the tuberculosis register of the City, and those not previously known were examined in the clinic and placed under care. All household contacts were examined except those who had been found negative in the X-ray survey. These contacts were mainly the children under ten years of age who were tuberculin tested and X-rayed if positive to tuberculin. When this follow-up had been fairly well cleared, the work was turned over to the official clinics of the district. Results of the follow-up will be available at a later date.

After the Harlem project was found to be productive, a similar survey was conducted in the Red Hook-Gowanus section in Brooklyn. 10,000 individuals were X-rayed during April and May, and the follow-up work is now being carried on.

The findings presented in this preliminary report are from tabulations of 10,232 individuals in Harlem and 8,517 in

Table 1. X-ray surveys of 18,749 individuals (10,232, Harlem and 8,517, Brooklyn) in New York City, 1933.

ADMINISTRATIVE CLASSIFICATION OF CASES TO BE INVESTIGATED	NUMBER			PER CENT		
	Harlem	Brooklyn	Total	Harlem	Brooklyn	Total
Total cases to be investigated	1,802	977	2,779	17.6	11.5	14.8
Total tuberculosis	1,254	793	2,047	12.3	9.3	10.9
Definite	221	255	476	2.2	3.0	2.5
Suspect	506	86	592	4.9	1.0	3.2
Healed	527	452	979	5.2	5.3	5.2
Cardiac	548	184	732	5.4	2.2	3.9

Brooklyn. Table 1 shows the number and per cent of persons in each district who needed further medical investigation. 1,254, or 12.3 per cent, of the 10,232 persons X-rayed in

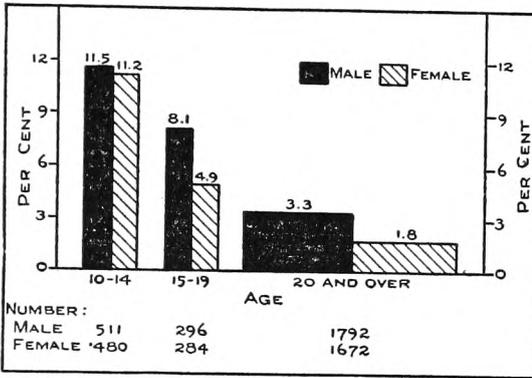


Fig. 1. Per cent of 5,035 white persons in Harlem classified as suspect tuberculosis according to age and sex, New York City, 1933.

Harlem and 793, or 9.3 per cent, of the 8,517 persons X-rayed in Brooklyn were diagnosed as having tuberculosis (definite, suspect, or healed). In addition there were found a large number of cardiac conditions needing further investigation, 5.4 per cent of

the Harlem group and 2.2 per cent of the Brooklyn group. The higher rate of cardiac conditions among the Harlem population X-rayed is due to the very high rate (8.2 per cent) found among the colored.

There is a marked difference in the two areas in the per cent of persons classified as having suspect tuberculosis; the rate is approximately five times as high in Harlem as in Brooklyn (4.9 against 1.0). The cases of suspect tuberculosis in the Harlem population were concentrated in the age groups 10-14 and 15-19 (Figure 1). For example, 11 per cent of the males aged 10-14 compared with 3.3 per cent among males aged 20 and over were diagnosed as suspects.³ This fact raised an important administrative problem. Since we were to deal largely with family groups and could rely upon the

³Figures 1 and 2 are based on the white individuals examined in Harlem. The same differences in the age specific rates were found among the colored and Porto Rican group.

follow-up to reach the contacts in the families, would not the survey in Brooklyn be more productive if we concentrated our efforts on the age group shown (Figure 2) to yield a

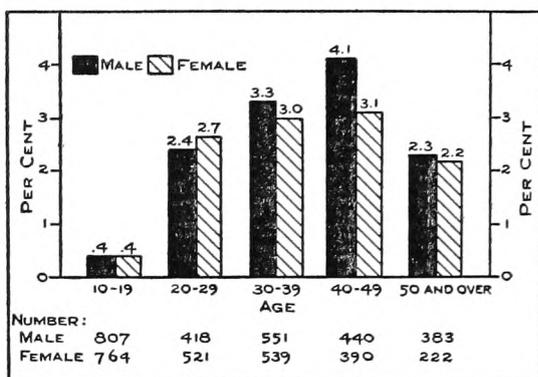


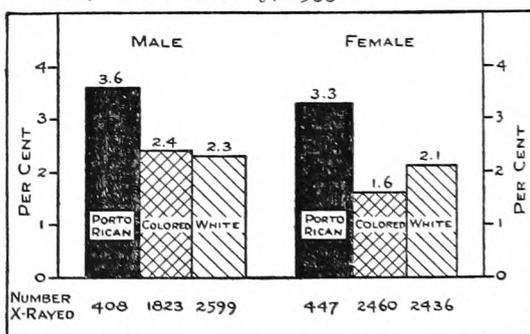
Fig. 2. Per cent of 5,035 white persons in Harlem with definite tuberculosis classified by age and sex, New York City, 1933.

higher percentage of persons with definite tuberculosis? For example, in the age groups over twenty, the yield of definite tuberculosis was from six to ten times as great as for the group below twenty years of age, (2.7 to 4.1 compared with 0.4). The higher rates among the adult males in all age groups except 20-29 warranted special emphasis being placed upon the examination of the male members of the families. Accordingly, the survey in Brooklyn was planned to include members of relief families fifteen years of age and over. The group 15 to 19 years was retained because of the importance of discovering early adult types of lesions among them.

It is of interest to note the differences (Figure 3) among the three groups in Harlem—Porto Ricans, colored and white. As

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Fig. 3. Per cent¹ of 10,173 persons in Harlem found by X-ray to have tuberculosis, New York City, 1933.



¹These are adjusted per cents obtained by applying the per cent for each age group to the age distribution of the combined white, colored, and Porto Rican populations X-rayed.

would be expected from their high tuberculosis mortality rate, the per cent of individuals diagnosed as having definite tuberculosis was much higher among the Porto Ricans. It is surprising (1) that there was no significant difference between the rates for the colored males and white males diagnosed as definite tuberculosis, and (2) that among the females, the rate for the colored was lower than for the white.

The total expenditure for the survey part of this project in Harlem was approximately \$20,000, or a per capita cost of \$1.78. Through more experience and better organization, this was reduced in the Brooklyn project to approximately \$12,000, or \$1.22 per capita. It would not have been possible by any other method to have so quickly and easily surveyed this large number of individuals and selected those needing care.