

*In planning community X-ray programs, it is useful to know why some people appear for screening and others stay away. A psychological study suggests three apparently significant factors in the public attitude toward chest X-rays.*

## Why People Seek Diagnostic X-Rays

By GODFREY M. HOCHBAUM, Ph.D.

MANY well-organized, efficiently handled, and very successful community X-ray programs have been conducted throughout the United States. Yet, even in the most effective ones, various segments of the population have failed to obtain X-rays. There is evidence that these segments include groups in which tuberculosis is highly prevalent.

It is hoped that better knowledge of factors which determine whether or not people obtain chest X-rays will help in planning more effective programs, especially for those unresponsive population groups. With this in mind, the National Tuberculosis Association and the Public Health Service jointly sponsored a study to identify some of these factors.

For this study, intensive personal interviews were held with 450 persons in Boston, 450 in

Cleveland, and 300 in Detroit, all 25 years of age or older. The respondents were selected in each city on the basis of random population sampling. The interviews, each lasting more than 1 hour, were designed to stimulate the respondents to express their opinions as well as their feelings and attitudes concerning psychological, sociologic, and administrative aspects of case finding for tuberculosis. To learn more about opinions, attitudes, and feelings than is usually expressed when only direct survey questions are asked, use was made of various psychological techniques, such as projective questions.

Of the 1,200 persons interviewed in the 3 cities, only 42 percent had voluntarily and without having any signs or symptoms of illness obtained one or more chest X-rays to check for tuberculosis. Another 16 percent stated that they had obtained X-rays voluntarily, but that they had done so because they had noticed symptoms which they thought might be due to tuberculosis. Fourteen percent said they had had all their X-rays either because other persons or groups had pressed them or because the X-rays had been required for one reason or another. A few persons had had X-rays to check for heart trouble or lung cancer rather than for tuberculosis. For about 10 percent who had had X-rays, no consistent and typical pattern could be established. Seventeen percent of the 1,200 persons had never in their lives had an X-ray.

Whether or not a person voluntarily obtains

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*Dr. Hochbaum is a research psychologist, Behavioral Studies Section, Division of General Health Services, Public Health Service. This article is a modification of a paper he presented at the annual meeting of the National Tuberculosis Association, Milwaukee, Wis., May 25, 1955. It deals with only one set of findings from a study on voluntary participation of the public in tuberculosis case-finding programs. A discussion of all the findings, as well as a fuller description of sampling procedure, study design, and techniques of obtaining data, will be published in monograph form at a later date.*

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a chest X-ray when given the opportunity is the result of a decision made by him. The fundamental problem with which this research was concerned, therefore, can be expressed by the following questions: Why and under what conditions do people decide to seek chest X-rays when given the opportunity? Why and under what conditions do they decide not to? Since a decision to act still may not result in an act, a further question must be posed: What conditions make it more likely or less likely for people who have decided to obtain X-rays actually to obtain them?

Obviously, many factors must be examined to answer these questions. Some of these are psychological in nature; others, sociologic; and still others, situational. No single factor ever determines by itself whether a person will or will not voluntarily obtain a chest X-ray. Hence, the study was designed to deal with a variety of factors. It was designed, further, not only to identify the factors that influence people to seek diagnostic X-rays, but also to determine how various factors affect each other.

This report is concerned with only one set of factors investigated by the study. These factors, even when considered by themselves, appear to be of particular significance to the question of why people seek diagnostic X-rays. A report to be published at a later date will discuss these factors in relation to several others investigated in the study.

### **The Three Factors**

The first in this set of factors is a person's conviction that he himself could really contract tuberculosis.

The second is a person's conviction that he might have tuberculosis for a considerable period of time without being aware of it—that is, without experiencing any outward symptoms of illness—and that only through a chest X-ray could the fact that he has the disease be ascertained.

Among 798 persons in the sample who had unrestricted freedom and opportunity to obtain X-rays (that is, excluding persons who had had X-rays because they were required to do so and also those who obtained X-rays for reasons not relevant to this analysis), 442 believed that

they could contract tuberculosis and also that X-rays alone would show the presence of the disease at an early stage. Over 80 percent of this group, although feeling healthy and free from any symptoms at the time, had voluntarily obtained X-rays. In contrast, 356 persons either did not believe that they would ever contract tuberculosis or were certain that they would be aware of it if they had the disease. Half of this group either had never had X-rays or had obtained them only after they had noticed what to them seemed suspicious symptoms.

From the nonmedical point of view, this behavior is quite rational. If a person is convinced—rightly or wrongly—that he will never have tuberculosis, it would seem to him a complete waste of time and effort to check on whether he does have it. And if a person is convinced that there will be some sign of illness, some pain or disfunction, as soon as he has become infected, he is also convinced that he could not have tuberculosis as long as he feels completely well. Such a person, too, would regard X-rays as completely unnecessary and would obtain them only when he notices signs which he thinks might be symptoms of tuberculosis.

Briefly, then, the findings indicate that people are likely voluntarily to seek diagnostic X-rays only if they really believe that they might contract tuberculosis and that it would be dangerous to rely on the appearance of outward symptoms.

The third factor is a person's belief that early detection of tuberculosis would decrease the problems and worries which he thinks would arise for him should he ever contract the disease. About 90 percent of 510 persons holding this belief had voluntarily obtained X-rays, a percentage about twice the percentage found among those who did not hold this belief.

Again, this is not at all irrational from the layman's point of view. To the medical profession, early detection means better prognosis or shorter, simpler therapy. But many people were found to worry less about prognosis or difficulty of treatment than about such things as losing their jobs and income, the shattering of their careers, or the financial burden on their families. Many of these people did not feel

that early detection of tuberculosis would do much to alleviate these problems. For them, detection of tuberculosis—early or late—may, with good reason, appear threatening rather than beneficial. They therefore tend to avoid being X-rayed.

In other words, people tend to obtain X-rays only if they feel that by early detection of tuberculosis those problems which they worry about can be avoided or at least considerably decreased.

Of particular interest in a study of why people obtain X-rays are those population groups among whom a relatively high tuberculosis prevalence has been reported but who often show very poor participation in screening programs. In this study, data for two of these groups, older males and people with low incomes, were analyzed.

It was found that the three factors described cut across socioeconomic classes and sex and age categories. That is, people who believe they might get tuberculosis, those who do not rely solely on symptoms as a stimulus for seeking X-rays, and those who see benefits for themselves in early detection of tuberculosis are likely to obtain X-rays voluntarily regardless of their economic status, their sex, or age. One thing that characterized the nonparticipating groups was that fewer persons in these groups held those beliefs.

### **Knowledge and Action**

In looking over these three factors, one may be tempted to conclude that many people still are not informed about tuberculosis and about the role of X-rays. But such a conclusion is not justified. What we are dealing with here is not merely a matter of information. It is a matter of real belief and of a conviction on the part of people that such information applies to them personally and that it is important to them as individuals.

Without question, a person must know what to do, when to do it, and how to do it before he can take action. But merely knowing these things will usually be insufficient to elicit the action to which they relate. Each of us keeps a storehouse of knowledge about things to do for our own health and welfare. But there is

a gap between having this knowledge and applying it in our own behavior. We learn to give the correct answers to questions long before we apply the information in voluntary action.

In view of these facts, it is not surprising that, although most people in the sample were able to give correct answers to direct informational questions, many of them still had never voluntarily applied this information by obtaining X-rays.

The following will illustrate this. During the interview, respondents were asked a direct informational question to see whether they knew that chest X-rays can detect the presence of tuberculosis before the patient becomes aware of outward symptoms of the disease.

Over 80 percent of the respondents were able to give correct answers to this question although many of them had never voluntarily obtained X-rays. Later in the interview, this subject was taken up again through a number of indirect, or projective, questions. These were designed to reveal beliefs and convictions, rather than merely factual information.

Analysis of the answers given to these projective questions yielded an interesting finding: Many of the respondents who had proved themselves fully informed concerning the fact that one can have tuberculosis without knowing it betrayed in their responses that they, to at least some degree, felt that they themselves would know if they had tuberculosis. Only about 35 percent of 543 such respondents had ever voluntarily obtained a chest X-ray without first noticing signs or symptoms of illness. Among those in whom this belief was especially strong, this percentage drops to about 20.

On the other hand, X-rays had been obtained voluntarily by 80 percent of the persons whose responses to the projective questions indicated that they believed fully that they themselves could have tuberculosis for a considerable period of time without knowing it.

### **Conclusion**

It should be emphasized again that this report deals with only three of the many factors that determine whether a person decides to obtain a chest X-ray and whether he follows up

his decision with appropriate action. Additional factors are being investigated in this study, and the results should further increase our understanding of the nature of voluntary health behavior.

To be of real value, however, the findings of

this study must be tested in actual practice under controlled conditions. Such coordination between research and program application is a must if research is to pay maximum dividends in ever-increasing sound health practices by the public.



## Pathological and Laboratory Services To Hospital Patients in Iowa

Of interest to hospital associations and administrators, as well as to physicians, pathologists, and laboratory technicians, is a recent decision by a district court of the State of Iowa, involving the provision of technological services to hospital patients. The case was that of *Iowa Hospital Assn., et al. v. Iowa State Board of Medical Examiners, et al.*, District Court, Polk County, decided November 28, 1955.

A group of some 30 nonprofit hospitals had brought an action for declaratory relief following the issuing of an opinion by the State attorney general. The major issue, as defined by the court, was whether "in purveying to patients . . . medical services in the form of laboratory procedures and X-ray procedures for compensation" the hospitals were engaged in "the illegal corporate practice of medicine."

The court ruled that they were so engaged and concluded, in addition, that under the practices described the pathologists or radiologists permitting a hospital to bill for medical services in the name of the hospital, without obtaining patient consent, violated the Iowa statute prohibiting fee splitting.

The Iowa State Hospital Association and the Iowa Medical Society were arrayed against each other in this litigation. The first joined with the hospitals as a plaintiff in the action, and the medical society intervened in behalf of the defendants which, in addition to the State

attorney general, included the Iowa State Board of Medical Examiners and the Iowa Association of Pathologists.

The arrangements for supplying pathological and laboratory services which had been practiced by the plaintiff hospitals and which the court condemned as violating the Iowa statutes are set out in detail in the court's findings. They were of long standing in the State and do not differ essentially from procedures commonly followed elsewhere. The opinion recognized that the facilities of pathology and X-ray laboratories are essential parts of a modern hospital that the plaintiff hospitals could continue to maintain. Further, it expressed the belief that the supplying of such services could be worked out "on the local level and within the law." The extent and nature of the required adjustment, however, were not spelled out in the opinion although changes by the hospitals in contractual arrangement with those providing services and with the patients would seem indicated.

The case has been appealed to the Supreme Court of Iowa. While the statutes involved are those of a particular State, the litigation is of unusual interest since this appears to be the first reported case in which nonprofit hospitals by such arrangements have been held in violation of medical practice acts.