The Nonhospitalized Tuberculosis Patient

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This will prove a disquieting paper to those who have become complacent about tuberculosis; those who assume that new drugs and modern practice have "solved the tuberculosis problem."

Changing emphases and concepts in the tuberculosis problem in the United States have given rise to a variety of assumptions not supported by valid evidence. The paucity of precise evidence concerning the characteristics and status of tuberculosis patients who are not hospitalized has permitted unsubstantiated conjecture so conflicting in nature as to limit the effectiveness of program planning. The Public Health Service has therefore undertaken to provide statistical data that will reliably describe the current status of known nonhospitalized tuberculosis patients in sample areas of the continental United States, so that health departments and other tuberculosis control agencies may have a foundation of specific information on which to construct plans for the effective use of funds, facilities, and operations.

This is the first of a series of papers in which the Public Health Service and cooperating groups will present analyses of the status of nonhospitalized tuberculosis patients. Our intention in this presentation is to bring together certain of the more outstanding findings of the study. The purpose of this undertaking is to study the characteristics of nonhospitalized tuberculosis patients who are in need of intensive public health supervision and to provide information on the types of care and services given them.

Study Design

By means of sampling technics, 37 areas of the United States were selected. Together, these areas constitute an unbiased sample census of the number and status of known nonhospitalized cases for the United States as a whole. The nation was divided into three population groups and further subdivided into areas of suitable administrative size ranging from 50,000 to 600,000 population. For the largest cities, a part of a city constituted an area. In sparsely settled regions, four or more counties combined to make an area.

These areas were categorized into three strata: (1) large cities with populations 200,000 and over, from which eight areas were selected; (2) metropolitan areas other than larger cities, from which nine areas were selected; and (3) nonmetropolitan areas, predominantly rural, but including smaller cities which are not parts of metropolitan areas. Twenty areas were selected from this stratum.

The 37 areas in the study had a total population of almost seven million and

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constitute portions of 24 states. It should be emphasized, however, that no area was intended to be representative of any state; rather, the 37 areas combined are representative of the entire nation. The 37 study areas are comprised of 123 independent health jurisdictions—nine cities, 92 counties, and 22 independent townships.

All areas used study dates within a period of 12 months from March 10, 1954, to March 1, 1955, with the exception of one area which participated later and used the study date, June 21, 1955.

According to the latest information on the status of all tuberculosis patients in need of intensive public health supervision in 37 areas, slightly more than half (55 per cent) were hospitalized cases and 45 per cent nonhospitalized cases.

Study Procedures

The original selection of cases was made from the state or local tuberculosis case register or the master index of reported cases. Cases for whom the health department had had no information during the last five years were not included. Cases with disease activity questionable, undetermined, or not stated were included and particular effort was made to obtain their clinical status. Each area was helped to establish procedures for carrying out the study as expeditiously as possible. The study entailed obtaining the most recent information available regarding clinical status, medical supervision, and public health nursing and social services provided during the six-month period preceding the study date. The usual procedure was to have case register personnel enter pertinent information from the case register on the individual patient schedule, and for the public health nurse to record the additional information requested. This information was obtained by reviewing clinic, public health nursing and hospital records, by conferences with private physicians and other personnel giving care in hospital outpatient departments, Veterans Administration, and social service agencies. Home visits were made when necessary to obtain current information as to the patient's home situation and needs.

In each area cases to be included in the study were those known to be active at home as of the study date. Total cases eventually included not only cases known to be active, but all current positive-sputum cases regardless of clinical status or treatment recommended, and all cases recommended for drug therapy. Cases known to be taking drugs or to have drugs recommended were included regardless of status because such cases require substantial resources for their care and supervision. However, in so doing, those classified as other than active were tabulated separately.

A large number of cases was removed from the study for various reasons. Many that had been classified as active, questionably active, and activity undetermined were found on follow-up not to be active tuberculosis cases. Somewhat more than 2,000 cases in all were removed as not fitting into the groups to be studied. About half were removed because they were not active cases and about one-sixth because they were found to have moved out of the area. Others had to be classified as lost, in hospital, etc. Out of more than 9,000 cases reviewed, less than 100 remained classified as "activity undetermined" at the end of the study and were for this reason excluded.

Characteristics of Study Cases

For purposes of analyzing the latest status of disease activity, the study cases were divided into three activity groups: (1) active and probably active, seen in past year; (2) presumably active, current activity status indeterminate;

Table 1—Activity Classification of Nonhospitalized Tuberculosis Cases

	Number	Per cent
Active and probably active, seen in past year	1,896	60.0
Presumably active, current activity status indeterminate	376	11.9
Total active and presumably active	2,272	71.9
Arrested or inactive with drug therapy prescribed	887	28.1
Total	3,159	100.0

(3) arrested or inactive with drugs prescribed.

In the following tables the active and presumably active cases are grouped together, because they comprise the cases that need the most intensive public health supervision.

Table 1 provides a census of tuberculosis cases at home at the time of the latest examination. Sixty per cent of the cases were active and probably active. Almost 12 per cent were presumably active. Twenty-eight per cent were arrested or inactive on drug therapy.

I should like to repeat at this point that according to the latest information at the time of the study, 55 per cent of the significant case load was hospitalized; 45 per cent was not hospitalized. Plainly, this situation has many implications for health departments and other agencies. Certainly, the community has as great a responsibility for those cases outside hospitals as for those that are hospitalized. Because of the attendant difficulties involved in supervising patients who are not in institutions especially designed for their care, medical, nursing, and social services will be particularly challenged. Health departments will be additionally concerned about the chances of spread of the disease because of the presence of active cases in their communities.

Table 2—Length of Time Known to Health Department

	Number	Per cent
Less than a year	815	25.8
1–4 years	1,528	48.4
5–9 years	511	16.2
10 years and over	276	8.7
Unknown or unreported	29	0.9
Total	3,159	100.0

Length of Time Known to Health Departments

This presentation contains information concerning nonhospitalized tuberculosis patients from the time they were first known to health departments to the time of this study (Table 2). Observe that one-fourth of the cases had been known to health departments less than one year, that three-fourths had been known for less than five years, and that 90 per cent had been known less than 10 years. This clearly indicates that the overwhelming number of cases at home are in need of that kind of public health supervision required soon after diagnosis.

The most significant fact to emphasize in Table 3 is the fact that about half of these nonhospitalized cases that

Table 3—Age Distribution of Nonhospitalized Tuberculosis Cases

Age Group	Number	Per cent
0–14 years	134	4.3
15–24 years	257	8.1
25–44 years	1,218	38.6
45–64 years	1,089	34.5
65 years and over	416	13.1
Not stated	45	1.4
Total	3,159	100.0

Table 4—Age and Sex of Nonhospitalized Tuberculosis Cases *

Under 35	
Male	415
Female	555
35 and over	
Male	1,456
Female	688

* Excludes 45 with age not specified.

need intensive public health supervision are 45 and older. It should also be pointed out that there is a striking similarity in the age distribution of these nonhospitalized cases and that of newly reported cases. That our tuberculosis control problem is proportionately greater in the older age groups can scarcely be questioned.

The study cases showed that males of all ages to females of all ages were in a ratio of 60–40. There is no great disparity in number of males and females in age groups under age 35; whereas there are more than twice as many males as females in ages over 35 (Table 4).

Table 5 shows the latest information available to the health departments about the extent of disease. One of the most significant facts to be stressed at this point is that so many of the cases are in advanced stages of disease.

Bacteriological status at last report within a six-month period is presented in Table 6. Observe that in nearly half the cases the sputum is either unknown or undetermined in the past six months.

Table 5—Extent of Disease

	Number	Per cent
Minimal	357	12.8
Moderately advanced	1,156	41.4
Far advanced	1,282	45.8
Total	2,795	100.0

Table 6—Bacteriological Status of Active and Presumably Active Tuberculosis Cases

Status	Per cent
Positive	24.0
Negative	27.8
Unknown or undetermined within preceding six months	48.2

This indicates that an inadequate job is being done generally in determining sputum status. Even if the failure lies largely in faulty communication, the fact remains that we do not know one of the most urgent clinical facts about these cases. Indeed, it is incredible that we are trying to supervise half our known cases at home with no information concerning sputum status.

We may say that more than two-thirds of the known active and presumably active cases are either positive or of unknown bacteriological status. In many instances the negatives consisted of a single bacteriological examination or of mere microscopic examination. Thus our data point out clearly that these cases at home include: (a) a large proportion that are positive, and (b) an even larger proportion that do not have a sufficient bacteriological determination to permit the public health agency to give realistic advice regarding prevention of the spread of disease.

By way of introduction to the material presented in Table 7, it should be pointed out that availability of facilities are directly related to density of population. That is, health department resources and facilities will be found in greater quantity and in a higher degree of accessibility in metropolitan areas. All the eight large cities in this study provide clinic, public health nursing, and social services; while almost half the study population in rural areas have no clinic services available, 10 per cent have no public health nursing service,

Table 7—Medical Supervision of Nonhospitalized Tuberculosis Cases

Type of Supervision	Number	Per cent
Health department chest clinic	887	33.5
Private physician	918	34.7
Sanatoria outpatient department	531	20.1
General hospital outpatient department	102	3.9
V.A. chest clinic	130	4.9
X-ray clinic	41	1.5
Organized home care program	38	1.4
Total under supervision	2,647	100.0
Not under supervision	512	
Total	3,159	

Table 8—Drug Therapy and Rest Recommended for Active and Presumably Active Tuberculosis Cases

	Number	Per cent
Both drug therapy and rest recommended	783	34.5
Drugs only recommended	207	9.1
Rest only recommended	360	15.8
Neither drugs nor rest known to be recommended	922	40.6
Total active and presumably active tuberculosis cases	2,272	100.0

and 80 per cent have no social services other than financial assistance, provided by departments of public welfare. Frequently, the amount of nursing service available was limited to one nurse serving a large rural county of 30,000 population, occasionally on only a part-time basis. In many rural counties there are few private physicians; thus, patients may be required to travel more than 200 miles to the state tuberculosis hospital outpatient department for medical examination. Some rural areas have x-ray facilities, but no physician is present to diagnose patients and make treatment recommendations.

Note that 512, or one-sixth of the patients, were under no medical supervision. Of those under medical supervision, nearly all were supervised by three groups—the public health chest clinic, private physicians, and sanatoria outpatient departments.

Health department chest clinics supervise only one-third of the patients. In large cities almost half the patients were under health department chest clinic supervision; while in the smaller cities and rural areas only 20 per cent of the patients were so supervised.

Private physicians carry about one-third of the cases on the average, but with variation from place to place. In rural areas and smaller cities, private physicians are the most frequent single source of supervision, although the percentage under care of private physicians is only slightly higher in these areas than it is in the large cities.

Formally organized home care programs exist in only two of the cities included in this study and they supervised only 38 patients or 1 per cent of the total load.

It has been widely assumed that patients under supervision at home have drugs prescribed. This study shows that only a third have both bedrest in any degree and drug therapy recommended. Indeed, more cases have rest recommended than have drugs prescribed.

Of the 922 patients with no recommendations known for either drugs or rest, more than half are not under medical supervision, in so far as could be determined by the health departments participating in the study (Table 8).

The most important contribution of Table 9 is the fact that 69 per cent of the active and presumably active cases had a history of at least one hospitalization since first known to health departments as tuberculosis cases.

Table 9—History of Previous Hospitalization

	Total	Previously Hospitalized	
	Number	Number	Per cent
Total	3,159	2,350	74.4
Active and presumably active	2,272	1,558	68.6
Arrested with drug therapy	887	792	89.3

Table 10 once again adds to the understanding of our control problems by demonstrating that as high as 44 per cent of the nonhospitalized patients were last discharged from a sanatorium against medical advice.

I believe it most significant that for 25 per cent of the active cases no medical recommendations for or against hospitalization were available. Only five and one-half per cent of the cases were recorded as awaiting hospitalization. It is noteworthy that two-thirds of the patients were not hospitalized because of medical, personal, and family preferences. Observe, too, that it is recorded that almost 30 per cent were not hospitalized because of medical preferences (Table 11).

Before summarizing the material just presented, it might be well to cite certain areas of incompleteness of our data which probably reflects an inadequacy of communication. This negative finding has positive value in that it underlines areas of activity wherein improvement should be made.

Table 10—Type of Discharge of Previously Hospitalized Cases

Type of Discharge	Number	Per cent
With medical advice	1,209	51.5
Against medical advice	1,035	44.0
Type of discharge unknown or unreported	106	4.5
Total previously discharged	2,350	100.0

Table 11—Reasons Patients Not Hospitalized

Reason	Number	Per cent
Awaiting hospitalization	125	5.5
Medical preference	673	29.6
Patient and/or family preference	841	37.0
Other reasons	63	2.8
No medical recommendations available	570	25.1
Total active and presumably active	2,272	100.0
Arrested with drug therapy	887	
Total	3,159	

We have found much of the information incomplete regarding clinical status, bacteriological status, and treatment recommendations for patients included in the study. Reasons for this are many—some are due to the health departments' lack of requesting information at regular intervals, inadequacies in interagency transferral of information, lack of centralization of reports, failure on the part of physicians to report changes in diagnosis, and reluctance on the part of physicians to make a definitive diagnosis. We found that some tuberculosis hospitals report to the health department the discharge diagnosis only for patients who leave against medical advice; some give no information regarding the hospital's recommendations for care of the patient on discharge, even though continued drug therapy may be prescribed. It is not unusual for hospital reports to be sent to the health department four to eight weeks after the patient's admission or discharge. Negative-sputum reports are not sent to the public health nurses in over 30 per cent of the study areas. In 16 per cent of the areas, public health nurses receive no laboratory reports,

except by request. Such practices as these point up the need for revising policies and practices so that health department personnel will be able to provide effective care for patients.

Summary

By means of sampling technics, 37 areas of the United States were selected. These areas had a total population of almost seven million and constitute portions of 24 states.

Roughly half (55 per cent) of the significant case load is in hospitals.

Roughly half (45 per cent) of the significant case load is at home.

Of those at home:

1. Three-fourths have been known to health departments for less than five years.
2. Half are 45 years of age and older.
3. In the age groups over 35 there are more than twice as many males as females.
4. Eighty-seven per cent are in advanced stages of disease.
5. Sputum status is unknown in almost half.
6. One-third are reported as under care of private physicians.
7. Forty-four per cent of active cases have had drugs recommended; 40 per cent of active cases have had neither drugs nor bedrest recommended.
8. Three-fourths of all cases had a history of previous hospitalization.
9. Almost half of all cases in the study were discharged from hospitals against medical advice.
10. For one-fourth of active cases, the supervising agencies were unable to obtain information about recommendations for hospitalization.
11. Two-thirds of the patients were not hospitalized because of medical, personal, and family preferences.

The availability of clinic, public health nursing, and social services is directly related to density of population; in rural areas almost half of the study population had no clinic services; 10 per cent had no public health nursing services; 80 per cent had no social services other than financial assistance as provided by departments of public welfare.

Gifts of Journals to Other Countries

The continuing difficulties of international remittances have cut off individuals and libraries in many overseas countries from the regular receipt of the American Journal of Public Health. In many of these instances it is virtually impossible to remit funds in United States dollars sufficient to continue these subscriptions.

The Executive Board of the American Public Health Association, taking cognizance of this situation, has commended those members of the Association who, having access to copies of the American Journal of Public Health other than their own subscriptions, have directed that the copies normally coming to them should be sent instead to those in other countries and made available to a larger readership. The Executive Board has suggested that this pattern might appeal to other members and Fellows of the APHA and that through this channel many additional bridges of international understanding might be built.

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