

# Experiment in Enthusiasm

**DURWARD L. BLAKEY, M.D., M.P.H., RAYMOND HOFSTRA, M.D., M.P.H.,  
ESTHER GILBERTSON, R.N., M.A., and JEWELL G. WYMAN, M.A.**

**S**EVEN years ago there were 1,712 unhospitalized people in Mississippi with known active tuberculosis, 90 percent of whom were not receiving any sort of care; and there were 783 beds for tuberculosis patients, 777 of them occupied. New cases were being discovered every day. Four years later this backlog of cases had been cleared up, and by 1956 nearly 85 percent of the newly reported cases were being treated. How was this done?

“By building more tuberculosis hospital facilities,” probably would be the answer of people familiar with tuberculosis control and the recommendations for hospitalization.

But there was one big difficulty. Among the 48 States in the Union at that time, Mississippi ranked 48th in both per capita and spendable family income. Obviously, this solution was out.

Although there were in existence drugs that were successful in treating tuberculosis, their cost and difficulty of administration made any sort of mass approach impractical. Then isoniazid came along and a successful formula was found: isoniazid, in combination with other drugs, and enthusiasm, administered in equal parts.

With this formula, the Mississippi State Board of Health made a new approach to the

---

*Dr. Blakey is director of preventable disease control, Mississippi State Board of Health. The other authors are with the Bureau of State Services of the Public Health Service: Dr. Hofstra as chief of Program Services, Chronic Disease Branch; Miss Gilbertson as public health nursing consultant, and Miss Wyman as public health adviser, Tuberculosis Branch.*

problem. A statewide outpatient drug therapy program was started for the large number of patients with active tuberculosis who could not be hospitalized. The organization of the State health department as well as the new drugs made such a “home treatment” program practical. Health departments in each county had X-ray facilities, and State laboratory services were available. The county health departments were supervised by the State board of health so that there was uniform administration, as well as comparable treatment. The State sanatorium was also under the direction of the board of health, making the coordination of home care with hospitalization easier. It goes without saying that no undertaking of such proportions could have succeeded without the wholehearted support of the workers in the county health departments and the cooperation of private physicians throughout the State.

The objectives of this program were simple: to protect the health of the community by reducing the sources of infection and to improve the health of patients through treatment. The program was not intended to replace other forms of care, and hospitalization was still recommended whenever practical. Both patients with active pulmonary disease and with primary tuberculosis were to receive drug therapy. After the program got underway, patients discharged from hospitals with recommendations for therapy, regardless of type of discharge, were also included.

The local health departments had the responsibility for making the program work. Whenever possible, treatment was to be provided either by or under the direction of the private physician of the patient's choice. How-

ever, if needed, the health departments provided part or all of the necessary medical, nursing, drug, laboratory, and X-ray services, as well as instruction of patients.

The original policy statement of 1953 defined dosage and treatment regimens for streptomycin, PAS, and isoniazid, with all three drugs to be given simultaneously to every patient when at all possible. The necessity of bed rest and proper nutrition was stressed to patients entering the program. In 1956, the original policy statement was revised to include recommendations for length of treatment by form and extent of disease.

Because of the financial situation in the State, the board of health was unable to provide any additional funds for drugs when the program was started, and the local health departments were given the responsibility of getting the necessary money in whatever way they could. This was done. The local tuberculosis associations and county boards of supervisors proved to be major sources of funds. Civic and religious organizations and individual citizens also contributed. In spite of this informal approach, local health department staffs feel that no patient was denied drugs or had treatment delayed for lack of them.

Starting in 1954, the State board of health was able to distribute a limited amount of drugs to local health departments in proportion to the amount of local funds used in buying drugs for totally indigent patients.

Since the health departments purchased the drugs in large quantities, they were able to obtain them at reduced cost. Thus many patients found it possible to pay for their own drugs. Whenever practical, patients were encouraged to contribute something toward the cost, even though in many cases this amounted to little more than a token gesture. It helped ease the burden on the health departments, and they believe it had a good psychological effect on the patients, encouraging them to maintain treatment.

The health departments found it necessary to schedule regular hours for taking X-rays and giving streptomycin injections. Staffing these additional clinics, instruction of patients, and maintaining continuity of treatment was accomplished chiefly by the nurses. In 1955, re-

gional consultation clinics were established by the State board of health to aid county health departments and private physicians in diagnosis and treatment. Each health department had access to expert medical consultation at least once every 3 months. These clinics also encouraged better use of both the outpatient and inpatient facilities of the State sanatorium.

### **Evaluation of Accomplishments**

In the early years of the home treatment program, the demands on everyone were so great that there was little attempt to evaluate progress. After 4 years of operation there was a growing recognition of the need for factual information, and in 1957 the Mississippi State Board of Health and the Tuberculosis Branch of the Public Health Service began a cooperative study of the program (1). The material discussed hereafter comes chiefly from this survey.

The study showed that the home care program was successful in achieving its primary aim, protection of the health of the community by bringing the large number of patients with active tuberculosis under treatment and thereby reducing sources of infection. When the statewide plan was put into effect in 1953, 25 counties had already started home treatment for tuberculosis patients. By the end of the first year of operation, 69 counties had entered the program, 9 more joined the next year, and by the end of 1955, every county in the State was participating.

The number of patients participating in the program showed a similar increase. In 1953, 630 patients were being treated; by 1956 the total had risen to 1,820. There was no serious difficulty in persuading patients to accept or continue treatment. Sixty-three percent started treatment within 1 week after recommendations, 83 percent within 1 month, and 95 percent within 6 months. At the time of the study, 82 percent were thought to be taking their drugs regularly. Only 8 percent discontinued drug therapy for as long as 2 months, and only 15 percent refused treatment or were lost to supervision after they started home treatment.

It was not possible to determine exactly how many of the 1,712 patients who were known to

have active tuberculosis in 1953 were treated under the program, nor to what extent cases newly reported in the following 2 years participated. However, 3,055 patients were taken care of during the 4½-year period between the beginning of the program and the 1957 study. If what happened in 1956 is any indication, and it is felt to be a good one, then most of the people who needed treatment got it. In that year nearly two-thirds of the newly reported active cases began home treatment, and another 22 percent were handled by private physicians and hospitals. Since about 5 percent of the new cases that year were reported at the time of or after death, only about 15 percent had no treatment or treatment was unknown.

Fifty-four percent of all the patients treated during the 4½ years had far-advanced disease when starting home therapy, and another 29 percent were in the moderately advanced stage. A substantial portion of the patients of working age (27 percent) were working either full time or part time when they joined the program. The patients were grouped in the following ways:

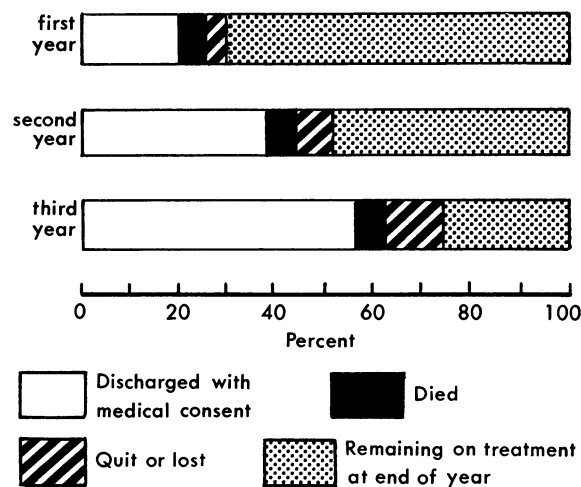
Characteristic	Percent
White .....	47
Nonwhite .....	53
Male .....	59
Female .....	41
25-64 years of age.....	71
All other ages.....	29

About one-fourth of the patients treated were discharged from the hospital to start home treatment and were not subsequently hospitalized. For obvious reasons, the medical characteristics of this group were quite different from those of the group who entered without hospitalization, both at the beginning of home treatment and at the time of the study.

Nearly 90 percent of the people who started treatment without hospitalization had active tuberculosis, and 60 percent had positive sputum. Among those who started treatment after leaving the hospital, 46 percent were active, 42 percent arrested, and 80 percent had negative sputum.

Reasons why patients stopped treatment during the 4½ years from the beginning of the

**Figure 1. Distribution of patients at the end of successive years of treatment with drugs in Mississippi, 1953-56**



NOTE: Discharged with medical consent includes patients who transferred to hospital, moved, or changed supervision.

program to the time of the study are given below:

	Program group (percent)	Hospital discharge group (percent)
Medical consent.....	29	63
Transferred to hospital.....	37	0
Moved or changed supervision....	11	16
Refused or lost.....	14	17
Died .....	9	4
Total.....	100	100

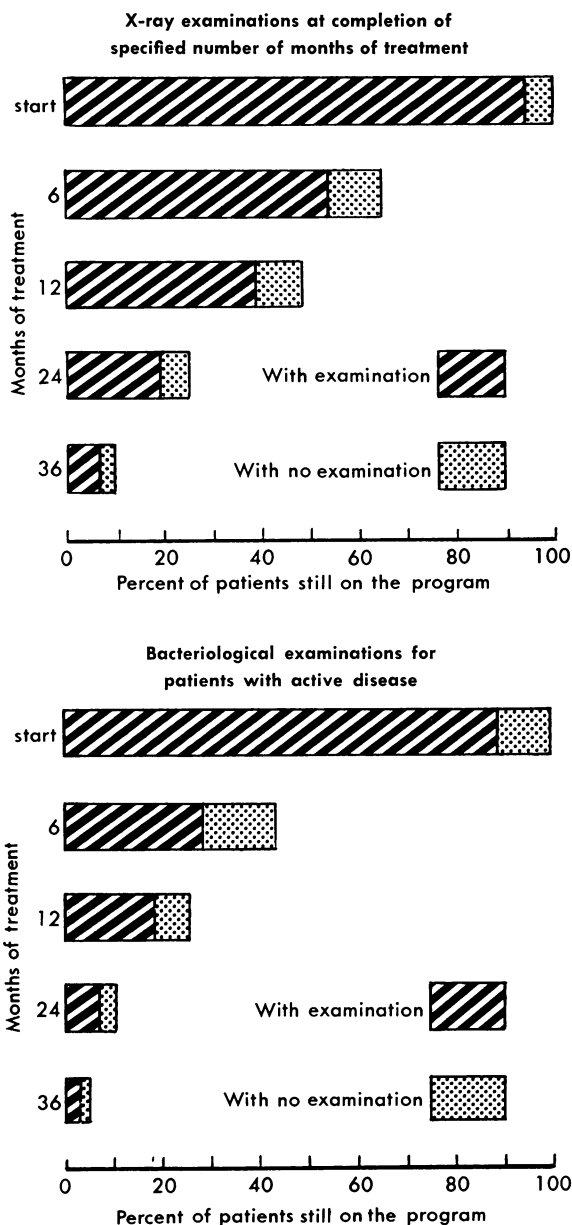
Since the patients who had some hospitalization were in better condition when they started home treatment, it is not surprising that 63 percent of this group were discharged with medical consent as no longer needing treatment. Only 29 percent of those who entered the program without prior care were so discharged. On the other hand, the fact that more than one-third of the latter group were hospitalized eventually indicates that ambulatory treatment in many cases cannot be expected to be an adequate substitute for hospitalization. As far as keeping patients under treatment was concerned, whether or not a patient had had any hospitalization did not seem to matter.

The persons who started home treatment without previous hospital care did not get well

overnight (fig. 1). However, after 3 years, 56 percent had been discharged with medical consent.

A group of newly reported active cases was studied in an effort to determine the therapeutic effectiveness of the program. The group

**Figure 2. X-ray and bacteriological examinations of patients with active tuberculosis treated with drugs in Mississippi, 1953-56**



NOTE: Patient was said to have had an examination, if examination was made within 3 months before or after date due.

was composed of patients with no previous medical care prior to starting treatment at home. All had at least 6 months of treatment, and some were hospitalized at some time during the 2 years they were studied. After 2 years of treatment, 62 percent were either arrested or inactive, 27 percent were still active and continuing treatment, and the remainder had stopped treatment before their disease status had changed. However, the patients still being treated showed improvement. Nearly three-fourths had positive bacteriology at the beginning; after 2 years only slightly more than one-fourth still had positive sputum and the percentage of patients with negative bacteriology increased from 18 to 51 percent. The increase from 10 to 22 in the percentage of patients with unknown bacteriological status still considered to be active probably resulted from the absence of sputum after 2 years of drug treatment and the refusal of some patients to supply specimens.

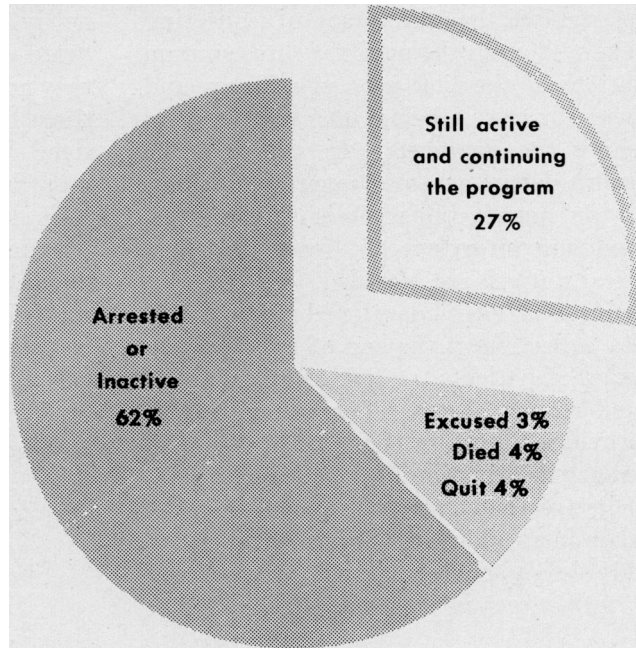
**Flaws**

Thus far the considerable accomplishments of the program have been presented. Successful as it proved to be, however, Mississippi started a crash program to meet an emergency situation and only the most confirmed optimist would not have expected some flaws to develop. In addition to the difficulties inherent in supervising patients at home, the study also revealed weaknesses in the program itself.

First of all, 13 percent of the patients started home care with an unknown bacteriological status. The sputum test was the only method used to make this determination. At the end of 3 years of program operation, there was still a significant proportion of the patients who were not receiving bacteriological and X-ray examinations at the proper intervals. These weaknesses are reflected in figure 2.

The development of a reservoir of patients with isoniazid-resistant organisms is a hazard in a program of this type. It was decided, however, that the main objective of the program, to lessen sources of infection, was of primary importance and the careful medical supervision of the dispensing of drugs would minimize this element of risk.

Nearly two-thirds of newly reported cases of active tuberculosis were either arrested or inactive after two years of combined home treatment and hospital care (about one-third were hospitalized for a time)



Even if complete data had been available on all patients on home care, their progress still would not have received proper evaluation. The job was simply too large for the two part-time consulting physicians to handle. In 1956, for example, the cases of only 60 percent of the patients on drug therapy were reviewed by the regional consultants.

Supervision also proved to be a problem. About 25 percent of the patients who started home care were working, even though they had active disease. At the time of the study, nearly 30 percent of the patients with positive sputum were working.

A most glaring need was for treatment under more controlled conditions for the patients who failed to make satisfactory progress. A significant portion of the patients (20 percent) failed to show a conversion in their bacteriological status after 6 months or more of treatment. Furthermore, a substantial portion (27 percent) still had active disease after 2 years of treatment.

### Discussion

Two years have passed since the survey and steps have been taken to correct some of these

weaknesses. In the area of administration, the program has been tightened by making the director of the division of preventable disease control, under the general direction of the executive officer of the Mississippi State Board of Health, responsible for coordination of the home treatment program with the State sanatorium.

Currently, when any change in a patient's status occurs, the information is immediately reported to all the other agencies participating in his care, thus improving considerably the continuity of treatment. In addition, new patients or patients who have failed to make satisfactory progress without hospitalization can be quickly admitted to the sanatorium by the two chest specialists.

Although it has not been possible to increase the number of cases reviewed by these consultants at field evaluation conferences, their work has been made more productive through greater selectivity in the cases to be reviewed. Guides are also being developed which will help even more in this selection.

The 1957 study revealed that a number of patients entered the home treatment program with the extent of their disease, bacteriological status, or both, unknown. Today, patients are

no longer being started on treatment without a minimum diagnostic workup. Emphasis is being placed on the techniques of collecting sputum as well as on the need for three sputum examinations at the time of every X-ray, and the tuberculin test is being used routinely in establishing the diagnosis. In addition, the State health department no longer accepts new cases as "pulmonary tuberculosis" if the necessary reporting on extent of disease and bacteriological status is not included.

Procedures have been developed also to facilitate data collection at the end of each year on the number of patients treated, length of treatment, and clinical status. This annual evaluation provides the State board of health with the necessary information for more precise planning of its treatment program, whether in the hospital or on an ambulatory basis.

The Mississippi home treatment program was started in 1952 because it was impossible to give

hospital care to many people who needed it. Now the day is not too far distant when every newly discovered case of tuberculosis in the State can be hospitalized first, and then, once they are on the way to recovery, released to continue treatment at home. When compared to some areas of the United States, this will be regarded as nothing unique, just good tuberculosis control. But the people in Mississippi who had to face the dismaying facts in 1952 know that this accomplishment in tuberculosis control could not even be mentioned today if it were not for the State experiment in enthusiasm.

#### REFERENCE

- (1) U.S. Public Health Service, Tuberculosis Program: Evaluation of the Mississippi program of home treatment for tuberculosis. Mississippi State Board of Health (distributors), Jackson, March 1959, 23 pp.

## Courses in Care of Premature Infants

In the fall of 1960, the Institutes for Physicians and Nurses in the Care of Premature Infants at the New York Hospital-Cornell Medical Center, under the sponsorship of the New York State Department of Health and the Children's Bureau, will begin their 12th year of operation. These institutes are designed to meet the needs of physicians and nurses in charge of hospital premature nurseries and special premature centers, and of medical and nursing directors and consultants in State and local premature programs. The attendance at each institute is limited to six physician-nurse teams. The program for physicians is of 2 weeks duration and that for nurses of 4 weeks duration. Participants pay no tuition fee and stipends are provided to help cover expenses during attendance at the institutes. Institutes for the 1960-61 year are definitely scheduled to start on the following dates: September 19, 1960; November 28, 1960; January 23, 1961; March 13, 1961; May 8, 1961. Early application for these institutes is essential since plans are contingent on the number of applications received.

Additional information may be obtained by writing Box 143, Institutes in the Care of Premature Infants, the New York Hospital, 525 East 68th Street, New York 21, N.Y.