

# Evaluation of Motivation of Patients in a Streptococcal Control Program

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**T**HE NEED for allied and paramedical personnel to assume responsibility for health-related functions previously limited to the physician and nurse has been receiving increasing emphasis (1, 2). In view of the ever-widening ratio of patients to professional health personnel and the rising costs of professional staff, exploration of new approaches to traditional public health functions is imperative. In Denver, Colo., this exploration took the form of an investigation by the city's department of health and hospitals to determine the productivity of nurses' visits in bringing untreated patients with streptococcal infections and their symptomatic contacts to treatment.

## Streptococcal Control Program

The division of disease control of the Denver Department of Health and Hospitals initiated a program for the control of streptococcal throat infections in 1957. This program operated on the assumption that the department's responsibility to the individual citizen and the community at large necessitated home visits by the public health nurse to all persons with documented positive beta hemolytic streptococcal

throat cultures. Within 24 hours after a diagnosis was reported to the division of disease control, the nurse made an initial home visit to administer treatment, promote health education, and collect epidemiologic data. A repeat visit was made within 1 month to evaluate the patient's condition and detect any apparent sequelae in the patient or his household contacts.

An integral component of the control program was the prophylactic treatment of the symptom-free and non-penicillin-allergic household contacts of persons with proved group A beta hemolytic streptococcal throat infections in order to prevent the potential sequelae. This function was delegated to the public health nurse, who administered long-acting benzathine penicillin G to the contacts in their homes. An evaluation of the efficacy of this prophylactic program showed that the incidence of streptococcal infections and streptococcal sequelae in a household could thereby be substantially reduced for a period of at least 3 months following the initial infection (3).

During 1960, the adverse reaction of a child to penicillin led to discontinuance of this home treatment program. Prophylactic penicillin was henceforth only administered in medical facilities. Until May 1966, however, the policy of the Denver Department of Health and Hospitals of requiring home visits by a public health nurse to all patients with documented beta streptococcal throat infection, whether or not they had received treatment, continued. The

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purpose of these visits was to refer to treatment all children and young adults with (a) complaints of fever and sore throat, (b) a significant red throat and cervical adenitis, petechiae on the soft palate, or both conditions, (c) pseudomembranous tonsillopharyngitis, (d) a generalized, punctate, erythematous eruption, or (e) acute otitis media. In addition, the nurse routinely made another visit within a month to determine the status of the family members in respect to sequelae and to refer all symptomatic persons to their medical facility for treatment.

During 1965-66, the department of health and hospitals expanded many areas of patient care, thereby increasing the demand on the home care nurse. Early in 1966, the staff of the department reviewed 247 (22 percent) of the total epidemiologic reports completed by the nurses on patients with streptococcal infections during the previous year. The purpose of this review was to see how successful the nurses' visits had been in locating untreated patients and their symptomatic household contacts and referring them for treatment. In this sampling, 101 (38 percent) of the initial visits were non-productive, either because the patient was not at home or because the reporting medical facility had supplied the wrong address.

The cost of the nurses' time expended in making these nonproductive visits was \$312.09. When this percentage of visits was projected on an annual basis, the cost rose to \$1,384.32, and more important, consumed 224 hours of the nurses' scarce time.

Of the patients located at home on the initial visits (61 percent of the sampling), 21 untreated persons were found who complained of symptoms suggesting the need for medical care. The symptoms most commonly elicited included sore throat, malaise, and fever. Overall, 71 percent of the patients reportedly had received treatment from the initial medical facility before the nurse's visit.

The staff of the department also evaluated the productivity of the nurse's 1-month follow-up visits to those persons in the sample with whom she had made contact on the initial visit. Of this group, 92 percent were again located. One person had developed nephritis and was already under medical care. The remainder of the 1-month visits were essentially negative in

### Sample letter to patients with untreated beta streptococcal throat infection

\_\_\_\_\_  
(Date)

Dear \_\_\_\_\_:  
(name)  
The throat swab which was done on you at \_\_\_\_\_ on \_\_\_\_\_ indicates (institution or P.M.D.) (date) that you have a streptococcal infection. This infection is serious, but easily treated without hospitalization or loss of work. You are urged to return to \_\_\_\_\_ (institution or P.M.D.) immediately for treatment. Please *take this letter with you and give it to your doctor.*

Sincerely,  
John A. Sbarbaro, M.D.  
  
Director  
Disease Control Service

Dear Doctor:

At the time you treat \_\_\_\_\_ for the above mentioned beta streptococcal infection, please sign, detach, and return this section of the letter to the Denver Health Department, Division of Disease Control, 670 Delaware Street. We request your cooperation in this regard since we are evaluating our present service to the community.

John A. Sbarbaro, M.D.

\_\_\_\_\_  
(date)

\_\_\_\_\_  
(Physician's signature)

terms of discovery of disease. In view of these results, the nurses' 1-month followup visits were discontinued in May 1966, and there was a definitive change in attitude in the department about the need for the initial visit.

A common medical practice in the community was to give an initial injection of procaine penicillin before the patient's throat culture was confirmed. The staff of the department of health and hospitals believed that this practice was often ineffective in streptococcal control because the dosage of this injection was frequently inadequate, reliance had to be placed on the patient's continuing cooperation, and the patient might unnecessarily be sensitized to penicillin. Therefore, in May 1966, the department informed the medical community that future visits of the public health nurse would be limited to only an initial visit to patients with positive beta streptococcal throat cultures who had received no treatment.

This limitation on visits was based on the inference that when a physician initiated treatment for a patient with a sore throat before receiving the results of the throat culture, he would assume full responsibility for the implications of his diagnosis. This responsibility included explaining to the patient the measures necessary in order to evaluate the infection and to prevent its spread to the patient's household contacts. It was believed that the physician could provide the patient with the essential information about the infection at the time of treatment just as completely as the nurse could later and that the patient would probably accept it with more interest at that time.

Upon discontinuing the followup visits of the nurses, the department implemented the study, described in the following section, of evaluating the traditional use of the public health nurse in the streptococcal control program as an agent for bringing the untreated patient with a confirmed streptococcal throat infection and his symptomatic contacts to treatment.

### Study Design and Method

During the period beginning with August 1966 through July 1967, a total of 201 consecutively reported patients with untreated beta streptococcal throat infections were registered with the disease control service of the Denver Department of Health and Hospitals. These patients were divided into three groups by random selection (application of a table of random numbers). The members of each group

were notified by letter of their diagnoses and the need for prompt medical care, but the letters were dispatched to each group by a different method.

Patients in group 1 were notified by a certified letter mailed in the official envelope of the disease control service of the department of health and hospitals. Patients in group 2 were notified by a first-class letter mailed in an official envelope of the Visiting Nurse Association. Patients in group 3 were notified by a visiting nurse, who gave the letter to the patient during a home interview.

Visiting Nurse Association envelopes were used for groups 2 and 3 because it was believed they might seem less threatening to the patient than the official envelopes of the department of health and hospitals. (The Denver Visiting Nurse Service is a combined nursing agency supported jointly by the Visiting Nurse Association, the Mile High United Way, Inc., and the Denver Department of Health and Hospitals.)

To facilitate accurate comparison of the number of patients in each group who were successfully brought to treatment by each method, the letters for each group were typed on stationery of a different color. In all other respects, the letters for the total study population were identical. Each piece of correspondence, however, was individually typed.

To reduce confusion about why a person was being referred for medical care and to provide a means of tabulating the number seeking treatment, the patient was requested to give the let-

### Comparison of three methods of notifying patients of streptococcal infection

Results of notification	Number of patients notified by—			Chi-square probability <sup>1</sup>
	Registered mail	Regular mail	Visit by nurse	
Came for treatment.....	56	50	50	0.76
Letter returned.....	49	43	38	.47
Letter not returned.....	7	7	12	.40
Did not come for treatment....	11	17	17	.46
Had moved.....	4	2	2	( <sup>2</sup> )
Refused treatment.....	7	15	15	.17
Total.....	67	67	67	

<sup>1</sup> Probability that differences as extreme as observed values would result by chance.

<sup>2</sup> Numbers too small to calculate chi-square probability.

ter to his physician. The lower portion of the letter was scored, providing a space for the attending physician's signature. The physician was requested to return this section to the division of disease control at the time the patient received treatment (see figure). A self-addressed stamped envelope was attached to the letter to expedite the physician's response.

To further enhance the accuracy of the study, a clerk from the division of disease control telephoned the patient's original source of medical care if the division did not receive notification within 1 week that the patient had been treated. This procedure eliminated the physician's failure to report treatment as a factor in the completeness of the study.

To prevent the sample from becoming weighted with repeaters, patients with repeated beta streptococcal infections were entered into the study only once. In addition, public health field supervisors and their staffs were not oriented to the purpose and details of the study.

### Results

No significant difference, as determined by the chi-square test, was apparent in the response to the three methods of notifying patients that their throat cultures were positive for beta-hemolytic streptococci (see table). The results were slightly, but not significantly, better with certified mail than with first-class mail or with a public health nurse's visit. There was no essential difference, however, between the results obtained with first-class mail and with a visit by a public health nurse. Although the number of patients who refused to come in for treatment was smallest in the group notified by certified mail, the difference was not statistically significant. The number suggests, however, that there is some positive advantage to communication through this medium.

The results thus support the use of postal media in lieu of public health nurse visits for stimulating untreated patients and their contacts to seek medical care. The nurses made only two home visits to patients with beta streptococcal infections during 1968. In both instances, the patients or the families presented histories of frequent, repeated beta streptococcal infec-

tions. This change in procedure has not, to date, resulted in an increase of beta hemolytic streptococcal infections or their sequelae nor any adverse community reaction.

### Summary

In an effort to justify the use of public health nursing home visits in a beta streptococcal control program, the Denver Department of Health and Hospitals implemented a study to compare the results of three methods of contacting untreated patients with positive cultures and bringing them to treatment.

The study group consisted of 201 consecutively reported patients with untreated beta streptococcal throat infections. These patients were divided into three groups by random selection, and each group was contacted through identical letters, but dispatched by a different method. The three methods were: (a) certified letters mailed in official envelopes of the Denver Department of Health and Hospitals, (b) first-class letters mailed in official envelopes of the Visiting Nurse Association, and (c) letters presented to the patients by the visiting nurse during home interviews.

The results, as determined by chi-square test, were slightly better for certified mail than for first-class mail or public health nurses' visits. They justify the use of postal media in lieu of nurses' visits to stimulate untreated patients with beta streptococcal throat infections and their symptomatic contacts to seek medical care. The nursing time thereby freed can be used to meet the increasing demands for home visits in other rapidly expanding health programs.

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### Tearsheet Requests

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