Sustained Glaucoma Screening Program

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GLAUCOMA, the second ranking cause of blindness in the United States, is responsible for one out of every eight cases of blindness. It occurs in about 2 percent of all people over 40 years of age and is more frequent with increased age.

Within the past decade the public health significance of the early detection of glaucoma has been recognized. Screening programs among the general population have been reported from many communities (*1–9*), but most of these programs were of a "one-shot" nature. The Brookline, Mass., program, however, is a regularly scheduled activity.

The Brookline glaucoma screening program was born in April 1957 at a meeting of the Sub-Council on Health of the Brookline Community Council. At this meeting representatives of the Lions Club said they were looking for ways in which they could help develop an effective community sightsaving program. The Brookline Health Department suggested to the Lions Club that a jointly operated glaucoma screening program might be the answer. After several meetings and exploration of what others had done, such a program was agreed upon.

There were three major reasons why glaucoma screening was selected. First, the town of Brookline has an unusually high proportion of older people. Approximately 29,000 residents, or 52 percent, are age 40 or older, and more than 7,500, or 14 percent, are 65 years or older. Actually, there are more people over age 65 in Brookline than there are children in its public schools. Second, the health department was concerned that it was expending most of its energies on programs for children despite the fact that the aged represented a larger proportion of the population. A third factor which influenced the selection of a glaucoma screening program was the existence of a new health center which was centrally located and well equipped to carry out a variety of public health programs.

The joint sponsors met frequently to work out the details. It was agreed that the Lions Club and health department would share the costs. The Lions Club would pay for additional professional personnel, new equipment, and expensive promotional costs, and also provide nonmedical volunteers. The health department would handle routine expenses such as educational materials, records, medical supplies, and publicity, plus administrative, nursing, and custodial services. It would take full responsibility for followup.

The decision to sponsor a sustained program, featuring smaller regularly scheduled clinics rather than one massive clinic, was made at this time. All concerned felt that the mechanics of followup of suspicious cases would be much more effective in the sustained program. In a clinic of 100 patients, 3 to 5 referrals for possible glaucoma could be anticipated, while in a clinic screening 2,000 individuals, 60 to 100 patients would require referral. The effectiveness of followup of the smaller caseload is obvious. The sponsors believed that at the end of a year the total number of patients screened would equal that of a massive "crash" program.

A formal letter was sent to the local medical

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society asking approval of the program and appointment of a representative to serve on a technical advisory committee. The society endorsed the program and expressed its appreciation for having been consulted early in the planning stages.

A technical advisory committee was established, consisting of the chiefs, or their delegates, of the eye services of the three teaching hospitals in the Boston area. Also on the committee were representatives of the Massachusetts Division of the Blind and the Massachusetts Department of Public Health. The Lions Club was represented by an ophthalmologist and an optometrist, as well as by the lay officers of the club. The health department was represented by its director and its health educator.

Procedures and Standards

The functions of this committee were to set the technical procedures and to determine the ethical standards for the operation of the clinic. A number of difficult questions had to be answered. The most difficult, by far, was that of defining the proper relationship between the ophthalmologists and the optometrists working in the clinic. Fortunately, the chairman of the technical advisory committee had worked with optometrists in a veterans hospital. Likewise, the optometrist on the committee had previously worked with many local ophthalmologists. The committee decided, after much discussion, to allow optometrists to work at those clinical procedures, such as visual acuity and the Harrington-Flocks screener, which did not involve putting drops in the patients' eyes. Since many people over 40 consult only an optometrist, the committee felt that clinic utilization might be increased if optometrists were included.

Clinic hours were set from 4:30 to 8:30 p.m. to attract people who could not come during working hours. A maximum of 100 patients were to be seen by appointment at each clinic. Eight appointments were given for every 20-minute period. A keysort punchcard was designed for the clinic record to facilitate follow-up and evaluation. The technical advisory committee also specified the types of eye drops to be used, the method of doing the tonometry, the procedure for sterilizing instruments, and the technical information about glaucoma and the clinic that would be given to the patients after their examination.

The standards for referral set by the committee were an intraocular pressure of 25 mm. Hg or above, or a differential tension of 6 mm. Lens changes also were routinely referred. All other eye conditions were referred at the discretion of the examining physician.

Promotional Methods

The methods of interpreting and promoting the clinic in the community were shared by both sponsoring agencies. The health educator was responsible for coordinating all the educational efforts. Since Brookline is highly organized, it was decided to lean heavily on already existing community organizations. The promotion and interpretation of the program through professional workers and community leaders was chosen as the first step. Inservice training programs on glaucoma and its prevention were developed and presented to teachers, social workers, pharmacists, nurses, physicians, and recreation workers. These are the people who have the greatest contact with adult and older age groups. A special effort was made to insure that these people—the so-called "gatekeepers"—all had their eyes tested early so that they could say, "I have had this test and I can honestly recommend it to you. It doesn't hurt!"

During the 8 weeks preceding its opening, feature articles on the clinic appeared in the local and metropolitan press. The Governor as well as the local board of selectmen appeared in several photo stories describing the program.

The Community Council of Brookline, where the idea for a clinic originated, endorsed the program and sent a letter to each of its 78 member agencies asking for their cooperation. The council also suggested that each agency might wish to plan a future educational program around glaucoma in order to interpret this new service to its members.

Shortly before the opening of the first clinic, a special issue of the *Health Bulletin* was devoted to glaucoma. This bulletin is distributed by the health department 4 times a year to

each of the 18,000 households in Brookline. This issue contained a simple illustrated feature describing what glaucoma was and the specific tests which were being offered to detect it. A speakers' bureau made up of Lions Club members and health department staff was available to community groups. Along with a talk on glaucoma, the film "Hold Back The Night" was used. This Canadian-produced film proved to be far superior to anything else available to us. Exhibits were posted in various store windows. The public library developed and exhibited a very attractive display on glaucoma.

The priority on promotional efforts follows.

Block appointments were offered to captive groups, such as policemen, firemen, teachers, and members of golden age clubs, service clubs, PTA's, and religious organizations. The secretary of each group was asked to fill a block of appointments. The response was so great that 1 month before the clinic opened, several hundred appointments had been made.

The second wave of appointments was built upon this initial momentum. Newspaper notices and the special issue of the *Health Bulletin* contained appointment coupons which residents could fill out and mail to the health department. By the time of the first clinic, there was a backlog of 1,000 appointments. This response encouraged other organizations and individuals to jump on the bandwagon. Another technique employed at this time was to enclose postage-paid appointment cards with welfare checks. The social workers, having been previously briefed, were able to answer questions and encourage their clients to participate.

The third wave of appointments came through person-to-person contacts. As he left the clinic each patient was handed one or more postage-paid appointment cards and was asked to tell his friends and neighbors about this clinic. Volunteers from the various golden age clubs personally solicited members and nonmembers alike to sign them up. Lions Club members and their wives also helped with this personal solicitation campaign.

Clinic Procedures

A patient entering the clinic comes directly into a large waiting room. Here the wives of the Lions Club members register him and take his personal and ophthalmic history. Behind the registration tables is an exhibit containing an automatic slide projector which allows the patient to see in advance what tests he is going to have as he goes through the clinic.

The patient is first tested for distant vision using a Snellen chart at 20 feet. This is done by an optometrist or a public health nurse. If the vision is below 20/40 he is retested with glasses or a pinhole. A volunteer collects the clinic cards and keeps them in proper sequence, calling each patient by name when it is time for his next test. At each step in the clinic procedure an effort is made to treat the patient as an individual rather than as a number.

During the first 2 years, a Harrington-Flocks screener was used to check visual fields. After evaluation of our first year's experience with this instrument, the test was dropped because it gave too many false negative results. Three out of four patients, whether or not they had any eye disease, read all the Harrington-Flocks cards correctly (*10*).

At the next step, the eye is inspected and examined with an ophthalmoscope. This is done by ophthalmology residents from two Boston teaching hospitals. Finally, a resident measures the intraocular pressure using the 1955 Schiotz tonometer. All clinical procedures are supervised by a practicing ophthalmologist who is also a member of the Lions Club.

After tonometry, a public health nurse interviews the patient. She reassures him if no abnormality was found and recommends retesting every 2 years. If ocular pathology was found, she initiates the referral procedure. When a patient is referred, a letter of explanation is sent immediately to the family physician and the eye doctor or clinic designated by the patient.

After seeing the nurse, the patient goes back to the waiting room where he is asked by a volunteer to fill out a postclinic reaction sheet. An analysis of the answers to this questionnaire reveals patient attitudes toward the clinic procedures and indicates how the service may be improved. It also supplies information on how citizens hear about this clinic (*11*).

In order to evaluate the program and main-

Results of 43 clinics in Brookline glaucoma screening program through December 1, 1960

Patients examined	3,127
Total normal	2,446
Total referred	681
Referrals for possible glaucoma	199
Diagnosis of glaucoma confirmed	58
Previously known	17
Previously unknown	41
Diagnosis of glaucoma unconfirmed [1]	60
Diagnosis of glaucoma pending	81
Referrals for other eye conditions	482
Diagnosis of other eye conditions confirmed	226
Diagnosis of other eye conditions unconfirmed	19
Diagnosis of other eye conditions pending	237

[1] Certain patients require continued observation since they may have borderline cases that will develop into glaucoma.

tain adequate control, a special clinical record was developed. It consisted of an easy-to-tabulate keysort punchcard. Following every clinic the senior author reviews and punches each record. He checks to be certain that full and correct information about each patient, including the results of his tests, has been properly recorded. These cards are also used for followup as well as for clinical information. Separate punches are made when a patient is referred to a physician or a clinic, when follow-up letters are sent, and when reports come back. It is possible to determine quickly at any time the current progress of each patient being followed.

In the 43 clinics held through December 1, 1960, 3,127 patients had been examined. This is approximately 11 percent of the eligible population. The proportion of residents examined increases with their age. Since the amount of ocular disease found is directly related to age, the program has been successful in reaching the groups with the greatest potential of eye disease. One interesting side effect of the clinic has been reported by local ophthalmologists who say that many of their patients who come to them for refractions now demand tonometry and refer to the new program available at the health center. Some of these physicians were frank to state that although tonometry was not previously a routine practice in their office, it is now.

Of the 3,127 patients screened, 199, or 6 percent were referred because of abnormal tensions (see table). Glaucoma was confirmed in 58 cases (2 percent). If these findings are projected to the 81 cases for whom a definite diagnosis is still pending, a total of approximately 98 cases could be anticipated from this program. Of the other types of eye disease for which patients were referred, refractive errors were the most common (20 percent), lens changes next (12 percent), followed by abnormalities noted on inspection (6 percent), and abnormal disks (9 percent).

The expense of operating the clinic has been low. The cost of each examination is approximately $1. The cost of each case of glaucoma discovered varies between $50 and $60. When this is compared with the estimated cost to the State of $1,500 a year for the maintenance of each blind person, the economic impact of such a program can readily be appreciated. In addition to glaucoma, other eye diseases which may lead to blindness are also being discovered and referred for correction.

Conclusion

Glaucoma causes one out of every eight cases of blindness and occurs in 2 percent of the population above the age of 40. It is insidious, progressive, and can lead to marked reduction in vision or even total blindness before its discovery.

Glaucoma detection with followup to treatment makes an ideal public health program. It is easily performed; it is inexpensive; and appropriate treatment halts further disability. The Brookline experience demonstrates the feasibility of conducting a sustained program for the detection of glaucoma and other eye diseases. It also demonstrates how an official agency (health department) and a voluntary organization (Lions Club) can combine their efforts to solve more effectively a community health program than can either organization working alone.

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Guidelines for Mental Health Service Facilities

Surgeon General Luther E. Terry in letters to all State Governors has urged consideration of guidelines for improved planning of mental health facilities which are set forth in a publication entitled "Planning of Facilities for Mental Health Service."

Prior to general distribution, each Governor was sent the 55-page report of findings of the Surgeon General's ad hoc committee which was assigned to develop a basis for planning mental health facilities.

The committee, comprised of State Hill-Burton hospital construction authorities, and State mental health authorities, began its study of the Nation's mental health facility needs in September 1959.

The Surgeon General said that the formation of the 12-member committee was an outgrowth of "the concern that more effective methods be found to assure adequate treatment and care of the mentally ill."

The report recommends in part that:

"Community-based mental health facilities be established as part of a coordinated system of statewide health services. The ultimate objective would be to provide proper facilities for early diagnosis, intensive and continued treatment, and rehabilitation programs designed to restore the individual to his fullest mental, physical, social, and vocational abilities.

"Each Governor consider taking whatever steps are necessary to stimulate the development of a comprehensive plan for mental health facilities.

"States enact enabling legislation and provide additional financial support to stimulate the construction, equipment, and maintenance of needed mental health facilities approved by the planning body."

The committee further recommended that "construction and expansion of large mental institutions be strongly discouraged, and State activities be directed toward replacement of existing institutions of this type by smaller community or regional facilities offering a wide spectrum of services."

The publication (PHS Publication No. 808) is on sale by the Superintendent of Documents, Government Printing Office, Washington 25, D.C., at 40 cents a copy.