

*A glaucoma detection program in an upstate New York district is described. Initiated by the official public health agency, it involved local ophthalmologists, county medical societies, and the local Lions Clubs. At a very low cost, a number of cases of unknown eye diseases were detected and diagnosed. Most of these were glaucoma.*

## **RURAL GLAUCOMA SCREENING**

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**A** NONCOMMUNICABLE disease assumes public health significance whenever it has the following three characteristics: (1) It is widely prevalent in the community; (2) it is a significant cause of death or disability; and (3) it can be dealt with on a community basis with reasonable assurance of success.<sup>1</sup>

Glaucoma is such a disease. It has been variously estimated from a number of surveys that there are approximately one million Americans with undiagnosed glaucoma,<sup>2</sup> or that about 2 per cent of the population over 40 have the disease unknowingly.<sup>3</sup> The National Society for the Prevention of Blindness reports that for 1957, in the United States, glaucoma was the second leading identified cause of blindness, with a rate of 26.7 per 100,000 population, or 13.6 per cent of all blindness for that year.<sup>4</sup> Only senile cataract, with a rate of 35 per 100,000, was more frequent in occurrence. The prognosis for successful treatment of glaucoma, when found and treated in its early stages, is approximately 85 per cent.<sup>2</sup>

Chronic simple glaucoma is by far the most prevalent type of this disease. The visual changes are gradual and painless, consisting of enlargement of the blind spot, then loss of peripheral field vision. As these changes are irreversible, and as

treatment is quite effective in preventing progression of the lesion, early case finding and treatment is of obvious benefit.

Finger ballotement testing for increased intraocular tension is grossly inadequate for the detection of glaucoma.<sup>1</sup> Tonometry is the best ophthalmological practice. As this procedure is not included by most practitioners in their routine of physical examination, and as the mild symptoms of early glaucoma are usually overlooked by the individual, who therefore knows of no reason for visiting an eye specialist, diagnostic screening clinics are one useful method of early case finding.

It was these considerations which led to the institution of glaucoma detection clinics in the Glens Falls District of the New York State Department of Health. This district is composed of Saratoga, Warren, and Washington Counties. The district has a combined population of 177,000 and is essentially rural, although it contains three cities ranging in size from 8,500 to 20,000.

When the department, through the district office, came to this decision, the local ophthalmologists were approached on the subject. They were unanimously in favor of such clinics and all volunteered their services. In addition, they presented the idea to the three county

medical societies and obtained their approval.

As soon as medical approval for the program was obtained the district office contacted the local Lions Clubs. A meeting was set up by each club so that the health officer could describe the program to the membership and could request them to jointly sponsor the clinics. The Lions Clubs were enthusiastic in their acceptance.

Subsequent meetings were held to decide mutual responsibility. It was finally determined that the Health Department would supply the equipment and one technician, and would handle the records and follow-up, that the Lions Clubs would provide the supplies (local anesthetic, alcohol, and cotton), a volunteer registrar, a volunteer to operate the visual acuity screener (orthorater), and a volunteer registered nurse to assist the ophthalmologist, and that the ophthalmologists would volunteer their services at the clinics. The district office arranged for clinic accommodations.

During the first year of the program only one clinic was in operation. It was in the southern part of the district. There is only one ophthalmologist in this area, and, at his request, no clinics are scheduled during June, July, and August. At the start of the second year an additional clinic was established to serve the upper half of the district. There are four ophthalmologists available in this area, so it has been possible to conduct clinics uninterruptedly throughout the year.

## Method

One clinic a month is scheduled in each area. It is restricted to persons 40 years of age and over. All visits are by appointment only, and at the outset it was planned to handle 40 people at each two-hour session. However, four of the ophthalmologists prefer to see fewer people, and their desire has been

honored. At present 20 appointments are scheduled for one, 30 for three others, and 40 for the fifth.

The Lions Clubs assume responsibility for the appointment lists. In the beginning, they published in the local newspapers several informative and promotional articles supplied by the district office. In addition, they place several notices in the papers, the week before each clinic, which remind the people of the time, place and the facts that attendance is by appointment only and that there is no charge. A telephone number is given for making an appointment.

The clinic sites consist of three rooms; a fairly large waiting room, where the registrar has a desk at which a simple history is taken,\* a second room where each registrant is screened for visual acuity and visual fields, and a third room fitted with an examining table and several chairs. The ophthalmologist and the registered nurse use this last room. The nurse instills the anesthetic into the eyes of waiting registrants while the ophthalmologist examines them in the supine position on the table.

The flow of registrants through the clinic is as follows. They enter the waiting room, where the registrar takes a brief history. When their turn comes, they enter the next room, where a volunteer who has been trained in the use of the visual acuity screener† checks them on this machine. They then move over to the visual field screener‡ where the district office technician tests them; (in clinics elsewhere this operation is also performed by a volunteer worker). They then enter the third room where the nurse instills two drops of anesthetic (ophthaine happens to be the choice of

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\* The history consists of name, address, age, name of family physician, and questions as to whether the registrant wears glasses and was ever told he had glaucoma.

† The New York State orthorater is used.

‡ The Harrington-Flocks visual field screener is used. Harrington, D. O., and Flocks, M. Multiple Pattern Method of Visual Field Examination. J.A.M.A. 157-645, 1955.

our ophthalmologists) into each eye twice, at three-minute intervals. They then are placed supine on the table where the ophthalmologist tests the intraocular pressure of both eyes with a Schiøtz tonometer and does a fundoscopic examination. Those whose test results are negative are informed immediately by the ophthalmologist. Those who are positive or are suspect are told they will receive a notice of the results through the mail.

In our clinics an intraocular pressure of 25 mm or less of mercury is considered normal, a pressure of from 25 to 30 mm is classified as suspect, and over 30 mm is diagnosed as positive. The visual field test is used mainly as corroborative of the pressure findings, although those with definite peripheral field loss and normal pressure are classified as suspect. Conditions other than glaucoma are also reported to the family physician.

### Follow-up

All records from the clinic are returned to the district office for filing and analysis.

Registrants who had a suspect or positive screening test, and those in whom any other eye abnormality was found, receive a letter stating merely that an abnormal eye condition was found, and advising them to consult their family physician for further advice on the matter. At the same time, the family physician receives a notice that abnormality has been found and is in-

formed that the patient has been advised to consult him. (It was decided at the outset to refer these people to their family physicians rather than to an ophthalmologist for two reasons: to preserve the physician-patient relationship, and to relieve the clinic ophthalmologist of any possible charge of using the clinic for personal gain.)

Four weeks after the original notice to the family physician he receives a second letter asking if the patient has contacted him, and, if so, whether he confirmed the diagnosis or referred the patient to a specialist. If the former is true, he is asked to indicate the final diagnosis; if the latter, the specialist is contacted and the diagnosis obtained. If the family physician states that the patient has not contacted him, a public health nurse visits the home to urge the patient to do so. So far, in the two years of operation, this has been necessary only on three occasions, and in each instance a single visit has been sufficient to get the individual to his family physician.

### Results

From October 21, 1958, to May 24, 1960, a total of 23 clinics were held, at which 651 people were tested. This was an average of slightly over 28 per clinic. Of this number 27 were positive. Of the 27, 16, or 64 per cent, were confirmed as glaucomatous, one was diagnosed as having latent glaucoma, eight proved to be negative, and in two the final diagnosis is pending (Table 1).

**Table 1—Glaucoma Screening Program, Glens Falls District, October 21, 1958, to May 24, 1960**

No. Screened	Screened Positive	Glaucoma Confirmed	Latent Glaucoma	Glaucoma Unconfirmed	Pending
651	27	16	1	8	2

**Table 2—Age Distribution of Screenees, Glaucoma Screening Program, Glens Falls District, October 21, 1958, to May 24, 1960**

Age	No. Screened	Screened Positive	Glaucoma Confirmed	Latent Glaucoma	Glaucoma Unconfirmed	Pending
Under 40	24	0				
40-49	168	6	3		2	1
50-59	190	3	2		1	
60-69	172	12	5	1	5	1
70-79	66	4	4			
80 and over	11	2	2			
Age unknown	20	0				
Totals	651	27	16	1	8	2

Of the 649 persons on whom final diagnosis is known, 2½ per cent proved to have previously unknown glaucoma.

Table 2 shows the same results tabulated by age groups.

The few conditions other than glaucoma which were diagnosed include several cases of cataract, both frank and incipient, retinal detachment,<sup>1</sup> and several cases of iritis. There was also one case in which there was suspicion of neoplasm. The final diagnosis on this case is not yet available.

## Discussion

One of the outstanding features of the program was and continues to be its immediate and universal popularity. The ophthalmologists, the county medical societies, the local Lions Clubs, and the public all accepted the program at once and continue to support and patronize it.

As has been mentioned before, the clinic in the southern part of the district is conducted by the lone ophthalmologist in the area. In the 19 months since this clinic started there have been 11 clinic sessions held. This is due mainly to the fact that the ophthalmologist is overworked, and frequently is unable to find time to schedule the clinics. In the northern sector, where there are four ophthalmologists, a clinic

has been held in every one of the 12 months since the inception of the program.

It is felt that the program is definitely worth while, but that its value would be considerably enhanced if a greater number of people could be tested. However, all five ophthalmologists agree that the amount of time allotted to each person in the clinic should not be reduced. Their opinion is that the fundoscopic examination should not be hurried, and that the several cases of cataract, retinal disturbance, and the one case of iritis found would probably have been overlooked if the clinic had been conducted on an assembly-line basis. We are now investigating the possibility of holding clinics more often.

No attempt has been made to determine the costs of the program. However, as described here, using volunteer services, it is inexpensive in terms of new dollars budgeted. Except for the original moderate cost of \$470 for the tonometer, the orthorater\* and the visual field screener, the very nominal costs in clerical time, stationery and postage can easily be absorbed by any official public health agency without special budgeting. This is very much in

\* When not in use in the clinics, the orthorater is offered to the local schools for use in their vision screening of pupils.

contrast to the usual problem of finding new public health funds for new programming. The expenditure by the Lions Clubs is less than \$10 a year in each area.

**Summary**

Glaucoma detection comes properly within the sphere of public health activity.

A glaucoma detection program in an upstate New York district is described which involved the official public health agency, the local ophthalmologists, the county medical societies, and the local Lions Clubs.

Of 651 people tested, 16, or 2½ per cent, were definitely diagnosed as having previously unknown glaucoma.

Glaucoma detection programs are well received by the medical profession and the community.

The cost of such a program to an official health agency, in terms of new budgeting, is nominal.

**REFERENCES**

1. *Glaucoma Program Guide*,—Chronic Diseases and Geriatrics Monograph No. 3. Albany: New York State Dept. Health, 1959.
2. *Glaucoma in General Medical Practice*. The Ophthalmological Foundation, Inc. Publ. No. 1, 1955.
3. Foote, F. M., and Boyce, V. S. Screening for Glaucoma. *J. Chronic Dis.* 2,4:487-490 (Oct.), 1955.
4. *Facts on Blindness in the United States*. Washington, D. C.: U. S. Department of Health, Education, and Welfare. PHS Publ. No. 706, 1959.

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**Grants for Developing Out-of-hospital Services**

“Project Grants to Develop and Demonstrate Better Methods of Providing Community Health Services for the Chronically Ill and Aged” instructs on the pertinent provisions of the Community Health Services and Facilities Act of 1961. It explains what the purpose of the grants is, who may apply for them, what the nature of the aid is, what is included under the “out-of-hospital health services” provision, what types of projects are eligible, and how to apply for grants. Copies of the leaflet and further information from any of the nine regional health directors of the Public Health Service or from Grants Management Branch, Bureau of State Services, PHS, Washington 25, D. C.