Need for Routine Glaucoma Screening by Hospitals and Physicians

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A RECENT EDITORIAL (*1*) on early detection of glaucoma stated: "We cannot urge too strongly the need to question patients with respect to family history of glaucoma and to incorporate tonometry into the routine physical examination. . . . Since glaucoma can be controlled but not cured, early detection of the first elevations of intra-ocular pressure is imperative to prevent ocular damage."

This exhortation has a direct relationship to glaucoma screening in hospitals. The modern hospital is the training ground for physicians. Considering the importance of preventing blindness due to glaucoma, the high casefinding rate for new glaucoma among hospital patients, and the ease of tonometry, the tonometer along with the stethoscope, the ophthalmoscope, and the percussion hammer should be part of the armamentarium of all physicians. Unless tonometry becomes part of the routine physical examination in hospitals, we cannot expect it to become routine in private practice.

According to Dr. John E. Scott, Division of Chronic Diseases, Public Health Service, one of the goals in testing hospital patients for glaucoma, on both an inpatient and outpatient basis, is "to teach physicians the importance of a tonometry test as part of every routine physical examination" and that "a logical step toward achieving this goal would be the initiation of screening programs for patients admitted to hospitals." The generous support of the Public Health Service in recent years for glaucoma screening programs is in keeping with this objective (*2*).

According to Porter (*3*), a significant number of ophthalmologists do not check the intraocular tension in all their patients who are over 40 years of age. I have also found evidence that many eye clinics, hospital eye services, and eye, ear, nose, and throat hospitals do not require routine tonometry on all adult patients.

A review of the literature and personal inquiries revealed that only six glaucoma screening programs are currently being conducted in hospitals. Most of these programs have received financial assistance, directly or indirectly, from Federal, State, or local sources. All but one are conducted in hospitals affiliated with medical schools. The programs are located at Freedmens Hospital, Washington, D.C. (*4* and personal communication from Dr. C. L. Cowan); Metropolitan Hospital, New York City (personal communication from Dr. B. Friedman and Dr. P. G. Halberg); Gouverneur Ambulatory Care Service, New York City (personal communication from Dr. H. Brown); Detroit Receiving Hospital (personal communication from Dr. A. D. Ruedemann); City of Memphis Hospitals (*5* and personal communication from Dr. H. Packer); and the hospital affiliated with the University of Florida College of Medicine (personal communication from Dr. H. E. Kaufman). In addition to the six cur-

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rent programs, I found that in recent years brief and relatively small programs were conducted in only seven hospitals or clinics (*6–8*).

Lack of Leadership

A major reason for the unimpressive total number of glaucoma screening programs is lack of leadership, which must come from departments of ophthalmology. This almost limits glaucoma detection to hospitals with at least 200 general care beds, because only hospitals of at least this size can support active outpatient departments and have more than a token ophthalmological staff and at least one resident in ophthalmology. All the larger general hospitals have departments of ophthalmology, some sizable, with full-time staff. However, they rarely have the leadership required for initiation of glaucoma detection programs. Even if a hospital's medical service were interested in glaucoma detection, its desire would be ineffectual without support from the department of ophthalmology.

Ophthalmologists are in great demand, because there are not enough of them (slightly more than 5,000 board certified) to meet the eye needs of the population, and most are engaged in busy, lucrative practices. Therefore, the $25–$35 most health departments pay specialists for 2 to 3 hours of their time holds little attraction for ophthalmologists. Another reason for the passive resistance of ophthalmologists to glaucoma screening programs is that many are skeptical about casefinding rates, which range between 2.5 and 6 percent. They point to the lack of uniform criteria for the diagnosis of glaucoma by ophthalmologists (*2*, *9*, and personal communication from Dr. B. Friedman and Dr. P. G. Halberg). Some ophthalmologists believe that if uniform standards were in effect, casefinding rates might drop to 1 percent.

Some ophthalmologists question whether early, asymptomatic, nonpathologic glaucoma, the type frequently detected in screening programs, will progress to loss of vision. They contend that the value of treatment for such patients has not been demonstrated as it has for patients with symptomatic cases. Also, according to Friedman and Halberg, no longitudinal study has been undertaken of treated and untreated patients with asymptomatic, nonpathologic glaucoma. The only study I found in the literature of the past 25 years described a 5-year followup of 225 patients treated for wide-angle glaucoma. Many of these patients had early cases, and there was evidence that normalization of intraocular tension stabilized the disease in more than 80 percent of all the patients (*10*).

The ophthalmologists also point out that progression of untreated asymptomatic glaucoma to loss of vision takes from 15 to 30 years, and patients without eye symptoms would be unlikely to persist with treatment over all these years. I have found that most of the hospital screening programs have no data available as to the rate at which patients with new, asymptomatic glaucoma lapse from care. At the City of Memphis Hospitals, of 219 persons diagnosed as having glaucoma during a 3-year period, 29 did not return for treatment and 83 returned only once. Thus, unless more than a few of the lapsed patients sought private care, more than half of the 219 new glaucoma patients were lost to care within 3 years (personal communication from Dr. H. Packer).

The New York City Department of Health conducts a year-round, nonhospital-based glaucoma detection program in which from 15,000 to 20,000 adults, most over 40 years of age, are screened annually. A study of a random sample of persons with newly diagnosed cases revealed that 11 percent were lost to treatment in the first 12 months and 26 percent after 30 months. The low attrition rate is probably the result of the city's painstaking followup program.

The Gouverneur Ambulatory Care Service in New York City has, to my knowledge, the only hospital-based glaucoma program for which leadership has not been provided by the ophthalmology department (personal communication from Dr. H. Brown). This city-owned facility, without an on-the-premise inpatient service, is operated by Beth Israel Hospital, a voluntary institution, under contract with the city's department of hospitals.

Tonometry

Assuming that a hospital is willing to undertake glaucoma screening, who will do the tonometry? Logically, if tonometry is to become

routine in the physician's office, it should be done by physicians in both inpatient and outpatient services. However, in five of the six current hospital-based programs, tonometry is done by technicians. Physicians are used only at the Detroit Receiving Hospital, and they are residents in ophthalmology who do tonometry in special glaucoma screening and retest clinics. Therefore, even at this hospital tonometry is not part of the routine physical examination performed by clinic and admitting physicians.

Hospitals have received little cooperation from physicians who are not eye specialists because many of these physicians are reluctant to use the Schiotz tonometer; they believe the instrument has a great potential for producing trauma. They recoil from further use of the instrument at the sight of the first red eye, even if it is only a transient irritation rather than a corneal injury. This fear can be overcome with experience in tonometry. The main obstacle to the use of the tonometer, however, is the physicians' attitude that tonometry is a nuisance, unproductive, time consuming, and relatively unimportant. They seem to disregard or be unaware of the ubiquity of glaucoma and its aftermath of blindness, and that it can be easily detected by tonometry. Obviously, education in this phase of preventive medicine is needed among practicing physicians.

A few screening programs have attempted to incorporate educational opportunities for community physicians interested in using the tonometer. Other programs were specially designed to educate practicing and staff physicians in the use of the Schiotz tonometer (*9*, *11*). Not one of these programs was notably successful.

At least six hospitals have trained interns in the use of the tonometer in the hope that they would use the instrument routinely when examining patients on admission, but this hope was not fulfilled (*11*, *12*). Also, as far as I could determine, few if any of these interns used the tonometer later in their private practices.

In the opinion of some ophthalmologists, tonometry should be taught in medical schools so that graduates will be induced to perform it routinely. Boston University (personal communication from Dr. T. Gundersen and *13*) and the University of Michigan Medical Schools (personal communication from Dr. F. B. Fralick) have included tonometry in their curriculums. However, I found no evidence that medical students taught tonometry used it in later years. Without the cooperation of a medical school's department of medicine, such training can have no lasting effect (*12*). The department of medicine must inculcate in students from the first physical examination they perform that tonometry is an integral and important feature of the routine physical examination. Unfortunately, a multidisciplinary approach from the departments of medicine, ophthalmology, and preventive medicine has not yet been introduced into medical school teaching.

Hospital Program Planning

Under present conditions, a number of problems confront hospitals planning glaucoma detection programs. Although the hospitals probably will use one or more technicians, how can they, particularly those not affiliated with a university, handle the retest load? Most screenees are indigent or medically indigent, and they cannot be referred to private ophthalmologists. Therefore, some special clinic arrangement must be available for retesting so that a definitive diagnosis can be made. The retest group may be 6 to 10 percent of the total screenee population, a group large enough to be a major logistical problem. Most of the regular eye clinics will not be able to handle such a group. If a regular eye clinic is particularly busy, a special clinic will be needed for retesting; if it is not so busy, retesting might be done when the clinic is not in session. If the retest clinic must occupy space other than in the eye clinic, it will require equipment—an expensive item.

No matter where the retest clinic is located, it will need its own staff. Although the technicians who do the screening can also do tonometry, tonography, and visual field determination in the retest clinic, there may be a need for an optometrist to check visual acuity and an ophthalmologist to supervise and perform diagnostic procedures. Obtaining an ophthalmologist may not be difficult for the hospital affiliated with a medical school, but each hospital, whatever its size, will have to provide funds for most of the personnel.

Glaucoma may be detected in 1 to 12 percent of the screenees, with variations depending on factors such as the predominant age groups screened, the percentage of screenees with diabetes or hypertension, whether inpatients or eye clinic patients are screened, and the diagnostic standards used. The hospital must provide treatment for most of the new patients, and the regular clinic may not be able to handle the additional load. A special glaucoma treatment clinic will have to be established, at additional expense to the hospital.

At least one other problem confronts the hospital; that is, followup and caseholding. As I have pointed out, the high attrition rate among patients under treatment is a particularly vulnerable feature of the program. However, a diligent followup system can help considerably, as evidenced by the previously mentioned non-hospital-based program in New York City. Followup should be a major consideration in the planning of a hospital-based program (personal communication from Dr. A. D. Ruedemann).

Although I have presented a rather discouraging picture for hospitals planning a glaucoma screening program, the situation is not so hopeless as it may seem. For example, assistance can be obtained from health departments. Whatever the solutions, however, it may take years before glaucoma screening becomes a routine part of hospital practice. Therefore, at this time we must plan on two fronts, one geared for more immediate results and the other a long-range program.

Current and Future Needs

Physicians experienced in glaucoma screening programs, including hospital-based ones, feel that a current need is the establishment of "seed" programs in hospitals. The handful of hospitals now engaged in glaucoma screening is too small to have a salutary effect on other hospitals. This small group could be expanded by use of grants-in-aid. Perhaps financial support could be obtained from the Federal Government if the seed programs included major research components (*2*). There is still much to learn about the public health aspects of glaucoma. Does asymptomatic, nonpathologic glaucoma progress to blindness? In what percentage of patients is therapy continued over 20 to 30 years beneficial? These are examples of areas in which research is needed.

One of the criteria for providing a hospital with a grant should be its geographic location. The hospital should be so located that its neighboring hospitals will eventually be compelled to introduce glaucoma screening. The later programs will probably have to be financed by the hospitals themselves or by insurance plans.

One activity which the health department might undertake when and if more hospitals begin to plan screening programs is the training of technicians at a hospital with a large department of ophthalmology. Or, if the health department conducts year-round community screening, it might train technicians within its own program.

Taking a longer view of the glaucoma detection problem, I must return to the postulate that glaucoma screening must become routine in private practice. This desideratum has been expressed by many physicians concerned with the prevention and control of blindness caused by glaucoma (*1, 2, 9, 12–16*). These physicians, having tried and failed to reach the internist, the general practitioner, and the intern, have concluded that the place to start is in the medical school. In this connection, I believe that each health department with one or more medical schools within its service area can be of great assistance. Health department officials have open channels of communication with the heads of medical schools; with the heads of the ophthalmology, medicine, and preventive medicine departments; and with members of the curriculum committees. The health department officials and persons who have academic rank in medical schools can find frequent opportunity to promote the need during contacts with medical school personnel.

Perhaps in presenting my suggestions I have been overly optimistic about what might happen in the future. On the other hand, to my knowledge, no alternative suggestions have been proposed which offer much hope that more hospitals will enter into glaucoma screening activities or that glaucoma screening will become routine in private practice.

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The Summer Corps

Dr. Baker

As part of the New York City health department's summer corps in 1903, Dr. S. Josephine Baker, later director of the division of child hygiene, worked in an overcrowded tenement district on the Lower West Side. She describes the work in her autobiography.

"My job was to start in this district every morning at 7 o'clock. I climbed stairs after stairs, met drunk after drunk, filthy mother after filthy mother, and dying baby after dying baby. It was the hardest physical labor I ever did in my life. It was an appalling summer with an average of 1,500 babies dying in New York each week, lean, miserable wailing little souls carried off wholesale by infant dysentery. Even New York's worst slums have forgotten what dysentery epidemics looked like. One could hardly walk a block in any tenement district without meeting a little white funeral. Dead horses were a common sight in almost every street. Pasteurization of milk was just beginning to be urged by that great philanthropist, Nathan Straus, but the bulk of milk that was fed was drawn from rusty cans dotted with flies."—*Excerpted from "Fighting for Life" by S. Josephine Baker, MacMillan Co., New York, 1939.*

Portrait of Dr. Baker from the Library of the New York Academy of Medicine