

The Societal Costs of Blindness From Uncontrolled Glaucoma

Public health efforts to enhance education could prove to be the most valuable intervention strategy.

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Glaucoma annually commands an estimated \$2.5 billion of the US health care budget, with \$1.9 billion in direct medical expenses. Health economists estimate that more than \$1.5 billion is spent on Social Security benefits, lost income tax revenue, and health care expenditures related to glaucoma.¹⁻³ Owing to the heightened public awareness of governmental spending, a reduction of health care costs is a major issue. Physicians and policymakers share an interest in identifying preventive cost-reduction intervention points.

PRIMARY OPEN-ANGLE GLAUCOMA

Nearly 80 million people in the world will be diagnosed with glaucoma by 2020.^{4,5} The prevalence of primary open-angle glaucoma (POAG) in the United States will increase by an estimated 28% per decade to approximately 7.32 million by 2050. Two high-risk demographics are also the fastest growing in the United States: the elderly and Hispanic communities. For this reason, we expect elderly Hispanic men will have the highest prevalence of POAG within 40 years.⁵ Half of the current 2.71 million persons with POAG are unaware of their diagnosis.⁶ Late interactions with an ophthalmologist and the public's imperfect understanding of the disease contribute to high rates of inadequate control.⁷ Uncontrolled glaucoma is therefore a major public health issue secondary to capital expenditures and personal psychosocial consequences related to the late-stage presentation of disease.

PUBLIC PERCEPTION AND ATTITUDES

Because of low public awareness and the relatively asymptomatic nature of POAG, delayed presentation is

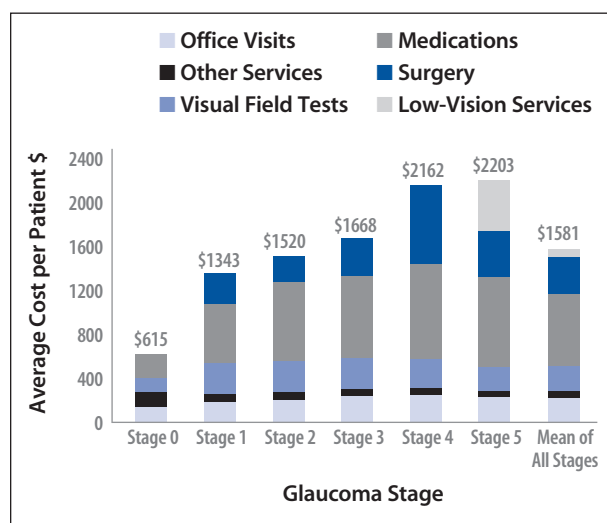


Figure. Average costs per patient for stages of glaucoma. (Adapted from Lee et al.⁹)

unfortunately commonplace. Many patients diagnosed with glaucoma are blind because of a lack of health care, nonadherence to prescribed therapy, and inadequate treatment.⁸ One factor is a lack of education among the highest-risk patients. Of African Americans surveyed by the Glaucoma Research Foundation, 16% stated they were unfamiliar with the disease. Similarly, 30% of all Americans surveyed by Prevent Blindness America reported they had never heard of glaucoma.¹ Of those diagnosed, patients cite three main barriers to treatment “buy-in”: (1) a poor understanding of glaucoma, (2) the financial burden of medication, and (3) side effects of treatment. These obstacles contribute to poor adherence and increase the risk of blindness.⁷

ECONOMIC IMPACT: DIRECT AND HIDDEN COSTS

Glaucoma accounts for more than 10 million visits to physicians each year. The average direct cost of glaucoma treatment ranges from \$623 per year for patients with early-stage glaucoma to \$2,511 per year for patients with

end-stage disease (Figure).⁹ “Costly” patients are thought to be younger, diagnosed with concomitant pseudophakia or aphakia, or undergoing cataract surgery within the first 2 years of glaucoma diagnosis.¹⁰ These patients compose approximately 5% of the population with glaucoma, but they use nearly 24% of direct treatment charges.¹⁰ At all stages, prescription medication costs drive financial burden.⁹

As glaucoma progresses to blindness, services for home skilled nursing begin to contribute greatly to indirect medical expenditures (an average of \$2,000 per year).^{11,12} Some indirect costs to blind individuals are not easily appraised, however, such as a loss of social status and a decline in self-esteem. Quality-of-life assessments help health care professionals to ascertain the psychosocial impact of disease processes. Scores are consistently depressed in the setting of low vision and correlate positively to greater visual field loss. Across all stages of disease, we observe higher rates of mechanical falls (three times more likely) and motor vehicle accidents (six times more likely) in patients with POAG than in age-matched cohorts.⁸

RECOMMENDATIONS

One might assume that identifying high-risk patients through early screening would reduce public spending for uncontrolled glaucoma. Although not yet validated by randomized controlled trials, the current literature does not support the notion of population screening. The National Business Group on Health estimates an average screening eye examination costs \$71, with additional charges for computerized instruments. In October 2013, the US Preventive Services Task Force could not recommend for or against glaucoma screening in asymptomatic patients.¹³ Screening measures retain considerable variability in sensitivity and specificity, which, coupled with the lack of a gold-standard test, produce unknown rates of false-negative and false-positive results.¹⁰ Clinicians should “chase” first-degree relatives of patients with known POAG, however, because as many as 23% of relatives will have manifest open-angle glaucoma.¹⁴

Considering the variable accuracy, the overtreatment of individuals who may go on to have a clinically silent course cannot be practically compared to the prevention of disease burden of a yet-unknown number of citizens. Public health efforts to enhance education could prove to be the most efficacious intervention point. The dissemination of accurate and culturally appropriate information is a low-cost intervention. An informed public will be fundamental to decreasing disease burden, health care spending, and the incidence of glaucoma-related blindness. Also needed is the development of cost-effective surgical and medical techniques to halt glaucomatous progression.

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The challenges society faces in glaucoma care.

BY MILDRED M. G. OLIVIER, MD

Glaucoma has social implications that extend beyond its impact on patients. Family, physicians, health systems, and society as a whole face issues related to the provision of care, its cost, and the long-term impact of impaired sight.

Individuals do not experience symptoms from glaucoma until the disease reaches an advanced stage.¹ Older adults, African Americans, Latinos, and people with a family history of the disease are at elevated risk of glaucoma.^{2,3} These people often make primary care a priority, but family practice and internal medicine physicians are generally not equipped to screen for glaucoma. Although an initial screening can be performed by a trained volunteer or technician, the techniques are rarely taught in general medical training. Most medical schools no longer have an elective for students to rotate through ophthalmology, decreasing doctors' understanding of how the eye functions and of common ocular

diseases. Examining at-risk groups requires the national health care system to provide personnel and equipment to detect glaucoma.

SOCIAL CHALLENGES

The first social challenge is to provide accessible and inexpensive screening to adults in community and clinical settings. After diagnosis, treatment presents a burden to most patients. Many, if not most, of the people being treated for glaucoma have other ongoing health issues. When managed as a chronic condition,⁴ glaucoma requires continual monitoring. Such care can be hard to schedule, is not always easily achieved, and can involve substantial costs. Even individuals with health insurance can find paying for treatment challenging. Medications are expensive, and more affordable generic eye drops are not appropriate for all patients. Preservative-free agents and new prescriptions are often more costly, although they may be more efficacious and improve compliance, owing to fewer ocular side effects. In addition to its financial impact,⁵ glaucoma requires of patients' (and any caregivers') time and discipline to comply with prescribed therapy.

A second social concern is developing and distributing affordable drugs and assisting people in using them as prescribed.

LIMITATIONS ON INSURANCE COVERAGE

When surgery is indicated, insurance coverage of newer procedures may be limited. Some surgeries may not be ideal in terms of their risk-benefit ratio, leaving the glaucoma specialist with an alternative treatment that is less than optimal, or they may require frequent follow-up to ensure maintenance of the target IOP. In the changing environment of affordable care organizations,⁶ recognition of the role of and the need for frequent appointments with the specialty ophthalmologist is crucial, especially in glaucoma and retinal care. Without this understanding, the ophthalmologist may bear more of the treatment and insurance risk for these patients.

Newer glaucoma procedures may only be available to people who have good insurance or who can afford to pay out of pocket (eg, premium IOLs). As a larger proportion of the US population acquires insurance through the Affordable Care Act, pressure increases on a system already stressed by the transition to electronic medical records, a shortage of medical personnel, and a lack of understanding among most people not invested in eye care that early intervention is critical to saving sight from glaucoma.

OTHER CHALLENGES

The aging US population, with its growing prevalence of glaucoma,⁷ and the large numbers of individuals

abroad with the disease demand more ophthalmologists. The currently limited number of ophthalmologic positions in residency programs challenges practicing ophthalmologists and glaucoma specialists to see more patients. The responsibility of helping people understand the nature of glaucoma and to select treatment options they can afford falls on doctors and their staff.

Outside urban areas, getting to a hospital for surgery can require traveling a long distance. The alternative to timely treatment is visual impairment. Society must either support the treatment of more patients with limited health care or adapt to the personal and social needs of people coping with blindness. Low vision services and patient-run support groups must become available across the nation and not just in select locations.

CONCLUSION

Recruiting and supporting physicians who understand the concerns of patients from a wide variety of backgrounds are another test of best practices in medicine. Diversity among physicians is limited.⁸ Creating inclusive health care teams who can relate to the unique circumstances of patients is a goal that has not yet been achieved.⁹ Improving the quality of medical care provided in the United States requires involving a diverse population of ophthalmologists in research, developing baseline eye metrics for specific populations, and identifying how those various patient populations respond to medications and surgery.¹⁰ ■

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