

5. MEDICARE COVERAGE OF SCREENING FOR OPEN-ANGLE GLAUCOMA

Costs to Medicare

At present, neither screening for all people with high intraocular pressure (IOP) nor for those with only manifest open-angle glaucoma (OAG) is covered by Medicare, although tonometry, ophthalmoscopy, and perimetry are all covered procedures when provided as diagnostic services or in the course of management of established disease.¹ If Medicare were to initiate a policy of covering screening for manifest OAG or for high IOP, what would be the implications for program costs and patient benefits?

As the previous chapters demonstrate, there is great variability and uncertainty surrounding the accuracy of screening tests and the effectiveness of treatment for either ocular hypertension (OH--high IOP without other signs of disease) or manifest OAG. This uncertainty makes a precise estimate of the costs and effectiveness of glaucoma screening infeasible. Nevertheless, OTA constructed a simple model of a hypothetical biannual glaucoma screening program in order to estimate the likely magnitude of the annual costs of such a program. The model incorporates a wide range of reasonable assumptions based on the available evidence. It is applied here, first, to screening for manifest OAG using the various technologies available; and second, to screening for high IOP with tonometry.

The model, presented in appendix C along with detailed assumptions and results, calculates both total program costs and the costs of detecting a case of OAG (or high

IOP). Total costs include both the costs of the screening episode and the costs of a followup visit for all individuals testing positive, to confirm or deny the test result. To calculate the average cost per case of OAG (or high IOP) detected, all screening and followup costs are loaded on true cases--i.e., on those with confirmed positive tests.

The costs of an ongoing screening program--and the number of cases detected as its result--depend fundamentally on whether the program is newly implemented or has been ongoing for some time. In initial years, the number of cases that can be identified through the program will approach the prevalence of the condition. The prevalence of high IOP in the elderly is quite high, and OAG itself is not uncommon, occurring in about 2 to 3 percent of the elderly. Consequently, costs per confirmed case of high IOP or OAG will be relatively low in initial years of a screening program (since costs per case are total costs divided by total number of cases found).

On the other hand, new cases of OAG are comparatively rare--on the order of 2 per 1,000 elderly per year. Thus, an ongoing program to detect OAG can identify only a very small number of cases. It has a correspondingly high cost per true positive case identified through the program. Note that, with true new cases of manifest OAG being comparatively rare, a high proportion of people referred for followup will in fact be false positive cases, even if the screening tests are quite accurate.

As discussed in the appendix, the uncertainties surrounding several crucial assumptions of the model preclude a precise estimate of costs. These assumptions include:

- the accuracies of the different *screening* procedures as performed by different examiners in different settings,
- the incidence and prevalence of OAG in the elderly,
- the costs attributable to screening,

¹ The current procedure codes for perimetry, on which payment is based, are intended to represent diagnostic, rather than screening, procedures. It is possible that costs and charges would be lower for screening perimetry, resulting in lower total cost estimates than those here. Similarly, there is no code for ophthalmoscopy that appears to be appropriately applied to screening for glaucoma; OTA's assumption that the costs of ophthalmoscopy would be the same as for tonometry may well be incorrect. The code for tonometry is not intended for screening, but in this case the procedure itself is the same regardless of the purpose.

- the extent to which people utilize the program, and
- the proportion of people testing positive who will show up at the confirmatory physician visit.

Because the uncertainties associated with these factors are so great, OTA has estimated and presented here only the likely upper and lower bounds of the costs and number of cases likely to be found through a screening program. These bounds encompass a very wide range. Nonetheless, the range is a useful indicator of the order of magnitude of costs likely to be incurred and number of cases likely to be identified through a screening program for the elderly.

In the initial years of an every-other-year program to screen for manifest OAG in the elderly, it would cost between \$1,000 and \$16,000, on average, to detect and confirm a case of glaucoma. Between 50,000 and 340,000 cases of OAG would be detected annually in the first two years, depending on the exact prevalence of OAG, the accuracy of screening tests, and the skill of the examiners using them.² In the later years of such a screening program, it would cost between \$3,000 and \$81,000 per confirmed case of OAG to detect between 10,000 and 90,000 cases per year. Annual total screening program costs would be between roughly \$200 million and \$1 billion in both initial and subsequent years (see app. C).

In a similar program screening for high IOP, costs would be between \$100 and \$1,700 per confirmed case of high IOP in initial years, and between \$300 and \$14,600 in later years. Total annual costs of such a program would likely be between \$100 million and

\$300 million initially and between \$250 million and \$500 million in subsequent years. This screening program would detect between 300,000 and 3 million people with high IOP per year in initial years and between 30,000 and 350,000 per year in later years. The cases of confirmed high IOP would consist primarily of people with OH--high IOP but no other signs of OAG--but would include a minority of individuals who had manifest OAG.

Medicare pays 80 percent of allowed charges after the beneficiary has met the deductible. Assuming that Medicare pays 80 percent of the total program costs delineated above leads to the conclusion that total Medicare costs of an ongoing program to detect OAG in the elderly would likely be **between approximately \$160 million and \$800 million per year. Total Medicare costs of a similar program to screen for high IOP would be between \$80 million and \$400 million per year.** These costs do not include the costs of treating detected cases of OAG or high IOP. Nor do they include the costs or the benefits of detecting conditions other than OAG (or high IOP) as a result of the screening visit.

The full benefits of a screening program depend fundamentally on the effectiveness of treatment. Potentially, these benefits include additional years of vision, lessened dependence on assistance in everyday tasks, and reduced expenditures for programs providing social services and support for people with disabilities. Because of the uncertainties about treatment effectiveness, the extent to which these potential benefits can be realized is unknown at present.

Implications of Scheduled Frequency of Screening and Screening Utilization for Medicare Costs

The scheduled frequency with which screening occurs and the utilization rate of glaucoma screening among the elderly have little impact on the average cost of identifying a case of OAG through the screening program. They do, however, have enormous implications for the total number of cases detected and for total program costs if the

² These cases would not all be previously unknown. Since OTA's calculation is based on prevalence, it includes the implicit assumption that **all people** in the population would be screened, regardless of whether they were already known to have OAG. (In fact, a substantial number of people who voluntarily appear at **community** screening clinics actually have been told previously that they have OAG (56).) After the first 2 years the model assumes that previously diagnosed cases will not appear for screening, and the calculations are based on incidence.

Medicare program were to cover the service. In the model presented in appendix C, OTA assumed that 75 percent of the population would participate regularly in a program in which people were screened every 2 years. A less frequent screening schedule would result in lower total program screening costs per year, since fewer people would be screened and diagnosed each year. These lower total costs would come at the expense of fewer diagnosed cases and cases that would be more severe when diagnosed.

Screening utilization would affect case detection and Medicare costs in three important ways:

Current utilization. Approximately 50 percent of elderly people report that they have been screened for OAG within 2 years (118). For this group, Medicare coverage simply means a shift in the cost of screening from the individual patient (or provider, or non-profit organization) to the Medicare program. No new health benefits accrue, since OAG (and OH) cases in this group would have been diagnosed regardless of Medicare coverage.

In some cases, Medicare coverage would replace screening currently provided free of charge to the patient. The National Society to Prevent Blindness, a nonprofit organization that often coordinates with local hospitals or service organizations to provide glaucoma screening, screened 46,889 people age 65 and over in 1985 (0.16 percent of the population in that age group) (85). The American Academy of Ophthalmology operates the National Eye Care Project, which refers needy elderly people to ophthalmologists who volunteer their services. Since 1986, this project has referred over 137,500 people, of which at least 77,500 have seen an ophthalmologist and had an eye examination as a result (129). About 5 percent of patients seen were diagnosed with glaucoma (19).

New utilization. Presumably, Medicare coverage would encourage people to be examined who otherwise would never have been screened for OAG. The cost model OTA has used assumes 75 percent utilization, or a 50 percent increase over the current utilization

rate of 50 percent.³ This new group would obtain new health benefits that would not have accrued in the absence of Medicare coverage. For example, under a scenario in which screening by perimetry in an office setting would detect 50,000 cases of OAG per year (about the middle of the range estimated in the model), the utilization rate of 75 percent would mean that one-third of these cases—nearly 17,000 of them—would not have been detected as rapidly without Medicare coverage because these people would not have been screened. The remaining 33,000 cases would have been diagnosed without Medicare coverage, but Medicare now pays their screening costs.

If screening were less frequent, the new additional utilization due to Medicare coverage would quite likely be less as well. For example, while only about 50 percent of the elderly population currently receive glaucoma screening every 2 years, a total of 75 percent receive screening at least every 3 years (118). Thus, if Medicare covered screening every 3 years, the additional utilization might be perhaps 10 percent over current levels (for a total of 80 to 85 percent utilization), and could be no more than 33 percent higher than at present.

Current diagnostic visits. Under the present Medicare system, a screening visit (in which the patient is asymptomatic) would not normally be reimbursed. Despite this policy, however, some current utilization is probably already supported by Medicare. For example, patients may be screened for OAG during a visit that was reimbursable for other reasons (e.g., evaluation of a cataract). Since a substantial number of elderly people have eye conditions other than OAG, and visits to the physician due to these conditions are often reimbursable, it is possible that a substantial amount of glaucoma screening is already being done during Medicare-reimbursed visits.

³ This represents a simplistic assumption that the 50 percent of the elderly reporting that they have been screened within 2 years are in fact routinely screened every other year.

In summary, the benefits of Medicare coverage for OAG screening depend heavily on how many people would be induced to undergo screening if the service were covered. For the over 50 percent of the elderly assumed to be already undergoing frequent screening, coverage will bring some relief from out-of-pocket costs but no additional benefits in preventing impairment. Elderly people induced to undergo screening due to Medicare coverage represent the greatest potential social benefit to the service. Under the assumptions of our model, this means that somewhere between 3,000 and 30,000 people would have manifest OAG diagnosed earlier if Medicare covered OAG screening than under the current financing scheme.

Costs and Effectiveness of Screening in Preventing Blindness

The above discussions of screening for OAG and high IOP include only the costs of detecting and confirming a case, not the expense of treating the cases found. OAG treatment can be expensive. Rough estimates by two researchers in 1980 suggested that each person with a diagnosis of OAG incurred annual charges of between \$180 and \$460 for medications and followup, depending on the number and type of drugs prescribed (41,4127). (Individuals with OH who are treated to lower their IOP would incur similar charges.) OAG patients requiring filtering surgery were estimated to incur charges of \$2,400 to \$3,000 in the year they received surgery.⁵

Because of the uncertainties regarding the effectiveness of treatment for OH and OAG, OTA did not extend the cost-effectiveness analysis to the full effectiveness of screening in preventing visual disability. The authors of one study in the literature, however, did attempt such an analysis (41).

⁴ Although this paper was published in 1983, the treatment cost estimates it contained were 1980 estimates from an earlier, unpublished paper.

⁵ Until 1991, Medicare will not cover any part of the costs of outpatient drugs to treat OH or OAG. Medicare does pay a proportion of hospital, physician, and ancillary charges associated with surgery for OAG.

The baseline assumptions in that analysis were generally optimistic, including high sensitivity and specificity for screening tests, low per-person costs of screening, and generous assumptions regarding the effectiveness of treatment.⁶ However, when less generous assumptions were made—for example, when less favorable treatment outcomes were assumed—costs per year of vision saved were up to 40 times greater than the lowest cost under baseline assumptions. Thus, just as this OTA analysis reports a wide range of potential program costs per OH and OAG case detected, that analysis demonstrated the extreme sensitivity of cost-per-year-of-vision-saved to assumptions regarding the effectiveness of treatment.

Problems in Implementing Medicare Coverage of OAG Screening

Covering OAG (or OH) screening as a Medicare benefit would present two problems concerning payment policies:

1. Paying for screening in community settings. If Medicare were to cover glaucoma screening, an immediate policy decision would have to be made regarding who would be paid to provide it. At present, a considerable amount of screening is provided inexpensively by non-profit organizations in community settings (e.g., at churches, schools, or hospitals). However, mass screening in community settings is a controversial issue among eye care professionals. Such efforts make glaucoma screening available to a broad spectrum of people who might otherwise not receive the service. On the other hand, a negative glaucoma test in a community screening clinic may sometimes encourage an individual not to seek any further eye care of any kind. Policy makers would have to decide if glaucoma screening were to be covered

⁶ The authors assumed, first, that persons with field loss at the screening would become blind in 7.5 years without treatment (it was assumed that only a small number of 'treatment failures' would go blind if treated); and, second, that people with elevated IOP but no visual defects at screening would go blind an average of 12.5 years after screening if untreated (41).

only in community settings, only in traditional health care settings (e. g., physicians' and optometrists' offices), or in both.

There is at present no mechanism by which Medicare pays for medical services offered in community facilities such as churches or senior citizens' centers. If Medicare covered OAG screening done in these settings, the Health Care Financing Administration (HCFA) would have to develop reimbursement policies for them. For example, HCFA might pay community screening program sponsors -- hospitals, nonprofit vision societies, etc. --- a set rate per patient for all Medicare beneficiaries screened. Although feasible, this policy would take some time to establish. Processes for developing payment rates, designating eligible clinic sponsors, and regulating dangers and problems in community facilities would have to be developed.

2. Paying for components of office visits.

The two most widely used OAG screening technologies, tonometry and ophthalmoscopy, when used as part of a routine physician office visit, are not billed separately (3). If Medicare covered OAG screening but not screening for other vision conditions, either:

- 1) examiners must be able to bill separately for these procedures,
- 2) Medicare would have to establish a policy of paying for part of a visit charge, or
- 3) Medicare would pay for a visit designated to include only glaucoma screening (for example, a "limited visit," as used in the cost model).

Ultimately, a Medicare decision to cover glaucoma screening would probably require the development of new codes to designate tonometry, ophthalmoscopy, or perimetry used for that purpose.