U.S. Preventive Services Task Force

Screening for Glaucoma: Recommendation Statement

▶ See related Putting Prevention into Practice on page 569.

This summary is one in a series excerpted from the Recommendation Statements released by the USPSTF. These statements address preventive health services for use in primary care clinical settings, including screening tests, counseling, and preventive medications.

The complete version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF website at http://www.uspreventiveservicestaskforce.org/uspstf/uspsglau.htm.

A collection of USPSTF recommendation statements reprinted in *AFP* is available at http://www.aafp.org/afp/uspstf.

Summary of Recommendation and Evidence

The U.S. Preventive Services Task Force (USPSTF) concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for primary open-angle glaucoma (POAG) in adults *(Table 1)*. **I statement.**

See the Suggestions for Practice Regarding the I Statement in the Clinical Considerations section for more information.

Rationale

IMPORTANCE

Open-angle glaucoma affects approximately 2.5 million Americans and is a leading cause of impaired vision (loss of peripheral vision) and blindness.

DETECTION

The USPSTF found inadequate evidence on the accuracy of screening for POAG in adults. Evidence is limited by the lack of an established standard against which individual screening tests can be compared.

BENEFITS OF DETECTION AND EARLY TREATMENT

The USPSTF found no direct evidence on the benefits of screening.

The USPSTF found convincing evidence that treatment of increased intraocular pressure (IOP) and early glaucoma reduces the number of persons who develop small, clinically unnoticeable visual field defects. The USPSTF also found that treatment of early asymptomatic POAG decreases the number of persons whose visual field defects worsen.

However, the USPSTF found inadequate evidence that screening for or treatment of increased IOP or early asymptomatic POAG reduces the number of persons who develop impaired vision or quality of life.

HARMS OF DETECTION AND EARLY TREATMENT

The USPSTF found no direct evidence on the harms of screening. It found convincing evidence that treatment results in numerous harms, including local eye irritation from medications and risk of complications from surgery, such as early formation of cataracts. The magnitude of these harms for most persons is small. Screening is associated with a risk of false-positive and false-negative results, but the magnitude of this risk is unknown, given the considerable variability in reported test sensitivity and specificity. Screening and treatment are associated with risk of overdiagnosis and overtreatment because some evidence shows that many persons with increased IOP or early POAG have an indolent long-term course yet still receive treatment.

USPSTF ASSESSMENT

The USPSTF concludes that the evidence of effectiveness of screening for glaucoma on clinical outcomes is lacking and that the balance of benefits and harms therefore cannot be determined.

Clinical Considerations

PATIENT POPULATION

This recommendation applies to adults who do not have vision symptoms and are seen in a primary care setting.

ASSESSMENT OF RISK

Increased IOP, family history of glaucoma, older age, and black race increase a person's risk of open-angle glaucoma.[1,2] Recent evidence shows that the risk of glaucoma may be increased in Hispanics.[3] Older blacks have a higher prevalence of glaucoma and perhaps a more rapid disease progression; if screening reduces vision impairment, then blacks would probably have greater absolute benefit than whites.

SCREENING TESTS

Diagnosis of POAG is based on a combination of tests showing characteristic degenerative changes in the optic disc and defects in visual fields (often loss in peripheral vision). Although increased IOP was previously considered an important part of the definition of this condition, it is now known that many persons with POAG do not have increased IOP, and that not all persons with increased IOP have or will develop glaucoma. Therefore, screening with tonometry alone may be inadequate to detect all cases of POAG.

Measurement of visual fields can be difficult. The reliability of a single measurement may be low; several consistent measurements are needed to establish the presence of defects. Specialists use dilated ophthalmoscopy or slit lamp examination to evaluate changes in the optic disc; however, even experts have varying ability to detect glaucomatous progression of the optic disc. In addition, no single standard exists to define and measure progression of visual field defects. Most tests that are available in a primary care setting do not have acceptable accuracy to detect glaucoma.

TREATMENT

The initial aim and effectiveness assessment of primary treatments of POAG are reduction of IOP. Treatments include medication, laser therapy, and surgery. These treatments also effectively reduce the longer-term development and progression of small visual field defects as assessed by clinical examination. However, the magnitude of the effectiveness in reducing impairments in patient-reported, vision-related function, including development of blindness, is uncertain.

SUGGESTIONS FOR PRACTICE REGARDING THE I STATEMENT

Potential Preventable Burden. Approximately 2.5 million persons in the United States have glaucoma, and approximately 1.9% of adults older than 40 years have open-angle glaucoma.[4] Most persons with glaucoma have POAG. This condition is defined as optic neuropathy with a visibly open anterior chamber angle (between the iris and the anterior sclera or peripheral cornea) that is associated with progressive death of retinal ganglion cells and axons and visual field loss.[1,2,5]

The goal of screening programs is to identify and treat POAG before visual

Table 1. Screening for Glaucoma: Clinical Summary of the USPSTF Recommendation

Population	Adults without vision symptoms who are seen in primary care
Recommendation	No recommendation Grade: I statement
Risk assessment	Important risk factors for open-angle glaucoma are increased intraocular pressure, older age, family history of glaucoma, and black race.
Screening tests	Diagnosis of glaucoma is usually made on the basis of several tests that, when combined, evaluate the biologic structure and function of the optic nerve and intraocular pressure. Most tests that are available in a primary care setting do not have acceptable accuracy to detect glaucoma.
Treatment	The immediate physiologic goal and measure of effect of primary treatment of glaucoma is reduction in intraocular pressure. Treatments that are effective in reducing intraocular pressure include medications, laser therapy, and surgery. However, these treatments have potential harms, and their effectiveness in reducing patient-perceived impairment in vision-related function is uncertain.
Balance of benefits and harms	Evidence on the accuracy of screening tests, especially in primary care settings, and the benefits of screening or treatment to delay or prevent visual impairment or improve quality of life is inadequate. Therefore, the overall certainty of the evidence is low, and the USPSTF is unable to determine the balance of benefits and harms of screening for glaucoma in asymptomatic adults.
Other relevant USPSTF recommendations	The USPSTF has made recommendations on screening for impaired visual acuity in older adults. These recommendations are available at http://www.uspreventiveservicestaskforce.org/.

NOTE: *For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to http://www.uspreventiveservicestaskforce.org/.*

USPSTF = U.S. Preventive Services Task Force.

impairment develops. The proportion of persons who are currently unidentified and who will develop vision problems as a result of a diagnosis obtained through screening is not known. The natural history of glaucoma is heterogeneous and poorly defined.

In some persons, POAG does not progress or progression is so slow that it never has an important effect on vision. The size of this subgroup is uncertain and may depend on the ethnicity and age of the population and initial findings of ophthalmologic testing. Screening in asymptomatic persons is likely to increase the size of this subgroup. Other patients have more rapid progression, as determined by optic nerve damage, visual field defects, and development of visual impairment.

Whether early glaucoma will progress to visual impairment cannot be precisely predicted. Whether the rate of progression of visual field defects remains uniform throughout the course of glaucoma is also not known. Older adults and blacks seem to be at increased risk and have more rapid progression. Persons with a short life expectancy probably have little to gain from glaucoma screening.

Potential Harms. Harms caused by treatment of glaucoma include formation of cataracts and those resulting from surgery and from topical medications. Overdiagnosis and overtreatment are possible because not all persons who are diagnosed with and treated for glaucoma progress to visual impairment; the magnitude of overdiagnosis and overtreatment is unknown.

Costs. The cost of screening varies widely depending on the tests used. Testing with hand-held tonometers and ophthalmoscopes can be done quickly and inexpensively. However, the diagnostic accuracy of these inexpensive tests is not known. According to the National Business Group on Health, the average screening eye examination costs $71.[6] Screening with specialized tests for glaucoma and with newer computerized instruments is more expensive.

Current Practice. Approximately 62% of Medicare patients enrolled in a health maintenance organization were screened for glaucoma in 2009.[7] In 2008, approximately 53% of whites, 47% of blacks, and 37% of Hispanics reported an annual eye care visit.[8]

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The "Other Considerations," "Discussion," and "Recommendations of Others" sections of this recommendation statement are available at http://www.uspreventiveservicestaskforce.org/uspstf/uspsglau.htm.

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