



## Complete Summary

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### GUIDELINE TITLE

Primary open-angle glaucoma. Limited revision.

### BIBLIOGRAPHIC SOURCE(S)

American Academy of Ophthalmology Glaucoma Panel, Preferred Practice Patterns Committee. Primary open-angle glaucoma. Limited revision. San Francisco (CA): American Academy of Ophthalmology (AAO); 2003. 37 p. [148 references]

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## SCOPE

### DISEASE/CONDITION(S)

Open-angle glaucoma and related entities as follows:

- Primary open-angle glaucoma
- Low-tension glaucoma
- Residual stage of open-angle glaucoma
- Glaucomatous atrophy of the optic disc

### GUIDELINE CATEGORY

Diagnosis  
Management  
Treatment

### CLINICAL SPECIALTY

Ophthalmology

### INTENDED USERS

Allied Health Personnel  
Health Plans  
Physicians

#### GUIDELINE OBJECTIVE(S)

To enhance the patient's health and quality of life by preserving visual function without causing untoward effects from therapy, by addressing the following goals:

- Document the status of optic nerve structure and function on presentation
- Estimate a pressure below which further optic nerve damage is unlikely to occur (See discussion of target pressure in the Care Process section of the original guideline document.)
- Attempt to maintain intraocular pressure (IOP) at or below this target level by initiating appropriate therapeutic intervention(s)
- Monitor the status of the optic nerve for further damage and reset the target intraocular pressure to a lower level if deterioration occurs
- Minimize the side effects of management and their impact on the patient's vision, general health, and quality of life
- Educate and engage the patient in the management of his/her disease

#### TARGET POPULATION

Adults with primary open-angle glaucoma (POAG)

#### INTERVENTIONS AND PRACTICES CONSIDERED

##### Diagnosis

1. Comprehensive initial glaucoma evaluation with the addition of, or special attention to, those factors that particularly bear upon the diagnosis, course, and treatment of primary open-angle glaucoma
2. Review of family, ocular, and systemic history
3. Physical examination including examination of the pupil, a slit-lamp biomicroscopy of the anterior segment, measurement of intraocular pressure with a Goldmann-type applanation tonometer, determination of central corneal thickness, gonioscopy, evaluation of the optic nerve head and retinal nerve fiber layer, documentation of optic nerve head appearance, evaluation of the fundus, and evaluation of the visual field

##### Management/Treatment

1. Follow-up evaluation and management plan
  - Target pressure
  - Therapeutic choices
  - Medications
  - Compliance
2. Surgical procedures and postoperative care
  - Laser trabeculoplasty
  - Filtering surgery
  - Cyclodestructive surgery

3. Patient education, counseling, and referral

#### MAJOR OUTCOMES CONSIDERED

- Stable optic nerve/retinal nerve fiber layer status
- Stable or decreased intraocular pressure
- Stable visual fields

### METHODOLOGY

#### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

#### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The literature search for this limited revision was restricted to the subject of central corneal thickness, pachymetry, and glaucoma. The literature search for the last full revision of this Preferred Practice Pattern was performed for the years 1995 to 1999.

#### NUMBER OF SOURCE DOCUMENTS

Not stated

#### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

#### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Ratings of Strength of Evidence

Level I: Provides strong evidence in support of the statement. The design of the study allowed the issue to be addressed, and the study was performed in the population of interest, executed in such a manner as to produce accurate and reliable data, and analyzed using appropriate statistical methods. The study produced either statistically significant results or showed no difference in results despite a design specified to have high statistical power and/or narrow confidence limits on the parameters of interest.

Level II: Provides substantial evidence in support of the statement. Although the study has many of the attributes of one that provides Level I support, it lacks one or more of the components of Level I.

Level III: Provides a consensus of expert opinion in the absence of evidence that meets Levels I and II.

#### METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

#### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

#### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

#### DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The results of a literature search on the subject of primary open-angle glaucoma suspect were reviewed by the Glaucoma Panel and used to prepare the recommendations, which they rated in two ways. The panel first rated each recommendation according to its importance to the care process. This "importance to the care process" rating represents care that the panel thought would improve the quality of the patient's care in a meaningful way. The panel also rated each recommendation on the strength of the evidence in the available literature to support the recommendation made.

#### RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Ratings of importance to care process

Level A, most important  
Level B, moderately important  
Level C, relevant but not critical

#### COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

#### METHOD OF GUIDELINE VALIDATION

Internal Peer Review

#### DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

These guidelines were reviewed by Council and approved by the Board of Trustees of the American Academy of Ophthalmology (November 2003). All Preferred Practice Patterns are reviewed by their parent panel annually or earlier if developments warrant.

## RECOMMENDATIONS

#### MAJOR RECOMMENDATIONS

Ratings of importance (A-C), ratings of strength of evidence (I-III) and ratings of feasibility (a-c), are defined at the end of the Major Recommendations field.

## Diagnosis

### Comprehensive Initial Glaucoma Suspect Evaluation

The comprehensive initial glaucoma evaluation includes all components of the comprehensive adult eye evaluation with the addition of, and special attention to, those factors that specifically bear upon the diagnosis, course, and treatment of primary open-angle glaucoma (POAG).

#### History

- Family [A: II](a), ocular, and systemic history [A: III](a)
- Pertinent records [A: III](b)
- Ocular and systemic medications [A: III](b)
- Ocular surgery [A: III](a)
- Known local or systemic intolerance to the use of glaucoma medications [A: III](b)
- Time of last use of glaucoma medications [B: III](b)
- Severity and outcome of glaucoma in family members, including history of visual loss from glaucoma [B: III](b)
- Assessment of impact of visual function on daily living and activities [A: III](b)

#### Physical Examination

- Pupil [B: II](a)
- Slit-lamp biomicroscopy of the anterior segment [A: III](a)
- Intraocular pressure [A: III](a)
- Determination of central corneal thickness [A: II](a)
- Gonioscopy [A: III](a)
- Evaluation of the optic nerve head and retinal nerve fiber layer (dilation of pupil preferable) [A: III](a)
- Documentation of optic nerve head appearance [A: II](a)
- Evaluation of the fundus [A: III](a)
- Evaluation of the visual field [A: III](a)

## Management

Management recommendations are described in the main body of the original guideline document.

## Follow-up Evaluation

Patients with primary open-angle glaucoma should receive follow-up evaluations and care to monitor and treat their disease according to the guidelines for follow-up summarized in Tables 4, 5, and 6 in the original guideline document.

#### History

- Ocular history [A:III](a)
- Systemic medical history [B:III](a)
- Local or systemic problems with medication [A:III](a)
- General assessment of the impact of visual function on daily living [B:III](b)
- Frequency and time of last intraocular pressure (IOP)-lowering medications, and verification of appropriate use of medications, if the patient is being treated [B:III](a)

#### Physical Examination

- Visual acuity in each eye [A:III](a)
- Slit-lamp biomicroscopy [A:III](a)
- IOP in each eye [A:III](a)

Central corneal thickness should be measured, preferably with an ultrasound-based, electronic pachymeter, after any event that may alter the continued accuracy of previous determinations (e.g., refractive surgery). [A:II](a)

#### Surgical Procedures and Postoperative Care

##### Laser Trabeculoplasty

The ophthalmologist who performs the surgery must ensure that the patient receives adequate postoperative care. [A:III](c) The plan for care prior to and after laser trabeculoplasty should include the following elements:

- Informed consent prior to surgery [A:III](c)
- At least one preoperative evaluation by the surgeon [A:III](a)
- At least one IOP check within 30 to 120 minutes of surgery [A:I](a)
- A follow-up examination within 2 weeks of surgery [A:III](a)
- A follow-up examination 4 to 8 weeks postoperatively [A:II](a)

##### Filtering Surgery

The ophthalmologist who performs the surgery must ensure that the patient receives adequate postoperative care. [A:III](c) The plan for care before and after filtering surgery should include the following elements:

- Informed consent prior to surgery [A:III](a)
- At least one preoperative evaluation by the surgeon [A:III](a)
- Use of topical corticosteroids in the postoperative period, unless contraindicated [A:I](a)
- Follow-up evaluation on the first postoperative day (12 to 36 hours after surgery) and at least once from the second to the tenth postoperative day to evaluate the visual acuity, IOP, and status of the anterior segment, including the anterior-chamber angle where appropriate [A:II](a)
- In the absence of complications, two to five additional routine postoperative visits during a 6-week period to evaluate the visual acuity, IOP, and the status of the anterior segment, including the anterior-chamber angle where appropriate [A:III](a)

- More frequent follow-up visits, if necessary, for patients with a flat or shallow anterior chamber or with other postoperative complications [A: III](a)

### Counseling/Referral

- Patients should be educated about the disease process, the rationale and goals of intervention, the status of their condition, and the relative benefits and risks of alternative interventions so that they can participate meaningfully in developing an appropriate plan of action. [A: III](b)
- Patients should be instructed in the proper techniques for taking and using medication to minimize side effects and complications. [B: II](c)
- Patients should be encouraged to alert their ophthalmologists to physical or emotional changes that occur when taking glaucoma medications. [A: III](c)
- Patients with significant visual impairment or blindness should be referred for and encouraged to use appropriate low-vision rehabilitation and social services. [A: III](c)

### Definitions:

#### Importance to Care Process

Level A, most important

Level B, moderately important

Level C, relevant, but not critical

#### Strength of Evidence

Level I: Provides strong evidence in support of the statement. The design of the study allowed the issue to be addressed, and the study was performed in the population of interest, executed in such a manner as to produce accurate and reliable data, and analyzed using appropriate statistical methods. The study produced either statistically significant results or showed no difference in results despite a design specified to have high statistical power and/or narrow confidence limits on the parameters of interest.

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Level III: Provides a consensus of expert opinion in the absence of evidence that meets Levels I and II.

#### Ratings of Feasibility

Level a, high feasibility Level b, moderate feasibility Level c, low feasibility

### CLINICAL ALGORITHM(S)

A clinical algorithm for the management of patients with primary open-angle glaucoma is provided in the original guideline document.

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

- Loss of vision from glaucoma may be retarded or prevented through early diagnosis and therapy.
- The success rate of filtering surgery alone or combined with medical therapy in a previously unoperated eye averages 85 to 95% at 2 years. The 5-year results indicate 80% success in African American patients and almost 90% success in Caucasian American patients.
- Laser trabeculoplasty increases aqueous outflow and provides a clinically significant reduction of intraocular pressure (IOP) in more than 75% of initial treatments of previously unoperated eyes.
- Adjunctive use of antiproliferative agents (5-fluorouracil or mitomycin C) improves the success of repeat filtering surgery in lowering intraocular pressure and of filtering surgery in pseudophakia, aphakia, and other types of complicated glaucoma.

### POTENTIAL HARMS

- The ophthalmologist should be thoroughly familiar with the pharmacology of glaucoma medications, including benefits; durations of action; and local and systemic side effects, toxicity, and possible interactions. The ophthalmologist must be prepared to recognize and manage potential life-threatening adverse reactions. It is important for the physician to be familiar with potential drug interaction between glaucoma medications and medications used for systemic illnesses.
- Ocular and systemic side effects of topical ocular medications must be identified, especially those that seriously affect health (e.g., cardiopulmonary, mental, and visual) and social functioning. Side effects of topical ocular glaucoma medications may be severe, and occasionally even fatal in highly susceptible individuals.
- Patient should be educated about eyelid closure and nasolacrimal occlusion when applying topical medications to reduce systemic absorption.
- The use of adjunctive antifibrosis agents in primary filtering surgery of phakic patients appears to yield lower intraocular pressure (IOP) measurements and to reduce the need for supplemental medical therapy, but it is associated with significant complications, such as bleb leaks, blebitis, endophthalmitis, and hypotony, which is especially likely to cause maculopathy in young myopes.
- Laser trabecular surgery and filtering surgery are associated with potential side effects and complications. Compared with initial trabeculoplasty, there is increased risk of problems and complications, such as IOP spikes.
- Cyclodestructive surgical procedures are less predictable and risks are greater than with other surgical procedures, these procedures are generally reserved

for cases in which other modalities have failed or there is poor visual potential.

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

- Preferred Practice Patterns provide guidance for the pattern of practice, not for the care of a particular individual. While they should generally meet the needs of most patients, they cannot possibly best meet the needs of all patients. Depending on a host of medical and social variables, it is anticipated that it will be necessary to approach some patients' needs in different ways. The ultimate judgment regarding the propriety of the care of a particular patient must be made by the physician in light of all the circumstances presented by the patient.
- Adherence to these Preferred Practice Patterns will certainly not ensure a successful outcome in every situation. These guidelines should not be deemed inclusive of all proper methods of care or exclusive of other methods of care reasonable directed at obtaining the best results.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Living with Illness

### IOM DOMAIN

Effectiveness  
Patient-centeredness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

American Academy of Ophthalmology Glaucoma Panel, Preferred Practice Patterns Committee. Primary open-angle glaucoma. Limited revision. San Francisco (CA): American Academy of Ophthalmology (AAO); 2003. 37 p. [148 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

#### DATE RELEASED

1989 Sep (revised 2003)

#### GUIDELINE DEVELOPER(S)

American Academy of Ophthalmology - Medical Specialty Society

#### SOURCE(S) OF FUNDING

American Academy of Ophthalmology (AAO)

#### GUIDELINE COMMITTEE

Preferred Practice Patterns Committee; Glaucoma Panel

#### COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Glaucoma Panel Members: Douglas E. Gaasterland, MD (Chair); R. Rand Allingham, MD; Ronald L. Gross, MD; Henry D. Jampel, MD; Young H. Kwon, MD, PhD; Bruce E. Prum, Jr, MD; Mae O. Gordon, PhD (Methodologist)

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#### FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

#### GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American Academy of Ophthalmology Glaucoma Panel. Primary open-angle glaucoma suspect. San Francisco (CA): American Academy of Ophthalmology; 2002 Oct. 26 p.

All Preferred Practice Patterns are reviewed by their parent panel annually or earlier if developments warrant.

#### GUIDELINE AVAILABILITY

Electronic copies: Available from the [American Academy of Ophthalmology \(AAO\) Web site](#).

Print copies: Available from American Academy of Ophthalmology, P.O. Box 7424, San Francisco, CA 94120-7424; telephone, (415) 561-8540.

## AVAILABILITY OF COMPANION DOCUMENTS

None available

## PATIENT RESOURCES

None available

## NGC STATUS

This summary was completed by ECRI on November 20, 2000. The information was verified by the guideline developer on December 20, 2000. This summary was updated on March 12, 2003 and again on April 9, 2004. The updated information was verified by the guideline developer on May 20, 2004.

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Date Modified: 11/8/2004

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