Clinical Practice Guideline: Glaucoma

Reference Number: CPG.VP.30
Last Review Date: 01/2022

Coding Implications
Revision Log

See Important Reminder at the end of this policy for important regulatory and legal information.

Description

Glaucoma is a multifactorial optic neuropathy in which there is characteristic acquired loss of optic nerve fibers. Glaucoma of all types is the second most common cause of legal blindness in the United States and is the leading cause of legal blindness among African Americans. This policy describes the clinical practice guidelines for the management of glaucoma.

I. Comprehensive eye evaluations are recommended for those with risk factors for the development of glaucoma. The likelihood that these factors will contribute to the development of glaucomatous optic nerve damage should be carefully weighed against the risk of treatment when deciding if therapy is warranted. This decision should be individualized, taking into account the risks and rates at which glaucomatous optic nerve damage and visual impairment are likely to occur, the patient's expected longevity, and the patient's tolerance for effective treatment. To justify therapy in high-risk patients, the potential benefit of treatment should outweigh the negative side effects of therapy on the patient's vision, general health, and quality of life. The overall risk of developing glaucoma increases with the number and strength of the following risk factors:

- **A.** Elevated intra-ocular pressure;
- **B.** Older age;
- **C.** Family history of glaucoma;
- **D.** African Race or Latino / Hispanic ethnicity;
- **E.** Thin central cornea;
- **F.** Low ocular perfusion pressure;
- **G.** Type 2 diabetes mellitus;
- **H.** Myopia;
- **I.** Low systolic and diastolic blood pressure;
- **J.** Disc hemorrhage;
- **K.** Larger cup-to-disc ratio;
- **L.** High pattern standard deviation on threshold visual field testing;
- **M.** Hypothyroidism;
- **N.** Male sex;
- **O.** Other factors – migraine headache, sleep apnea, peripheral vasospasm, cardiovascular disease, systemic hypertension, and genetic factors.

Background

Primary Open Angle Glaucoma (POAG) is the most common type of glaucoma and is a chronic, generally bilateral, and often an asymmetrical disease. It progresses very slowly as the intraocular pressure rises due to the inability of the fluid to drain properly. There are no early warning systems and is often called the "sneaky thief" of sight.

POAG represents a spectrum of disease in adults in which the susceptibility of the optic nerve to damage varies among patients. Although many patients with POAG present with elevated intraocular pressure (IOP), nearly 40% of those with otherwise characteristic POAG may not have elevated IOP measurements. The vast majority of patients with POAG have disc changes or disc and visual field changes, but there are rare cases where there may be early visual field changes before there are detectable changes to the optic nerve.

Low Tension Glaucoma (LTG) usually has intraocular pressure within normal range and yet the optic nerve is damaged; therefore significant optic nerve cupping suggests the diagnosis of glaucoma instead of a pressure determination.

Primary Angle Closure Glaucoma (PACG) is appositional or synechial closure of the anterior chamber angle caused by relative pupillary block in the absence of other causes of angle closure. This form of glaucoma is relatively rare and is very different from chronic glaucoma because the eye pressure rises very quickly. The symptoms of acute glaucoma are severe headache or eye pain, nausea, severely blurred vision, and halos around lights at night. These symptoms require prompt emergency medical attention because sudden high intraocular pressures can lead to serious, immediate visual damage.

Congenital Glaucoma occurs in infants. This very rare condition may be inherited and may be the result of incomplete development of the eye's drainage canals during the prenatal period.

Secondary Glaucoma can occur as the result of an eye injury, inflammation or tumor, or in advanced cases of cataracts or diabetes. This type of glaucoma may be mild or severe, and the method of treatment depends on whether the condition is acute or chronic. The primary problem that caused the glaucoma will also need to be treated.

Glaucoma Suspect is a person with one or more risk factors for glaucoma, listed above. The decision to treat a glaucoma suspect patient may arise in various settings:

- Any patient who shows evidence of optic nerve deterioration based on ONH appearance, RNFL loss, or visual field changes consistent with glaucomatous damage has developed POAG and should be offered treatment. Clinicians can recognize subtle abnormalities in the optic disc and RNFL by using periodic fundus imaging with disc photography and computerized imaging of the ONH, RNFL, and macula.
- A new visual field defect that is consistent with a pattern of glaucomatous visual field defect, confirmed on retesting of visual fields, may indicate that the patient has developed POAG. Strategies include Goldmann visual field testing, 30-2 and 24-2 testing, and central 10-2 testing. Automated 10-2 central visual field testing has demonstrated the ability to discern central defects that can be missed with wider field perimetry.
- A patient who demonstrates very high IOP in which optic nerve damage is likely to occur may require treatment.
- In some cases, initiating IOP-lowering treatment to lower the risk of glaucomatous damage may be appropriate if the patient has additional risk factors for glaucoma. Established risk factors for POAG, besides elevated IOP, include older age, family history of glaucoma, African-derived race or Latino/Hispanic ethnicity, thin central cornea, low ocular perfusion pressure, diabetes mellitus, myopia, low systolic and

diastolic blood pressure, disc hemorrhage, large cup-to-disc ratio, high pattern standard deviation on threshold visual field testing, hypothyroidism, and male sex.

- Clinicians may consider using a risk calculator to determine the risk of progressing from ocular hypertension to POAG. These calculators determine the overall risk of developing glaucoma in 5 years using the risk factors of age, vertical cup-to-disc ratio, pattern standard deviation (from standard automated achromatic visual field testing), CCT, and IOP. Risk calculators are available on https://ohts.wustl.edu/risk/. They are also available as applications for smartphones.

Comprehensive Glaucoma Evaluation

The initial comprehensive glaucoma evaluation should include all the components of the comprehensive adult eye examination, with the addition of, or special attention to, those factors that particularly reflect upon the diagnosis of course of treatment of glaucoma. The components of the evaluation may require more than one visit.

- History: The comprehensive evaluation should include a review of family, ocular, and systemic history.
- Physical examination focuses on the following elements:
  - Pupils: The pupils are checked for an afferent pupillary defect.
  - IOP: IOP is measured preferably before gonioscopy or dilation of the pupil. The time of day should be recorded because of diurnal variation. Diurnal measurements may be indicated in patients with possible glaucomatous damage and IOPs less than 21mm Hg. The baseline assessment may also require a diurnal measurement of normal IOP when disc damage exceeds the amount expected based on a single IOP measurement.
  - Slit lamp examination of the anterior segment
  - Gonioscopy: Careful evaluation of the anterior chamber angle is required to rule out angle closure or secondary cause of pressure elevation.
  - Evaluation of the optic disc and retinal nerve fiber layer: Examination provides valuable structural information about glaucomatous nerve fiber damage. The preferred method of exam includes magnified stereoscopic visualization through a dilated pupil.
  - Documentation of the optic appearance: Photography and stereo-photography provides a reproducible image for future comparison. A detailed description or drawing may be used if photography is not available.
  - Evaluation of the fundus: Examination includes a search for other abnormalities that might account for visual field defects.
  - Evaluation of the visual field: Visual field should be measured with automated static threshold techniques or with careful (manual) combined kinetic and static threshold testing.
  - Other secondary causes of glaucoma that would eliminate the diagnosis of POAG should be sought and carefully ruled out by the history and physical examination.

Management

The goals of managing patients with glaucoma are to control IOP in a target range and to prevent progressive visual field and optic nerve/RNFL damage in order to preserve visual function and quality of life. Establishing an effective regimen requires attention to the potential impact of the

disease and the degree to which this is reduced by noncompliance due to visual, physical, social, economic, and psychological factors. The physician must take all of these into consideration when establishing a management plan.

Eye care providers can lower IOP with medications, laser therapy, or incisional glaucoma surgery. Results from randomized controlled trials and other studies provide evidence that these treatments reduce IOP and decrease the rate and incidence of progressive glaucoma.

Target Pressure

In managing glaucoma, the physician should strive to achieve a stable range of pressure that would be unlikely to cause further optic nerve damage. The upper limit of that range is defined as the target pressure, which will vary among patients and at time with the same patient. The pretreatment pressure range is that which damaged the optic nerve and would cause additional damage in the future. Thus the initial target pressure in glaucoma patients should be at least 20%-30% below the baseline pressure. A reasonable target for IOP reduction in a glaucoma *suspect* patient in whom the decision to treat has been made is 20%, based on the Ocular Hypertension Treatment Study (OHTS).

The adjustment factors for additional lowering beyond the 20%-30% range are the severity of existing optic nerve damage, the height of the IOP, and the rapidity with which the damage occurred (if known), the distance from the target IOP, and other risk factors (family medical history and race). In general, the more severe the damage, the lower the target pressure should be. Failure to meet and maintain the target pressure should trigger a reassessment of the treatment plan. Severity of glaucoma damage may be graded using the following:

- Mild: definite optic disc or RNFL abnormalities consistent with glaucoma as detailed above and a normal visual field as tested with standard automated perimetry (SAP)
- Moderate: definite optic disc or RNFL abnormalities consistent with glaucoma as detailed above, and visual field abnormalities in one hemifield that are not within 5 degrees of fixation as tested with SAP
- Severe: definite optic disc or RNFL abnormalities consistent with glaucoma as detailed above, and visual field abnormalities in both hemifields and/or loss within 5 degrees of fixation in at least one hemifield as tested with SAP
- Indeterminate: definite optic disc or RNFL abnormalities consistent with glaucoma as detailed above, inability of patient to perform visual field testing, unreliable/uninterpretable visual field test results, or visual fields not performed yet

Recommended Follow-Up Glaucoma Evaluation

Target IOP Achieved	**Progression of Damage**	**Duration of Control**	**Follow up Intervals (months)**
Yes	No	≤6 months	6 months
Yes	No	>6 months	6-12 months
Yes	Yes	N/A	1-2 months
No	Yes	N/A	1-2 months
No	No	N/A	3-6 months

The following should be reviewed with every routine follow-up visit:

- Interval ocular history
- Interval systemic medical history if applicable
- Local or systemic problems with medication
- Frequency and time of last glaucoma medication
- Verification of appropriate use of glaucoma medications

The following component should also be performed at every follow-up visit:

- Visual acuity
- IOP in both eyes
- Slit lamp exam
- Optic nerve evaluation and visual field testing should be performed as necessary

Reviews, Revisions, and Approvals	Date	Approval Date
Original approval date	12/2019	12/2019
Converted to new template	07/2020	10/2020
Annual Review	12/2020	12/2020
Annual Review; Modified recommended baseline target IOP and monitoring intervals to align with AAO updated Preferred Practice Patterns; Restructured Content; Updated References	12/2021	01/2022

References

1. American Academy of Ophthalmology, Preferred Practice Pattern® Guidelines, Primary Angle-Closure Disease, San Francisco, CA, American Academy of Ophthalmology, 2020, https://www.aao.org/preferred-practice-pattern/primary-angle-closure-disease-ppp
2. American Academy of Ophthalmology, Preferred Practice Pattern® Guidelines, Primary Open-Angle Glaucoma, San Francisco, CA, American Academy of Ophthalmology, 2020, https://www.aao.org/preferred-practice-pattern/primary-open-angle-glaucoma-ppp
3. American Academy of Ophthalmology, Preferred Practice Pattern® Guidelines, Primary Open-Angle Glaucoma Suspect, San Francisco, CA, American Academy of Ophthalmology, 2020, https://www.aao.org/preferred-practice-pattern/primary-open-angle-glaucoma-suspect-ppp

Important Reminder

This clinical policy has been developed by appropriately experienced and licensed health care professionals based on a review and consideration of currently available generally accepted standards of medical practice; peer-reviewed medical literature; government agency/program approval status; evidence-based guidelines and positions of leading national health professional organizations; views of physicians practicing in relevant clinical areas affected by this clinical policy; and other available clinical information. The Health Plan makes no representations and accepts no liability with respect to the content of any external information used or relied upon in developing this clinical policy. This clinical policy is consistent with standards of medical practice current at the time that this clinical policy was approved. “Health Plan” means a health

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Note: For Medicaid members, when state Medicaid coverage provisions conflict with the coverage provisions in this clinical policy, state Medicaid coverage provisions take precedence. Please refer to the state Medicaid manual for any coverage provisions pertaining to this clinical policy.

Note: For Medicare members, to ensure consistency with the Medicare National Coverage Determinations (NCD) and Local Coverage Determinations (LCD), all applicable NCDs, LCDs, and Medicare Coverage Articles should be reviewed prior to applying the criteria set forth in this clinical policy. Refer to the CMS website at http://www.cms.gov for additional information.