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# GLAUCOMA

Glaucoma affects nearly 3 million Americans and is one of the leading causes of blindness in the United States. Glaucoma can gradually "steal" your vision without your being aware of it. Early detection and prompt treatment are keys to protecting you against permanent loss of vision.

## I. What is Glaucoma?

Glaucoma is a group of eye diseases, with damage to the optic nerve leading to permanent vision loss or blindness. The optic nerve is located at the back of the eye and is made up of over a million nerve fibers. It sends images that you see from the retina, a light sensitive layer that lines the interior of the eye, to the brain.

## II. Causes of Glaucoma

In most cases, an abnormally high pressure within the eye causes glaucoma. Inside the eye, fluid is continuously produced and circulated to nourish the nearby tissues, remove unwanted wastes and maintain normal eye pressure. This fluid is not the same as tears, which are produced on the outside of the eye. Fluid leaves the eye through a "drain" located at an angle where the iris and cornea meet. When the fluid drains too slowly out of the eye, the pressure in the eye builds up, causing damage to the optic nerve.

## III. Who is At Risk for Glaucoma?

Anyone can develop glaucoma. The following factors/conditions increase your risk of glaucoma:

- Persons over age 40
- African Americans and Asian Americans
- Family History

- High internal eye pressure (above 22 mmHg)
- Diabetes, high blood pressure, or heart disease
- Chronic eye inflammation
- Eye tumor
- Severe near-sightedness/far-sightedness
- Previous eye injury
- Long-term use of corticosteroids (anti-inflammatory drugs)

## IV. Types of Glaucoma

The two main types of glaucoma are:

1. Open-angle glaucoma (OAG)  
In open-angle glaucoma, the fluid drains too slowly leading to fluid backup and a rise in eye pressure. The optic nerve is slowly damaged, causing gradual loss of vision. This is the most common form of glaucoma in Caucasians and African Americans. OAG is a chronic disease and usually affects both eyes at the same time.
2. Closed-angle glaucoma (CAG)  
In closed-angle glaucoma, the drainage may be too narrow or blocked, causing sudden buildup of pressure in the eye. Asians and persons who are far-sighted are more prone to develop CAG. This is a common form of glaucoma among Chinese, Vietnamese, Filipinos, and also Eskimos. The condition can be chronic or acute and usually affects one eye at a time. Acute CAG is a medical emergency and should be treated by an eye specialist (ophthalmologist) immediately to prevent severe vision loss or blindness.

## V. Signs and Symptoms of Glaucoma

Signs and symptoms vary according to the type of glaucoma. In the early stages of glaucoma, there are often no symptoms, pain, or change in vision. As the disease progresses, a person begins to lose peripheral (side) vision and eventually loses vision completely if left untreated.

Acute glaucoma develops suddenly as a result of sudden rise in eye pressure due to blockage of fluid drainage from the eye. This requires immediate medical attention in order to prevent permanent vision loss, which can occur within hours or days after the onset.

Signs of acute glaucoma include:

- Sudden blurred vision with pain and redness in the eye
- Appearance of colored rings (halos) around lights
- Headache
- Nausea and vomiting

## VI. Diagnosis of Glaucoma

The following tests are frequently used to diagnose glaucoma:

- Dilated eye exam  
An instrument called an ophthalmoscope is used to look through the pupil and check for changes in the optic nerve.
- Eye pressure measurement  
An instrument called a tonometer is used to measure eye pressure.
- Visual field test  
A computerized eye test is used to measure your field of vision.
- Nerve fiber analyzer  
An instrument which directly or indirectly measures the extent of nerve

fiber damages in the retina around the optic discs.

## VII. Treatment of Glaucoma

Open angle glaucoma cannot be cured, and the damage to the optic nerve is irreversible. The purpose of treatment is to prevent further loss of vision. Treatment options include:

### 1. Medications

Prescription eye drops or pills to help lower internal eye pressure by increasing the outflow of fluid or reducing the production of fluid in the eye. Daily and lifetime use of these medications are often necessary.

### 2. Surgery

When medications fail to control eye pressure, laser treatment or surgical operations may be needed to open blocked drainage, stretch drainage holes or create a new opening to allow fluids to flow out of the eye. In more severe cases, procedures to destroy the part of the eye that produces fluid may be done.

Closed angle glaucoma can be cured by laser treatment of the iris.

## VIII. Prevention of Glaucoma

Open angle glaucoma is not preventable. However, with early detection and treatment, OAG can be controlled. Comprehensive eye exams are recommended every 2 years for persons between the ages of 40-65, and every year for those over 65. More frequent checkups may be needed for those at high risk.

Closed angle glaucoma is preventable by laser treatment of the iris. If you are currently under treatment for glaucoma, be sure to use or take your medications exactly as prescribed and see your eye doctor regularly. To learn more about eye health, contact:

National Eye Institute  
(301) 496-5248  
[www.nei.nih.gov](http://www.nei.nih.gov)

Prevent Blindness California  
(415) 387-0934  
[www.eyefinfo.org](http://www.eyefinfo.org)

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Revised 01/2010