

The Essential Facts on GLAUCOMA



*Identifying, treating and
adapting to this prevalent
and often misunderstood
eye disorder*



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Glaucoma is a leading cause of blindness worldwide, affecting close to 67 million people. In the U.S., an estimated three million people have glaucoma, but only half of those affected may realize they have it.

Glaucoma is often called “the sneak thief of sight” because most of the time, it shows no symptoms until there is irreversible vision loss. Although it is incurable, glaucoma can be treated. If left untreated, however, it will lead to blindness. Therefore, for those at risk, regular eye exams are essential.

Glaucoma is actually a group of eye diseases in which there is damage to the optic nerve (the bundle of nerve fibers that carries information from the eye to the brain); this can lead initially to loss of side (peripheral) vision and ultimately, blindness. Optic nerve impairment

usually occurs in the presence of high eye pressure, but can also take place when eye pressure is normal.

To understand how high eye pressure impacts the development of glaucoma, it is important to understand how the eye works. Basically, the eye constantly makes fluid, called **aqueous humor** which helps maintain normal eye pressure and provides nutrients to the cornea and lens. The aqueous humor circulates in front of the eye and drains through a spongy tissue called the **trabecular meshwork**. Normally, there is a balance between the amount of fluid produced and the amount that leaves the eye. If this balance is not achieved, then **intraocular pressure (IOP)** builds up inside the eye. This damages the optic nerve and can lead to glaucoma.

Types of Glaucoma

- In the most common type, *open-angle glaucoma*, there are no symptoms until vision is permanently lost. IOP gradually builds, and the optic nerve is damaged, resulting in loss of side (peripheral) vision. If left untreated, open-angle glaucoma can lead to total blindness.
- *Normal-tension glaucoma* is a form of the disease in which the optic nerve is damaged in the absence of high IOP. Its cause is not well understood, but may be due to an unusually fragile optic nerve or decreased blood flow to the optic nerve.
- *Closed-angle glaucoma* is much rarer and can be either *chronic* or *acute*. Chronic closed-angle glaucoma progresses slowly and can result in optic nerve damage without showing symptoms until vision is lost, similar to open-angle glaucoma. Acute closed-angle glaucoma begins suddenly

when the normal flow of aqueous humor between the iris and lens is blocked. Symptoms include pain, nausea, vomiting, blurred vision and seeing halos around lights. The acute form is a medical emergency and needs to be treated immediately, or blindness can result in one or two days.

- There are several other more rare forms of glaucoma including congenital, secondary and neovascular.

Risk Factors

Glaucoma can occur in anyone at any age. However, certain factors may increase the risk of developing this disease:

- **Race** – Open-angle glaucoma is more common in African Americans and Hispanics in the U.S.
- **Genetics** – All types of glaucoma tend to run in families. This may also explain why cer-

tain races are more predisposed to various forms of the disease.

- **Age** – Glaucoma becomes more common with age, especially for people over 60 years old. African Americans are more likely to develop open-angle glaucoma in mid-life, around age 40.
- **Other risk factors** – For open-angle glaucoma, other risk factors include high IOP, thin corneas and suspicious optic nerve appearance. Potential risk factors are severe near-sightedness, diabetes, eye injury or surgery, high blood pressure and use of corticosteroids (e.g., eye drops, pills, inhalers and creams).

Diagnosis

To diagnose glaucoma through an eye exam, the doctor will:

- Dilate the pupils to better view the inside of the eye.

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- Measure eye pressure (IOP) using a tonometer.
 - Test the visual field (central and peripheral vision).
 - Measure visual acuity using an eye chart.
 - Determine corneal thickness.
 - View the interior and the front part of the eye with special instruments.
 - Image the optic nerve.

Treatments for Glaucoma

The first line of treatment for most cases of glaucoma is medication, usually eye drops and rarely, pills. There are several types of eye drops, some of which may be combined, that improve the flow of fluid out of the eye or decrease eye fluid production. To be effective, glaucoma medications must be used consistently and exactly as

directed. Many people are able to control their condition with medication alone.

Generally, surgery is an option only if medications fail. However, surgery may sometimes be considered first, and in other cases, a combination of surgery and medication is most successful. Note that patients (infants) with congenital glaucoma are almost always treated surgically, and people with acute closed-angle glaucoma always require emergency surgery.

The goal of all surgery, whether conventional filtration or laser, is to relieve high IOP by providing a way for fluid to drain from the eye. Laser surgery is the most common procedure used to treat open-angle glaucoma.

Since each case is unique, discuss all options with your eye doctor to determine the best treatment for you.

Low Vision Aids

There are many items designed to make life easier for people with vision loss. These include the following:

- **Reverse telescopes** – used for tunnel vision to allow all the light entering the eye to focus within the “tunnel.”
- **Magnifiers** – can benefit those with multiple eye problems, but most glaucoma patients do not need them.
- **Devices with large letters/numbers** – clocks, watches, telephones, remote controls and other items are available.
- **Large print materials** – including books, newspapers, magazines, cards, puzzles, labels and many other items that require reading.
- **Computer and internet enhancements** – large type keyboards, bigger type sizes, larger

monitors, screen magnifiers and screen reading software are all available. Many websites have adjustable print size and differing contrast options.

- **Audio devices** – talking books, watches, calculators and appliances can help with reading, making appointments, paying bills, preparing meals, etc.

Meeting Everyday Challenges

With some adjustments, people with low vision can meet daily challenges, live independently and enjoy life. Consider the following suggestions:

- Improve lighting and add lights where needed.
- Install handrails on stairs; consider marking the edges of steps with bright tape or painting with contrasting colors.
- Install grab bars in the bathroom, use contrasting colors

for mats and towels, and tape the edges of the tub and sink.

- Consider removing doors; ensure that thresholds are flush with the floor.
- Use brightly colored or black tape to mark light switches, electrical outlets, thermostats and other fixtures.
- Eliminate anything you might trip over and keep “travel areas” clear.
- Organize household items by always putting them in the same place; develop a grouping system.
- Use large stickers on the thermostat, stove and other appliances. (Many utility companies will do this at no charge).
- Use bright, contrasting colors for towels, rugs, placemats, tableware, etc., and put bright or light-colored towels or blankets on furniture.

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- Mark medications with different numbers of rubber bands or large print labels.
 - Program frequently used and emergency numbers into your telephone.

Ask For Help

Learning to cope with low vision can be very difficult, and initially may lead to feelings of depression, frustration and isolation. The key is to take on challenges and resolve problems as they arise and not become overwhelmed by negative emotions. Don't be afraid to ask for help and let others know your wants and needs. Eye doctors, low vision therapists, family, friends and community volunteers can all assist you. Consider joining a low vision support group. There are also many companies and organizations that sell or provide low vision aids and print and audio materials at little or no cost. Seek out information on these, and use them fully. For

people with limited resources, financial aid is available to defray medical and other costs. Over time, with motivation and perseverance, you will succeed in adjusting to vision loss, and lead a full, independent life.

More Information

The National Glaucoma Research (NGR) program of the American Health Assistance Foundation supports glaucoma research worldwide and has a strong public outreach effort.

NGR offers the following free publications, which can be ordered by phone, online or by mail. All are also available in PDF at the AHAF website (www.ahaf.org) to read or download:

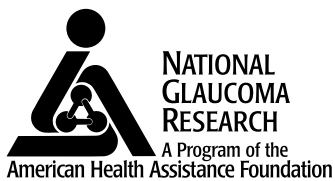
- *Living with Glaucoma* (34-page informative booklet)
- *Low Vision Resource List* (extensive list of organizations to assist the visually impaired)

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- *National Glaucoma Research Report* (quarterly newsletter)
 - *Safety and the Older Driver*

For more information:

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