

# Glaucoma Health

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Glaucoma is a disease of the eye in which the optic nerve is damaged. The optic nerve is composed of approximately 1.2 million nerve fibers that carry the visual information collected by the eye to the brain. When damage to these nerve fibers occurs, areas of the peripheral vision may be lost which may go unnoticed. If this permanent damage progresses, it can affect sharp central vision. High eye pressure (intraocular pressure) is the leading risk factor for glaucoma, but research is showing that sensitivity to damage comes from other factors unrelated to eye pressure. Until more evidence is available, the mainstay of glaucoma is to control intraocular pressure.

The eye's intraocular pressure comes from the balance between fluid production and drainage in the front of the eye. This fluid, called aqueous humor, is produced behind the colored iris, travels through the pupil, and is drained between the colored iris and clear cornea in a structure called the angle. This fluid production and drainage is independent of tearing (or lack of tearing) on the surface of the eye. Glaucoma can be divided into two general categories based on whether the drainage angle is open or closed.

Open angle glaucoma is the most common form of glaucoma in the United States and its risk increases with age. Typically, the drainage angle of the eye becomes less effective allowing the pressure to increase. In some patients, the optic nerve becomes sensitive even to what is considered a normal eye pressure.

Closed angle glaucoma occurs in eyes where the colored iris is too close to the drainage angle (this is called a "narrow angle"). If the iris moves forward into the drainage angle and blocks it, the intraocular pressure can rise suddenly. Symptoms of acute angle closure glaucoma include blurred vision, severe eye pain, headache, rainbow-colored halos around lights, nausea and vomiting. This is a true eye emergency that if not treated, can cause permanent blindness. The typical treatment is a laser procedure called a peripheral iridotomy that creates a bypass of the aqueous through a small hole in the colored iris. This flattens the iris and opens the angle.

Risk factors for the development of glaucoma include aging, family history and African ancestry. Other factors such as diabetes, hypertension and nearsightedness may also play a role. A comprehensive dilated eye exam is the best way to evaluate for glaucoma. During the exam, the intraocular pressure will be measured, the angle assessed and the optic nerve health evaluated. Additional testing with visual fields to check for areas of visual loss, optic nerve scanning with instruments such as the GDx or OCT, optic nerve photos and corneal thickness measurements may be used to complete the evaluation.

Damage from glaucoma cannot be reversed and the goal is to identify and treat it before significant visual field or visual loss occurs. Eye drops used once or twice a day often can control the intraocular pressure and prevent further damage. In-office laser procedures such as the SLT (Selective Laser Trabeculoplasty) can be used to treat the drainage angle and improve intraocular pressure. Surgical procedures in the operating room, such as trabeculectomy are usually reserved for patients that have not responded well to the drops or laser.

