CONDITION

Glaucoma

Glaucoma is a group of eye conditions that damage the nerve carrying visual information to the brain.

WHAT IT IS
Progressive damage to the eye's optic nerve

BODY SYSTEM
Eyes and vision

MAIN SYMPTOMS
Often none early, side-vision loss, blurred vision, eye pain

WHAT CAUSES IT
Usually impaired eye-fluid drainage and pressure-related nerve damage

HOW IT IS DIAGNOSED
Optic nerve examination, visual fields, imaging, and pressure measurement

MAIN TREATMENT
Eye drops, laser treatment, or surgery

CAN IT BE CURED?
No - lost vision cannot be restored

IS IT AN EMERGENCY?
Sometimes - sudden painful red eye with nausea

LONG-TERM OUTLOOK
Vision often preserved with early, sustained treatment

Overview

Glaucoma is a group of eye conditions that damage the optic nerve. This nerve carries visual information from the eye to the brain. Damage usually develops slowly and can cause permanent sight loss.

Many types of glaucoma are linked to raised pressure inside the eye. The eye continually makes a clear fluid called aqueous humor. If this fluid does not drain well, pressure can build up and damage the optic nerve. However, glaucoma can also occur when eye pressure is within the usual range.

Primary open-angle glaucoma is the most common form. The drainage angle inside the eye remains open, but fluid drains too slowly. It usually causes no early symptoms.

Angle-closure glaucoma happens when the drainage angle becomes blocked. It may develop gradually, but a sudden complete blockage is an emergency.

Glaucoma-related sight loss cannot currently be reversed. Treatment aims to lower eye pressure and protect the vision you still have. Finding glaucoma early matters because treatment can often slow or prevent further damage.

Symptoms

Open-angle glaucoma usually has no noticeable symptoms at first. Central vision may remain clear while damage develops in side, or peripheral, vision. Because the brain can partly compensate for early gaps, you may not realise that anything has changed.

As glaucoma advances, you may notice:

Gradual angle-closure glaucoma may also have few symptoms. Some people experience occasional blurred vision, eye discomfort, headaches, or coloured rings around lights.

Acute angle-closure glaucoma is different. Pressure rises suddenly and may cause severe eye pain, a red eye, blurred vision, halos around lights, headache, nausea, or vomiting. It needs emergency treatment to protect sight.

Babies and young children can rarely develop glaucoma. Signs may include unusually large or cloudy eyes, sensitivity to light, frequent tearing, or eyelid squeezing.

- Missing areas or blurred patches in your side vision
- Difficulty seeing obstacles, steps, or objects approaching from the side
- Reduced vision in dim light
- Narrowed or "tunnel" vision in advanced glaucoma

Causes and risk factors

Glaucoma develops when the optic nerve becomes damaged. Eye pressure is the main treatable risk factor, but it is not the whole explanation. Some optic nerves are damaged at pressures that would not harm another person.

Primary open-angle glaucoma has no single cause. Age, inherited traits, the structure of the eye, blood supply to the optic nerve, and eye pressure may all contribute.

Your chance of developing glaucoma is higher if you:

Do not stop prescribed corticosteroids like prednisone or hydrocortisone because of this risk.

If you use them, ask whether eye-pressure monitoring is appropriate.

Secondary glaucoma develops because of another eye condition, injury, medicine, or procedure. Congenital and childhood glaucomas are often related to abnormal development of the eye's drainage system. Some forms have a strong genetic cause, while others do not.

- Are older
- Have a parent, sibling, or child with glaucoma
- Have raised eye pressure
- Are of African, Caribbean, Hispanic, Latino, or East Asian ancestry, depending on glaucoma type
- Are very short-sighted or, for some angle-closure types, long-sighted
- Have a thin central cornea
- Have diabetes or certain blood-pressure and circulation conditions
- Have previously injured the eye
- Have inflammation inside the eye
- Have used corticosteroid medicines, especially in the eyes or for long periods

Diagnosis

Glaucoma cannot be confirmed from symptoms or an eye-pressure reading alone. Some people have high pressure without optic nerve damage, while others develop glaucoma at pressures within the usual range.

Diagnosis involves a detailed eye examination. Tests commonly include:

The diagnosis may require repeat tests. This helps confirm whether an unusual result is consistent and provides a baseline for future comparison.

If glaucoma is found, it may be described as mild, moderate, or advanced according to the amount of optic nerve and visual field damage. Monitoring then looks for progression rather than relying on a single result.

- Tonometry: measures pressure inside the eye
- Dilated optic nerve examination: uses eye drops to widen the pupil so the nerve can be examined
- Visual field testing: maps side and central vision to look for missing areas

- Optical coherence tomography, or OCT: creates detailed images of the optic nerve and retinal nerve fibres
- Gonioscopy: examines whether the eye's drainage angle is open, narrow, or closed
- Pachymetry: measures corneal thickness, which helps interpret pressure readings

Treatment and management

Treatment aims to lower eye pressure enough to reduce the chance of further optic nerve damage. The appropriate pressure target is based on factors such as existing damage, starting pressure, age, and whether tests show progression.

Eye drops are a common treatment. Different types either improve fluid drainage or reduce the amount of fluid the eye makes. Drops can cause local effects such as stinging, redness, eyelash growth, or changes around the eye. Some can also affect breathing, heart rate, or blood pressure. Tell the prescribing professional about other conditions and medicines.

Using drops consistently is important. If cost, side effects, hand movement, memory, or difficulty aiming the bottle gets in the way, raise this at routine follow-up. Bottle aids, reminders, or a different treatment may help. Do not double a dose unless you have been specifically told to do so.

Laser treatment may be offered as an initial treatment or when drops do not control pressure adequately. Selective laser trabeculoplasty improves drainage in many people with open-angle glaucoma. Its effect can lessen over time, and some people still need drops.

Laser peripheral iridotomy makes a small opening in the coloured part of the eye, called the iris. It is used for certain narrow-angle and angle-closure conditions so fluid can reach the drainage pathway more easily.

Surgery may be considered if glaucoma continues to progress or pressure remains too high. Procedures can create a new drainage route, place a small drainage device, or improve the eye's existing drainage system. All eye surgery has potential risks, so the expected benefits and follow-up needs are discussed beforehand.

Acute angle-closure glaucoma is treated urgently with pressure-lowering medicine, followed by a procedure-usually laser iridotomy-to address the blockage. The other eye may also be at risk and may need preventive treatment.

Treatment cannot restore optic nerve tissue that has already been lost. Its purpose is to preserve remaining vision.

Complications

The main complication is permanent loss of vision. It often begins in side vision and can progress toward central vision if glaucoma is not controlled.

Advanced glaucoma can make walking, reading, driving, and recognising hazards more difficult. Loss of contrast sensitivity may make low-light conditions especially challenging. Glaucoma in both eyes can eventually cause severe visual impairment or blindness, although treatment reduces this risk.

Medicines, laser treatment, and surgery can also cause side effects or complications. Regular follow-up helps identify these and shows whether pressure and optic nerve damage are stable.

Prevention

Most primary glaucoma cannot be completely prevented. Age, ancestry, eye structure, and inherited risk cannot be changed.

Early detection and treatment can prevent or limit avoidable sight loss. Comprehensive eye examinations are especially important if you have a close relative with glaucoma or another important risk factor. The suitable testing interval is based on your age, examination findings, and level of risk.

Protecting your eyes from injury may reduce the chance of injury-related glaucoma. Use suitable eye protection during hazardous work, sports, or home projects.

Use corticosteroids only as directed, and attend recommended eye-pressure checks if you need long-term treatment. Healthy habits support general eye and circulation health, but no food, supplement, or exercise routine has been proven to prevent glaucoma.

Living with it and what to expect

Glaucoma is usually a lifelong condition. Most people need continued monitoring, and many need long-term treatment even when their eyesight seems normal. Normal vision does not mean treatment is no longer needed, because early and moderate glaucoma may remain unnoticed.

Follow-up commonly includes pressure checks, optic nerve imaging, and visual field tests. Pressure can change from one visit to another, so long-term patterns are more useful than a single number. Treatment may be adjusted if pressure rises, side effects develop, or testing

shows further damage.

Many people with early, well-controlled glaucoma continue their usual work, hobbies, and daily activities for years. The course cannot be predicted exactly. Some glaucoma remains stable with treatment, while some progresses despite apparently acceptable pressure and needs a lower target or additional treatment.

If vision loss affects daily life, low-vision services can help. Lighting changes, magnification, contrast markings, mobility training, and accessible technology may make tasks safer and easier. Driving eligibility is based on visual acuity and visual field standards where you live, not simply on having a glaucoma diagnosis.

When to get medical help

Seek emergency care now if you develop:

These symptoms can occur with acute angle-closure glaucoma or another urgent eye condition. Do not wait for a routine appointment, and do not drive yourself if your vision is impaired.

Arrange prompt eye assessment if you notice a new gap in your side vision, persistent unexplained blurred vision, or a significant change in one eye.

Contact your eye-care service during routine hours if you are having trouble using drops, regularly miss treatment, develop ongoing side effects, or cannot obtain your medicine. Keep scheduled monitoring appointments even when your vision feels unchanged.

- Sudden severe eye pain
- A red eye with rapidly blurred vision
- Halos around lights with headache, nausea, or vomiting
- Sudden major loss of vision

Common questions

Can glaucoma make me blind?

It can cause severe, permanent sight loss if optic nerve damage continues. However, many people keep useful vision when glaucoma is detected early, treated, and monitored over time. Your outlook is influenced by how advanced it is when found and how it responds to treatment.

Can glaucoma be cured?

There is no cure that restores a damaged optic nerve. Treatment can lower eye pressure and may greatly slow or stop further damage. Continued monitoring is still needed after successful laser treatment or surgery.

Can I have glaucoma with normal eye pressure?

Yes. Normal-tension glaucoma causes typical optic nerve damage even though measured pressure is within the usual population range. Lowering pressure further can still help protect the nerve.

Will I need eye drops forever?

Many people use drops long term, but treatment can change. Laser or surgery may reduce the number of drops needed, although they do not always remove the need for medicine. Never stop drops without discussing an alternative plan.

Can I drive if I have glaucoma?

Many people with mild glaucoma can drive. Advanced loss of side vision may affect safety and legal driving standards. Formal visual field testing may be required, particularly when both eyes are affected.

Does glaucoma run in families?

Some forms have a strong inherited component. Having a parent, sibling, or child with glaucoma raises your risk but does not mean you will certainly develop it. Close relatives should know about the family history when arranging eye care.

Sources

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