

Glaucoma

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Introduction

Glaucoma is one of the world's leading causes of blindness.

It becomes more common as we get older and is present in more than 1 in 50 people over 40 in the UK.

Glaucoma is not curable, but the vast majority of people retain useful vision for the rest of their life. Blindness is preventable if the glaucoma is diagnosed and treated early enough.

There are usually no warning signs. However, its onset can be detected by regular eye tests by your community optometrist (optician).

What is Glaucoma?

Glaucoma is an eye condition in which there is loss of vision due to damage to the optic nerve, which cannot be reversed. The optic nerve carries signals to the brain from the eye; damage to it leads to permanent sight loss.

Loss of vision tends to be very gradual, affecting the peripheral vision (around the edges of your field of vision) at first. Both eyes are usually affected, though the degree of damage is often different in each eye.

Even if you have excellent sight, this doesn't rule out glaucoma because:

1. Glaucoma initially destroys the off-centre vision, leaving the central vision unaffected until a later stage.
2. Blank patches in the field of vision may go unnoticed as the less affected eye 'completes the picture'.
3. Glaucoma does not affect the ability of the eye to focus and the condition may be present even though vision seems fine without the need for glasses. You could lose a considerable amount of sight irretrievably before you are aware of a problem.

Relevant anatomy and glossary of terms

Aqueous humour is the watery fluid which fills the front chamber of the eye.

Ciliary body is the part of the eye which that produces the aqueous humour.

Ocular hypertension is raised intraocular pressure with no signs of damage to the optic disc.

Optic disc is the end of the optic nerve which is visible to the examiner. A normal looking optic disc is different from one which is damaged by glaucoma.

Optic nerve leaves the eye at the optic disc, and transfers all the visual information to the brain.

Trabecular meshwork is the part of the eye through which aqueous exits the eye.

Intraocular pressure is measured by the clinician. It is the pressure within the eye.

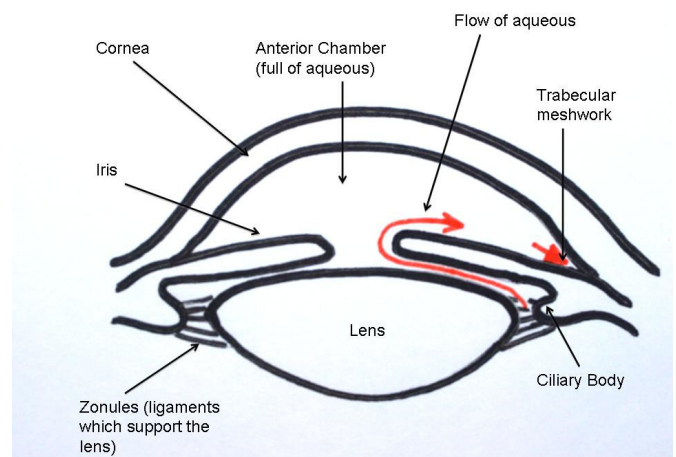
Visual field is the overall panoramic view of your surroundings. It becomes constricted in glaucoma.

Why does glaucoma occur?

It is thought that there are two mechanisms for damage occurring to the optic nerve:

1. **Raised eye pressure (intraocular pressure).** High pressure within the eye pushes on the optic disc. Initially, this causes no damage to the eye – a condition called ‘ocular hypertension’. If untreated, raised pressure may sometimes damage the optic nerve at the back of the eye. Raised pressure occurs because the aqueous (the watery fluid constantly produced by the ciliary body inside the eye), is not drained away quickly enough from a part of the eye called the ‘trabecular meshwork’.

An increase in the pressure within the eye usually happens because there is an obstruction within or in front of the trabecular meshwork. The obstruction means that the aqueous is not able to exit the eye. As a result, fluid builds up within the eye, causing the pressure to increase.



2. **Reduced blood flow to the optic nerve.** Some patients have optic disc damage and visual field loss typical of glaucoma, but with normal intraocular pressures. The reason this happens is thought to be a lack of blood supply to the nerve. This is known as ‘normal tension glaucoma’.

Are there different types of glaucoma?

Yes. Glaucoma is often categorised according to the appearance of the trabecular meshwork, which is the part of the eye through which fluid exits the eye. There are three types of glaucoma, which are described below.

1. Open angle glaucoma

This is the most common type of glaucoma. It usually affects both eyes and develops slowly so that loss of sight is gradual. There is no pain, redness of the eye or dramatic change in vision. On examination, the trabecular meshwork appears normal but microscopically there is an obstruction within it.

2. Angle-closure glaucoma

There is an obstruction in front of the trabecular meshwork.

It may present in two ways:

1. There may be a gradual rise in eye pressure, which is painless and causes very gradual loss of sight.
2. There may be a sudden increase in the pressure within one eye, causing the eye to become red and painful. Often there is mistiness of vision and episodes of seeing haloes around lights.

3. Secondary glaucoma

This type of glaucoma has an identifiable cause, being 'secondary' to another condition, eg inflammation inside the eye. As well as treating the glaucoma, the other condition must also be addressed. Sometimes, the eye may then return to a normal state and not require further treatment.

How is glaucoma diagnosed?

The diagnosis of glaucoma is made on the basis of a medical history and examination of the eye, and specialised tests / imaging techniques. There is no one specific test that can rule it in or out. Instead, by gathering lots of information, we can tell you if you are at high, medium or low risk of developing it.

History

We ask about:

- The presence or absence of eye symptoms
- Need for glasses
- Previous eye problems or treatment
- General medical condition
- Medications
- Family history of glaucoma

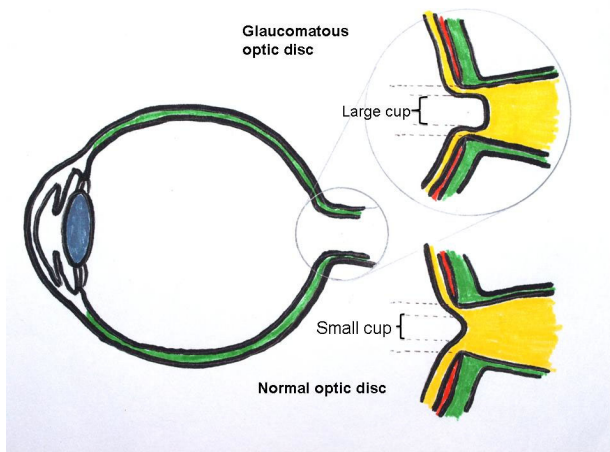
Examination

We look carefully at the whole eye. You will receive eye drops to make your pupil larger to enable a clear view of the retina and optic disc.

You are advised not to drive to clinic appointments because these drops can temporarily blur your vision.

The examination is painless.

Particularly important aspects of the examination are measurement of eye pressure, the appearance of the part of the eye which drains fluid away (trabecular meshwork) and the appearance of the optic disc (visible part of the optic nerve).



Specialised tests / imaging techniques

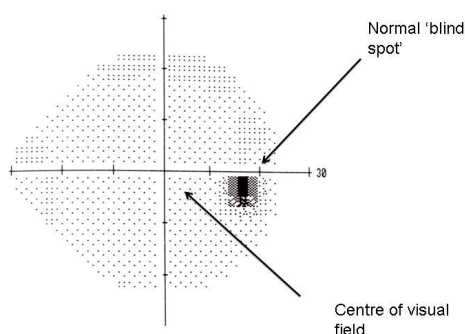
Visual field test

This measures the extent of your field of vision (peripheral vision) on each side of an object you are looking at. The test takes about 10 minutes per eye and is painless. You will be asked to sit at a screen and keep your gaze fixed on a small central light. You will be asked to indicate (by pressing a button) if you can see a series of other lights. This test detects if there are any missing areas in your visual field caused by damage to the optic nerve.

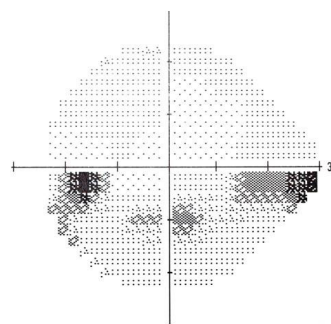


Examples of the 'normal' visual field, followed by progressive glaucomatous visual field loss

Normal visual field

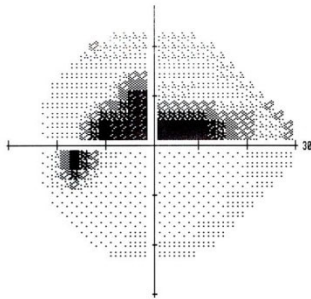


Mild glaucomatous visual field loss

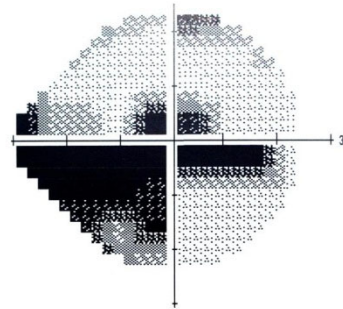


loss are shown below.

Moderate glaucomatous visual field loss



Advanced glaucomatous visual field loss



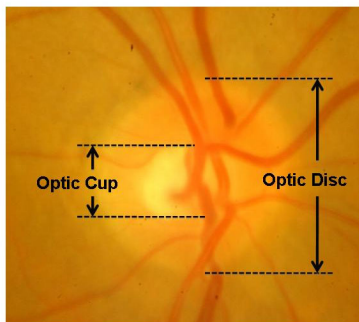
Corneal thickness measurement

Known as 'pachymetry', this is a painless test, which takes a few seconds. It measures the thickness of the central cornea (the clear window at the front of the eye). There is evidence that the thickness of the cornea may be a risk factor for glaucoma.

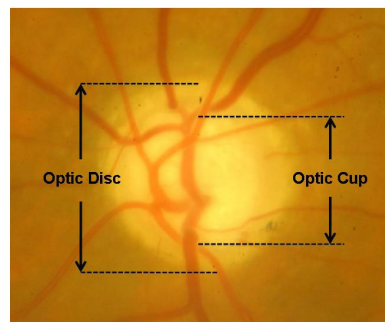
Photographs

Stereoscopic colour photographs of the optic disc will be taken and are kept in your file (**Black & white examples are shown below**). These can be used for comparative purposes in the event of possible future change.

Normal Optic Disc



Glaucomatous Optic Disc



HRT

Heidelberg Retinal Tomography provides a computer-generated analysis of the optic disc. It can help make the diagnosis and monitor change.

Commonly asked questions

Is there any way to prevent glaucoma?

No, but regular eye checks by your community optometrist (optician) will enable early detection and treatment. Sight tests are free for people with diabetes and parents, children, brothers, and sisters of people with glaucoma.

Can I continue to drive?

The law requires you to inform the Driver and Vehicle Licensing Agency (DVLA) and your insurance company of any change in health or sight likely to affect the safety of your driving, such as being told you have glaucoma in both eyes.

You must be able to read a number plate at 20.5 metres (25 yards) in good daylight and with spectacles if worn. You must also have an adequate field of vision. Standards are more stringent for vocational drivers.

The DVLA may request that you go to an optometrist registered with them for the appropriate visual field test.

To drive when you are unable to meet the standard is an offence and may invalidate your insurance. An inability to meet these standards requires you to notify the DVLA. You should not drive until you have had confirmation that your vision meets the standards. For more detailed information, please **contact the DVLA**.

Will I go blind if I am diagnosed with glaucoma?

The vast majority of people with glaucoma continue to see very well throughout their lifetime.

It is extremely rare for patients to lose their sight completely.

Earlier detection and improved treatments have improved the management of glaucoma tremendously over the past few years.

How did I get glaucoma?

Glaucoma is not an infectious disease and cannot be passed on to others.

We know that certain people have a greater chance of developing glaucoma.

Risk factors include:

- Increasing age
- African-Caribbean ethnicity
- Highly short-sighted or long-sighted eyes
- Family history of glaucoma

Should my family be tested for glaucoma?

Close blood relatives have an increased risk of developing the condition. The biggest risk is to brothers and sisters, followed by parents and children.

Glaucoma sufferers should alert their relatives to the need for regular sight tests.

Currently, the NHS pays for a sight test for such relatives for those aged 40 and over.

Who is entitled to a free NHS sight test?

You qualify for a free NHS sight test if:

1. You are aged 60 or over
2. Are under 16, or under 19 and in full-time education
3. Your or your partner receive income support, family credit, income-based job-seekers allowance, pension credit guarantee and are entitled to or named on a valid NHS tax credit exemption certificate, or are named on a valid HC2 certificate.
4. You have diabetes or glaucoma
5. You are 40 or over and have a close relative with glaucoma, i.e brother, sister, parent or child
6. A hospital ophthalmologist says you are at risk of glaucoma
7. You are registered visually impaired
8. You are entitled to vouchers for complex lenses

Further information

North Devon District Hospital

For more information, advice, or support, please contact our nurse-led helpline, on **01271 349143**. Please leave a message on the answer-phone and a nurse will return your call.

We also run a Glaucoma Society Support Group for North Devon patients twice a year. For details, please contact Nicola Addicott on 01271 322770.

External organisations

There are a number of external organisations who support people with glaucoma including:

The International Glaucoma Association

Woodcote House,
15 Highpoint Business Village,
Henwood, Ashford, Kent TN24 8DH
Tel. 01233648164
Website: www.glaucoma-association.com

The Glaucoma Foundation

Website: www.glaucomafoundation.org

PALS

The Patient Advice and Liaison Service (PALS) ensures that the NHS listens to patients, relatives, carers and friends, answers questions and resolves concerns as quickly as possible. If you have a query or concern call 01271 314090 or email ndht.pals@nhs.net. You can also visit the PALS and Information Centre in person at North Devon District Hospital, Barnstaple.

Have your say

Northern Devon Healthcare NHS Trust aims to provide high quality services. However, please tell us when something could be improved. If you have a comment or compliment about a service or treatment, please raise your comments with a member of staff or the PALS team in the first instance.

'Care Opinion' comments forms are on all wards or online at www.careopinion.org.uk.

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