Glaucoma UK

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Ocular Hypertension

This free booklet is brought to you by **Glaucoma UK** (formerly the International Glaucoma Association). Contact Glaucoma UK for further information or advice:

Glaucoma helpline: 01233 64 81 70
Monday-Friday 9.30am-5.00pm
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Glaucoma UK

Glaucoma UK is a registered charity that is here for everyone living with glaucoma throughout the UK.

- We raise awareness of glaucoma so that it is detected and treated early.
- We campaign for effective services for everyone affected by glaucoma.
- We provide advice and support to help people live well with glaucoma.
- We fund vital glaucoma research.

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01 Introduction

This guide provides an introduction to raised pressure within the eye, or ocular hypertension (OHT).

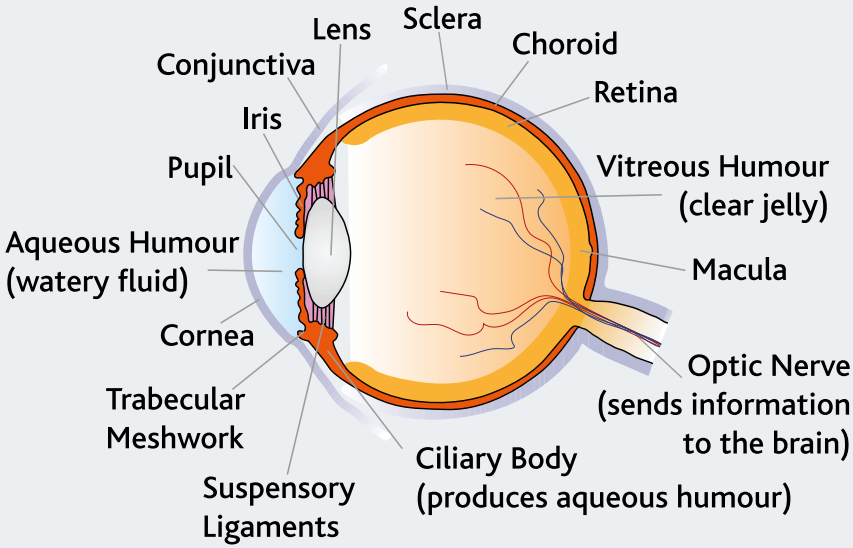
OHT is a significant risk factor for glaucoma, and if the eye pressure is very high you may be advised to consider treatment to reduce the chances of developing glaucoma in the future. Some people with (mild) OHT may not need treatment as the risk of developing glaucoma may be very small.

This booklet is to help you understand your condition and the reasons for your treatment to help ensure that you retain useful sight for life.

02 Structure of the eye

Figure 1

Cross section through the eye showing the major structures, Health Press Unlimited (Oxford)



The eye is shaped like a ball. The white outer coat called the sclera is tough and its surface is covered by a thin membrane called the conjunctiva. The clear outer layer at the front and centre of the eye is called the cornea which

is covered by the tear film. Behind the cornea is the iris – the coloured part of the eye – with the pupil forming a hole in its centre.

The space between the cornea and the lens is filled with a clear fluid, called aqueous humour, which maintains the intraocular pressure (IOP) in the eye. The eye pressure is determined by the balance between the fluid production inside the eye and its drainage out of the eye.

At the back of the eye is the retina, which is the light-sensitive layer onto which an image of what is being seen is focused, and the optic nerve, which takes the visual information from the eye to the brain. The central area of the retina where the most detailed vision is located, known as the macula, has a very high density of visual cells.

Further away from the macula is an area of the retina which is more sensitive to dim light and this also provides our peripheral vision. Light that has passed through the front of the eye and is focused onto the retina is finally converted into a series of complex electrical impulses by visual cells. These signals pass along the optic nerve to the brain, where the final image is processed.

03 What is ocular hypertension?

Ocular hypertension simply means a raised pressure within the eye, but that the eye is otherwise healthy. In glaucoma, there is usually high pressure as well as a damaged optic nerve and visual field loss. People with OHT are at increased risk of developing glaucoma, and it is very important for them to be monitored regularly. If glaucoma does start to develop it will be detected at the earliest possible stage, when treatment is most effective.

What is meant by raised eye pressure?

In the general population, average eye pressure is about 16mm of mercury (mmHg). As with many health-related measures it is common to define normal using a statistical approach, so all measurements that are close to the mean (average) of a healthy population are considered to be normal. Statistically two standard deviations above that average will give an upper limit of normal of about 21mmHg and if the eye pressure is above this level it is considered high. We currently say that a person has ocular hypertension if the eye pressure is consistently above 21mmHg. This is obviously a mathematical calculation, and many people with high eye pressure will have healthy eyes.

However, the risk of developing glaucoma increases with rising eye pressure. Some people may have treatment to reduce the pressure to a more normal level even when they don't have glaucoma, in order to prevent it developing.

The National Institute for Health and Care Excellence (NICE) recommend that treatment should be considered for anyone with eye pressure above 24mmHg

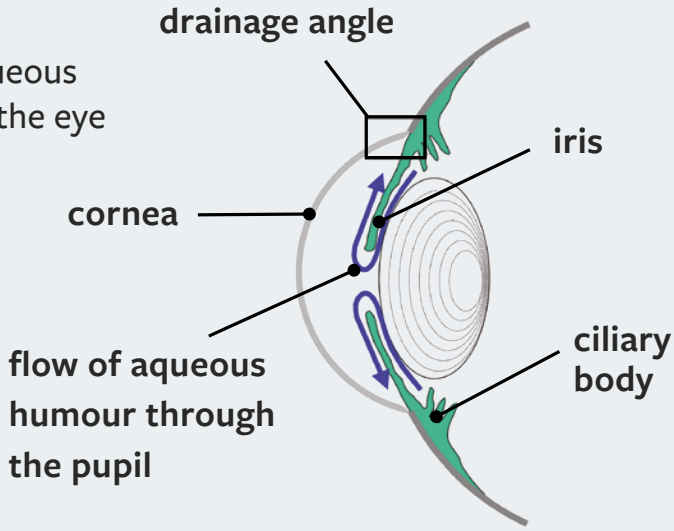
What creates pressure within the eye?

Intraocular pressure (IOP) is controlled by a watery fluid called aqueous humour which fills the front part of the eye. The purpose of the aqueous humour is to provide nutrients to the eye and to remove waste products. This fluid is made in the ciliary body (a ring of tissue behind the iris). The aqueous humour flows through the pupil and drains away through tiny drainage channels called the trabecular meshwork.

The drainage channels are situated in the anterior (front) part of the eye, between the cornea (the clear window at the front of the eye) and the iris. In a normal eye there is a balance between the production and the drainage of the aqueous humour, but in some eyes the drainage system does not work well, and the eye pressure rises.

Figure 2

Flow of aqueous humour in the eye



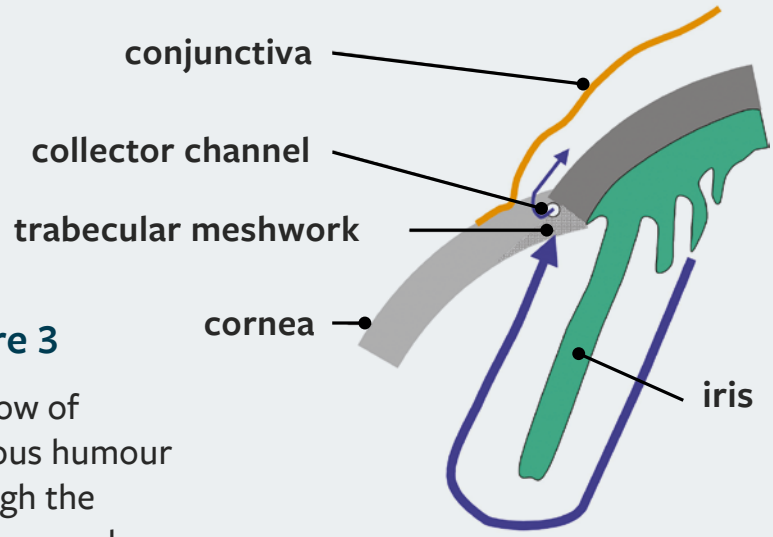


Figure 3

Outflow of aqueous humour through the drainage angle

06 Are some people at increased risk of developing glaucoma?

Yes, there are several risk factors which make the development of glaucoma in people with ocular hypertension more likely and they include the following:

Age

Ocular hypertension and glaucoma become much more common with increasing age so regular eye testing with a community optometrist from about the age of 40 is especially important. However it is advisable to have regular eye checks from an early age.

Family history of glaucoma

Any history of glaucoma in a close blood relative leads to an increased risk of developing glaucoma. More information can be found in the leaflet Glaucoma and Your Relatives.

Myopia

Very short sightedness (high myopia) is a risk factor for glaucoma.

Thin cornea

If the cornea (clear outer layer at the front of the eye) is thin your eyes have an increased risk of developing glaucoma. The corneal thickness can be easily measured in the eye clinic with an ultrasonic device. It is also important to measure the corneal thickness because a thick cornea can lead to the eye pressure being overestimated, whereas a thin cornea may lead to eye pressure being underestimated.

07 What will happen if I have ocular hypertension?

Firstly, be reassured that your vision is not at risk. As mentioned, ocular hypertension is a major risk factor for the development of glaucoma and thus regular routine eye examinations will probably be needed in order to make sure that the condition has not developed into

glaucoma. These routine examinations may be carried out at the hospital or they may be carried out by a community optometrist.

The eye health check includes three tests:

Ophthalmoscopy

An examination of the optic nerve at the back of the eye with a special torch or a slit lamp. Sometimes your clinician may take a picture or a scan of the back of the eye to retain as a record enabling the detection of any future changes.

Tonometry

A measurement of intraocular pressure.

Perimetry or visual field test

A test of the peripheral field of vision (visual field test) to see if there are any signs of sight loss in the off-centre part of the vision which could be a sign of the development of glaucoma.

08 How is ocular hypertension treated?

Not everyone with ocular hypertension needs treatment, but if the risk of development of glaucoma is deemed significant (for example if the eye pressure is very high), your clinician may decide that treatment is advisable.

If this is the case, the most usual type of treatment is eye drops to control the pressure within the eye. These are the same drops that are used to control glaucoma, and they work by either reducing the amount of aqueous humour being produced by the ciliary body or increasing the rate of drainage. You will probably need to use the drops daily and long-term.

Another treatment option for OHT is to use a laser to treat the drainage area and improve the outflow, called Selective Laser Trabeculoplasty (SLT).

09 How should I use my eye drops?

Drops are typically used once or twice a day, depending on the type of medication, and it is worth getting into a routine so the drops are not forgotten. For instance, if you keep the bottle of drops by your toothbrush, you will remember to put in the drops when you brush your teeth.

There are various ways to put drops in the eye. One of the simplest is to sit in front of a mirror, pull down the lower lid and let the drop fall into the space between the eye and the lid. Then close your eye and gently press on the inside corner for one to two minutes. This will slow the rate at which the drops drain out through the tear duct and help to keep the eye drop in your eye where it is needed.

Figure 4

Putting drops in

Figure 5

Closing the tear duct

Eye drops and tears drain away through the tear ducts into your nose and then are swallowed, which is not normally harmful but which may lead to unwanted side effects in susceptible people.

Our booklet Eye Drops and Dispensing Aids shows different ways of putting drops in. There are also videos available on the Glaucoma UK website which show other techniques for putting in drops:

www.glaucoma.uk

Tips

If you use more than one type of drop, it is important to leave at least five minutes between each drop to prevent the second one washing out the first drop.

To be certain your drops are going into the eye, try storing them in the door of the refrigerator (not the freezer). It is easier to feel the drop going into the eye when it is cold than when it is at room temperature. Always read the patient information leaflet which accompanies the drops for storage information or ask your pharmacist for advice.

10 Can I continue to drive with ocular hypertension?

Yes. Ocular hypertension is not glaucoma and there is no requirement to inform the Driver and Licensing Authority (DVLA) about the condition. People with glaucoma in **both eyes** are required by law to inform the DVLA. Nevertheless, it is important that your general eyesight is good enough to allow you to drive, so if you have any doubts it is best to ask your optometrist or ophthalmologist.

11 What if my ocular hypertension cannot be controlled?

For the vast majority, ocular hypertension won't lead to any deterioration in vision. A small proportion of people may develop glaucoma (about 1 in 10 people after 10 years) but the glaucoma will typically be mild and will not cause severe vision loss. It is very rare for people with ocular hypertension who follow the recommended treatment to develop severe visual loss.

If you have been diagnosed with ocular hypertension and receive the appropriate level of monitoring, then any early signs of glaucoma will be detected at a stage when little damage to the field of vision has occurred. At the point at which ocular hypertension develops into glaucoma, there are several effective treatments available. It would therefore still be reasonable to expect to retain good sight for life, although the treatment and monitoring regime will inevitably change.

12 Other free advice booklets

that may be helpful

- Glaucoma - A Guide
- Eye Drops and Dispensing Aids
- Secondary Glaucomas
- Dry Eye Syndrome - A Guide
- Driving and Glaucoma
- Glaucoma and Your Relatives
- Eye Clinic Referral
- Cool Wallet for Eye Drops

All our information booklets are free and can be downloaded or ordered at **www.glaucoma.uk**

13 Further help and information

from Glaucoma UK

Glaucoma UK is here for anyone affected by glaucoma. For help and advice:

Call our telephone helpline:

01233 64 81 70 (9.30am - 5.00pm Monday to Friday)

Email us with any worries or queries:

helpline@glaucoma.uk

Visit our website **www.glaucoma.uk** for information and advice. You can also order a range of free booklets online and use the user forum to ask questions and share experiences with other people living with glaucoma

Call us to find out if there is a glaucoma patient support group in your area.

About Glaucoma UK

- **We fund sight-saving research into the early detection and treatment of glaucoma**
- **We campaign to raise awareness of glaucoma so that no one loses their sight needlessly**
- **We provide support that helps people to live well with glaucoma**

Each year in the UK over 11,000 people are diagnosed with glaucoma. We are passionate about supporting them and are committed to providing our services free of charge to anyone who needs them. It is only through the generosity of our supporters that we can do this.

Help us save sight and fund research

- make a donation by calling **01233 64 81 64**
- donate online at **www.glaucoma.uk**
- become a member for £17.50 a year. Join online or call **01233 64 81 71**

Your support will make a difference to people with glaucoma today and will protect future generations from unnecessary glaucoma sight loss.

Glaucoma UK

The information in this leaflet was correct at the time of printing (printed 06/2020).

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Whilst every step has been taken to compile accurate information and to keep it up to date, we cannot guarantee its correctness and completeness.

Glaucoma UK and the author cannot take responsibility if you rely solely on the information in this booklet. The information provided is designed as an addition to, and not a substitute for, professional advice from a qualified doctor or other healthcare professional, which will be tailored to a patient's individual circumstances.

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