

UPDATE

Module 1687

This module covers:

- Impact of chronic glaucoma
- Diagnosis and management
- How pharmacists can advise and support people with glaucoma

FEBRUARY >>

Eye, ear and nose month

● Chronic glaucoma	Feb 1*
● Infection	Feb 8
● Age-related macular degeneration	Feb 15
● Rhinitis	Feb 22

*Online-only for Update and Update Plus subscribers

Chronic glaucoma

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Chronic glaucoma is often considered a condition of ageing and, indeed, it tends to affect older rather than younger people. Because it is relatively common – just under 500,000 people in England are thought to have the condition – and often asymptomatic, it is frequently dismissed as an annoyance, and one that can be managed easily.

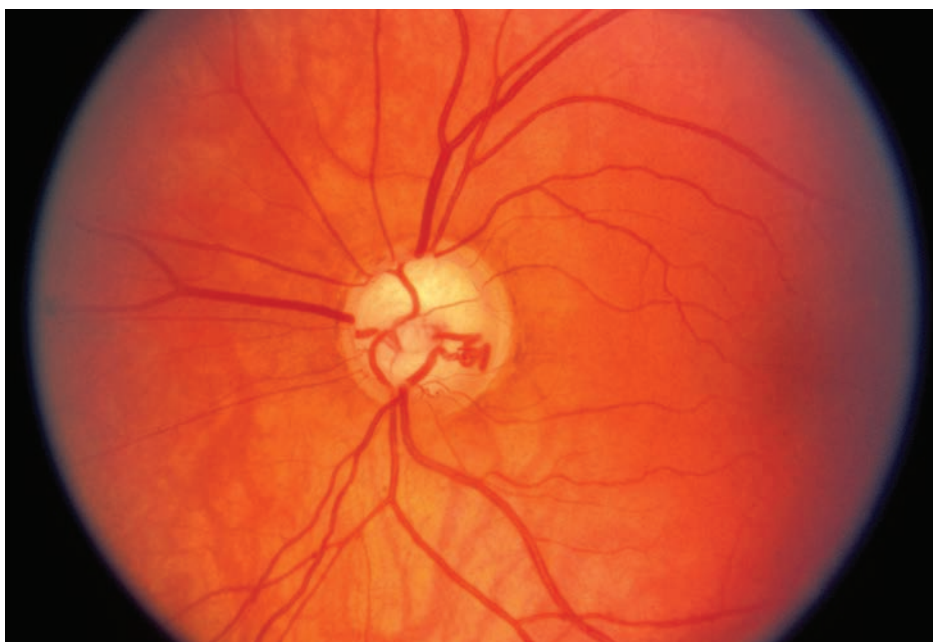
But this underplays how severe glaucoma can be: according to Nice, approximately 10 per cent of UK blindness registrations are attributed to glaucoma.

The cost of the condition to the NHS is significant, as it not only includes the lifelong monitoring and prescriptions needed to preserve eyesight in those diagnosed with glaucoma, but also the free sight tests offered to those at high risk of developing the condition, and surgical interventions.

The term glaucoma is used to describe a number of conditions that occur when some of the trabecular channels responsible for draining aqueous humour from the anterior chamber of the eye into the bloodstream become blocked. This results in an increase in intraocular pressure (IOP), which gradually damages the optic nerve, leading to impairment of vision.

The most common form of glaucoma is chronic primary open angle glaucoma (usually referred to as chronic glaucoma), which develops very slowly. The first sign of a problem is a gradual deterioration in peripheral vision, most often starting above or below central vision and spreading inwards over time. Because peripheral vision is less sensitive (and less used) than central vision (which is used when looking straight ahead) and because glaucoma does not always cause pain or discomfort, sufferers may not notice the change in their eyesight until the condition is quite advanced. Eventually the impairment encroaches on the eyesight so much that tunnel vision develops.

There are certain groups of people who are at



Primary open angle glaucoma can result in nerve damage, optic nerve cupping and restricted vision

higher risk of developing chronic glaucoma:

- Older people – the condition is largely unknown in under 40s. According to NHS figures, 1 to 2 per cent of those aged over 40 years in the UK have glaucoma, rising to 4 to 5 per cent of those aged over 80 years
- Those of African or African-Caribbean descent
- Myopia sufferers are more likely to develop chronic glaucoma than those with normal vision or requiring other visual corrections
- Individuals with close relatives (a sibling or parent) who has glaucoma
- Those with diabetes.

Free NHS eye tests are available to people aged over 40 years who have a close family member with chronic glaucoma, and certain other patient groups.

Diagnosis

Initial tests for glaucoma are usually carried out by an optometrist, and include:

- tonometry (measurement of IOP in both eyes)

- central corneal thickness measurement, as this affects the interpretation of IOP
- gonioscopy (examination of the area at the front of the eye between the cornea and iris where fluid drains from, to determine whether the angle is open or closed)
- perimetry (visual field test)
- optic nerve assessment to assess damage caused by glaucoma.

If the optometrist concludes that the patient is suffering from glaucoma, they will make a referral to an ophthalmologist to confirm the diagnosis, establish the cause and evaluate the damage. Visual field loss is defined in terms of mean defect (MD):

- An MD greater than -6dB means the condition has been caught at an early stage
- Between -6dB and -12dB is classed as moderate visual field loss
- Between -12dB and -20dB is considered advanced field loss
- Anything above -20dB is defined as blindness.

Other types of glaucoma and associated conditions

Acute angle closure glaucoma is usually unilateral and develops very quickly. Although much less common than chronic glaucoma, it is something that community pharmacists and their staff should be aware of, so they can refer patients to emergency services. The main symptom is pain in the affected eye, with the eyesight either appearing misty or featuring rainbow coloured rings around white lights. Nausea and vomiting are not uncommon.

Secondary glaucoma results from another eye condition or injury. A relatively common cause is a genetic condition in which the body produces abnormal protein fibres that block the flow of aqueous fluid out of the eye. This is known as pseudoexfoliation glaucoma and is treated in the same way as the chronic form of the condition.

Congenital glaucoma is either present at birth or develops soon afterwards due to a structural abnormality of the eye. Diagnosis is difficult because of the age of the patient but symptoms may include photophobia, nystagmus, an apparent squint, watery eyes or the eyes appearing particularly large or cloudy.

Ocular hypertension is defined as an intraocular pressure of more than 22mmHg, but with no damage to the optic nerve or visual field loss. It may or may not lead to glaucoma, but is treated in the same way.

Low tension glaucoma is the opposite of ocular hypertension: the intraocular pressure is within normal range, but there is damage to the optic nerve. It is treated in the same way as chronic glaucoma.

Management

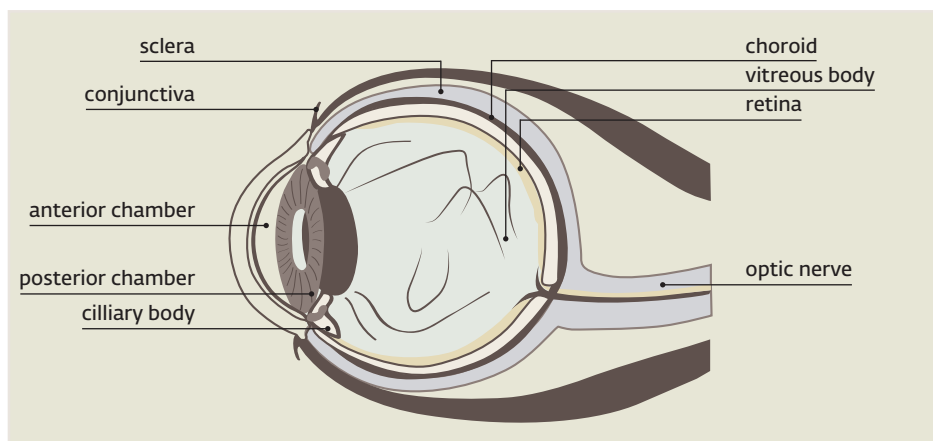
The main aim of glaucoma treatment is to reduce intraocular pressure to a target level (usually below 20mmHg for early disease, and often lower for moderate or advanced cases). First-line therapy is usually topical, with the choice of eye drops governed by disease progression and patient factors such as medical conditions, concurrent medication and side effects.

Prostaglandin analogues such as latanoprost and bimatoprost increase the flow of aqueous humour out of the eye, thus reducing IOP. They are usually the drugs of first choice for patients with early or moderate chronic glaucoma. Local side effects are not uncommon, and may include enlarged blood vessels, darkening of the eye lashes and iris colour, photophobia, dry eyes and infections. Systemic side effects are rare, but can include dizziness, headache, chest pain or palpitations, and angina exacerbations.

Care is needed when using prostaglandin analogues in patients with brittle or severe asthma due to risk of bronchospasm. The once daily (ideally in the evening) dosage regimen required of prostaglandin analogues makes them an attractive proposition for patients.

Beta-blockers such as timolol and levobunolol

Cross-section of the eye showing the main structures



are the other first choice drugs, they reduce IOP by reducing the rate at which aqueous humour is produced. Risk of systemic absorption means they should be avoided in patients with bradycardia, heart block, uncontrolled heart failure, asthma or a history of obstructive airways disease. Local side effects can include stinging or pain on application, dry eyes, itching and allergic reactions. Most beta-blocker eye drop preparations require twice daily application.

Some patients require a combination of beta-blockers and prostaglandin analogues to bring their IOP to the target level.

Carbonic anhydrase inhibitors, such as brinzolamide and dorzolamide, reduce IOP in the same way as beta-blockers. They may be used in patients who cannot take or do not respond to first-line agents, or in combination with them. Systemic absorption can occasionally cause sulphonamide-like side effects, but more common adverse effects include dry mouth, headache, taste changes and ocular disturbances such as photophobia and reduced visual acuity.

Acetazolamide may be used as an oral treatment as an adjunct to other treatments, but is not recommended for long-term use because of the risk of side effects.

Sympathomimetics, for example brimonidine, are another alternative to beta-blockers, or may be used as an adjunct if monotherapy with another agent has proved inadequate. They are thought to reduce IOP by reducing the production of aqueous humour and increasing the flow out of the eye. Adverse effects are relatively common and include dry mouth, gastrointestinal or taste disturbances, upper respiratory symptoms, headache, drowsiness, dizziness, malaise and local side effects. Rarer but significant adverse effects include cardiac symptoms, dyspnoea and depression.

Miotics, such as pilocarpine, are not routinely used because of the risk of side effects such as pupil miosis, but have a role in some secondary glaucomas. One of the most distressing adverse effects in the initial weeks of use is ciliary

spasm, which causes headaches and brow aches. Ocular side effects are also common, and the drug class should only be used with caution in a range of medical conditions including hypertension, peptic ulceration, asthma, epilepsy and Parkinson's disease.

Other options may be explored if medication does not bring down the IOP to the target level. Laser treatment can unblock the capillaries in the trabecular network (trabeculoplasty) or may be performed to destroy some of the ocular tissue responsible for the production of aqueous humour. Surgery is more invasive, and may take the form of removal of part of the trabecular network (trabeculectomy), removing part of the outer eye covering to enable better fluid outflow (viscocanalostomy) or implanting a tiny tube or device to improve aqueous humour drainage (sclerectomy or trabecular stent bypass).

Patients with chronic glaucoma should be monitored regularly to evaluate their disease progression and review their treatment if needed. The interval at which they need to attend appointments varies from two to 12 months, depending on their IOP and visual field.

Role of the pharmacist

Pharmacists and their staff have an important role in helping patients with chronic glaucoma. One of the most valuable ways is by ensuring sufferers are instilling their eye drops correctly, comfortably and confidently, and talking to them about whether they need any compliance aids such as an eye drop dispenser and how they store their medicines at home.

It is worth asking patients how they are getting on with their eye drops when they bring in their prescriptions for dispensing, as they may well confide concerns about their treatment or side effects. Reassuring individuals that adverse effects will pass (if appropriate) or referring them for something that warrants further investigation but they had not considered significant are essential aspects of patient counselling, as is reminding them of the need to attend regular check-ups.

Patients may also have worries about whether their glaucoma affects their ability to drive. Pharmacists can advise them that this is generally fine, as long as their visual field loss is not advanced. However, glaucoma patients should be reminded that they are required by law to notify the Driver and Vehicle Licensing Authority if they have been diagnosed with the condition in both eyes.

In England, patients with glaucoma who get their medication dispensed by the same pharmacy for three months in a row are eligible for a medicines use review (MUR), although this condition is not one of the national target groups. MURs are also available in pharmacies in Wales. In Scotland, patients with chronic glaucoma can be enrolled onto the chronic medication service. In Northern Ireland, patients who are considered vulnerable or at risk are eligible for the Managing Your Medicines service.

More information

- Nice has produced several documents on glaucoma, including clinical guidance (publications.nice.org.uk/glaucoma-cg85), a quality standard (publications.nice.org.uk/glaucoma-quality-standard-qs7) and a commissioning guide (nice.org.uk/usingguidance/commissioningguides/glaucoma/glaucoma.jsp). There is also guidance on various surgical procedures.
- NHS Choices is a good source of patient information at nhs.uk/conditions/glaucoma/pages/introduction.aspx. The Royal National Institute of Blind People has produced information for patients in conjunction with the Royal College of Ophthalmologists, which is available at rnib.org.uk/eyehealth/eyeconditions/eyeconditionsdn/Pages/glaucoma.aspx.
- The International Glaucoma Association website may also be useful: glaucoma-association.com.
- The BNF has an overview of glaucoma management using pharmacological agents. The resource is also available at bnf.org (free registration required).
- Information about glaucoma and driving is available at gov.uk/glaucoma-and-driving.
- Information about MURs is available from PSNC at psnc.org.uk/services-commissioning/advanced-services/nms.
- Community Pharmacy Scotland provides an overview of the chronic medication service at communitypharmacyscotland.org.uk/nhs-care-services/services/chronic-medication-service/care-using-chronic-medication-service.
- Community Pharmacy Northern Ireland has information about pharmacy services in the province at communitypharmacyni.co.uk/regional-services.

5 minute test

■ Sign up to take the 5 Minute Test and get your answers marked online: chemistanddruggist.co.uk/update

Take the 5 Minute Test

1. Chronic glaucoma is thought to affect about 500,000 people in England.

True or false?

2. Approximately 20 per cent of UK blindness registrations are attributed to glaucoma.

True or false?

3. The most common form of glaucoma is chronic primary open angle glaucoma.

True or false?

4. The first sign of chronic glaucoma is a gradual deterioration in peripheral vision.

True or false?

5. Four to 5 per cent of those aged over 40 years in the UK have glaucoma.

True or false?

6. Having diabetes increases the risk of developing chronic glaucoma.

True or false?

7. A mean defect of between -6dB and -12dB is classed as advanced visual field loss.

True or false?

8. Carbonic anhydrase inhibitors are the first choice treatment for patients with early or moderate chronic glaucoma.

True or false?

9. Side effects of beta-blocker eye drops include darkening of the eye lashes and iris colour.

True or false?

10. Patients with glaucoma diagnosed in both eyes are required to notify the Driver and Vehicle Licensing Authority.

True or false?

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Tips for your CPD entry on chronic glaucoma

Reflect What are the symptoms of chronic primary open angle glaucoma? Which patient groups are at higher risk of developing glaucoma? How is glaucoma treated?

Plan This article describes chronic glaucoma and includes information about its incidence and impact and how the condition is diagnosed and managed. The advice and support that community pharmacists and their staff can provide to patients with chronic glaucoma is also discussed.

Act Read the Update article and the suggested reading (below), then take the 5 Minute Test (above). Update and Update Plus subscribers can then access their answers and a pre-filled CPD logsheet at www.chemistanddruggist.co.uk/mycpd.

Find out more about glaucoma and its treatment from the Royal National Institute of Blind People (RNIB) website tinyurl.com/glaucoma1

Read more about laser and surgical treatment for glaucoma on the

International Glaucoma Association website

tinyurl.com/glaucoma3

Read the MUR tips for glaucoma on the C+D website. Identify any patients with glaucoma who might benefit from an MUR. What sources of information could you recommend?

tinyurl.com/glaucoma4

Read the advice about using eye drops on the patient.co.uk website

tinyurl.com/glaucoma5

Evaluate Do you now feel confident in your knowledge of glaucoma and its treatment? Could you give advice to patients with glaucoma about using eye drops and coping with the condition?

ASK THE EXPERT

February is eye, ear and nose month and our expert is on hand to answer your queries. From glaucoma to rhinitis, submit your questions by email: steve.titmarsh@ubm.com