



# GLAUCOMA

## Top tips for MURs

- Counsel patient on correct instillation procedure (see below)
- Advise patient of the importance of regularly administering drops, correct storage and to discard all eye products 28 days after opening
- Counsel patient taking prostaglandin analogues and prostamides for possible changes in eye colour (particularly if only using drops in one eye) and increase in eyelash length, thickness and darkness
- Advise patient to seek advice from the prescriber if they have significant side effects of discomfort, stinging, burning, itching and tearing as this may indicate a cytotoxic reaction to preservatives and a need to change to preservative free medication
- Check that patient has had full blood count and U & Es regularly if taking acetazolamide
- Check that patient has had their intraocular pressure checked within 12 months
- Counsel patient using contact lenses that lenses should be removed before instillation of the eye preparation
- Counsel patient on avoiding sedating antihistamines (OTC hayfever or travel sickness tablets)
- Counsel patient on signs and symptoms of complications that need referral (see red flags overleaf) and common side effects (see overleaf)
- Check that the patient has notified the Driver and Vehicle Licensing Agency (DVLA) of their condition and is aware of measures that should be taken
- Report any relevant adverse drug reactions to the Yellow Card Scheme

## Pathophysiology of glaucoma / ocular hypertension

Glaucoma is an eye disease in which the optic nerve is damaged, which can permanently damage vision in the affected eye(s), if left untreated. It is normally associated with increased fluid pressure in the eye (aqueous humour). Raised intraocular pressure (above 21 mmHg) is the most important and only modifiable risk factor for glaucoma.

The term “ocular hypertension” is used for people with consistently raised intraocular pressure (IOP) without any associated optic nerve damage or visual field defect and the term ‘normal tension’ or ‘low tension’ glaucoma is used for those with optic nerve damage usually with associated visual field loss, but normal or low intraocular pressure (below 21mmHg).

Glaucoma can be roughly divided into two main categories, “open-angle” and “closed-angle” (or “angle closure”) glaucoma. The angle refers to the area between the iris and cornea through which fluid must flow to escape via the trabecular meshwork. Angle closure glaucoma can appear suddenly and can be painful; visual loss can progress quickly, but the discomfort often leads patients to seek medical attention. Open-angle, chronic glaucoma tends to progress at a slower rate and patients may not notice they have lost vision until the disease has progressed significantly.

## Correct Instillation Procedure:

- Wash hands and sit or stand in front of a mirror.
- Take off the top of the bottle.
- Bend your head backwards and gently pull your lower eyelid down.
- Hold the dropper above one eye. Squeeze one drop into the pocket formed by gently pulling down the lower eyelid. Try not to touch your eye or eyelashes with the dropper tip.
- Let go of the eyelid and keep eye closed for 2-3 minutes after application of the eye drop. Apply gentle pressure on tear duct to avoid systemic absorption of drugs.
- Repeat, if applicable, in other eye.
- If using multiple eye drops, leave at least 5 minutes between administrations of each drop.

## How do medications to treat glaucoma work?

<b>Topical beta-blockers e.g. timolol</b>	Reduces intra-ocular pressure by reducing the rate of production of aqueous humour.
<b>Prostaglandin analogues and prostamides e.g. latanoprost</b>	Reduces intra-ocular pressure by increasing outflow of aqueous humour through the uveoscleral route.
<b>Sympathomimetics e.g. brimonidine tartrate</b>	Brimonidine reduces intra-ocular pressure by increasing uveoscleral outflow and reducing aqueous humour formation. Apraclonidine reduces aqueous humour formation.
<b>Carbonic anhydrase inhibitors and systemic drugs e.g. acetazolamide and brinzolamide</b>	Reduces intra-ocular pressure by reducing aqueous humour formation.
<b>Miotics e.g. pilocarpine</b>	Miotics improve the flow of fluid out of the eye by opening the inefficient drainage channels in the trabecular meshwork.
<b>Combination medications e.g. DuoTav (timolol + travoprost)</b>	Reduces intra-ocular pressure by the combined actions of the individual components



## Lifestyle Issues

- Counsel patient on reducing alcohol intake to within safe limits (up to 14 units a week, spread evenly over 3 more days, with several alcohol free days)
- Counsel patient on healthy eating, exercise & weight loss (if BMI > 25kg/m<sup>2</sup>) - reduce saturated fat and salt intake, increase oily fish intake, complete 30 minutes of aerobic exercise three to five times a week, reduce caffeine intake to no more than 5 cups a day and recommend 5 portions of fruit and vegetables a day
- Advise patients who smoke of the benefits of stopping smoking and refer to Stop Smoking Wales or Pharmacy Stop Smoking services if willing to stop

## Red flags that need referral

- Visual disturbances such as pain, nausea, floaters and halos around light sources and loss of vision
- Side effects including exacerbation of asthma or angina, palpitations and chest pain
- Allergic reactions including: anaphylaxis with beta-blockers and red, sore sticky eyes with alpha agonists
- Permanent blurred vision in a red sore eye (may indicate corneal clouding associated with reaction to medication)

## What are the common side effects to look out for?

Drug	Common side effects	Recommendation
Topical beta-blockers	<b>Systemic</b> - slow pulse, dizziness, asthma, fatigue, depression, loss of libido or impotence <b>Local</b> - ocular stinging, burning, pain, itching, dry eyes, erythema	Refer to prescriber if not tolerated.
Prostaglandin analogues and prostamides	Eye redness	Advise patient this improves over time.
	<b>Local</b> - ocular stinging, burning, pain, itching, dry eyes, erythema. Blepharitis and pain; skin rash, dry eyes, headache and photophobia; Iris may darken in colour (less common in blue eyes) and eyelashes grow longer and darker	Refer to prescriber if not tolerated.
Sympathomimetics – alpha2-adrenoreceptor agonist	<b>Systemic</b> – Drowsiness, dizziness and malaise, dry mouth, GI and taste disturbance, headache	Advise patient may affect performance of skilled tasks (e.g. driving).
	<b>Local</b> - ocular stinging, burning, pain, itching, dry eye, photophobia	Refer to prescriber if not tolerated.
Carbonic anhydrase inhibitors	<b>Local</b> - ocular stinging, burning, pain, itching, dry eye, photophobia, redness of eye, crusty eyelashes and ocular disturbances, fatigue	Refer to prescriber if not tolerated.
	<b>Systemic</b> - headache and taste disturbance (bitter taste in mouth); skin rash with oral acetazolamide	Refer to prescriber.
Miotics	<b>Local</b> - ocular stinging, burning, pain, itching, dry eye, photophobia. Headache or eye ache (more severe in first 2-4 weeks of treatment); ocular burning, itching, decrease in size of pupil	Refer to prescriber if not tolerated.
	Blurred or darkening of vision	Counsel patient that performance of skilled tasks such as driving, particularly at night may be affected.

## Potential serious drug interactions?

Systemic absorption may follow topical application of drugs used to treat glaucoma and interact with other medications –

### See BNF Appendix 1: Interactions for more details

- Beta-blockers, calcium channel blockers (risk of AV block) and sympathomimetics (risk of severe hypertension and bradycardia)
- Avoid brimonidine with MAOIs, tricyclics-related antidepressant and tricyclics
- Diuretics - possibility of interactions with brinzolamide and dorzolamide

## Where can you find more information?

- Eye – BNF sub-section 11.6 Treatment of glaucoma
- Pharmaceutical Care of the Eye (2011) Distance learning pack found on the WCPPE website (<http://www.wcppe.org.uk>)
- NICE guidance Glaucoma: Diagnosis and management of chronic open angle glaucoma and ocular hypertension, can be found on NICE website (<http://www.nice.org.uk/CG85>)
- Clinical Knowledge Summary glaucoma can be found on CKS website (<http://www.cks.nice.org.uk>)
- International Glaucoma Association (IGA) – 01233 648170 (<http://www.glaucoma-association.com>)
- RNIB (Royal National Institute of Blind People) **0303 123 9999** [helpline@rnib.org.uk](mailto:helpline@rnib.org.uk) (<http://www.rnib.org.uk>)

## References

1. Pharmaceutical Care of the Eye (2011) NI Centre for Pharmacy Learning & Development
2. NICE clinical guideline 85: Glaucoma: Diagnosis and management of chronic open angle glaucoma and ocular hypertension