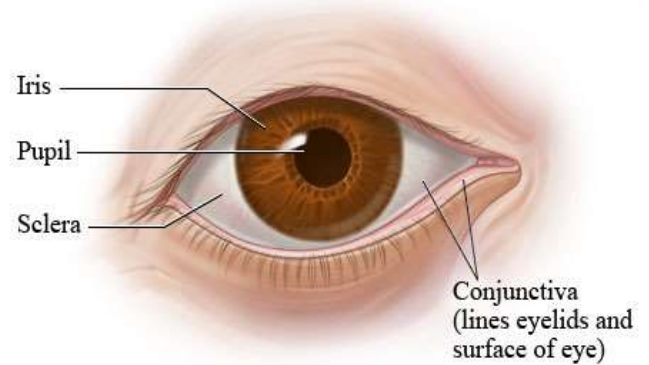


1-Conjunctivitis

Redness of the eye is one of the common ophthalmic problems seen in the community pharmacy and **conjunctivitis (bacterial, viral, or allergic) may responsible for most cases of this problem** ⁽¹⁾.

Conjunctivitis is an acute inflammation of the conjunctiva, the transparent surface **covering the white of the eye and the inside of the eyelids.**

In the conjunctiva there are tiny blood vessels, which are normally almost invisible .The conjunctiva, can become inflamed due to infection, allergy or irritation. The blood vessels dilate and become more obvious, making the **eye look red or pink** ⁽²⁾. **Pharmacist should differentiate types of conjunctivitis**, and to diagnose the cases that required referral ⁽¹⁾.



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Patient Assessment with Red Eye:

1-Duration: Minor eye problems are usually self-limiting and resolve within a few days .therefore, any ocular redness (apart from Subconjunctival hemorrhage, and allergic conjunctivitis) that **last more than 1 week requires referral** ⁽¹⁾.

2-Discharge: Most commonly seen in conjunctivitis. It can vary from watery to mucopurulent depending on the form ⁽¹⁾. (See the table 1 below)

Mucopurulent discharge is more suggestive of bacterial conjunctivitis especially if the eyes are **glued together** ⁽¹⁾.

3-Associated rhinitis: Sign and symptoms of an upper respiratory tract infection points towards viral cause of conjunctivitis ⁽¹⁾. (See the table 1 below)

4-Visual changes: Any **loss of vision, photophobia, or haloes around the objects** -----referral ⁽¹⁾.

5-Pain/discomfort/itch: True pain-----referral ⁽¹⁾.

Pain associated with conjunctivitis is often described as a gritty/ foreign-body type pain ⁽¹⁾.(see the table 1 below)

! TRIGGER POINTS indicative of referral: Red eye	
Symptoms/signs	Possible danger/reason for referral
Clouding of the cornea Associated vomiting	Suggests glaucoma
Redness caused by a foreign body	Requires removal of body – outside remit of community pharmacist
Irregular shaped pupil or abnormal pupil reaction to light Photophobia True eye pain Distortion of vision Redness localised around the pupil	All suggest sinister pathology

6-Location of redness: Redness localized near or around the pupil (colored part of the eye) -----referral ⁽¹⁾. Generalized redness or redness towards the corners of the eye is more indicative of conjunctivitis ⁽¹⁾. (See the table1 below)

Table: 1: symptoms help to distinguish the different type of conjunctivitis ⁽¹⁾:

	Bacterial	Viral	Allergic
Eyes affected	Both , but one eye affected a day or so before the other	both	both
Discharge	purulent	watery	watery
Pain	Gritty feeling	Gritty feeling	itching
Distribution of redness	Generalized and diffuse	Generalized	Generalized
Associated symptoms	None commonly	Cough and cold symptoms	Rhinitis (may also have family history of atopy)

Management

A-Bacterial conjunctivitis.

Nonpharmacological advices ⁽¹⁾.

- 1-Bathe the eyelids with lukewarm water to remove any discharge.
- 2-Tissues should be used to **wipe the eyes** and thrown away immediately.
- 3-Avoid wearing contact lenses until symptoms have resolved.
- 5-Regular hand washing and avoid sharing pillows and towels.

Pharmacological therapy:

Chloramphenicol Eye Drop and ointment:

Note: The use of antibiotics is associated with **marginal benefits** as in most cases the **infection is self-limiting** (the chances that an individual will benefit from treatment are very small).

Anti-infectives should not be routinely recommended and patients told that the condition is self-limiting but **if symptoms persist for more than 7 days** then they should be **re-assessed ⁽¹⁾**.

1-In 2005, chloramphenicol eye **drops** and in 2007 chloramphenicol **ointment** became OTC in the UK ⁽¹⁾.

Dosage: The dosage for the OTC product (for adults, and children aged two years and over) is **1 drop every 2 hours for the first 48 hours, then 1 drop every 4 hours for a further 3 days**. Patients can be advised that (**Sleep need not be interrupted** in order to administer eye drops) ⁽³⁾. The course should be **completed even if symptoms improve** ⁽⁴⁾.

The ointment, if used **in conjunction with the drops**, should be only applied **at night** . approximately 1 cm of ointment should be applied to the inside of the eyelid, after which blinking several times will spread the ointment ⁽¹⁾.

If ointment used alone, then the ointment should be used **3 or 4 times a day** ⁽¹⁾.

In pregnancy and breastfeeding there is a lack of manufacturer data for them to recommend their use. Practically, during pregnancy hygiene measures should be adopted and if absolutely necessary they can be used in breastfeeding women ⁽¹⁾.

Treatment timescale:

If the symptoms do not improve within **two days**, the patient should be referred ⁽³⁾

Adverse effects:

Are usually minor, such as a transient **burning or stinging sensation** in the eye when applying drops ⁽²⁾.

Further reading (1and 2)

B-Allergic conjunctivitis:

Nonpharmacological advices ⁽⁵⁾:

Applying **cold compresses** to the eye 3-4 times daily will reduce redness and itching. Other measure includes avoiding or reducing the exposure to the causative allergen (if possible).

Pharmacologic-therapy

These include **Mast cell stabilizers** (sodium cromoglicate), **Sympathomimetic** e.g. Naphazoline , **Anti-histamine** (Antazoline) , and **Decongestants—antihistamine** combination (Naphazoline-Antazoline) ⁽¹⁾.(See table(2.4 and 2))

C-Viral conjunctivitis:

Viral conjunctivitis is usually self-limiting, with symptoms resolving over 1-3 weeks ⁽⁵⁾.

Nonpharmacological advices ⁽⁵⁾:

The condition is highly contagious therefore the patient should:

1-Wash the hand after touching the eye.

2-Avoid sharing towels or any other objects that might come in contact with infected eyes.

Pharmacologic-therapy

Viral conjunctivitis is treated by **ophthalmic decongestant** which had been discussed under allergic conjunctivitis ⁽⁵⁾.



Table 2.4
Practical prescribing: Summary of medicines for red eye

Name of medicine	Use in children	Likely side effects	Drug Interactions of note	Patients in which care exercised	Pregnancy & breastfeeding
Allergic conjunctivitis Mast cell stabilisers sodium cromoglicate	>6 years	Local irritation, blurred vision	None	None	OK
Antihistamines Antazoline*	>12 years	Local irritation, bitter taste	Avoid concomitant use with MAOI's and moclobemide due to risk of hypertensive crisis	Avoid in glaucoma	
Sympathomimetics Naphazoline	>12 years	Local irritation	Avoid concomitant use with MAOIs and moclobemide due to risk of hypertensive crisis	None	Not adequately studied but not yet shown to be a risk – probably OK
Bacterial conjunctivitis Chloramphenicol	>2 years	Local burning and stinging	None	Avoid if family history of blood and bone marrow problems	In pregnancy ideally avoid

HINTS AND TIPS BOX 2.1: EYE DROPS

Children and school	The Health Protection Agency recommends (2010) that children with conjunctivitis do not need to be kept away from schools
Contact Lens wearers	Patients who wear soft contact lenses should be advised to stop wearing them while treatment continues and for 48 hours afterwards. This is because preservatives in the eye drops can damage the lenses
Chloramphenicol drops	These must be stored in the fridge. If they are put into the eye cold it will be uncomfortable so patients should be told to remove them from the fridge prior to use to allow them to warm up to room temperature
Administration of eye drops	<ol style="list-style-type: none"> 1. Wash your hands 2. Tilt your head backwards, until you can see the ceiling 3. Pull down the lower eyelid by pinching outwards to form a small pocket, and look upwards 4. Holding the dropper in the other hand, hold it as near as possible to the eyelid without touching it 5. Place one drop inside the lower eyelid then close your eye 6. Wipe away any excess drops from the eyelid and lashes with the clean tissue 7. Repeat steps 2 to 6 if more than one drop needs to be administered
Administration of eye ointment	<ol style="list-style-type: none"> 1. Repeat eye drop steps 1 and 2 2. Pull down the lower eyelid 3. Place a thin line of ointment along the inside of the lower eyelid 4. Close your eye, and move the eyeball from side to side 5. Wipe away any excess ointment from the eyelids and lashes using the clean tissue 6. After using ointment, your vision may be blurred, but will soon be cleared by blinking

Table 2: Doses of some eye drops used for allergic conjunctivitis ⁽¹⁾.

	Dose
Mast cell stabilizers (sodium cromoglicate)	1 drop four times daily
Sympathomimetic : Naphazoline	1 drop 3-4 times daily
Anti-histamine : Antazoline	1 drop 2-3 times daily
Decongestants—antihistamine : (Naphazoline-Antazoline)	1 drop 2-3 times daily

2-Eyelid Disorders:

A-(Stye and Chalazion):

Styes are caused by bacterial infection and can either be external (outside the surface of the eyelid) or internal (in the inner surface of the eyelid) ⁽¹⁾. Internal stye generally has a more prolonged course than external ⁽¹⁰⁾.

Occasionally, internal stye can evolve into **Chalazion** (a granulomatous inflammation that develops into a **painless lump**) ⁽¹⁾.

A chalazion can be confused with a stye. **Stye often has a head of pus** at the lid margin and will **be tender and sore**, whereas a chalazion presents as painless lump ⁽¹⁾.

Although styes are caused by bacterial pathogens the use of antibiotic **therapy is not usually needed**. Topical application of ocular antibiotics does not result in speedier symptom resolution ⁽¹⁾.

Patient with stye should avoid **touching the eyes and wash the hands** after any contact with infected eye ⁽¹⁰⁾. Without treatment, a stye will usually resolve within seven to 14 days ⁽⁸⁾. A stye typically responds well to **hot compress** applied 3-4 times daily for 5-10 minutes each time. Gentle pressure, applied by rolling the compress gently around the affected area is recommended. A fresh, clean compress should be used with each treatment. Clearing usually occurs with 1 week ⁽⁵⁾. External stye usually drains spontaneously, but warm compress will hasten resolution which usually occurs within 48 hours. Internal stye generally resolves within 1-2 weeks ⁽¹⁰⁾. If either stye does not **drain within one week** --referral ⁽⁵⁾.

A chalazion is self-limiting, although it might take a **few weeks to resolve completely** ⁽¹⁾. Initial treatment for chalazion is similar to that of stye especially for small chalazion (warm compress applied several times a day. About 25-50% resolves with this treatment. If the lesion does not begin to resolve within few days ----referral ⁽¹⁰⁾)

If the patient complains that it is particularly **bothersome** and is affecting **vision** or associated with eye **pain**. Referral in these circumstances is needed for surgical removal ^(1, 10).

3-Subconjunctival hemorrhage

The rupture of a blood vessel under the conjunctiva causes Subconjunctival hemorrhage. A segment or even the whole eye will appear **bright red**. Most subconjunctival hemorrhages are **idiopathic** (It occurs **spontaneously**) but can be precipitated by coughing, straining or lifting ⁽¹⁾. The patient will wake up with the hemorrhage, which is not noticed until he or she looks in a mirror ⁽⁸⁾.

The condition appears alarming but is usually harmless ⁽⁸⁾. There is no pain and the patient should be reassured that **symptoms will resolve in 10 -14 days without treatment**. However, a patient with **history of trauma should be referred** to exclude ocular injury ⁽¹⁾.

Hypertension is also a possible cause so pharmacists can advise patients to have their **blood pressure checked**. Anticoagulant or antiplatelet drugs (e.g. warfarin, aspirin, clopidogrel) can also cause a hemorrhage so patients should **be asked about their medicines** and those taking warfarin should have their international normalized ratio (INR) measured ⁽⁸⁾

INR : تحليل مختبري يقيس درجة سيولة الدم لدى مستخدمي دواء وارفارين

4-Dry Eye

Dry eye is among the most common disorders affecting the anterior eye ⁽⁵⁾.the condition is **chronic with no cure** ⁽¹⁾. Essentially, a reduction in the tear volume (caused by ↑ drainage or ↓production) or alteration in the tear composition cause dry eye ⁽¹⁾.

Patient Assessment with Dry Eye:

1-Age: Dry eye is most often associated with **aging process**, especially postmenopausal women ⁽⁵⁾. **Dry eye is rare in children and required referral** ⁽¹⁾.

2-Symptoms: symptoms that are frequently reported are eyes that **burn, feel tired , itchy, irritated** (decreased tear production results in irritation and burning) **or gritty and feel as if something is in the eyes** ^(1, 6).

3-Clarifying questions: Have you had daily, persistent, troublesome dry eyes for more than 3 months? Do you have a **recurrent sensation of sand or gravel in the eyes?**

A positive response to at least one of these questions would indicate dry eye syndrome ⁽¹⁾.

4-Associated Symptoms: normally no other symptoms are present in dry eye. If is complain of a **dry mouth** —————> check for medications that can cause patient dry mouth (Diuretics, isotretinoin, drugs with anticholinergic effects (TCA, Antihistamines,...), Hormone replacement Therapy). If medication is not implicated —————> then this could be due to an autoimmune disease —> Referral ⁽¹⁾.

Sometimes the lower eyelid turns outward (a condition called **Ectropion**) —————> This will over expose the conjunctiva to atmosphere —————> eye dryness —>Referral ⁽¹⁾.

Management:

Dry eye are managed by instillation of **artificial tear preparations**. They act by stabilizing the tear film (by increasing the viscosity of tear → decrease evaporation) ⁽⁵⁾.

Drops can be divided into those

which contain a **preservative and those which do not (i.e. preservative free)**. The preservative is nearly always **benzalkonium chloride**, usually present at 0.01 per cent. **Preservatives can damage the corneal epithelium**. If a patient is likely to be using artificial tears for a long time, a preservative-free preparation should be considered ⁽⁶⁾. **Examples** of the compound used are:



TRIGGER POINTS indicative of referral: Dry eye

- Associated dryness of mouth and other mucous membranes
- Outward turning lower eyelid

1-Hypromellose (hydroxypropylmethylcellulose): (Tears Naturale ® eye drop)

2-Polyvinyl alcohol (Liquifilm Tears® eye drop)

Patients with **mild** dry eye may benefit from instillation of one of these artificial tear drops up to **four times** a day. However, in **moderate to severe** cases, these preparations need to be instilled more frequently ⁽⁹⁾.

3-Carbomers: (Liquivisc ® Gel : Viscotears ® gel): To overcome the problem of frequent instillation , preparations containing **a longer-acting polymer**, known as **carbomer** , have been introduced. Such preparations have a much longer retention time in the eye and symptom relief is obtained with **significantly fewer instillations** ⁽⁹⁾.

4-Lubricating ointments: Ophthalmic lubricating ointments contain white **soft paraffin** (Lubri-Tears ®Eye ointment), **lanolin and liquid paraffin**. These preparations **melt at the temperature of the ocular tissue** and are retained longer than other ophthalmic vehicles. They are not generally recommended as tear substitutes during **the day because the vision is blurred after instillation**. They are, however, a useful adjunct to artificial tears **if used at bedtime** ⁽⁹⁾.

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Further reading لاطلاع

1-The Royal Pharmaceutical Society's Practice Guidance on OTC Chloramphenicol eye drops lists other circumstances in which the patient should be referred. These include:

A-Copious purulent discharge that reaccumulates after being wiped away.

B-Patients with glaucoma or who have had eye surgery or laser treatment in the past six months

2-Although some reports have suggested an association between the topical use of Chloramphenicol in the eye and aplastic anemia, this is extremely rare with eye drops and several studies have failed to prove a link).