CLINICAL GUIDELINE

Anterior segment treatment ladder

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The Intranet version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Guidance for Greater Glasgow & Clyde Community Optometrists

This guidance has been produced by the 'Optometry Prescribing & Supply Group'* and should be considered in context with the overall prescribing framework advice document for Greater Glasgow & Clyde Optometrists.
It should be stated that this is a guidance document and as such is not finite.
There will be scenarios where the clinician will be required to exercise alternative clinical judgement and operate outwith the content of this document.
The guidance is primarily for adults but can be applied for children.

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Guidance for GG&C Community Optometrists

This document forms part of the overarching prescribing framework document for all optometrists within the Greater Glasgow and Clyde NHS Board area (for entry level and independent prescribing optometrists). This guidance applies to Ip and non IP Optometrists.
The Covid-19 pandemic led to an expanded "1st Port of Call" responsibility for IP Optometrists, often managing more complex acute cases in the community and this expanded role is considered in this latest draft of the GG&C treatment Ladders.

GG&C has developed a prescribing formulary to improve safety within the prescribing community [GGC Medicines: Home].
It is hoped that the Optometry prescribing Framework, including documents such as this will help clinicians conform more closely with the GG&C formulary.
This guidance provides safe, practical advice for the management of a number of common anterior eye conditions and is built on current guidance from the College of Optometrists and prescribing experience across Scotland. In addition, please refer to the BNF , MIMMS or similar documents for drug interactions and side effects.

The guidance has been set up to follow the natural history of each condition and how a stepped approach should look on paper that would provide a role for all practice staff in the detection, treatment and management of these conditions.
The treatment ladder approach provides a measured, evidence based, graded approach to the management of various anterior eye conditions for adults and children.
It is always helpful to know that once a patient has been referred that certain steps have already been undertaken prior to referral, this applies to referrals to an IP Optometrist or onto secondary care.

The advice covers all aspects of patient management including medicated and non-medicated options. This will mean prescribing oral medications and topical steroids from time to time.
Always ensure that any prescribing is supported by evidence and that all contra-indications are considered beforehand.
For **oral antibiotics** this would mean taking note of any potential **interactions and side effects** of the drug before prescribing [see BNF] and considering local guidance .
https://rightdecisions.scot.nhs.uk/media/2583/166-inf-mng-adults-fp.pdf
For **topical steroid** use always examine the anterior eye to exclude corneal infection and carefully monitor IOP.
It is also important to consider whether the potency of the topical steroid and use an appropriate product. This would mean prescribing a product such 1% Fluorometholone for blepharitis and episcleritis but a more potent / penetrating product such as Prednisolone Acetate or Dexamethasone Alcohol 0.1% for the management of anterior uveitis.
Always ensure that a follow up review appointment is arranged for patients being prescribed any medicated product.
A detailed set of specific drug advice notes are being developed to supplement this guidance.

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Anterior Segment Treatment Ladders

Section 1-Periocular

Blunt Trauma

Stage 1 - General Assessment

Remember that trauma after alleged assault or injury at work often ends up in court.
Good record keeping is vital including:

- Time / circumstances
- IOP
- Range of ocular movements
- VA
- Fundus
- Draw or photograph injuries if possible

Assess carefully and refer severe cases to ARC
Irrigate and carry lid eversion and lid sweep as necessary
Lid oedema: cold compress to ease swelling

Stage 2 Pharmacological Treatment.

Consider:- Systemic analgesia eg. paracetamol, aspirin
Consider the need for ongoing ocular lubrication
Tissue swelling: non-steroidal anti-inflammatory drug (eg ibuprofen)
In cases of corneal abrasion consider topical antibiotic

Stage 3 – Consider referral to ophthalmology for:

Assessment and investigation including imaging (e.g. X-ray, CT)
Treatment of penetrating injury where present
May require hospital admission

Trauma Penetrating

Stage 1 – General

Partial or full-thickness injury of outer wall of eye caused by sharp object
Common causes include: assault, industrial or work-related accident, DIY injury.

Stage 2 Take a careful history

DO NOT APPLANATE OR EXERT PRESSURE ON EYE

Patient's description of events leading to trauma
nature of any known foreign body, its speed and size
check tetanus status
If there is any suspicion of a full-thickness laceration of the globe
do not exert any pressure on the eye (including forcing the lids open)
advise patient not to cough or strain
Check VA (important even if pain and swollen lids make that difficult)
Protect eye by taping over it a rigid plastic shield (e.g. cartella)
If penetrating object is still in the eye do not be tempted to remove it
If iris protrudes from wound do not attempt to push it back
Advise patient to take nil by mouth (except as below*)

Stage 3 - Pharmacological treatment

Topical anaesthetic (to aid examination), systemic pain relief and antiemetic as required
*(*To assist swallowing of tablets, a small amount of water is permissible)*

Stage 4 - first aid followed by immediate referral; no intervention.

Possible management by ophthalmologist

Orbital X-ray, ultrasound, other investigations
Surgical management of penetrating injury
Prophylaxis of intra-ocular infection
Follow-up includes examination for possible sympathetic ophthalmia affecting fellow eye (occurs in 0.1% of cases of penetrating trauma)

Chemical Trauma

Stage 1 - General

The incidence of chemical injuries to the eye has been reported to be 10.7 per 100,000 population, representing an estimated 10% of ocular trauma treated in emergency departments. Most patients are males aged 16–25 years.
A wide variety of chemicals can be responsible for ocular injury, including:
Alkalis (NB alkalis cause liquefactive necrosis and readily penetrate the eye), acids , detergents, solvents, fixatives, contact lens products, pepper gas, super glue etc.

Stage 2 – Treatment

The management protocol is dependent on the severity of the injury.
In severe cases immediate management involves diluting the offending agent:-

- Copious prolonged irrigation of the eyes with sterile normal saline; if not immediately available, use tap water
- Irrigate for 15-30 min (with intermittent topical anaesthetic if required) or until pH between 7 and 8 (normal value 7.4, range 7.3 – 7.7): to measure, cease irrigation, wait for 1 min, apply universal indicator paper to fornix
- When pH normal, check again after additional 30 min
- Remove any particulate matter
- Ascertain which chemical caused the injury
- Check VA (important even if pain and/or swollen lids make this difficult)

Contact lens solution accidents do not require irrigation, but advise no contact lens wear until after satisfactory review

Pharmacological Treatment

In severe cases (i.e. where there is limbal ischaemia or loss of corneal transparency), no pharmacological intervention - first aid & immediate referral to ophthalmology

In mild cases, e.g. contact lens solution accidents, give ocular lubricants for symptomatic relief
For pain or photophobia, advise systemic analgesia and darkened room

In severe cases refer to ophthalmology for:-
Further irrigation
Admission to hospital where necessary
Treatment with steroids, ascorbic acid, sodium citrate, systemic acetazolamide if IOP raised, other drugs
Surgical rehabilitation, e.g. amniotic membrane graft, limbal stem cell transplantation

Preseptal Cellulitis

Aetiology

Infections of the periorbital and orbital tissues range in severity from minor to potentially life-threatening. These infections occur most commonly in children under the age of 10 years.

Preseptal cellulitis

- bacterial infection of tissues lying anterior to the orbital septum (therefore not an orbital condition)
- in young children, high risk of extension into the orbit
- Young children should normally be referred

Orbital cellulitis

- bacterial infection of tissues lying posterior to the orbital septum (within the orbit)

severe sight - and life - threatening emergency

For both conditions, the usual causative organisms are Staphylococcus aureus, Streptococcus pneumoniae, H. influenzae, Moraxella catarrhalis, anaerobes

Orbital cellulitis is an ocular emergency and should be referred same day.

Differential Diagnosis

Preseptal cellulitis

- erythema of skin (can extend beyond orbital rim)
- lid oedema, warmth, tenderness
- ptosis
- pyrexia (fever greater than 38°C; normal temperature ranges from 36-37.5°C)

Orbital cellulitis

- proptosis
- restriction of extraocular motility
- pain with eye movement
- visual acuity may be reduced.
- pupil reactions may be abnormal (RAPD)
- pyrexia (see above)

Feature	Preseptal Cellulitis	Orbital Cellulitis
Proptosis	Absent	Present
Ocular Motility	Normal	Painful/Restricted
Visual Acuity	Normal	Reduced
RAPD	Normal	Present

Management / Treatment [Pre-septal Cellulitis]

Step1

If Preseptal Cellulitis is confirmed

IP Optometrists or GP can prescribe oral antibiotics.

- **Oral Co-amoxiclav** 625 mg 8 hourly for 7 days and review
  OR
- **Oral Flucloxacillin** 500mg, 4 x daily for 7 days and review

If true penicillin allergy consider:-

Oral doxycycline 200mg first day, followed by 100mg per day for 7 days.
Another alternative is **Oral erythromycin 500mg every 6 hours** for 7 days.

https://ggcmedicines.org.uk/other-formularies

Review after 2-3 days to ensure patient is recovering. Review again at 7 days and again at 14 days if required.

Treatment should be carried out until condition has resolved.

Step 2

True orbital cellulitis can be potentially sight or life-threatening and SAME DAY REFERRAL to Ophthalmology is required for:-

- Confirmation of diagnosis
- CT or MRI scan
- Admission to hospital for observation
- Systemic antibiotics (oral and/or parenteral)
- Blood tests, possibly including microbial culture
- Drainage of orbital abscess
- Co-management with ENT specialist colleague

Herpes Zoster Ophthalmicus (HZO)

General

The varicella zoster virus (VZV) is a member of the herpes virus family.
HZO is a common unilateral infection caused by VZV. It typically affects older people but can occur earlier especially with immunocompromised individuals.
HZO normally results from a previous varicella systemic infection ie chickenpox when the virus has lain dormant (sometimes for decades) in the dorsal root and cranial sensory ganglia.
Presentation is often with a general malaise, with pain and a maculopapular rash across the distribution of the first division of the trigeminal nerve. The rash progresses through vesicles and pustules to crusting.
Periorbital oedema may close the eyes and spread to the other side, lymphadenopathy is common.
Skin lesions to the tip of the nose (Hutchison's Sign) increases the risk of ocular involvement by 50%.

Step 1 – Examination

A detailed examination of the anterior eye will detect common anterior ocular findings such as mucopurulent conjunctivitis, episcleritis, scleritis, keratitis and anterior uveitis.
Look for Keratitis:
Epithelial punctate – early sign in 50% of cases / pseudo-dendrites – fine multiple stellate lesions that might present at 4-6 days / nummular – fine granular deposits under Bowmans layer / disciform – happens in 5% of cases 3 weeks after initial rash / reduced corneal sensitivity / endothelial changes and KP.
All patients need a dilated internal examination to exclude posterior segment disease such as retinitis, secondary glaucoma, optic neuritis, optic atrophy, posterior uveitis.
Assess for neurological complications such as nerve palsies and encephalitis.

Step 2 - Treatment

IP Optometrist or GP can treat with systemic anti-viral drugs.
Normally **Oral Aciclovir** 800mg x 5 daily for 7-10 days [alternatives include **valaciclovir** (1g) and **famciclovir** (500mg every 8 hours).
Ensure advice is given for adequate hydration to help avoid crystallisation of drug in the kidney.
Assess for ocular signs e.g. conjunctivitis / keratitis / anterior uveitis/ scleritis /raised IOP.
Treat secondary bacterial conjunctivitis with **Chloramphenicol** or **Ofloxacin** (Exocin)
(see separate treatment ladder for Bacterial Conjunctivitis.)
Treat associated blepharitis – (see separate treatment ladder on Blepharitis).
Treat keratitis as necessary & appropriate using topical antibiotics, topical anti-viral agents.
Manage Anterior Uveitis with topical steroid – see separate treatment ladder for Anterior Uveitis.
Optometric review at one week.
If ocular signs not improved after ten days, refer to ophthalmology for further investigation and treatment.

Always refer scleritis, retinitis and posterior uveitis

Nasolacrimal Duct Obstruction

Can be congenital or acquired.

Congenital

For congenital cases do not consider sac wash out or probing until after 12 months old.

Step 1 -

- Instruct parents on massage: -
- Gentle pressure with finger over the common canaliculus, stroking in a downward manner firmly to increase pressure in the lacrimal sac and encourage opening of the valve / nominally 10 strokes per session, twice daily.
- Routinely clean any discharge from eyelids.
- Most cases resolve spontaneously after massage.

Step 2 -

- Consider sac wash out or lacrimal probing after 12 months.

Acquired

Consider causes of infection such as cannaliculitis or dacryocystitis. (see TL on dacryocystitis)
Exclude other causes such as tumour of the canaliculi / lacrimal sac or facial nerve palsy.

Step 1

- Consider testing tear drainage using the 'Jones fluorescein dye test'.

Step 2

- Treat underlying dry eye or ocular surface infection. Typically, topical antibiotic such as chloramphenicol and a mild topical steroid such as**; FML – Fluorometholone eyedrops**.

Step 3

- Consider sac wash out or punctal probing for persistent epiphora.

Consider referral to ophthalmology for

Canalicular curettage or dacryocystorhinostomy (DCR)

Dacryocystitis

Determining whether the condition is acute or chronic and acquired or congenital is important before starting any form of treatment.

Acute	Chronic
Red / Tender Swelling centred over the lacrimal sac and extending around the orbit	Recurrent episodes similar to - but less severe than acute dacryocystitis - swelling at or below medial cantos
Purulent discharge expressible from one or both puncta when pressure is applied over the lacrimal sac	Mucoid discharge can sometimes be express when pressure is applied to the lacrimal sac
Frequently the patient will present with conjunctivitis and preseptal cellulitis - rarely it extends behind the septum	

Remember - Dacryocystitis is likely secondary to a naso-lacrimal duct obstruction.

Management / Treatment

For Acute Dacryocystitis

Topical antibiotic to prevent conjunctivitis - **Using Chloramphenicol 0.5% (drops) or 1% (ointment)** for no less than 5 days
For mild and non febrile cases - consider prescribing a systemic antibiotic - Flucloxacillin / Co-amoxiclav.
Consider Clarithromycin or Erythromycin for patients with a penicillin allergy.

DO NOT ATTEMPT TO PROBE THE LACRIMAL DRAINAGE SYSTEM DURING ACUTE INFECTION

For Chronic Dacryocysitis

Treatment should be conservative in patient with a lacrimal sac swelling and suspicion of obstruction of the lacrimal drainage system. Hot compresses and massage are the best non pharmacological approaches.
If infection is suspected - topical antibiotic **- Chloramphenicol 0.5% or 1%** can be used for no less than 5 days.

Referral to ophthalmology should be considered for:

Patient with pyrexia and/or is systemically unwell or if an abscess has developed.
All cases in children

Section 2 - Eyelids

Blepharitis

Step 1

Lid hygiene is first line of management regardless of type of blepharitis. This is the most important measure in treating blepharitis. Long-term compliance is essential if symptoms of blepharitis are to be controlled.

This wipes away bacteria and deposits from lid margins and mechanically expresses the lid glands:

- using dedicated proprietary lid cleaning solution / wipes / foam / gel with a swab or cotton bud patient to clean the lid margins (but not beyond the muco-cutaneous junction).
- *Other options include fragrance free baby wipes.*
- *Alternatives that can result in a higher ocular surface toxicity risk include diluted baby shampoo or diluted tea tree oil shampoo (1 : 10H_2O), sodium bicarbonate solution (1 : 10H_2O)]*
- carry out twice daily at first; reduce to once daily as condition improves
- use firm pressure with swab or cotton bud to express glands

Warm compresses to loosen collarettes and crusts
Advise the avoidance of cosmetics, especially eye liner and mascara
Treat seborrheic dermatitis and dandruff (disorders associated with skin yeasts) with medicated shampoos containing e.g. selenium sulphide or ketoconazole (refer to BNF for dosing)
Counsel patient about the need for long-term compliance.
Advise to return/seek further help if symptoms persist despite good compliance to lid hygiene.

Assess for Demodex Folliculorum infestation and treat with lid cleaning as above and tea tree oil lid cleaning
(In-house optometrist treatment = 50:50 mix tea tree oil : diluting oil {eg coconut oil or macadamia oil – avoid if there is any nut allergy}). [Some new lid wipe products contain tea tree oil]
NB. Complete eradication of the blepharitis may not be possible, but long-term compliance with these measures should reduce symptoms and minimise the number and severity of relapses

Step 2

Dietary advice regarding additional omega 3 / 6 oil-based food products.
If infection present**, Chloramphenicol 1% eye ointment**, twice daily for up to 4 weeks
In presence of any signs of dry eye or surface keratopathy consider ocular lubricants such as **Carbomer 980 0.2% gel eyedrop** (e.g Clinitas gel or Lumecare gel) 3-4 times daily.
https://ggcmedicines.org.uk/other-formularies
In presence of Meibomian Gland Disease recommend lipid containing lubricant up to every two hours initially then four times a day and as required until review. [Might require products such as Propylene Glycol 0.6% eyedrops (Systane Balance)]

In presence of severe dry eye recommend white soft/ liquid paraffin eye ointment at night (eg Hylo Night / Xailin Night).
Review in two to four weeks.
If present, manage aqueous tear deficiency:

- refer to Treatment Ladder (TL) on Tear Deficiency

Step 3

Proceed to step 3 if symptoms non-resolving after 4 weeks of above treatment
Continue non-pharmacological measures
If persisting signs of dry eye despite good compliance, consider preservative free alternative lubricant. eg **Sodium Hyaluronate eye drops**
https://ggcmedicines.org.uk/other-formularies
Discuss with patient subjective benefit of lubricant before changing.

In presence of any ocular surface inflammation, request Rx from IP Optometrist or GP for mild topical steroid every four hours per day for four weeks and review.

Topical steroid options: **Fluorometholone (FML)/ Betamethasone 0.1**% (Betnesol) /Prednisolone 0.5% (Predsol)

[Typical topical steroid dosage 4 hourly – taper over 3 to 6 days]

Check intraocular pressure before commencing steroids. Please check for contra-indications for topical steroid use before commencing.

Review in two to four weeks

Step 4

Proceed to step 4 if symptoms non-resolving after 4 weeks of above treatment
Continue non-pharmacological measures
If persisting signs of dry eye despite good compliance, continue preservative free lubricant.
Further 4-week course of topical steroids as above. *See Step 3 for details.*
In presence of persistent inflammation, request IP Optometrist/GP to prescribe an oral tetracycline such as Systemic **Doxycycline 100mg OD or Lymecycline 408mg OD** for two months.
Alternatively consider an oral macrolide such, systemic **Azithromycin 500 mg OD** for 3 – 5 days This can be repeated in 6 - 8 weeks)
or systemic **erythromycin 2 x 500mg** per day for 6 to 12 weeks.
Assess for contraindications
Explain to patient aim of treatment is to control symptoms on minimal amount of treatment possible and likely to need at least non-pharmacological measures and ocular lubricants in the long-term.

Review in one to two months

If symptoms controlled, stop oral antibiotics and continue lubricants and non-pharmacological measures long-term.

Consider referral to ophthalmology if **:-**

- *Treatment in primary care has failed*
- *There is other ocular surface conditions not related to blepharitis*

Ocular Rosacea

Step 1 General

- Advice on avoiding the causes of exacerbations (including facial flushing) if these have been identified by the patient; can include spicy foods, alcohol, sunlight, heat, cosmetics and soaps
- Management of associated conditions such as chalazion, hordeolum (stye), posterior marginal blepharitis and tear deficiency or instability- see other specific treatment ladders for these conditions

Step 2 Pharmacological Treatment

1. Ocular lubricants for tear deficiency/instability related symptoms (drops for use during the day, unmedicated ointment for use at bedtime):
2. Carbomer 980 (Clinitas or Lumecare) 0.2% Eye Drops as required for use during the day
3. Soft /Liquid paraffin products (eg Hylo Night / Xailin Night eye ointment) for use as at night or as required
4. If no improvement, consider alternative preservative free lubricants -see blepharitis treatment ladder [https://ggcmedicines.org.uk/other-formularies]
5. NB: Patients on long-term medication may develop sensitivity reactions which may be to active ingredients or to preservative systems (see treatment ladder on Conjunctivitis Medicamentosa). They should be switched to unpreserved preparations.
6. Refer to IP Optometrist / GP for prescription of oral antibiotic (eg **Doxycycline 100mg or Lymecycline 408mg** once daily for up to 6 months **or** consider oral **erythromycin /azithromycin**) and topical steroid treatment (eg **FML** four times daily).

Consider referral to ophthalmology if no improvement for:-

Management of corneal perforation: tissue adhesive, lamellar keratoplasty, penetrating keratoplasty
Restoration of vision lost through corneal disease: penetrating keratoplasty (but high risk of rejection)

Tear Deficiency – Dry Eye Disease

Step 1 – Non-pharmacological and pharmacological treatment options should be considered in unison.

Non-pharmacological options

Tear preservation, consider:

Blepharitis Treatment - reduce evaporation – lid hygiene for Meibomian dysfunction (hot compress, lid massage, lid cleaning with swabs or cotton buds) -– refer to blepharitis treatment ladder for additional advice.

Advise avoidance of factors that aggravate symptoms

Epilation for trichiasis

Pharmacological options

Tear supplements for use during the day, unmedicated ointment for use at bedtime:

- **Carbomer 980 0.2% Eye Drops,** may be instilled, 4 -6 times a day or as required -see formulary options.
- Soft / liquid paraffin products at night or during the day as required. These products contain lanolin and will blur vision [https://ggcmedicines.org.uk/other-formularies]

Step 2

If no improvement on the above despite adequate compliance, consider second line lubricants:

Sodium Hyaluronate eye drops

*Alternative preservative free sodium hyaluronate (or combination drops) options [https://ggcmedicines.org.uk/other-formularies]

4 times per day or more frequently as required.

Other alternative second line options include Propylene Glycol 0.6% (eg Systane Balance), Carmellose, Ilube (acetylcysteine 5% & hypromellose 0.35%) [https://ggcmedicines.org.uk/other-formularies]

Consider diminishing tear outflow – punctal plugs (refer to treatment ladder, College guidance & other guidance on the use of punctum plugs and intra-canalicular occlusion)

Some patients might benefit from the protective action of bandage contact lenses and this can be considered as an adjunct therapy.

NB Patients on long-term medication may develop sensitivity reactions which may be to active ingredients or to preservative free systems (see Guideline on Conjunctivitis Medicamentosa).

They should be switched to unpreserved preparations *.

Consider referral for:-

Drug treatment for underlying disease (eg Stevens Johnson Syndrome, Ocular Cicatricial Pemphigoid)

Electrolysis, cryotherapy

Permanent (surgical) occlusion of puncta

Tarsorrhaphy (surgical or botulinum toxin)
Transplantation of salivary gland/duct

Hordeola

Step 1 - General Advice

Most resolve spontaneously or discharge, followed by resolution
May help to remove the lash associated with the infected follicle
Traditional remedies such as hot spoon bathing and/or warm compresses may relieve symptoms
Treat associated blepharitis with lid hygiene (see TL on Blepharitis)
Rarely, referral for incision in cases that do not discharge (commoner with internal hordeolum)
An internal hordeolum may evolve into a chalazion (see TL for Chalazion)
Advise patient to return/seek further help if symptoms persist

Step 2 Pharmacological treatment options

Consider course of antibiotic ointment (e.g. **Chloramphenicol 1% Ointment**, 3 times a day for 5 days) in the presence of copious muco-purulent discharge.

In severe or recurrent cases, consider referral to GP / IP Optometrist for management with systemic antibiotics eg **Doxycycline 100mg or Lymecycline 408mg** daily for 2-3 weeks
For Children consider oral **Erythromycin 250-500mg** qds for 10 days or **Azithromycin 500mg** OD for 3 days (refer to the BNF).

See also TLs on, Pre-septal Cellulitis

Trichiasis

Step 1 - General

Epilation: remove lash(es) with forceps. Lash(es) will re-grow within 4-6 weeks, therefore epilation may need to be repeated
If due to entropion, tape the eyelid for temporary relief of symptoms
Consider therapeutic contact lens (silicone hydrogel soft [possibly on an EW basis], rigid limbal or rigid scleral) for temporary relief of symptoms
Advise patient to seek further help / return if symptoms persist or recur

Step 2 - Pharmacological Treatment

Ocular lubricants for symptomatic relief (drops for use during the day, unmedicated ointment for use at bedtime:-

- **Carbomer 980** (Clinitas® or Lumecare) **0.2%** Eye Drops as required for use during the day
- **Soft / liquid paraffin** (eg Hylo Night / Xailin Night eye ointment) for use as at night or as required

NB Patients on long-term medication may develop sensitivity reactions which may be to active ingredients or to preservative systems (see Treatment Ladder on Conjunctivitis Medicamentosa). They should be switched to unpreserved preparations
Lid hygiene for associated blepharitis [see Treatment Ladder on blepharitis]

Step 3 – Consider referral to ophthalmology for:-

Electrolysis: destruction of lash follicle by passing electric current into lash root. Suitable for single or small numbers of lashes. May require multiple treatments
Cryotherapy: nitrous oxide cryoprobe eliminates large numbers of lashes; may cause skin depigmentation
Lid surgery if trichiasis secondary to entropion

Punctum Plugs

Punctum plugs can be used as a treatment option for patients who suffer from dry eyes.
Determining if it is aqueous deficient or evaporative dry eye prior to treatment.

Ensure adequate training on this procedure before carrying out fitting of punctum plugs.
The process should include preparing the area with a suitable short-acting topical local anaesthetic.

There are two different types of punctum plugs

1. Temporary / dissolving plugs - made of a material (collagen) that gradually breaks down and absorbed by the body. They can last in the eye for days to months.
2. Semi - permanent plugs - Made with a longer lasting plastic (silicone etc). Designed to stay in the eyes for years - can be removed if needed.

It is advisable to use a temporary plug before fitting more permeant plugs. This will allow you and the patient to see the benefits of fitting punctum plugs.

Section 3 – Cornea

Marginal Keratitis

Step 1 - General advice

- Dark glasses to ease photophobia
- Advise patient on the need for long term management of blepharitis – see treatment ladder on blepharitis.
- Lid hygiene: perform twice daily for first month then reduce to once daily as required
- Warm compresses as required for crusting
- Counsel patient about the need for long-term compliance.
- Complete eradication of the blepharitis may not be possible, but long-term compliance with these measures should reduce symptoms and minimise the number and severity of relapses including recurrence of marginal keratitis
- Long term treatment option might include oral antibiotics eg Doxycycline 100mg / Lymecycline 408mg daily for up to three months.
- Alternatively, Azithromycin 500mg per day for 3-6 days

Step 2 - Pharmacological

Marginal Keratitis is a self-limiting condition. However, it is conventional to give treatment with a view to relieving symptoms and shortening the clinical course

The concurrent use of topical antibiotic in addition to topical steroid is theoretically justified by the immunosuppressive effect of the steroid which enhances the risk of infection.

Treatment is directed at eliminating the bacterial colonization from the external ocular surface.

When diagnosis of marginal keratitis is clear:

- **Prescribe Chloramphenicol 0.5% eye drops, or 1% ointment as required for 2 weeks**
- **Refer to IP Optometrist / GP for an alternative topical antibiotic – eg Ofloxacin (Exocin) eye drops 4 times a day for 2 weeks**
- **Refer to IP Optometrist/ GP for non-penetrating topical steroid eg Prednisolone 0.5% / Fluorometholone (FML) / Betamethasone eye drops, 4 times a day for 5 days (then taper off steroid over 3 days)**

In some cases combination steroid / antibiotic drugs can aid compliance.

Review in one week. If clinically improving, review after 4 weeks once treatment completed.

Some cases might require long term systemic Doxycycline or Lymecycline – see blepharitis treatment ladder.

In addition, consider; _

- Ocular lubrication for symptomatic relief - Carbomer 980 0.2% (Clinitas or Lumecare) eyedrops 4 times a day. Please refer to treatment ladder on Tear Deficiency
- In the presence of Meibomian Gland Disease - prescription from IP Optometrist / GP for lipid containing lubricant, Polyethylene Glycol 400 0.4% [eg Systane Balance] up to every two

hours initially, then four times a day or as required until review. https://ggcmedicines.org.uk/other-formularies .

- Systemic oral analgesia if needed: paracetamol, aspirin or ibuprofen as per BNF.
- Prescribe Chloramphenicol 1% Eye Ointment, twice a day for 5 days following lid hygiene
- Oral Doxycycline 100mg or Lymecycline 408mg once a day for up to 4 months pending review.
- If suspicious of a dendritic ulcer, look for reduced corneal sensation, which confirms herpetic keratitis.

Consider referring to ophthalmology when:

- *There is persistent inflammation after 4 weeks.*
- *If a contact lens wearer, and there is a suspicion of acanthamoeba keratitis*
- *Microbiological cultures of lesion and lid margins*
- *Investigation of patient's immune status*

Herpes Simplex Keratitis

Stage 1 General

Exclude **viral retinitis following pupil dilatation** (especially in immunocompromised patients) as this would warrant emergency (same day) referral

Stage 2 - Pharmacological Treatment for IP Optometrists

Acute Herpes Simplex: in non-contact lens wearing adults and where HSK is confined to the epithelium, commence antiviral therapy with one of the following:

- Ganciclovir 0.15% ophthalmic gel 5x daily (Virgan)
- Oc. aciclovir 3%) ophthalmic preparation (Zovirax) 5x daily.

[As both ganciclovir and acyclovir are almost equally effective the preferred option is ganciclovir as it is considerably more cost effective]

Treat for one week and return for examination and review.
If the dendritic ulcer has healed:-
- Instruct the patient to continue treatment 3 x day for another 7 days and stop.
- Reassure the patient and explain that the condition may recur.
- Discharge patient

If the dendritic ulcer has not healed:-
- Instruct patient to continue with treatment 5 x day and return in one week.
- consider oral acyclovir (5 x 400mg per day) for persistent cases
- If the dendritic ulcer has healed after the second week stop treatment and discharge.
-Explain to the patient that the condition can recur.

Managing Conditions

- Stromal keratitis can be treated with topical steroids, with anti-infective cover.

Consider referral to ophthalmology
- If the dendritic ulcer is not healing after 14 days refer to ophthalmology.
- for surgical debridement
-for penetrating keratoplasty, in some cases with scarring. Manage recurrent cases on the same basis as above

YOUNG CHILDREN SHOULD ALWAYS BE REFERRED

In a **contact lens wearer, always consider Acanthamoeba keratitis.** Contact lens wear should be discontinued for three months after the ulcer has healed and treatment has stopped.

Corneal Abrasion

Step 1 - General

Determine how the injury was caused. In particular rule out chemical injury and penetrating trauma

- Evaluate abrasion using fluorescein
- size (use length of slit beam) and location
- depth
- edge quality
- oedema beneath abrasion
- confirm no corneal foreign body present
- If corneal foreign body present remove with sterile needle or similar implement.
- Evaluate anterior chamber reaction
- Evert eyelids to confirm no foreign body present
- If sub-tarsal foreign body present, (see TL on Sub-Tarsal Foreign Body)
- Advise patient to return/seek further help if symptoms persist

Do not patch eye (see Evidence Base)

Step 2 - treatment

- Topical anaesthetic (eg proxymetacaine) if necessary, to aid examination
- Systemic analgesia for first 24h (paracetamol, aspirin, or ibuprofen if no contraindications; dosage as for headache)
- Prescribe a broad-spectrum topical antibiotic if risk of infection (NB risk of infection following mild trauma is low):
- Chloramphenicol 1% Ointment, 3 times a day for 5 days
- Consider prescribing Azithromycin Eye Drops twice daily for 7 days as an alternative if:
- allergic to Chloramphenicol
- treatment 4 times a day is impractical (e.g. in children, elderly)
- the patient is pregnant or breastfeeding
- For large abrasions, give cycloplegia to prevent pupil spasm:
- Cyclopentolate 1% Minims twice daily for 2 days

Consider referral to IP optometrist for debridement if indicated.

Consider using a therapeutic bandage contact lens.
Review according to severity of corneal defect.
Look out for corneal erosion (see TL on corneal erosion).

Consider referral to ophthalmology :
Recurrent breakdown suggestive of epithelial basement membrane dystrophy
Signs of secondary infectious keratitis
Plain X-ray or CT scan to exclude retained foreign body

Photokeratitis

Stage 1 General

- Exclude any corneal or sub-tarsal foreign body
- Reassure patient that:
- damage is transitory
- symptoms will be gone within 24 to 48 hours (mild photophobia and blurring may persist for a week or longer)
- Cold compresses, sunglasses for symptomatic relief
- Advise rest with eyes closed
- Review following day (corneal epithelium should have largely healed)
- Advise patient to return/seek further help if symptoms persist
- Advise patient on future eye protection

Stage 2 Pharmacological Treatment

- Local anaesthetic (proxymetacaine) should be used only if required to aid examination, and not for pain relief.
- For large abrasions issue Cycloplegic (short acting: eg Cyclopentolate 1%) twice daily for 2 days to prevent ciliary spasm.
- Drops: tear supplements for symptomatic relief.
- Soft / liquid paraffin ointment: (eg Hylo Night / Xailin Night eye ointment) at bedtime as required (to ease discomfort through lubrication)

  or

- Prescribe a broad spectrum topical antibiotic (NB risk of infection following mild trauma is low):
  - Chloramphenicol 1% Ointment, 3 times per day for 5 days
- Consider prescribing Azythromicin drops (bd) or Ofloxacin (Exocin qds) eye Drops daily for 7 days as an alternative if:
  - allergic to Chloramphenicol
  - treatment 4 times daily is impractical (eg children, elderly)
  - the patient is pregnant
- Eyes should not be padded
- Oral analgesic for pain relief

Not normally referred.

Corneal Foreign Body

Stage 1 - General Assessment Check VA pre and post removal of FB

Take a history and exclude other causes of Red Eye. e.g. Uveitis, Glaucoma (acute angle closure attack) corneal ulcer, dendritic ulcer etc. Ascertain time elapsed since injury if the patient aware of this.

Always check for exposure to chemicals. If so, irrigate eye with normal saline, check pH and refer to Eye Casualty immediately.

Always elicit history of hammering metal to metal and wearing of safety goggles to rule out of high velocity injury to the eye and possibility of intraocular foreign body.

Always dilate to assess for any penetrating injury, look for Seidel's sign at the cornea and assess all ocular surface for signs of trauma. Assess anterior chamber. Check depth of injured eye and compare with uninjured eye.

REFER SAME DAY TO OPHTHALMOLOGY IF THERE ARE SIGNS OF PENETRATING INJURY.

Examine the eye and evert the eyelids to check for sub tarsal foreign body.

Check VA pre and post removal of Foreign Body

Stage 2 Corneal Foreign Body Removal Procedure

1. Instil one drop of Proxymetacaine 0.5%.

At the slit lamp, remove foreign body using a 25 gauge orange needle or similar tangentially to the cornea.
If rust ring remains, use needle to remove or consider using Alger brush to remove it completely. If a rust ring is present and difficult to remove, consider use of 1% Chloramphenicol ointment TDS and then review in 24 to 48 hours. This can have the effect of loosening the rust stain

Stage 3 Pharmacological Treatment.

Chloramphenicol 1% Ointment to be used 3 times a day for 7 days.

If Chloramphenicol is inappropriate, consider alternative topical antibiotics such as azithromycin bd or ofloxacin qds to prevent infection.

In cases of contact lens wearers consider a drug with effect against Gram negative organism
e.g. quinolone such as ofloxacin Initially every 2-4 hours for first two days then 4 times a day for a maximum of 10 days. Taking account of local formulary guidance.
Give advice on when it is appropriate to return to contact lens wear.

Consider systemic analgesia eg. paracetamol, for pain relief.

Stage 4 Review

Consider the need for ongoing ocular lubrication to manage corneal abrasion.
Review as necessary regarding risk of corneal erosion.

Corneal Erosion

Stage 1 - General Advice

Exclude corneal abscess

Stage 2 - Pharmacological Treatment

Mild cases:

Ocular Lubricants:

- Carbomer 980 (Clinitas or Lumecare) 0.2% Eye Drops, 4 times a day during day

- Unmedicated ointment before sleep – Soft / Liquid paraffin (eg Hylo Night / Xailin Night at night– should be continued for at least 3 months from date of last recurrence (see Evidence base)

Consider alternative preservative free ocular lubricants if concerns for preservative sensitivity

Stage 3 – More advanced episodes

For more severe cases with large area of epithelial loss, refer to TL under Corneal Abrasion:
Cycloplegic agent (Cyclopentolate 1% Eye Drops) twice a day for two days to prevent pupil spasm.
If more than 50% epithelial defect issue Chloramphenicol Ointment 1% 3 times a day for 5 days ± pad
NB if infection suspected, do not pad
Review at monthly intervals
Advise patient to return/seek further help if symptoms persist.
Once epithelial defect resolved, antibiotic ointment can be replaced by ocular lubricants (see above)

If there are recurring episodes despite the use of antibiotic ointment / lubricants, bandage contact lens may be required for four weeks together with preservative free lubricant drops and preservative free chloramphenicol 0.5% eyedrops twice a day.
Remove bandage contact lens after four weeks and review.
Some patients will benefit from long term bandage contact lens use.
Consider referral to IP Optom for debridement.

Consider referral to ophthalmology for:-

Excimer laser photo-therapeutic keratectomy
Micropuncture with hypodermic needle or YAG laser
'Alcohol delamination'

Infiltrative Keratitis

Stage 1 General

The aetiology of this condition is inflammatory, not infective. Though it is bacteria-related, bacteria do not invade or replicate in the cornea and there is no progression to infection, nor is the condition a marker for increased risk of microbial keratitis, which is a separate disease entity
CL-associated infiltrative keratitis is considered to be a response to microbial (usually Staphylococcal) antigens, derived from bacteria on the lens or on the lid margin. Micro-organisms cannot usually be recovered from the lesions.

Stage 2 Management

This condition is usually self- limiting but can cause discomfort and distress to patients:-
Temporarily discontinue lens wear
most signs and symptoms resolve within 48 hours
infiltrates resolve over 2-3 weeks
Advise against extended wear
Warn about possibility of recurrence
If condition recurs, switch to disposable

Stage 3 Treatment

Consider ocular lubricants for symptomatic relief.
Consider topical antibiotic (eg Chloramphenicol) and non penetrating topical steroid (eg Fluorometholone 0.1% (FML) to relieve pain and redness. Consider topical Ofloxacin [Exocin] as an alternative to chloramphenicol as appropriate.

Consider lid hygiene if blepharitis present.
Oral antibiotic (Doxycycline 100mg / Lymecycline 408mg for 14 days) may be indicated for blepharitis (see Treatment Ladder on Blepharitis)

Not normally referred

Microbial Keratitis (Fungal / Protozoal / Bacterial)

Fungal Keratitis

Fungal is a rare presentation and common pathogens are yeasts (eg candida0 and filamentous fungi eg fusarium and aspergillus).

Common predisposing factors include chronic ocular surface disease, long term exposure to topical steroids, contact lens wear, systemic immunosuppression, diabetes and trauma associated with agricultural tools and plant matter.

A detailed history should help exclude other causes and patients will present with pain, photophobia and a watery/mucopurulent discharge. Some patients can present with a small epithelial defect initially but as the risk of progression to a larger hazy infiltrate is significant all cases of suspect fungal keratitis warrant same day referral to ophthalmology.

Protozoal Keratitis

The protozoa acanthamoeba are ubiquitous free living protozoa commonly found in water soil and the upper respiratory tract.

In cystic form they are highly resilient but under appropriate conditions the cysts morph into trophozoites (most notably when exposed to their normal nutrient source which is gram negative bacteria) becoming mobile and can penetrate tissue causing severe infection.

A common risk factor in developed countries is contact lens wear.

As early misdiagnosis with contact lens wearers can be herpes simplex keratitis clinicians should be wary and consider the importance of effective differential diagnosis.

Early symptoms include severe pain & photophobia – disproportionate to the clinical signs.

Early signs are irregular epithelial pseudo-dendrite lesions, diffuse or focal stromal infiltrates and perineural infiltrates (this is virtually pathognomonic to AK).

Over time there is a gradual enlargement and coalescence of the infiltrates to form the typical ring infiltrate associated with this disease.

All suspect cases warrant same day- referral to ophthalmology for culture and other investigations.

Bacterial Keratitis

Bacterial keratitis can develop when the cornea becomes compromised ad common pathogens are pseudomonas aeruginosa (gram-negative), staphylococcus (gram-positive) and streptococci (gram positive).

Risk factors include contact lens wear, trauma, ocular surface disease (eg conjunctivitis, herpetic infection, dry eye, blepharitis, exposure, severe ocular allergy and corneal anaesthesia).

It is normal practice to refer for scraping and culture to identify the bacterial pathogen.

As contact lens wear is a common association the initial presentation is often to optometry.

In addition, as ‘First Port of Call’ responders many cases are presented to optometry from primary care or as self-referral.

This was exacerbated during the covid crisis when IP optometrist were being requested to triage a wider range of severe ocular surface disease and initiating treatment in the community rather than referral.

It has become common practice in various parts of Scotland to adopt a pragmatic approach to managing early presentations of small peripheral / mid peripheral corneal ulceration (<1mm) by initiating rapid treatment in the community.

Patient present with pain, photophobia , watery discharge or purulent discharge. There is often an associated anterior uveitis, chemosis and periorbital oedema.

Treatment

If appropriate, IP optometrists can consider monotherapy with a broad spectrum fluoroquinolone such as ciprofloxacin or ofloxacin hourly dose until resolution.

A mydriatic such as cyclopentolate can be used to reduce pain and prevent the formation of synechiae.

The use of topical steroid can reduce pain and help minimise corneal scarring.

But as they can promote replication of some microorganisms they should be withheld until there is significant signs of resolution.

Review after one day, if no improvement after 2-3 days consider referral to ophthalmology.

Section 4 : Conjunctiva

Bacterial Conjunctivitis

This condition often resolves in 5-7 days without treatment :-

- Bathe/clean the eyelids with lint or cotton wool dipped in sterile saline or boiled (cooled) water to remove crusting
- Advise patient that condition is contagious (do not share towels, etc.)

➢ Treatment with a topical broad-spectrum antibiotic may improve short-term outcome and render patient less infectious to others:

- Chloramphenicol 0.5% Eye Drops, up to two hourly , then 4 times a day for 5 days
- Chloramphenicol 1% ointment, 3 times a day for 7 days (PGD)
- If allergic to Chloramphenicol, refer to IP Optometrist / GP for alternative treatment eg ofloxacin eye drops (Exocin) qds or Gentamicin qds for 7 days or Azythromycin (not SMC approved) eye drops, twice daily for 3-7 days.

Advise patient to return/seek further help if symptoms persist and consider referral to an IP optometrist.

Consider referral to ophthalmology:-

- ➢ If resistant to treatment, or recurrent
- ➢ For conjunctival swabs taken for microscopy and culture
- ➢ For treatment with other antibiotics, based on culture results

Viral Conjunctivitis - Non-Herpetic

Step 1 - General

- Wash hands carefully before and after examination
- Do not applanate as condition highly contagious
- Advise patient
- condition is normally self-limiting, resolving within two to three weeks
- condition is highly contagious for family, friends and work colleagues (do not share towels, etc)
- confirmed infection with adenovirus necessitates 2 weeks off work/school
- cold compresses may give symptomatic relief
- Review to monitor for appearance of corneal signs or development of conjunctival pseudo-membrane.
- Removal of pseudo-membrane if possible*. Otherwise refer to ophthalmology.*

Step 2 - Pharmacological treatment

- Antibacterial agents not effective in viral conditions
- Current anti-viral agents also ineffective in adenovirus infection
- Artificial tears and lubricating ointments:
- Carbomer 980 0.2% (Clinitas or Lumecare) Eye Drops, 4 times a day, for use during the day
- Soft /liquid paraffin products (eg Hylo Night / Xailin Night eye ointment) for use at bedtime
- NB Patients on long-term medication may develop sensitivity reactions which may be to active ingredients or to preservative systems (see Guideline on Conjunctivitis Medicamentosa). They should be switched to unpreserved preparations
- Topical vasoconstrictors and antihistamines may be used for severe itching

Step 3 – More Advanced Cases

- Refer to IP Optometrist for:
- Recurring pseudomembrane
- Non-resolution with above measures - for topical non-penetrating steroids to be prescribed [Fluorometholone (FML) / Prednisolone sodium phosphate0.5% (Predsol) / Betamethasone sodium Phosphate 0.1% (Betnesol)
- Corneal changes
- Uncertainty regarding underlying diagnosis needing further investigation

Not normally referred to secondary care.

Chlamydial Conjunctivitis

No treatment by optometrist.
Even if diagnosis appears beyond doubt, do not commence specific treatment before referral to GP as other STDs may also be present.
Refer to GP and ophthalmology simultaneously.
Urgent referral to Ophthalmology within 72 hours.

Advise against contact lens wear
Consider symptomatic relief with ocular lubricants
Possible Management by Ophthalmologist / GP:

- Liaison with Genito-Urinary Clinic, which will exclude other STDs and advise on treatment of patient and partner(s), and on future avoidance
- Systemic azithromycin, doxycycline or erythromycin
- Symptomatic treatment of concomitant lid disease – see blepharitis TL.

Sub Tarsal Foreign Body

Stage 1

- Evert upper eyelid
- Double eversion if possible
- Remove foreign body with
- saline irrigation
- saline-wetted cotton bud (can also be used to sweep the fornix)
- Advise patient to return/seek further help if symptoms persist

Stage 2 Pharmacological Treatment

- Local anaesthetic Proxymetacaine 0.5% Eye Drops (Minims®), 1 drop repeated if necessary to aid examination.
- After removal, consider prophylactic antibiotic (e.g. course of Chloramphenicol 1% Ointment, 3 times a day for 7 days) if there is substantial epithelial loss or foreign matter contamination of the conjunctival sac.

Not normally referred but could be for:-

- Double eversion of upper lid
- Removal of sub-tarsal foreign body
- Treatment of associated complications

Sub Conjunctival Hemorrhage

Stage 1 General

- Measure blood pressure
- In traumatic cases, refer to Guideline on Blunt Trauma
- Ensure that posterior border of haemorrhage can be seen, to exclude intra-cranial source
- If patient has history of recurrent subconjunctival haemorrhages or a history of bleeding or clotting abnormalities, refer to GP
- Reassure patient
- Condition usually clears within 5-10 days
- Cold compress may reduce discomfort
- Advise patient to return/seek further help if problem does not resolve or if it recurs.

Stage 2 Pharmacological

- Tear supplement / ocular lubricant if mild ocular irritation is present :

  - Carbomer 980 (Clinitas / Lumecare) 0.2% Eye Drops as required for use during the day
  - Soft /liquid paraffin (eg Hylo Night / Xailin Night eye ointment) for use as at night or as required

  NB Patients on long-term medication may develop sensitivity reactions which may be to active ingredients or to preservative systems (see Guideline on Conjunctivitis Medicamentosa). They should be switched to unpreserved preparations

Not normally referred.

Allergic Conjunctivitis –seasonal / perennial

Step 1 - General

- Identify allergen(s)
- Advise avoidance of allergen(s)
- Cold compresses for symptomatic relief

Advise against eye rubbing (causes mechanical mast cell degranulation)

Step 2 Pharmacological Treatment

a) Olopatadine 1mg/ml [Opatanol] (twice daily) is first line treatment option (ketotifen as alternate).
b) Consider artificial tears up to 6 times/day – act as barrier and dilute allergen. Keep refrigerated
c) If no resolution after 5 days, continue Olopatadine and request IP Optometrist / GP to prescribe oral anti histamine . (eg Cetirizine/Loratadine/Fexofenadine once daily). [Patients can self-purchase cetirizine or loratadine].

Step 3

If no resolution after 2 further weeks request IP Optometrist to prescribe topical steroid or topical NSAIDs in addition to previous therapy.
Topical steroid options:
Fluorometholone 1mg/ml (FML) / Betamethasone sodium phosphate0.1% (Betnesol) / Prednisolone sodium phosphate 0.5% (Predsol) (four times daily)

Cease contact lens wear when treating with topical NSAIDs or topical steroids

Ensure no corneal involvement or features of differential diagnoses above
If no resolution after 2 further weeks, continue treatment with topical steroid for another 2 weeks

If no resolution with above treatment after six weeks, corneal involvement, or worsening of ocular condition despite treatment, **consider referral.**

If symptoms improved but are not resolved after course of topical steroid, reduce to Olopatadine + oral anti histamine or revert to Olopatidine only, as appropriate to control signs and symptoms.
If established diagnosis and similar to previous episodes continue combination anti-histamine + Opatanol, (Olopatadine may be continued for up to 4months if required to control symptoms) and/or oral antihistamine and conservative measures as required. Also consider mast cell stabiliser for longer term use eg Lodoxamind qds(Alomide).
NB: A general rule of thumb is that topical steroids should not be prescribed for more than 6 weeks in any 4 month period for ocular allergy and IOP should be monitored during use.

Not normally referred. Refer if diagnosis in doubt

Acute Allergic Conjunctivitis

Stage 1

Reassure patient: most cases resolve spontaneously within a few hours
Advise against eye rubbing (causes mechanical mast cell degranulation)
Cool compress may give relief
Artificial tears – act as barrier and dilute allergen. Keep refrigerated
If possible, identify allergen and advise future avoidance
Advise patient to return/seek further help if symptoms persist

Stage 2.

Pharmacological intervention not normally required
If condition requires medication dual acting antihistamine /mast cell stabiliser Olopatadine 0.1% (Opatanol)(twice a day for 5 days.
Some patients might benefit from an oral anti histamine such as loratadine, cetirizine or fexofenadine.
If no resolution after 5 days refer to TL for Perennial/Seasonal Allergic conjunctivitis for alternative longer term therapy.
Not normally referred.

Giant Papillary Conjunctivitis (GPC)

Step 1

- Removal of lens deposits if appropriate
- Replace soft lenses more frequently eg consider daily wear
- Improve hygiene – more rigorous surfactant cleaning, more frequent enzyme use
- Change care regimen and solutions
- Polish or replace rigid lenses
- Reduce exposure time
  - abandon extended wear
  - reduce daily wearing time to minimum possible
  - cease wear for a period in some cases
- Optimise lens fit, material and wearing regime
  - rigid lens: alter overall diameter (repositions lens edge relative to tarsus), reduce edge clearance and edge thickness
  - change soft lens material to one with improved deposit resistance

Step 2

Pharmacological Options

- Topical mast cell stabilisers e.g. sodium cromoglicate, lodoxamide or topical combined anti-histamine/mast cell stabilizer e.g Olopatadine 0.1% . (Opatanol)(off-licence use)
  - can be used while lens wear continues but preserved drops should not be instilled with soft lenses in situ

[Olopatadine is the product of first choice due to the combined H1 antagonist and MCS effect]

- **nedocromil sodium is yellow and may discolour soft lenses**

- Topical steroids are effective but rarely justified because of the risk of adverse effects (except in prosthesis-related GPC)

Step3

Possible Additional Management by IP Optometrist :

Topical steroids in recalcitrant cases that do not respond to other treatment, especially where contact lens wear is medically indicated.

Topical non-penetrating steroid options:

Fluorometholone 1mg/ml (FML)/ Betamethasone sodium phosphate 0.1% (Betnesol) /Prednisolone sodium phosphate 0.5% (Predsol) (four times daily)

Not normally referred.

Conjunctivitis Medicamentosa

Step 1

- Withdrawal of the offending medication or preservative if appropriate
- Cold compress (symptomatic relief)
- Advise patient to avoid any future use of causative drug or preservative

Step 2

Pharmacological

- Non-prescribed medications:
  - decide whether original condition still requires treatment
  - prescribe unpreserved alternative if necessary
- Prescribed medications:
  - where unpreserved formulation of the same medication available, switch to that
  - do not discontinue a medication when the consequences of interruption could be more serious than the conjunctivitis medicamentosa (e.g. glaucoma medications)
  - refer back to original prescriber for consideration of alternative medication
- Unpreserved tear supplements / ocular lubricants (for symptomatic relief):
  - Sodium Hyaluronate preservative free eye drops e (eg Eyeaze 0.4% / Theoloz Duo eye drops) as required for use during the day
  - Soft / Liquid paraffin products (eg Hylo Night or Xailin Night eye ointment) – as required

<u>Possible Management by IP Optometrist</u>

- As above with possible addition of steroids in severe cases.

Section 5 – Inflammation

Episcleritis

Stage 1 General Advice

- Usually self-limiting in 7-10 days
- Reassurance: condition does not progress to more serious ocular disorder
- Advise patient to return/seek further help if symptoms persist
- Differential diagnostic test for Scleritis - instil 2.5% Phenylephrine to 'bleach' episcleral vessels.
- Cases of Scleritis require same day referral to ophthalmology for immune suppression therapies and investigation for systemic vasculitis.

Stage 2 Pharmacological Options

- Mild cases: no specific treatment – possibly cold compresses
- If discomfort: artificial tears, eg Carbomer 980 0.2% (Clinitas or Lumecare) as necessary and recommend oral non-steroidal anti-inflammatories (eg ibuprofen) for one week.
  (Some patients have benefited from topical NSAIDs, though this use is 'off-licence')
- If non- resolving after one week or patient reports discomfort consider a mild topical steroid. [Fluorometholone 0.1% (FML) /Betamethasone 0.1% (Betnesol) / Predinisolone 0.5% (Predsol)] Dosage 4 x daily for 1 – 2 weeks [taper dosage over 3 days]

Consider referral for:-

- Investigation for underlying systemic disease

Uveitis -anterior / acute / recurrent

General

Anterior uveitis is traditionally classified as 'non-granulomatous' or 'granulomatous', based on the nature of the keratic precipitates.
Non-granulomatous uveitis typically has an acute onset and shows fine KP. It is more likely to be idiopathic.
Granulomatous uveitis typically presents as a chronic condition showing large, 'mutton fat' KP and iris nodules. It is more likely to be associated with systemic conditions.
Always ensure that when prescribing topical steroids that a review appointment is arranged for follow up.

Stage 1

- Take a detailed history to determine the possible causes, HLA B27 antigen eg Ankylosing Spondylitis
- Examine and dilate to look for cells in both eyes
- Dilated fundus examination to exclude posterior uveitis
- Exclude herpes simplex keratitis
- Herpetic infection can cause anterior uveitis
- Explain the diagnosis
- Check intraocular pressure
- Advise Sunglasses for photophobia
- Spectacle near addition for cycloplegia
- Warn patients of possible recurrence and educate on early symptoms of recurrence
- Monitor for ocular complications:
  - non dilating pupil (after Cyclopentolate Hydrochloride 1% is instilled)
  - IOP > 30mmHG or PATIENT IS A KNOWN STEROID RESPONDER
  - Large granulomatous keratic precipates
  - Hypopyon or Vitritis
  - Fundus Lesions
  - Macular oedema / CMO
  - Bilateral cases
  - Children should always be referred

Stage 2 - Treatment (if no reason to refer)

First episode:

Topical steroid (first exclude herpetic infection): gutt. prednisolone acetate 1% ((**Pred Forte**) or gutt Dexamethasone Alcohol 1% (**Maxidex**) hourly until eye is white or inflammation controlled
Topical cycloplegic (NB first check for possibility of angle closure): gutt. cyclopentolate 1% bd/tds to break synechiae and allow a detailed vitreous / fundus examination.

Review after two days

Examine and assess for improvement and check IOP (for steroid response)
Review frequently thereafter, monitor for improvement.

Once condition has resolved slowly taper steroid treatment to avoid rebound effect.

- Continue Cyclopentolate 1% Eye Drops 1-3 times a day until resolution
- Reduce Prednisolone 1% / Dexamethasone 1% Eye Drops as follows:
  - every second waking hour for 7 days
  - then 6 times a day for the next 7 days
  - then 4 times a day for the next 7 days

Review after 21 Days

If the eye is quiet:

- Discontinue Cyclopentolate 1% Eye Drops
- Taper off topical steroid Eye Drops:
  - 3 times a day for 7 days
  - 2 times a day for the next 7 days
- Once a day for the next 7 days and then stop

After 2 -3 recurrent episodes consider referral to the GP or an ophthalmologist for systemic review and possible onward referral to rheumatologist to investigate any underlying auto-immune condition.

Managing Complications

Steroid response – consider hypotensive agents – see treatment ladder.
Hypopyon – consider referral?
Vitritis / Intermediate uveitis – consider referral.
Posterior uveitis – always refer.
CMO – consider referral – see treatment ladder.

Stage 3 – Consider Referral to ophthalmology: -

- if serious concerns
- If no improvement after 2 -3 weeks
- suspicious posterior segment involvement
- To treat secondary glaucoma
- If sub-tenon's steroid injection is required
- Possible systemic immunosuppression
-

REMEMBER:

- Young children should always be referred
- Warn patients of possible recurrence and educate on early symptoms of recurrence

Section 6 – Miscellaneous

Steroid Response

Some patients being treated with systemic or topical steroids can elicit a 'steroid response', resulting in elevated intra-ocular pressure.
When treating patients with steroids, optometrists must take base line IOP measurements and follow up IOP review during the treatment period.
If the IOP is significantly high and the exposure to the steroid is prolonged there is a greater risk damage to the optic nerve head.

A steroid response can be detected with both ocular and systemic steroids. About 70% of cases are associated with topical application to the yes.
Sustained elevation of IOP can result in optic neuropathy [steroid glaucoma] and care should be taken to avoid this at all times.

The mechanism of elevated intraocular pressure is resistance to aqueous outflow due to thickening of the trabecular meshwork beams, decreased intertrabecular spaces, thickened juxtacanalicular tissue, activated trabecular meshwork cells and increased amounts of extracellular material.

The College of optometrists have split steroid response into three groups:-

- high responders (5%): marked elevation of IOP by >15mmHg
- moderate responders (30%): moderate elevation by 6-15mmHg
- non-responders (65%): an elevation of up to 5mmHg is considered irrelevant in this instance

The higher the steroid potency, the greater the ocular hypertensive response.
The topical steroids 'Maxidex' (dexamethasone alcohol) and Pred Forte (prednisolone acetate) are considered to be more potent and penetrating, therefore more likely to result in clinically significant increases in IOP when compared to FML (fluorometholone), Predsol (prednisolone sodium phosphate), Betnesol (betamethasone sodium phosphate) and Lotemax (loteprednol).

Depot injections of steroid increase the risk of a significantly raised IOP in responders, with intravitreal steroids being a greater risk than subconjunctival or sub-tenon's delivery

Patients living with glaucoma, close family relatives of a glaucoma patient, high myopes and diabetics are more at risk of a steroid response.

For the vast majority, the 'steroid response' ceases once the steroid is withdrawn.
The main objective is to treat a steroid response effectively when it occurs and reduce the risk of long term damage to the optic nerve head.
Please note that not all cases of a steroid response warrants treatment, only those cases where a moderate to high response is observed.

Management
A baseline measurement of IOP should always be taken prior to commencement of steroid therapy. Patients newly begun on ocular steroid therapy should have their IOPs measured again after 1-2 weeks, then every 4 weeks for 2-3 months, then 6-monthly if therapy is to continue

It has been recommended in patients receiving intravitreal steroids (injections or implants) to measure IOP at 30 minutes, at 1 week, 2 weeks and then monthly for up to 6 months

If a steroid response is detected, consider if it is possible to discontinue treatment or use a 'weaker' topical steroid.

The chronic steroid response usually resolves in 1-4 weeks, whilst the acute response may resolve within a few days of cessation of steroid therapy.
Optometrists would normally be involved in the management of acute cases following toicial treatment of anterior uveitis or similar condition.

For chronic long term cases, the IOP usually returns to normal within 2-4 weeks after discontinuation, but if the steroid therapy has continued for 18 months or more, the raised IOP may persist for longer and referral to ophthalmology will be required.

Treatment
Clinically significant ocular hypertension may be treated with ocular antihypertensives. Topical beta blockers and carbonic anhydrase inhibitors (CAI) are effective.

Stage 1. First line option:-
Topical beta blocker eg Timolol maleate 0.25 or 0.5% twice daily. If patient is suitable and has no-contraindications.

Stage2 Second line option
Combined topical beta blocker and a CAI twice daily – beta eg timolol maleate and dorzolamide or brinzolamide.

The use of prostaglandin analogues have been shown to be effective in countering a steroid response, however like alpha agonists and miotics they are relatively contra-indicated in patients with uveitis.

Always monitor IOP carefully and frequently after prescribing

Hyphaema

During the COVID -19 epidemic, guidelines for conditions previously managed in secondary care were provided to primary care with the aim of maintaining management and follow up in the community. This has effectively broadened the type of conditions which could be managed in primary care. Further assessment is ongoing as to what conditions previously referred to ophthalmology could now be safely managed in the community by optometrists.
The following is based on GGC guidance for ocular hyphema.

Stage 1 General assessment

Hyphema is an accumulation of red blood cells within the anterior chamber. It can occur spontaneously or following ocular trauma either penetrating or non-penetrating.
If no trauma occurred contact ARC and GP to assess reasons for the hyphaema.
Children should be referred to ophthalmology.
If rupture of the globe is suspected refer urgently to ophthalmology.

Obtain a thorough medical and ophthalmic history of the patient, including any previous ocular injuries, and VA if possible.

A detailed record of the trauma including size, shape and direction of the object including where known its composition and number of times globe was struck should be taken, also whether protective eyewear was worn. Check for changes in VA and any associated ocular disturbance. However with globe rupture the VA may remain unchanged. Ask about pain photophobia or any diplopia and discomfort on ocular movement. Assess orbit for any asymmetry or damage, if noted refer to ARC

Examination

Firstly exclude globe rupture. Check for signs of penetration e.g. seidel test. Check for pupil irregularity and reflexes, anterior chamber depth and asymmetry. Check ocular motility and diplopia and any orbital asymmetry. Do not assess IOP or carry out gonioscopy if globe rupture suspected and refer to ARC. Photograph if possible to aid management.
A dilated examination must take place, where safe to do so to assess any posterior pole damage. If dilation is inappropriate refer urgently to ophthalmology.

Step 2 Treatment

Pain management simple analgesia Paracetamol / Co-codamol. (8/500 initially).
Avoid NSAID or analgesia likely to induce vomiting
There is no evidence that any drug or non-drug intervention alters VA final outcome. Advise patient to undertake minimal activity for at least 2 weeks. No lifting or straining. Avoid lying flat and sleep with head elevated 30-45 degrees. Use clear eye shield. Many hyphaema will self-resolve. Review daily if no resolution in 3 days contact ARC. Refer the patient to ophthalmology if you have concern regarding the patients adherence to treatment.

Step 3 Pharmacological treatment

Anterior Uveitis

If uveitis or photophobia is present management could include Prednisolone 1% up to 6 times daily and 1% Cyclopentolate 3 times a day (see treatment ladders management of uveitis).

Raised IOP

Management of Raised IOP. Check for any contra indications before initiating treatment 20-30mmHg Timolol 0.5 % twice daily If IOP 31 mmHg or above consult ophthalmology.

Post operative Cystoid Macular Oedema(CMO) Irvine –Glass Syndrome

General

Irvine Glass syndrome is one of the most common complications following uneventful cataract surgery. Clinical CMO impairing vision is found in approximately 1-2% of patients with its peak around 6 weeks. Sub clinical CMO can be seen in approximately 30% of patients. In most cases CMO is benign and self-limiting with without visual impairment, although up to 28% of eyes with pseudoaphakic CMO did not fully recover 6/6 (1)

Stage 1

Firstly if no reason to refer back to ophthalmology and there are no other factors which may account for the response e.g Diabetes, history of uveitis, previous CRVO or currently being treated for glaucoma with prostaglandin. A baseline measurement of IOP should always be taken prior to starting steroid therapy and measured again in 2 weeks

Stage 2 Management

The scarceness of material makes it impossible to formulate strong recommendations for the treatment of Irvine Glass syndrome. However clinical practice and theoretical background support topical NSAID and topical steroid use. (current management options in Irvine Glass Syndrome article sited above) (1)

- Obtain baseline OCT
- Maxidex (0.1% Dexamethasone) 6 times a day for 2 weeks reducing to 4 times a day for 2 weeks then 2 times a day for 2 weeks and Acular 3 times a day for 2 weeks.
- If no improvement a 6 weeks refer back to ophthalmology
  Acular is good but less well tolerated than Nevanac .

Section 7 – References

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