NHS Greater Glasgow and Clyde

CLINICAL GUIDELINE

Anterior Segment Treatment Ladders

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.

NHS
Greater Glasgow and Clyde

ANTERIOR SEGMENT TREATMENT LADDERS

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.

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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).
The number of IP optometrists within GG&C is increasing year on year and once a request is made to the Board, all IP qualified optometrists are issued with an NHS prescribing pad.

GG&C has developed a prescribing formulary based to improve safety within the prescribing community. 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.

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.
The principal intention is to retain more patients in the community in keeping with General Ophthalmic Services "1st Port of Call" principles.
It should also be helpful for secondary care to know that once a patient has been referred that certain steps have already been undertaken prior to referral.

The advice includes 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.
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 as FML for blepharitis and episcleritis but a more potent / penetrating product such as Pred Forte or Maxidex 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 will be issued to supplement this guidance.

The guidance development group are grateful to the input from prescribing leads, ophthalmology, the Optometry IP group & General Practitioners.
It is the intention to review and extend this guidance on a rolling basis or as required.

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MANAGEMENT / TREATMENT [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).
    [Alternative options that can result in a higher ocular surface toxicity risk include fragrance-free baby wipes, diluted baby or tea tree oil shampoo (1 : 10H2O), sodium bicarbonate solution (1 : 10H2O)]
  - 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 seborrhoeic dermatitis and dandruff (disorders associated with skin yeasts) with medicated shampoos containing e.g. selenium sulphide or ketoconazole
- 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 Consider:-

- 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 e.g Clinitas gel or Lumecare gel (Carbomer 980 0.2% gel eyedrop)

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 Hylo Night / Xailin Night eye ointment at night.
Review in two to four weeks.

<u>Step 3</u>

- 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 Hylo Forte 0.2% eye drops)
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- see TL on anterior Uveitis]

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 Systemic Doxycycline 100mg OD or Lymecycline 408mg OD for two months.
- Alternatively, Azithromycin 500 mg OD for 3 – 5 days. This can be repeated in 6 - 8 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 persisting, refer to ophthalmology for further assessment
If symptoms controlled, stop oral Doxycycline and continue lubricants and non-pharmacological measures long-term

Consider sooner referral to HES if:
Any evidence of keratitis, progressive corneal disease
Development of other ocular surface conditions not related to blepharitis necessitating review
Adverse reactions to any prescribed treatment

Manage aqueous tear deficiency, if also present:
- refer to Treatment Ladder (TL) on Tear Deficiency

Evidence Base

- Bilkhu PS, Naroo SA, Wolffsohn JS. Randomised masked clinical trial of the MGDRx EyeBag for the treatment of meibomian gland dysfunctionrelated evaporative dry eye. Br J Ophthalmol. 2014;98(12):1707-11

- Khaireddin R, Hueber A. [Eyelid hygiene for contact lens wearers with blepharitis.Comparative investigation of treatment with baby shampoo versus phospholipid solution].[Article in German] Ophthalmologe. 2013;110(2):146-53

- Koo H, Kim TH, Kim KW, Wee SW, Chun YS, Kim JC Discomfort and Demodex: Effect of Tea Tree Oil Eyelid Scrub in Demodex Blepharitis. J Korean Med Sci 2012;27:1574-9

- Lindsley K, Matsumura S, Hatef E, Akpek EK. Interventions for chronic blepharitis. Cochrane Database of Systematic Reviews 2012, Issue 5. Art. No.: CD005556

- Zhao YE, Wu LP, Hu L, Xu JR. Association of Blepharitis with Demodex: A Meta-analysis. Ophthalmic Epidemiology 2012;19(2),95-102

- http://cks.library.nhs.uk/blepharitis
- (Oxford Centre for Evidence-Based Medicine Level of Evidence = 2b)

Management / Treatment [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 management guidelines for these conditions

Step 2 Pharmacological Treatment

- Ocular lubricants for tear deficiency/instability related symptoms (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
  - 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.
- IP Optometrist / GP for prescription of oral antibiotic (Doxycycline 100mg / Lymecycline 408mg daily for up to 6 months) and topical steroid treatment (eg FML qds).

Possible Management by Ophthalmologist:

- Ocular lubricants
- Topical steroid for management of lid, conjunctival and corneal disease
- Oral antibiotic (eg Lymecycline 408mg, once daily, for 6 months) for both ocular and cutaneous rosacea (GP or dermatologist will also prescribe)
- Management of corneal perforation: tissue adhesive, lamellar keratoplasty, penetrating keratoplasty
- Restoration of vision lost through corneal disease: penetrating keratoplasty (but high risk of rejection)

Evidence Base

- van Zuuren EJ, Graber MA, Hollis S, Chaudhry M, Gupta AK, Gover M. Interventions for rosacea. Cochrane Database of Systematic Reviews 2005, Issue 3. Art. No.: CD003262. DOI: 10.1002/14651858.CD003262.pub3. Authors' conclusion: Evidence of benefits of pharmacological treatment in ocular rosacea could only be demonstrated for topical and oral metronidazole and oral tetracycline (Centre for Evidence-based Medicine Level of Evidence = 1a)

- Ghanem VC, Mehra N, Wong S, Mannis MJ. The prevalence of ocular signs in acne rosacea: comparing patients from ophthalmology and dermatology clinics. Cornea. 2003;22(3):230-3

- Stone DU, Chodosh J. Oral tetracyclines for ocular rosacea: an evidence-based review of the literature. Cornea. 2004;23(1):106-9

- Vieira AC, Mannis MJ. Ocular rosacea: common and commonly missed. J Am Acad Dermatol. 2013;69(6 Suppl 1):S36-41

Evidence of the benefit of other drugs of the tetracycline family is based on a published case series and a single small sample Randomised Controlled Trial Zengin N et al: Cornea 1995; 14: 144-6 (Tetracycline treatment improves TBUT) Frucht-Pery J et al: Am J Ophthalmol 1993; 116: 88-93 (Doxycycline and tetracycline demonstrate symptomatic improvement) Bartholomew RS et al: Brit J Ophthalmol 1982; 66: 386-88 (Compared to placebo, oxytetracycline produced a significantly higher number of remissions) (Centre for Evidence-based Medicine Level of Evidence = 2b)

Management / Treatment [Tear Deficiency]

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 (Clinitas or Lumecare) 0.2% Eye Drops, may be instilled, 4 -6 times a day or as required.
  - Hylo Night / Xailin Night eye ointment at night or during the day as required. These products contain lanolin and will blur vision.

Step 2

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

- Sodium Hyaluronate 0.2-0.4% (Blink Intensive, Hylo Forte, Evolve HA) eye drops 4 times per day or more frequently as required.
- Other alternative second line options are Systane Balance / Carmellose (Celluvisc unit dose or Evolve Carmellose), Ilube (acetylcysteine 5% & hypromellose 0.35%)

Consider diminishing tear outflow – punctal plugs (refer to College & 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 SJS, OCP)
- Electrolysis, cryotherapy
- Protection with therapeutic contact lenses of all types
- Permanent (surgical) occlusion of puncta
- Tarsorrhaphy (surgical or botulinum toxin)
- Transplantation of salivary gland/duct

Evidence Base

- Dry Eye Syndrome. American Academy of Ophthalmology Cornea/External Disease Panel, Preferred Practice Patterns Committee. Dry eye syndrome. San Francisco (CA): American Academy of Ophthalmology (AAO); 2003 (Oxford Centre for Evidence-based Medicine Level of Evidence = 2b)

- Alves M, Fonseca EC, Alves MF, Malki LT, Arruda GV, Reinach PS, Rocha EM. Dry eye disease treatment: a systematic review of published trials and a critical appraisal of therapeutic strategies. Ocul Surf. 2013;11:181-92

- Ervin A-M, Wojciechowski R, Schein O. Punctal occlusion for dry eye syndrome. Cochrane Database of Systematic Reviews 2010, Issue 9. Art. No.: CD006775. DOI: 10.1002/14651858.CD006775.pub2

- Doughty MJ, Glavin S. Efficacy of different dry eye treatments with artificial tears or ocular lubricants: a systematic review. Ophthal Physiol Opt 2009;29:573–83

- Doughty MJ. Fluorescein-tear breakup time as an assessment of efficacy of tear replacement therapy in dry eye patients: a systematic review and meta-analysis. Ocul Surf. 2014;12:100-11

Management / Treatment [Marginal Keratitis]

Step 1 General advice

- Dark glasses to ease photophobia
- Advise patient on the need for long term management of blepharitis – see guidance 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 four 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 4 times a day for 2 weeks**
- **Prescription from IP Optometrist/ GP for non-penetrating topical steroid eg Prednisolone 0.5% / FML / Betnesol eye drops, 4 times a day for 5 days (then taper off steroid over 3 days)**

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.
- In the presence of Meibomian Gland Disease - prescription from IP Optometrist / GP for lipid containing lubricant, Systane Balance [Polyethylene Glycol 400 0.4%] up to every two hours initially, then four times a day or as required until review. (Please refer to Formulary).
- Systemic oral analgesia if needed: paracetamol, aspirin or ibuprofen
- Prescribe Chloramphenicol 1% Eye Ointment, twice a day for 5 days following lid hygiene
- Oral Doxycycline 100mg or Lymecycline 408mg once a day for four months
- If suspicious of a dendritic ulcer, look for reduced corneal sensation, which confirms herpetic keratitis.

Consider referring to ophthalmology when:

- No clinical improvement after two weeks
- There is persistent inflammation after 4 weeks.
- Children should normally always be referred.
- If anterior chamber cells are present.
- If a contact lens wearer, to exclude acanthamoeba keratitis.

Possible Management by Ophthalmologist:

- Prednisolone 1% eye drops 4 times a day for two weeks the twice a day for a further two weeks as a tapering dose
- Microbiological cultures of lesion and lid margins
- Investigation of patient's immune status
- Topical and/or systemic antibiotic treatment of blepharitis

Evidence Base

Chignell AH et al: Marginal ulceration of the cornea. Br J Ophthalmol 1970; 54: 433-40 Authors' conclusion: Early administration of steroid drops clearly results in a more rapid resolution of symptoms and signs compared with other forms of treatment (Centre for Evidence-based Medicine Level of Evidence = 2b)

Treatment / Management [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. (PGD)
- 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.

Possible Management by Ophthalmologist:

- Surgery rarely performed in presence of acute infection

See also TLs on Chalazion, Pre-septal Cellulitis

Evidence Base

- Lindsley K, Nichols JJ, Dickersin K. Interventions for acute internal hordeolum. Cochrane Database Syst Rev. 2010;(9): CD007742
- Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

Management / Treatment [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
  - 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 TL on Conjunctivitis Medicamentosa). They should be switched to unpreserved preparations
- ❖ Lid hygiene for associated blepharitis [see TL on blepharitis]

Step 3 - Possible Management by Ophthalmologist:

- ❖ 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
- ❖ Therapeutic contact lenses in severe trichiasis, as temporary measure before surgery or as definitive management if patient refuses surgery
- ❖ Treatment of predisposing ocular conditions
- ❖ Lid surgery if trichiasis secondary to entropion

Evidence Base

- ❖ Yorston D, Mabey D, Hatt S, Burton M. Interventions for trachoma trichiasis. Cochrane Database of Systematic Reviews 2006, Issue 3. Art. No.: CD004008. DOI: 10.1002/14651858.CD004008.pub2 Authors' conclusion: No trials show [that] interventions for trichiasis (in cases of trachoma) prevent blindness. Certain interventions have been shown to be more effective at eliminating trichiasis. Full thickness incision of the tarsal plate and rotation of the lash-bearing lid margin through 180 degrees is probably the best technique (Centre for Evidence-based Medicine Level of Evidence = 1a)

- Case Series: Johnson RLC, Collin JRO: Treatment of trichiasis with a lid cryoprobe. Brit J Ophthalmol 1985; 69: 267-70 (Centre for Evidence-based Medicine Level of Evidence = 4)

Management / Treatment [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 - instill 2.5% Phenylephrine to 'bleach' episcleral vessels.
- Cases of Scleritis require urgent referral to the ARC 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 Brufen) 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. [Fluoromethalone 0.1% (FML) /Betamethasone 0.1% (Betnesol) / Predinisolone 0.5% (Predsol)] Dosage 4 x daily for 1 – 2 weeks [taper dosage over 3 days]

  Review after 7 days (including IOP measurement). If non-resolving after one to two weeks with topical steroid, refer to ophthalmology ARC.

Possible Management by Ophthalmologist:

- Investigation for underlying systemic disease
- Persistent cases may need mild topical steroid, eg Prednisolone sodium phosphate (Predsol®) 0.5% eye drops, 4 times a day for 7 – 14 days.

Evidence Base

- Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

- Lloyd-Jones D, Tokarewicz A, Watson PG. Clinical evaluation of clobetasone butyrate eye drops in episcleritis. Br J Ophthalmol. 1981;65(9):641-3

- Lyons CJ, Hakin KN, Watson PG. Topical flurbiprofen: an effective treatment for episcleritis? Eye (Lond). 1990;4(3):521-5
- Sainz de la Maza M, Molina N, Gonzalez-Gonzalez LA, Doctor PP, Tauber J, Foster CS. Clinical characteristics of a large cohort of patients with scleritis and episcleritis. Ophthalmology. 2012;119(1):43-50
- Watson PG, Lobascher DJ, Sabiston DW, Lewis-Faning E, Fowler PD, Jones BR. Double-blind trial of the treatment of episcleritis-scleritis with oxyphenbutazone or prednisolone. Br J Ophthalmol. 1966;50(8):463-81
- Watson PG, Hayreh SS. Scleritis and episcleritis. Br J Ophthalmol 1976;60:163-91
- Williams CP, Browning AC, Sleep TJ, Webber SK, McGill JI. A randomised, double-blind trial of topical ketorolac vs artificial tears for the treatment of episcleritis. Eye (Lond). 2005;19(7):739-42

Management / Treatment [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 refer urgently to the ARC if there is:
  - 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
  - Bilateral cases
  - Children should always be referred

Stage 2 - Treatment (if no reason to refer)

First episode:
Topical steroid (first exclude herpetic infection): e.g. **Pred Forte** (gutt. prednisolone acetate 1%) or **Maxidex** (gutt Dexamethasone Alcohol 1%) 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 - if no improvement at one to two weeks, consider referral to an ophthalmologist.

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 Prednisolone 1% 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.
NB: do not commence treatment if patient is known to have a history of corticosteroid-induced ocular hypertension or has had an episode of hypertensive uveitis
First episode:
The first episode is not normally referral to ophthalmologist, where there is:

- non-granulomatous inflammation
- unilateral involvement
- no underlying systemic aetiology
- no posterior segment involvement

Stage 3 - Referral
Urgent (within one week) referral to ophthalmologist if:

- no improvement after one week of pharmacological treatment
- granulomatous features from the outset
- hypopyon or fibrin in anterior chamber
- failure to break posterior synechiae
- bilateral disease
- posterior segment involvement
- inadequate pupil dilation (to exclude posterior uveitis)
- history suggestive of an underlying systemic aetiology

Emergency (same day) referral to ophthalmologist (no intervention) if:

- significant reduction in vision
- severe pain
- significantly raised IOP
- Second or subsequent episode:

Possible management by ophthalmologist

- Cycloplegia (gutt. cyclopentolate 1%)
- Topical steroid (e.g. gutt. dexamethasone 0.1% or gutt. prednisolone acetate 1%)
- Treat secondary glaucoma
- Sub-Tenon's steroid injection may be required
- Possible systemic immunosuppression
- At third episode, may investigate aetiology of uveitis and possibly refer appropriately for further medical investigation.

REMEMBER:

❖ Young children should always be referred

❖ Warn patients of possible recurrence and educate on early symptoms of recurrence

Evidence Base

❖ Curl A, Mattos K, Pavésio C: Uveitis (acute anterior). Clin Evid 2005; 14: 179-43.
Authors' conclusion: Available RCTs are too small to prove clinically important differences between steroid eye drops and placebo, or between steroid and nonsteroidal eye drops. The limited evidence suggests that steroid eye drops are more effective than non-steroidal eye drops and that newer topical steroids (e.g.rimexolone 1%) may be as effective as prednisolone but with less risk of adverse reactions.

Centre for Evidence-based Medicine Level of Evidence = 2b

❖ Islam N, Pavesio C: Uveitis (acute anterior). Clin Evid (Online). 2010 Apr 8;2010.
Authors' conclusion: 'Topical corticosteroids have been standard treatment for anterior uveitis since the early 1950s, especially for people with acute or severe uveitis. Placebo controlled RCTs are unlikely to be conducted and evidence is therefore based on consensus. The studies examining the effects of NSAID eye drops or mydriatics were either too small or of insufficient quality to allow us to judge their effectiveness in treating uveitis.'
(The Oxford 2011 Levels of Evidence = 2)

❖ College of Optometrists: Clinical Management Guidelines. June 2017

❖ Jabs DA, Nussenblatt RB, Rosenbaum JT; Standardization of Uveitis Nomenclature (SUN) Working Group. Standardization of uveitis nomenclature for reporting clinical data. Results of the First International Workshop. Am J Ophthalmol. 2005;140(3):509-16

Management / Treatment [Conjunctivitis Bacterial]

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, consider Exocin (Ofloxacin) qds 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

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

Evidence Base

- Sheikh A, Hurwitz B. Antibiotics versus placebo for acute bacterial conjunctivitis. Cochrane Database of Systematic Reviews 2006, Issue 2. Art. No.: CD001211. DOI: 10.1002/14651858.CD001211.pub2.
- Jefferis J, Perera R, Everitt H, van Weert H, Rietveld R, Glasziou P, Rose P. Acute infective conjunctivitis in primary care: who needs antibiotics? An individual patient data meta-analysis. Br J Gen Pract. 2011 Sep;61(590):e542-8

  Authors conclusion: Acute bacterial conjunctivitis is frequently a self-limiting condition, but the use of antibiotics is associated with significantly improved rates of clinical and microbiological remission.

- (Centre for Evidence-based Medicine Level of Evidence= 1a)

Management / Treatment [Conjunctivitis – Viral, 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 pseudomembrane.

Removal of pseudomembrane if possible. Otherwise refer to ARC.

Step 2

- ❖ 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
  - 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

IP Optometrist for:

- Recurring pseudomembrane
- Non-resolution with above measures - for topical non-penetrating steroids to be prescribed [FML / Predsol / Betnesol]
- Corneal changes affecting visual axis and acuity
- Uncertainty regarding underlying diagnosis needing further investigation

Step 4

Refer for Possible Management by Ophthalmologist:-

- Conjunctival swabs for virus isolation and strain identification
- Topical steroid may be prescribed for pseudomembrane and for keratitis.

Evidence Base

- Majeed A, Naeem Z, Khan DA, Ayaz A Epidemic adenoviral conjunctivitis report of an outbreak in a military garrison and recommendations for its management and prevention. The Journal of the Pakistan Medical Association. 2005, 55(7), 273-5 Authors' conclusion: Adenoviral conjunctivitis is a highly contagious disease and often spreads in epidemics, particularly in crowded communities with poor hygiene. Prevention of transmission is the most important therapeutic measure particularly in the ophthalmic clinics of the hospitals. Although the disease is benign and self-limiting, cold compresses and topical anti-histamine/decongestant eye drops reduce the discomfort and severity of the disease. (Centre for Evidence-based Medicine Level of Evidence = 2b)

- Azari AA, Barney NP. Conjunctivitis: a systematic review of diagnosis and treatment. JAMA. 2013;310:1721-9

- Pihos AM. Epidemic keratoconjunctivitis: A review of current concepts in management. J Optom. 2013; 6(2): 69–74

- Skevaki CL, Galani IE, Pararas MV, Giannopoulou KP, Tsakris A. Treatment of viral conjunctivitis with antiviral drugs. Drugs. 2011;71(3):331-47

- Everitt H, Wormald R, Henshaw K, et al. Viral conjunctivitis. In: Wormald R, Smeeth L, Henshaw K, eds. Evidence Based Ophthalmology. London: BMJ books, 2003

Management / Treatment [Chlamydial Conjunctivitis]

Refer to Ophthalmology within 72 hours.
Even if diagnosis appears beyond doubt, do not commence specific treatment before referral to GP as other STDs may also be present
Advise against contact lens wear
Consider symptomatic relief with ocular lubricants
Possible Management by Ophthalmologist:

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

Evidence Base

- Katusic D, Petricek I, Mandic Z et al. Azithromycin vs doxycycline in the treatment of inclusion conjunctivitis. Am J Ophthalmol. 2003; 135: 447-51. Authors' conclusion: A single 1-g azithromycin therapy is as effective as standard 10-day treatment with doxycycline (100 mg twice daily) in the treatment of adult inclusion conjunctivitis (Centre for Evidence-based Medicine Level of Evidence = 2b)
- Azari AA, Barney NP. Conjunctivitis: a systematic review of diagnosis and treatment. JAMA. 2013;310:1721-9

Management / Treatment [HSK]

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

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:

- Virgan (ganciclovir 0.15%) ophthalmic gel 5x daily
- Zovirax (oc. aciclovir 3%) ophthalmic preparation [whilst stocks last], 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.
- If the dendritic ulcer has healed after the second week stop treatment and discharge.
-Explain to the patient that the condition can recur.

- If the dendritic ulcer has not healed after 14 days refer to the ARC.

Manage recurrent cases on the same basis as above

Consider referral to the ARC if there is:

- stromal involvement
- keratic precipitates
- anterior chamber cells or
- the intraocular pressure is raised

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.

Possible Management by Ophthalmologist:

- Isolation and characterisation of virus from corneal swab or biopsy
- Antivirals (topical and/or systemic)
- Topical steroid
- Surgical debridement
- Penetrating keratoplasty in some quiescent cases with scarring

Evidence Base

- Wilhelmus K. Therapeutic interventions for herpes simplex virus epithelial keratitis. Cochrane Database of Systematic Reviews 2007, Issue 3. Art. No.: CD002898.DOI: 10.1002/14651858.CD002898.pub3. Author's conclusion: currently available anti-virals are effective and nearly equivalent. Topical application of aciclovir or ganciclovir results in a high proportion of resolutions within one week of treatment. Insufficient placebo-controlled studies are available to assess debridement
- Rowe AM, St Leger AJ, Jeon S, Dhaliwal DK, Knickelbein JE, Hendricks RL. Herpes keratitis. Prog Retin Eye Res. 2013;32:88-101
- White ML, Chodosh J. Herpes Simplex Virus Keratitis: A Treatment Guideline 2014.
- Centre for Evidence-based Medicine Level of Evidence = 1a

Management / Treatment [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 – refer to ARC

Possible Management by Ophthalmologist:

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

Evidence Base

- Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

- Alteveer J, Lahmann B. An evidence-based approach to traumatic ocular emergencies. Emergency Medicine Practice 2010;12(5):1-21
- Kuhn F, Morris R, Witherspoon CD, Mester V. The Birmingham Eye Trauma Terminology system (BETT). J Fr Ophtalmol. 2004;27(2):206-10
- Lecuona K. Assessing and managing eye injuries. Community Eye Health. 2005;18(55):101-4

Management / Treatment [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 **DO NOT APPLANATE OR EXERT PRESSURE ON EYE** **Take a careful history** • 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.** Contact ARC or on call ophthalmologist **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)
Evidence Source Alteveer J, Lahmann B. An evidence-based approach to traumatic ocular emergencies. Emergency Medicine Practice 2010;12(5):1-21 Kuhn F, Morris R, Witherspoon CD, Mester V. The Birmingham Eye Trauma Terminology system (BETT). J Fr Ophtalmol. 2004;27(2):206-10 Lecuona K. Assessing and managing eye injuries. Community Eye Health. 2005;18(55):101-4

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TRAUMATIC HYPHEMA
Take a history and exclude other causes of Red Eye e.g. Uveitis, Glaucoma, and Corneal ulcer. ❖ **Refer to ARC same day.** ❖ Explain the diagnosis and check IOP if no reason to suspect perforating eye injury. ❖ 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 perforating injury and intraocular foreign body. ❖ Children should always be referred. ❖ Complete rest until the hyphaema has resolved is very important. ❖ Warning should be given about the possibility of a re-bleed (the patient should look out for a increase in pain and/or deterioration in vision). ❖ If pain is severe and/or the patient is very distressed, admission maybe necessary.
Remember: ❖ An anterior chamber containing blood will impair the vision, cause some inflammation and the intraocular pressure may well be elevated. Three to four days following injury, there is a risk of a second, more serious re-bleed. There is also a real possibility that the severe blunt trauma has caused damage to the posterior pole or peripheral retina. ❖ After being discharged, from Hospital Eye Service the patient should have their pressure checked every two years thereafter as there is a very small but real risk of late glaucoma developing.

Management / Treatment [Trauma Chemical]

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 ARC.

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

Possible management by ophthalmologist

- 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

Evidence Source

Bagley DM, Casterton PL, Dressler WE, Edelhauser HF, Kruszewski FH, McCulley JP, Nussenblatt RB, Osborne R, Rothenstein A, Stitzel KA, Thomas K, Ward SL. Proposed new classification scheme for chemical injury to the human eye. Regul Toxicol Pharmacol. 2006;45(2):206-13

Blackburn J, Levitan EB, MacLennan PA, Owsley C, McGwin G Jr. The epidemiology of chemical eye injuries. Curr Eye Res. 2012;37(9):787-93

Chau JP, Lee DT, Lo SH. A systematic review of methods of eye irrigation for adults and children with ocular chemical burns. Worldviews Evid Based Nurs. 2012;9(3):129-38

Dua HS, King AJ, Joseph A. A new classification of ocular surface burns. Br J Ophthalmol. 2001;85(11):1379-83

Schrage NF, Langefeld S, Zschocke J, Kuckelkorn R, Redbrake C, Reim M. Eye burns: an emergency and continuing problem. Burns. 2000;26(8):689-99

College of Optometrists: Clinical management Guidelines. Feb 2016.

Management / Treatment [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, see TL on Corneal Foreign Body
- ❖ 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 benoxinate 0.4%) 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 (PGD)
- ❖ 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 (PGD)

Consider using a therapeutic bandage contact lens.
Review according to severity of corneal defect.
Look out for corneal erosion (see TL on corneal erosion).
<u>Consider referral:</u>
Recurrent breakdown suggestive of epithelial basement membrane dystrophy
Signs of secondary infectious keratitis

<u>Possible Management by Ophthalmologist:</u>

- ❖ Assess for secondary infection
- ❖ Debridement if indicated
- ❖ Therapeutic contact lens fitting in some cases
- ❖ Plain X-ray or CT scan to exclude retained foreign body

Evidence Base

- Turner A, Rabiu M. Patching for corneal abrasion. Cochrane Database of Systematic Reviews 2006, Issue 2. Art. No.: CD004764. DOI: 10.1002/14651858.CD004764.pub2 Authors' conclusions: 'Treating simple corneal abrasions with a patch does not improve healing rates on the first day post-injury and does not reduce pain. In addition, use of patches results in a loss of binocular vision. Therefore it is recommended that patches should not be used for simple corneal abrasions.' (Centre for Evidence-based Medicine Level of Evidence = 1a)
- Weaver CS, Terrell KM. Evidence-based emergency medicine. Update: do ophthalmic nonsteroidal anti-inflammatory drugs reduce the pain associated with simple corneal abrasion without delaying healing? Ann Emerg Med. 2003 Jan;41(1):134-40 Authors' conclusion: Ophthalmic NSAIDs appear to be useful for decreasing pain in patients with corneal abrasions who can afford the medication and who must return to work immediately (Centre for Evidence-based Medicine Level of Evidence = 1b)
- Management is otherwise based on clinical consensus (Centre for Evidence-based Medicine Level of Evidence = 5)
- Calder LA, Balasubramanian S, Fergusson D. Topical nonsteroidal anti-inflammatory drugs for corneal abrasions: meta-analysis of randomized trials. Acad Emerg Med. 2005;12(5):467-73

Management / Treatment [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
Evidence Base Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

Management / Treatment [sub Conjunctival Haemorrhage]

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
  - 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, but the ophthalmologist would:-

- Investigate for underlying cause of subconjunctival haemorrhage
- Cauterise bleeding vessel if found

Evidence Base

- Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

- Leiker LL, Mehta BH, Pruchnicki MC, Rodis JL. Risk factors and complications of subconjunctival hemorrhages in patients taking warfarin. Optometry. 2009;80(5):227-31
- Pitts JF, Jardine AG, Murray SB, Barker NH. Spontaneous subconjunctival haemorrhage-a sign of hypertension? Br J Ophthalmol. 1992;76(5):297-9
- Tarlan B, Kiratli H. Subconjunctival hemorrhage: risk factors and potential indicators. Clin Ophthalmol. 2013;7:1163-7

Management / Treatment [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 (benoxinate or amethocaine) 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.
- Ointment: 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 (Ofloxacin as alternate)
- Consider prescribing Azythromicin drops or Fusidic Acid 1% Eye Drops twice 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.

Evidence Base

- Cullen AP. Photokeratitis and other phototoxic effects on the cornea and conjunctiva. Int J Toxicol. 2002;21:455-64

❖ Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

Management / Treatment [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 – hylo Night / Xailin Night at night– should be continued for at least 3 months from date of last recurrence (see Evidence base)

Stage 3

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. If recurring episodes thereafter, refer.

<u>Possible Management by Ophthalmologist:</u>

❖ Therapeutic contact lens ± prophylactic topical antibiotic

❖ Débridement of loose epithelium

❖ Excimer laser photo-therapeutic keratectomy

- Micropuncture with hypodermic needle or YAG laser
- 'Alcohol delamination'

Evidence Base

- Watson SL, Barker NH. Interventions for recurrent corneal erosions. Cochrane Database of Systematic Reviews 2007, Issue 4. Art. No.: CD001861. DOI: 10.1002/14651858.CD001861.pub2 Authors conclusion: Robust randomised controlled trials are still needed to establish the benefit of prophylactic treatments. One study showed that unmedicated ointment led to increased symptoms of recurrent corneal erosion (Oxford Centre for Evidence-based Medicine Level of Evidence = 1a)

- Diez-Feijóo E, Grau AE, Abusleme EI, Durán JA. Clinical presentation and causes of recurrent corneal erosion syndrome: review of 100 patients. Cornea. 2014;33:571-5

- Mencucci R, Favuzza E. Management of recurrent corneal erosions: are we getting better? Br J Ophthalmol. 2014;98:150-1

Management / Treatment [Conjunctivitis – allergic 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] (bd) 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 for 2 weeks. (Cetirizine/Loratadine/Fexofenadine once daily). Or patients can self-purchase cetirizine or loratadine.

Step 3

If no resolution after 2 further weeks request IP Optometrist / GP to prescribe topical steroid or topical NSAIDs in addition to previous therapy.
Topical steroid options:
Fluorometholone 1mg/ml (FML)/ Betamethasone 0.1% (Betnesol) /Prednisolone 0.5% (Predsol) (qds)

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 Opatanol 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 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 and IOP should be monitored during use.

Possible Management by Ophthalmologist:

- Not normally referred. Refer if diagnosis in doubt

Evidence Base

- Owen CG, Shah A, Henshaw K, Smeeth L, Sheikh A. Topical treatments for seasonal allergic conjunctivitis: systematic review and meta-analysis of efficacy and effectiveness. Br J Gen Pract. 2004 Jun; 54(503): 451-6 Authors' conclusions: There is evidence for the benefit of topical mast cell stabilisers and antihistamines over placebo for the treatment of allergic conjunctivitis. There is, however, insufficient evidence to recommend the use of one type of medication over another. (Centre for Evidence-based Medicine Level of Evidence = 1a)

- Bilkhu PS, Wolffsohn JS, Naroo SA, Robertson L, Kennedy R. Effectiveness of nonpharmacologic treatments for acute seasonal allergic conjunctivitis. Ophthalmology 2014;121(1):72-8

- Calderon MA, Penagos M, Sheikh A, Canonica GW, Durham SR: Sublingual immunotherapy for allergic conjunctivitis: Cochrane systematic review and meta-analysis. Clin Exp Allergy 2011;41:1263-72

- del Cuvillo A, Sastre J, Montoro J, Jáuregui I, Dávila I, Ferrer M, Bartra J, Mullol J, Valero A. Allergic Conjunctivitis and H1 Antihistamines. J Investig Allergol Clin Immunol. 2009;19,Suppl.1:11-18

- La Rosa M, Lionetti E, Reibaldi M, Russo A, Longo A, Leonardi S, Tomarchio S, Avitabile T, Reibaldi A. Allergic conjunctivitis: a comprehensive review of the literature. Ital J Pediatr. 2013;39:18

Management / Treatment [Conjunctivitis Acute Allergic]
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 Opatanol (Olopatadine 0.1%) twice a day for 5 days. Some patients might benefit from an oral anti histamine such as loratadine, cetirizine or fexafenadine. If no resolution after 5 days refer to TL for Perennial/Seasonal Allergic conjunctivitis for alternative longer term therapy. Not normally referred.
Evidence Base Clinical consensus (Oxford Centre for Evidence-based Medicine Level of Evidence = 5). Buckley RJ. Allergic eye disease – a clinical challenge. Clinical & Experimental Allergy 1998;28:39-43. del Cuvillo A, Sastre J, Montoro J, Jáuregui I, Dávila I, Ferrer M, Bartra J, Mullol J, Valero A. Allergic Conjunctivitis and H1 Antihistamines. J Investig Allergol Clin Immunol. 2009;19,Suppl.1:11-18

Management / Treatment [CL 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 (sodium cromoglicate, lodoxamide) or topical combined anti-histamine/mast cell stabilizer e.g. Opatanol [Olopatadine 0.1%] (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 / Ophthalmologist:

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 0.1% (Betnesol) /Prednisolone 0.5% (Predsol) (qds)

Evidence Base

- Conjunctivitis-Allergic, Clinical Knowledge Summary Version 2.1. 2007. National Library for Health http://cks.library.nhs.uk/conjunctivitis_allergic#297473001
- (Oxford Centre for Evidence-based Medicine Level of Evidence = 3a)
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- Elhers WH, Donshik PC. Giant papillary conjunctivitis. Curr Opin Allergy Clin Immunol. 2008;8:445-9

- Friedlaender MH, Howes J. A double-masked, placebo-controlled evaluation of the efficacy and safety of loteprednol etabonate in the treatment of giant papillary conjunctivitis. The Loteprednol Etabonate Giant Papillary Conjunctivitis Study Group I. Am J Ophthalmol. 1997;123(4):455-64

- Khurana S, Sharma N, Agarwal T, Chawla B, Velpandian T, Tandon R, Titiyal JS. Comparison of olopatadine and fluorometholone in contact lens-induced papillary conjunctivitis. Eye Contact Lens 2010;36:210-4

- Matter M, Rahi AHS, Buckley RJ. Sodium cromoglycate in the treatment of contact lens-associated giant papillary conjunctivitis. Proc VII Congress of Europ Soc Ophthalmol, Helsinki 1985: 383-4

Management / Treatment [CL-Associated 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 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 TL on Blepharitis)

Not normally referred

Evidence Base

Chalmers RL, Hickson-Curran SB, Keay L, Gleason WJ, Albright R. Rates of adverse events with hydrogel and silicone hydrogel daily disposable lenses in a large postmarket surveillance registry: the TEMPO Registry. Invest Ophthalmol Vis Sci. 2015;56(1):654-63

Richdale K, Lam DY, Wagner H, Zimmerman AB, Kinoshita BT, Chalmers R, Sorbara L, Szczotka-Flynn L, Govindarajulu U, Mitchell GL. Case-Control Pilot Study of Soft Contact Lens Wearers With Corneal Infiltrative Events and Healthy Controls. Invest Ophthalmol Vis Sci. 2016;57(1):47-55

Sweeney DF, Jalbert I, Covey M, Sankaridurg PR, Vajdic C, Holden BA, Sharma S, Ramachandran L, Willcox MD, Rao GN. Clinical characterization of corneal infiltrative events observed with soft contact lens wear. Cornea. 2003;22:435-42

Szczotka-Flynn L, Jiang Y, Raghupathy S, Bielefeld RA, Garvey MT, Jacobs MR, Kern J, Debanne SM. Corneal inflammatory events with daily silicone hydrogel lens wear. Optom Vis Sci. 2014;91:3-12

College of Optometrists: Clinical management Guidelines. Online Resource. Dec 2017.

Management / Treatment [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 0.4% preservative free Hylo Forte Eye Drops as required for use during the day
  - Hylo Night
  - / Xailin Night eye ointment for use as at night or as required

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

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

Evidence Base

- Conjunctivitis-Allergic, Clinical Knowledge Summary Version 2.1. 2007. National Library for Health http://cks.library.nhs.uk/conjunctivitis_allergic#297473001

- Antihistamines and mast cell stabilizers are not recommended for the treatment of contact dermatoconjunctivitis because they have no effect in controlling inflammation in type IV hypersensitivity reactions
- (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)

- Baudouin C, Labbé A, Liang H, Pauly A, Brignole-Baudouin F. Preservatives in eyedrops: the good, the bad and the ugly. Prog Retin Eye Res. 2010;29(4):312-34

- Spector SL, Raizman MB. Conjunctivitis medicamentosa. J Allergy Clin Immunol. 1994;94(1):134-6

CELLULITIS: PRESEPTAL & ORBITAL

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

- 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, Streptococcus and Haemophilus species.

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

Colour Vision	Normal	Reduced in severe cases

Management / Treatment [Cellulitis]

Step1

If Preseptal Cellulitis is confirmed , IP Optometrists or GP can prescribe oral antibiotics.
Oral Flucloxicillin 500mg, 4 x daily for 7-14 days [Co-Amoxiclav is an alternative, but there are concerns regarding C. Diff resistance] [Or oral doxycycline 200mg first day, followed by 100mg per day if allergic to penicillin].
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

Evidence Base

NHS Greater Glasgow and Clyde. Infection Management Guidelines: Empirical Antibiotic Therapy. 2019.
Botting AM, McIntosh D, Mahadevan M. Paediatric pre- and post-septal peri-orbital infections are different diseases. A retrospective review of 262 cases. Int J Pediatr Otorhinolaryngol 2008; 72(3): 377-83 (Centre for Evidence-based Medicine Level of Evidence = 4).
Baring DE, Hilmi OJ. An evidence based review of periorbital cellulitis. Clin Otolaryngol. 2011;36(1):57-64.
Nageswaran S, Woods CR, Benjamin DK Jr, Givner LB, Shetty AK. Orbital Cellulitis in Chldren. Pediarr Infect Dis J. 2006;25(8):695-9.
Georgakopoulos CD, Elioppoulou MI,Stasinos S,Exarchou A, Pharmakakis N, varvarigou A. Periorbital and orbital cellulitis: a 10 year review of hospitalized children. Eur J Ophthalmol. 2010;20(6);1066-72
Upile NS, Munir N, Leong SC, Swift AC. Who should manage acute periorbital cellulitis in children? Int J Pediatr Otorhinolaryngol. 2012;76(8):1073-7.

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 / pseudodentrites – 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 Aciclovir 800mg x 5 daily for 5 to 7 days [alternatives include valaciclovir (1g) and famciclovir (500mg tid).
Ensure advice is given for adequate hydration to help avoid crystalisation 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.

Step 3

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.

Evidence Base

- (Centre for Evidence-based Medicine Level of Evidence = 1b)
- Gelb LD. Preventing herpes zoster through vaccination. Ophthalmology. 2008;115(2 Suppl):S35-8
- Liesegang TJ. Herpes zoster ophthalmicus natural history, risk factors, clinical presentation, and morbidity. Ophthalmology. 2008;115(2 Suppl):S3-12
- McDonald EM, de Kock J, Ram FS. Antivirals for management of herpes zoster including ophthalmicus: a systematic review of high-quality randomized controlled trials. Antivir Ther. 2012;17(2):255-64
- Opstelten W, Zaal M. Managing ophthalmic herpes zoster in primary care. BMJ 2005;331:147–51

Key Terms

Z

Zovirax – topical aciclovir 22, 47