The acute painful red eye [10,11]

CONDITION	DIFFERENTIATING FACTORS	TREATMENT AND REFERRAL URGENCY
Corneal abrasion (Corneal epithelial defect as a result of injury)	**Symptoms:** Severe pain and distress; photophobia +/- reduced vision **Signs:** Reduced visual acuity; lacrimation; corneal epithelial defect	· **Abrasions may be missed if fluorescein is not instilled.** · Topical chloramphenicol is advised until the epithelial defect heals · +/- topical cycloplegic drops if severe pain reported; +/- oral analgesia · Refer to ophthalmology if symptoms do not resolve within 48 hours, vision is impaired, secondary infection or purulent discharge present
Microbial keratitis **Bacterial:** *Pseudomonas* (most commonly contact lens associated), *Staphylococcus* **Fungal:** *Candida* (yeast-like), *Fusarium* (filamentous), *Aspergillus* (filamentous)	**Bacterial keratitis risk factors:** Contact lens wear and poor hygiene, ocular trauma, ocular surgery, immunocompromised, topical steroid use **Fungal keratitis risk factors:** Secondary to trauma involving organic material **Symptoms:** Moderate-severe unilateral pain; acute onset; rapid progression; photophobia +/- reduced vision **Signs:** Reduced visual acuity, corneal infiltrate +/- epithelial defect; +/- anterior chamber inflammation	· **Emergency ophthalmology referral** · Culture of contact lens +/- solution · Corneal scrape for culture and sensitivities · **Bacteria:** Topical ofloxacin; ***If severe***: Fortified cefuroxime + gentamicin · **Fungal:** Filamentous: topical natamycin; Yeast: topical amphorteracin
Marginal keratitis (Inflammation of peripheral cornea due to hypersensitivity to staphylococcal exotoxins)	**Risk factors:** Staphylococcal blepharitis, rosacea, history of atopy **Symptoms:** Increasing pain; foreign body sensation; photophobia **Signs:** Reduced visual acuity; lacrimation; epithelial defect stains with fluorescein; sterile white sub-epithelial peripheral corneal infiltrate adjacent to limbus but separated from limbus by an interval of clear cornea	· Refer to ophthalmology for diagnosis and management · Treatment options: 1) Topical maxitrol or 2) Topical predsol and topical chloramphenicol · Treat associated blepharitis or rosacea
HSV epithelial keratitis *(Herpes simplex virus)*	**Symptoms:** History of recurrent HSV infection; pain; extreme photophobia; reduced vision **Signs:** Reduced visual acuity; commonly unilateral; lacrimation; dendritic ulcer seen on fluorescein stain	· Refer to ophthalmology for diagnosis and management · Topical aciclovir · Topical steroid contraindicated
Scleritis (Inflammation of the sclera)	**Symptoms:** Severe pain exacerbated by eye movement; sleep disturbance as a result of the pain; possible history of systemic inflammatory disease **Signs:** Reduced visual acuity in severe cases; Usually bilateral; globe tenderness; phenylephrine blanches superficial episcleral vessels but does not affect deeper scleral vessels	· **Emergency ophthalmology referral** · Oral NSAIDS +/- topical steroids · Consider systemic immunosuppression in severe cases
Acute angle closure glaucoma (AACG) (Increased intraocular pressure due to blockage of aqueous drainage)	**Symptoms:** Severe unilateral pain; reduced vision; haloes; nausea and vomiting; history of previous intermittent attacks **Signs:** Reduced visual acuity; fixed semi-dilated pupil; corneal oedema; shallow anterior chamber; raised IOP (usually 50-80mmHg) +/- optic disc swelling/atrophy	· **Emergency ophthalmology referral** · Conservative management: ask patient to lie down to relieve pressure on iridocorneal angle · Initiate treatment if diagnosis has been confirmed – IV acetazolamide, pilocarpine drops (if no contra-indications) · Ophthalmology treatment is directed to breaking the pupil block and lowering the intraocular pressure – miotics (pilocarpine); systemic agents (acetazolamide); topical anti hypertensives (timolol); topical steroids; YAG laser iridotomy
Acute uveitis (Inflammation of the uveal tract – iris, ciliary body or choroid)	**Symptoms:** Acute onset; dull pain – can be exacerbated by reading; photophobia; reduced vision **Signs:** Reduced visual acuity; ciliary flush; keratitic precipitates; anterior chamber inflammation; posterior synechiae +/- vitritis / retinitis	· **Emergency ophthalmology referral** · Topical steroid to reduce inflammation and prevent adhesions · Topical cycloplegic drops to relieve ciliary spasm and break posterior synechiae · Intraocular pressure (IOP) lowering agents if IOP raised · Patient with panuveitis will need systemic investigation +/- systemic immunosuppression · Patients with bilateral involvement, recurrent disease (>3 times), granulomatous cases will also require systemic investigation
Exogenous endophalmitis *(Staphylococcus epidermidis, Staphylococcus aureus)*	**Risk factors:** Recent history of surgery; blepharitis; diabetes; complicated surgery **Symptoms:** Pain, reduced vision **Signs:** Reduced visual acuity; corneal oedema; anterior chamber activity; hypopyon; posterior segment inflammation – vitritis / retinitis	· **Emergency ophthalmology referral** · Intravitreal vancomycin + ceftazidime / amikacin +/- vitrectomy · +/- Topical / intravitreal/oral steroids
Corneal foreign body	**Symptoms:** History of trauma **Signs:** Lacrimation; corneal foreign body +/- corneal oedema	· Use local anaesthetic when removing the foreign body · If the foreign body is loose, irrigate the eye · If foreign body is adherent, use cotton wool bud or sterile 21G green needle to remove the foreign body · Topical chloramphenicol for three days after removal of the foreign body · Refer to ophthalmology if there is residual foreign body following initial attempts of removal
Chemical injury	**Signs:** Beware of the 'white' eye – ischaemia; symblepharon; loss of conjunctiva; perilimbal ischaemia; corneal ulceration; corneal oedema; anterior chamber activity; traumatic mydriasis; raised IOP; rarely vitritis, necrotic retinopathy	· 3Is: Irrigate, Irrigate, Irrigate until pH of 7.5 reached · Remove loose particles and sweep the fornices · Recheck pH 30 minutes after irrigation to ensure no further leeching of chemicals · **Emergency ophthalmology referral** · Topical chloramphenicol if epithelial defect present; topical cycloplegics for pain relief; topical steroids to suppress inflammation; topical potassium ascorbate 10% and oral ascorbic acid to promote healing; topical sodium citrate 10.11% and oral tetracycline has anti-protease properties; topical lubricants