

Red Eye / Pink Eye

Definition / Supporting Information

A red or pink eye occurs due to hyperaemia of the conjunctiva. Although most commonly seen with conjunctivitis, it can be a presenting feature of more serious corneal and intraocular pathology.

Keywords / also known as: conjunctivitis, eye infection

Essential History

Ask about:

- Duration and time course of symptoms
- Exacerbating / relieving factors
- Watering / discharge
 - Allergic and viral conjunctivitis cause mucoid / watery discharge
 - Bacterial conjunctivitis causes mucopurulent discharge
 - Eg, sticky eye
- Unilateral / bilateral / sequential
 - Infectious conjunctivitis often begins in one eye, then spreads to the second eye after a few days
- Current or prior systemic disease including immune status
- Previous ocular trauma or surgery
- Contact lens wear (increased risk of infectious keratitis)
- Systemic signs, symptoms and history (sore throat / colds often accompany viral conjunctivitis)
- Use of topical / systemic medication
- Signs, symptoms and history in family and close contacts
 - May indicate contagious origin

'Red Flag' Symptoms and Signs

Ask about:

- Severe pain
- Blepharospasm
- Severe photophobia
- Reduced vision
- Pupillary distortion or change in appearance of pupil
- Lid swelling severe enough to prevent eye examination

- Poor, absent or abnormal red reflex (indicates intraocular pathology (eg, retinoblastoma))

Look for: (if child is in pain, consider using a topical anaesthetic eg, proxymetacaine 0.5% to facilitate the diagnosis)

- Limitation of movement or pain on assessment of eye movements
- Evidence of unequal / unreactive pupils
 - Examine for relative afferent pupillary defect (RAPD) by swinging the torchlight from one eye to the other
 - A smaller pupil suggests uveitis
 - RAPD (the pupil in affected eye dilates when the torchlight is swung over from the other side) is caused by serious retinal or optic nerve pathology
- Reduced visual acuity – test each eye separately
 - In school age children use a Snellen chart both with and without glasses correction if used
 - In pre-verbal children look for visual interest in small toys / sweets
 - In babies look for visual interest in faces / lights
- Conjunctival redness and swelling
 - Conjunctival redness and swelling inside the lower lid (inferior fornix) suggests conjunctivitis
 - Redness around the cornea (circum-corneal) and not associated with conjunctival swelling suggests corneal / intraocular pathology
- Corneal haziness and / or opacities
 - If possible use fluorescein 2% drops to stain an ulcer or abrasion (use blue torchlight)
- A white reflex (leukocoria) or an absent / abnormal red reflex
 - Examine the red reflex with an ophthalmoscope looking for shadows on the reflex

Differential Diagnosis / Conditions

Conjunctivitis in children over 1 year (common)

- Infectious conjunctivitis (very common)
 - Usually resolves within 2 weeks
 - Does not cause reduced vision
 - Usually viral, associated with colds and sore throats / chicken pox / molluscum lesions on lid margin
- Allergic conjunctivitis (common)
 - Itchiness is chief complaint with chemosis (conjunctival swelling) and pink eye
 - Does not affect vision

- Seasonal and perennial forms depending on allergen
- Vernal kerato-conjunctivitis causes chronically itchy red eyes with lid swelling and photophobia
- Blepharo-conjunctivitis causes a chronic red eye associated with discomfort and watering due to blepharitis (lid margin inflammation)
- Rarer causes of conjunctivitis
 - Chlamydial conjunctivitis can affect sexually active children. Consider if chronic conjunctivitis with preauricular lymphadenopathy
 - Atopic conjunctivitis: chronic itchy eyes with photophobia due to keratitis and lid thickening
 - Giant papillary conjunctivitis: chronic itchy conjunctivitis associated with contact lens wear
 - Immune-mediated conjunctivitis eg, Stevens-Johnson syndrome with conjunctival ulceration, graft-versus-host disease

Neonatal conjunctivitis (uncommon)

- Neonates with red, swollen, inflamed and discharging eye(s) require urgent specialist referral (see also Neonatal Sepsis)
- A simple, non-inflamed white sticky eye is common and caused by congenital nasolacrimal obstruction
- Neonatal conjunctivitis may be associated with systemic infection and can result in early corneal perforation
- Infective causes:
 - *Chlamydia*: high risk of conjunctivitis and pneumonitis if mother has the infection. Develops 4-10 days after birth
 - Gonococcal conjunctivitis: develops within days of delivery. Marked discharge and risk of corneal perforation
 - Herpes simplex: develops in second week of life, associated with keratitis, encephalitis, pneumonitis, jaundice and hepatomegaly / splenomegaly
 - Haemophilus conjunctivitis: develops in the first week of life. Causes a bloody discharge and haemorrhagic conjunctivitis

Keratitis (uncommon)

- Corneal epithelial loss causes circum-corneal conjunctival hyperaemia, intense pain, photophobia and reduced vision. The epithelial defect may appear as an opaque circular lesion on the cornea or may only become visible after fluorescein staining
 - Keratitis can be secondary to viral infection eg, a herpes simplex dendrite or due to bacterial infection – a particular problem in contact lens wearers
 - Exposure keratopathy is a drying of the inferior cornea due to poor lid closure, either due to proptosis or lagophthalmos (inability to close the lids).

This is usually seen in children who have facial nerve weakness, are heavily sedated in hospital or as a complication of ptosis surgery

Anterior uveitis (uncommon)

- Anterior uveitis is an inflammation affecting the iris which causes protein and white cells to leak into the anterior chamber of the eye
 - Acute uveitis: causes pain and photophobia. The conjunctival hyperaemia is circum-corneal and there is no sticky discharge, just tears. This form of uveitis is not common in young children but may be associated with HLA B27-related conditions. The pupil of the affected eye may be smaller than its partner
 - Chronic uveitis: often asymptomatic and bilateral with a mildly pink eye(s) and mild watering. The paucity of symptoms may delay diagnosis until the complications of untreated ocular inflammation result in bilateral visual loss. This condition is generally detected on ophthalmological screening of children with systemic rheumatological conditions eg, juvenile idiopathic arthritis and psoriatic arthropathy

Scleritis / episcleritis (uncommon)

- Both conditions are uncommon in childhood
- Episcleritis causes a mild bruised sensation and localised area of redness on the eye. It is generally a mild, self-limiting condition
- Scleritis causes a red, swollen eye with pain on eye movement. It can be associated with systemic immunological disease in children

Congenital glaucoma (rare)

- A rare condition causing raised intraocular pressure leading to enlargement of the eye (buphthalmos) and optic neuropathy
- Causes a mildly pink eye with watering and sensitivity to light
- The cornea may appear hazy due to corneal oedema

Secondary acute glaucoma (rare)

- A sudden rise in intraocular pressure may cause a painful red eye with reduced vision
- May occur following intraocular surgery, but may occur as a response to topical steroid drops or as a consequence of lens abnormalities

Trauma and post-operative red eye

- Sub-conjunctival haemorrhage is common both after eye surgery and following mild trauma. Depending on size, the haemorrhage may take a week or two to resolve

- Conjunctival and corneal abrasions stain with fluorescein. These usually heal within 48 hours. Linear vertical corneal abrasions suggest the presence of a sub-tarsal foreign body
- Squint surgery or trauma to one of the extraocular muscles can result in swelling and redness over the muscle. Eye movements should be checked to ensure that the muscle function has not been affected
- Blunt trauma can result in a collection of blood in the anterior chamber (hyphaema)
- Penetrating injuries or complications from intraocular surgery in children may result in pain, redness, reduced vision and a distorted pupil, hyphaema or dark uveal pigment on the ocular surface
- Chemical injury results in conjunctival and corneal burn. The conjunctiva may look white from ischaemia
- Endophthalmitis is a severe bacterial infection within the globe and usually occurs in the first post-operative week after intraocular surgery although it can also result from endogenous infection. It causes a severely painful red eye with reduced vision and poor red reflex. There is sometimes a level of pus in the anterior chamber (hypopyon)

Nasolacrimal duct obstruction (NLDO)

- Congenital NLDO causes unilateral / bilateral watery / sticky eyes with matting of lashes present since soon after birth
- Does not usually cause a persistent red eye

Retinoblastoma

- Retinoblastoma can present as a red eye
- Check the red reflex and refer urgently if abnormal or absent
- Note that the child may be systemically well with no other symptoms

Investigations

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) Team) or by specialist practitioners (eg, Emergency Department / Ophthalmology / Paediatric Ophthalmology Team(s)):

For persistent / chronic (duration greater than 2 weeks) or neonatal conjunctivitis (prior to starting treatment):

- Swab of conjunctival discharge
 - Gram / Giemsa stain for bacterial infection
 - Indirect immunofluorescent antibody assay for *Chlamydia*
- Conjunctival scrape for herpes virus / adenovirus DNA

Treatment Approach

To be undertaken by non-specialist practitioners (eg, General Practitioner (GP) Team) or by specialist practitioners (eg, Emergency Department / Paediatric / Ophthalmology Team(s)):

- Infectious conjunctivitis (see Conjunctivitis - infective [\[NICE clinical knowledge summary\]](#))
 - Symptoms usually improve within 2 weeks
 - Consider offering a topical ocular antibiotic when:
 - Infective conjunctivitis is severe, or likely to become severe, providing serious causes of a red eye can be confidently excluded
 - For example, when the person considers the symptoms to be distressing or signs are judged to be severe from clinical experience
 - Chloramphenicol 0.5% eye drops should be instilled at least every 2 hours in severe infection then reduce frequency as infection is controlled and continue for 48 hours after healing. For less severe infection 3–4 times daily is generally sufficient.
 - Chloramphenicol 1% eye ointment may be easier to apply in younger children and should be applied either at night (if eye drops used during the day) or 3–4 times daily (if eye ointment used alone).
 - Fusidic acid 1% eye drops used twice-daily may be substituted if there is a personal or family history of blood dyscrasia or chloramphenicol intolerance
 - Suspected chlamydial conjunctivitis requires treatment with systemic erythromycin and contact tracing in conjunction with a genitourinary medicine specialist
 - Patients on systemic aciclovir for herpes simplex / zoster do not require topical aciclovir for an associated conjunctivitis. However, chloramphenicol ointment four times a day should be prescribed as prophylaxis against secondary bacterial infection
 - Refer children with 'red flag' signs or persistent conjunctivitis
- Allergic conjunctivitis (see Conjunctivitis - allergic [\[NICE clinical knowledge summary\]](#))
 - Before treating, exclude the serious causes of a red eye that can result in permanent visual impairment (see 'red flag' symptoms and signs)
 - When rapid relief of symptoms is required, prescribe an oral or topical ocular antihistamine, depending on the person's preference and previous response to treatment
 - When prolonged control of symptoms is required, prescribe an oral antihistamine, topical ocular antihistamine, or a topical ocular mast cell stabiliser

- Neonatal conjunctivitis
 - Take bacterial, herpes and chlamydial conjunctival scrapes prior to starting empirical topical chloramphenicol eye drops or ointment. If *Chlamydia* is suspected, topical azithromycin is the optimal treatment
 - Once laboratory results are known, therapy is tailored to treat the identified organism with systemic antimicrobial therapy
 - Infants with neonatal conjunctivitis require systemic examination by a paediatrician for pneumonitis (*Chlamydia*) and encephalitis (herpes simplex) and admission for intravenous antibiotic / antiviral treatment. Very urgent referral to an ophthalmologist is required since neonatal conjunctivitis can rapidly lead to corneal perforation and scarring
- Blepharitis / blepharo-conjunctivitis (see Blepharitis [\[NICE clinical knowledge summary\]](#))
 - Mild-moderate cases can be managed conservatively with eyelid hygiene
 - Advise the young person to avoid eye make-up
 - Consider prescribing topical antibiotics (chloramphenicol ointment or fusidic acid) or oral antibiotics (eg, tetracycline for children over the age of 12 years) if there are clear signs of staphylococcal infection or meibomian gland dysfunction. Antibiotics should usually be reserved for second-line use when eyelid hygiene alone has proved ineffective
- Corneal abrasion (see Corneal superficial injury [\[NICE clinical knowledge summary\]](#))
 - Remove the foreign body if present
 - Instil a topical anaesthetic (proxymetacaine hydrochloride) and attempt to remove the foreign body gently with a cotton swab
 - Evert the upper lid to detect a sub-tarsal foreign body
 - Refer to an ophthalmologist if unsuccessful
 - Manage ocular chemical injury if present
 - Offer or advise analgesia for pain relief
 - Paracetamol or ibuprofen is recommended first-line treatment
 - Consider offering a one-off dose of a cycloplegic (eg, cyclopentolate hydrochloride) if available
 - To prevent secondary infection prescribe:
 - Topical chloramphenicol first-line, four times a day, for 7 days. Consider prescribing fusidic acid, twice-daily as an alternative if four times a day is impractical, if there is a personal or family history of blood dyscrasias or the child is intolerant of chloramphenicol
 - Advise not to wear contact lenses until the corneal abrasion has completely healed / until signs and symptoms of infection have resolved and, where possible, for 24 hours after finishing treatment with topical antibiotics (see Conjunctivitis - infective [\[NICE clinical knowledge summary\]](#))

- Congenital NLDO
 - Advise parent to massage the area infero-nasal to the medial cantus with a fingertip 3 to 4 times a day when the infant is feeding. This will empty the sac of mucus and improve symptoms
 - Topical antibiotics are only required if conjunctivitis develops
 - Bacterial swab and antibiotic eye drops should be prescribed only if conjunctivitis develops
 - If symptoms persist at 1 year of age the child should be referred to an ophthalmologist for possible surgical intervention

When to Refer

Refer urgently (arrange emergency transport) to specialist practitioners (eg, Emergency Department / Ophthalmology / Paediatric Ophthalmology Team(s)) if:

- Suspected penetrating eye injury
 - Darkly pigmented tissue on the ocular surface, hyphaema or pupillary distortion with severe sub-conjunctival haemorrhage indicate possible globe penetration or rupture
 - Avoid manipulation of the eye and protect with a rigid shield
- Suspected chemical injury (after irrigation)

Refer urgently to specialist practitioners (eg, Emergency Department / Ophthalmology / Paediatric Ophthalmology Team(s) or emergency eye clinic during working hours) if:

- Severe pain / photophobia
 - Suggests corneal or intraocular pathology
- Children with red eye and reduced visual acuity
- Neonates with conjunctivitis
- Infants / children with red eye who cannot be adequately examined
- Infants with tearing and large eye(s)
 - May indicate congenital glaucoma
- Infant / toddlers with swollen and inflamed nasolacrimal sac (dacryocystitis)
- Conjunctivitis in a contact lens wearer
 - High risk of infectious keratitis
- Poor or abnormal red reflex
 - Indicates intraocular pathology (eg, retinoblastoma)

Refer routinely to specialist practitioners (Ophthalmology / Paediatric Ophthalmology Team(s)) if:

- One year olds with NLDO
- Children with persistent conjunctivitis without 'red flag' signs

Patient / Carer Information

****Please note: whilst these resources have been developed to a high standard they may not be specific to children.***

[Conjunctivitis](#) (Web page), the NHS website

[Tear duct blockage in babies](#) (Web page), Patient

[Information about retinoblastoma](#) (Web page), Childhood Eye Cancer Trust

Resources

Suggested Resources

****Please note: these resources include links to external websites. These resources may not have national accreditation and therefore PCO UK cannot guarantee the accuracy of the content.***

[Chloramphenicol for eye infections](#) (Web page), Medicines for Children

[How to give medicines: eye drops and eye ointment](#) (Web page), Medicines for Children

[Conjunctivitis – infective](#) (Web page), NICE Clinical Knowledge Summary

[Conjunctivitis – allergic](#) (Web page), NICE Clinical Knowledge Summary

[Corneal superficial injury](#) (Web page), NICE Clinical Knowledge Summary

[Blepharitis](#) (Web page), NICE Clinical Knowledge Summary

[Dry eye syndrome](#) (Web page), NICE Clinical Knowledge Summary

[Red eye](#) (Web page), NICE Clinical Knowledge Summary

[Uveitis](#) (Web page), NICE Clinical Knowledge Summary

Denniston KO, Murray PI. Oxford Handbook of Ophthalmology, 3rd edn. Oxford: Oxford University Press; 2009

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