

## Infective conjunctivitis

This article discusses **infective conjunctivitis**. The separate [Diagnosing Conjunctival Problems](#) article covers assessment of conjunctival inflammation and discusses other causes of conjunctivitis:

- Conjunctival trauma.
- Degenerative conditions of the conjunctiva (pinguecula, pterygium, concretions, retention cysts).
- Other inflammatory conditions (mucus fishing syndrome, ligneous conjunctivitis).
- Blistering mucocutaneous diseases ([cicatricial pemphigoid](#), [Stevens-Johnson syndrome](#)).
- Conjunctival lesions (pigmented, squamous tumours and other tumours).

## What is infective conjunctivitis?

Infective conjunctivitis is usually caused by viruses or bacteria:

- Bacterial conjunctivitis is usually a benign self-limiting illness. However, it can sometimes be serious or signify a severe underlying systemic disease. Occasionally, significant ocular and systemic morbidity may result.
- Viral conjunctivitis can be prolonged and can, in some cases, have lasting consequences. Adenoviral infection is usually (but not always) mild and self-limiting, whereas herpes viruses can cause significant associated keratitis and uveitis.

## How common is infective conjunctivitis? (Epidemiology)<sup>[1]</sup>

- In adults, viral conjunctivitis is more common than bacterial conjunctivitis; however, in children and the elderly, bacterial conjunctivitis is more common than viral conjunctivitis.
- In general practice approximately 1% of all consultations are for acute infective conjunctivitis .
- Infective conjunctivitis accounts for around 35% of all eye problems presenting in general practice, with 13–14 cases per 1,000 population per year.
- Highest rates of diagnosis are in children under 7 years of age and diagnoses peak between the months of December and April.<sup>[2]</sup>
- Estimates of the proportion of infective conjunctivitis that is bacterial vary widely between studies. Recent studies in primary care estimate that between 33% and 78% of cases are bacterial in origin.

## Differentiating bacterial, viral and allergic conjunctivitis<sup>[3]</sup> <sup>[4]</sup>

It is not always easy to determine whether simple, acute conjunctivitis is bacterial, viral or allergic. Swabbing provides the most accurate answer but it is not practical to swab every patient. In severe, resistant, atypical cases or in immunosuppressed patients, however, swabbing for culture and sensitivities is important.

- A history of infectious conjunctivitis and of itch both make current bacterial involvement less likely, as itch suggests allergic cause and recurrence suggests viral conjunctivitis.
- The **absence** of itch and the **absence** of a positive history of infective conjunctivitis make a diagnosis of bacterial conjunctivitis more probable.
- A purulent, sticky discharge suggests bacterial infection.
- Watery discharge is more suggestive of viral or allergic conjunctivitis.
- Preauricular lymph nodes are suggestive of viral conjunctivitis.

- Eyelids that are stuck together in the morning do not necessarily indicate the presence of a purulent discharge. Viral conjunctivitis and allergic conjunctivitis often cause lids to be matted shut on waking, due to drying of tears and serous secretions.
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## Bacterial conjunctivitis<sup>[1]</sup> <sup>[5]</sup>

### Symptoms

- Discomfort – burning or gritty but not sharp.
- Significant pain suggests a more serious diagnosis.
- Vision is usually normal, although 'smearing', particularly on waking, is common.
- Discharge tends to be thick rather than watery.
- There may be mild photophobia. Significant photophobia suggests severe adenoviral conjunctivitis or corneal inflammation.

### History

- Ask about contact lens wear: establish whether this could affect the cornea.
- Onset and duration: in chronic cases consider sexually transmitted infection (STI).
- Use of over-the-counter medication: consider whether this could be a reaction to previously administered drops or ointment.
- Contact history: establish whether anybody else has had it (family, school, work).
- Occupational history: should the patient go to work?

### Findings

- Red eye, with uniform engorgement of all conjunctival blood vessels.
- Typically causes a yellow-white mucopurulent discharge.
- Eyes may be difficult to open in the morning, with lids glued together by discharge.

- Bacterial conjunctivitis is usually bilateral (though often sequential).
- Visual acuity should be normal, other than the mild and temporary blur secondary to the discharge.
- There may be conjunctival follicles, which are round collections of lymphocytes, most prominent in the inferior fornix, appearing as small, dome-shaped nodules, pale at the top and red at the base. They are typically seen in conjunctivitis caused by viruses, atypical bacteria and toxins, including some topical medications. Papillae have more of a cobblestone appearance and are red on the surface and pale at the base. They are most commonly associated with an allergic or foreign body response.

## Types of bacterial conjunctivitis<sup>[6]</sup> <sup>[7]</sup>

### Simple bacterial conjunctivitis

The common bacterial causes include *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus pneumoniae* and, in children, *Haemophilus influenzae*. It is more common in infants and children.

Typical presentation is of bilateral, uncomfortable red eyes with yellow-white mucopurulent discharge. Lids are often stuck shut on waking. Occasionally, there is mild photophobia. There may be evidence of lid crusting and oedema, mucous strands and conjunctival papillae. Occasionally, superficial punctate keratitis is seen.

Risk factors in children include nasolacrimal duct obstruction, concomitant [otitis media](#) or pharyngitis, and exposure to an affected individual. In adults, additional risk factors include lid malposition, severe tear deficiency, immunosuppression and trauma.

### Gonococcal conjunctivitis<sup>[8]</sup>

Onset is typically fast (12–24 hours) unilateral or bilateral hyperpurulent conjunctival inflammation. There is tender lid oedema, profuse discharge, keratitis (with oedema, fluorescein uptake, decreased visual acuity and photophobia), and preauricular lymphadenopathy. Gonococcal conjunctivitis, whilst rare, is a high-risk disease which tends to invade the cornea and which, untreated, can lead to globe perforation and severe visual impairment.

The causative organism is *Neisseria gonorrhoeae*. Risk factors include contact with infected individuals, and the presence of other [STIs](#).

Patients should be offered screening for other STIs, including chlamydia. Sexual partners should also be traced and treated as appropriate, which will usually necessitate a referral to local sexual health services.

### **Chlamydial infection** <sup>[9]</sup>

Chlamydial inclusion conjunctivitis is caused by *Chlamydia trachomatis* serotypes D to K. It is transmitted by autoinoculation or eye-to-eye spread. It is an STI with an incubation period of one week, which may be associated with urethritis or cervicitis.

It typically causes a chronic low-grade conjunctivitis (which may persist for 3-12 months if left untreated), with a green stringy discharge in the morning. Inferior conjunctival follicles, superior corneal pannus and palpable preauricular lymph nodes may be seen.

Risk factors are contact with infected individuals, and the presence of other STIs.

Trachoma is caused by *C. trachomatis* serotypes A to C and arises in the context of poor sanitation. It is the third most common cause of severe visual impairment worldwide, causing severe conjunctival cicatricial changes and secondary corneal ulceration and scarring.

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### **Ophthalmia neonatorum** <sup>[10]</sup>

This describes any conjunctivitis within the first 28 days of life. It may be chemically induced (usually from silver nitrate drops) or arise as a result of infection through contamination from the maternal genital tract. Most is bacterial: around 50% are due to common bacteria such as *Staphylococcus*, *Streptococcus* and *Haemophilus* species. 20-40% are due to chlamydial infection and about 1% to gonococcal infection. All cases should be referred to ophthalmology. There is a separate [Ophthalmia Neonatorum](#) article.

# Treatment and management of bacterial conjunctivitis<sup>[1]</sup>

Most cases of bacterial conjunctivitis are self-limiting and management is usually supportive. Conjunctivitis caused by gonococcal or chlamydial infection should be treated with antibiotics.

Conjunctivitis in contact lens wearers should prompt assessment with fluorescein to rule out corneal staining, as this is potentially a sight-threatening complication. Any doubt should merit referral to ophthalmology. In the absence of corneal involvement lens wearers should also be treated with antibiotics.

## Advice to patients on simple bacterial conjunctivitis

- Infective conjunctivitis is a self-limiting illness that usually settles without treatment within 1-2 weeks. If symptoms persist for longer than two weeks they should return for review.
- Seek medical attention urgently if marked eye pain or photophobia, loss of visual acuity, or marked redness of the eye develop.
- Remove contact lenses, if worn, until all symptoms and signs of infection have completely resolved and any treatment has been completed for 24 hours.
- Lubricant eye drops may reduce eye discomfort; these are available over the counter, as well as on prescription.
- Clean away infected secretions from eyelids and lashes with cotton wool soaked in water.
- Wash hands regularly, particularly after touching the eyes.
- Avoid sharing pillows and towels.
- It is not necessary to exclude a child from school or childcare if they have infective conjunctivitis, as mild infectious illnesses should not interrupt school attendance.<sup>[11]</sup> An exception would be if there is an outbreak of infective conjunctivitis, when advice should be sought from the Health Protection Agency by the school.
- Adults who work in close contact with others, or with vulnerable patients, should avoid such contact until the discharge has settled.

## **Use of antibiotics for bacterial conjunctivitis**

### **Arguments for the use of antibiotics**

Topical antibiotics decrease the duration of bacterial conjunctivitis and allow earlier return to school or work. A 2012 Cochrane Review (which has yet to be updated) of 11 RCTs concluded that although acute bacterial conjunctivitis is frequently self-limiting, the use of antibiotic eye drops is associated with modestly improved rates of clinical and microbiological remission.<sup>[12]</sup> The authors conclude that use of antibiotic eye drops should therefore be considered in order to speed the resolution of symptoms and infection.

### **Arguments against the use of antibiotics**

- Many cases of conjunctivitis seen in primary care are viral. These cases will not benefit from the use of antibiotics.
- Bacterial conjunctivitis is not usually severe and needs to be set against the high annual cost of this medication and the additional population risk of increasing bacterial resistance.

Patients often resist conservative management, particularly if they have always been treated with drops before. A pragmatic approach is to treat where symptoms suggest a bacterial cause and are causing greater distress, where attendance at school, work or childcare is being prevented and where the patient wears contact lenses (although lenses should not be worn for the duration of treatment).

Current advice suggests offering a topical ocular antibiotic to a person with infective conjunctivitis when the condition is severe, or likely to become severe, providing serious causes of a red eye can be confidently excluded.<sup>[13]</sup> <sup>[14]</sup> <sup>[15]</sup> There are no agreed definitions of mild, moderate, or severe conjunctivitis.

## **Administration of medication<sup>[1]</sup>**

### **Drops versus ointment**

- Ointments are messy and may smear, causing blurred vision that makes them impractical for daytime use in many people. However, ointment maintains the concentration of antibacterial agent in the eye longer than drops. Some people, such as those with arthritic hands, find ointment easier to apply.

- Drops should be prescribed in preference to ointments when a patient is taking other eye drops.
- Using drops by day and ointment by night is the ideal.
- Contact lenses should not be worn for the duration of treatment.

For more general information about ocular prescriptions, see the separate [Eye Drugs – Prescribing and Administering](#) article.

### **Antibiotic options**

**Chloramphenicol** is the drug of choice for superficial eye infections. It is bacteriostatic, with a relatively broad spectrum of action against most Gram-positive and Gram-negative bacteria.

- It should be avoided in people who have experienced myelosuppression during previous exposure to chloramphenicol, in those who have a blood dyscrasia or who have a family history of blood dyscrasias and in patients who are concurrently with other myelotoxic drugs.
- It should be avoided in pregnant or breast-feeding women, as its safety has not been established.
- Prolonged use should be avoided, since this may increase the likelihood of sensitisation and resistance.

**Fusidic acid** is useful for staphylococcal infections and is an alternative antibacterial agent to chloramphenicol.

- Consider this particularly in pregnant women, those with a personal or family history of blood dyscrasias, such as aplastic anaemia, and patients who are intolerant of chloramphenicol.

**Aminoglycosides** have an incomplete coverage of *Streptococcus* spp. and *Staphylococcus* spp. and so this rules them out as first-line therapy.

- A relatively higher incidence of toxicity to the corneal epithelium has been recorded with prolonged use of aminoglycosides.

**Fluoroquinolones** such as ciprofloxacin and ofloxacin are reserved for serious ocular infections to limit the development of bacterial resistance.



- Fluoroquinolones have poor coverage of *Streptococcus* spp.
- Ciprofloxacin eye drops are licensed for corneal ulcers; intensive application (especially in the first two days) is required throughout the day and night.<sup>[16]</sup>

**Gentamicin, ciprofloxacin, levofloxacin, ofloxacin, and polymyxin B** are effective for infections caused by *Pseudomonas aeruginosa* (contact lens wearers are a risk group for pseudomonal infection).

### **Treatment of atypical bacterial conjunctivitis**

**Trachoma:** can be treated with oral azithromycin.

**Chlamydia:** there is ongoing debate as to which antibiotic is most effective (alone or in combination). Topical treatment with tetracycline ointment (qds for six weeks) and systemic doxycycline (100 mg bd for 1-2 weeks) or azithromycin (1 g single dose) or erythromycin (500 mg qds for one week if tetracycline is contra-indicated).

**Gonococcal conjunctivitis:** only one study of the treatment of gonococcal conjunctivitis among adults has been published in recent years. In that study, all 12 patients responded well to a single 1 g intramuscular injection of ceftriaxone, together with a single episode of ocular lavage with saline.<sup>[17]</sup>

**Gonococcal ophthalmia neonatorum:** early treatment and referral are essential. Although the condition is rare it should be suspected in cases of purulent conjunctivitis in neonates, since failure to treat it early can severely compromise vision. WHO guidelines suggests a single IM dose of either ceftriaxone 50 mg/kg (maximum 150 mg) IM, kanamycin 25 mg/kg (maximum 75 mg) or spectinomycin 25 mg/kg (maximum 75 mg) IM. Topical antibiotics are not indicated, although some sources suggest the use of topical bacitracin. Regular saline lavage is also recommended.<sup>[18]</sup>

### **Complications of bacterial conjunctivitis<sup>[1]</sup>**

Serious complications are rare in simple adult bacterial conjunctivitis.

- Corneal ulceration: healthy intact corneas are relatively resistant to infection. However, contact lens wearers may have compromised corneas, particularly if not taking care with lens hygiene. Damaged corneal epithelium provides a potential point of entry for micro-organisms.
- **Blepharitis** and meibomian gland inflammation may complicate chronic bacterial conjunctivitis.
- **Otitis media** develops in 25% of children with *H. influenzae* conjunctivitis.
- Invasive **meningococcal disease** complicates primary meningococcal conjunctivitis in up to 18% of cases.
- Chlamydial conjunctivitis is complicated by pneumonia in 10–20% of cases.
- Neonatal conjunctivitis can result in a severe localised infection of the eye and potentially serious systemic complications.
- Gonococcal conjunctivitis can rapidly cause corneal ulceration and compromise vision.

## Prognosis for bacterial conjunctivitis<sup>[1]</sup>

Bacterial conjunctivitis is usually a self-limiting disease that does not cause any serious harm and spontaneous remission should occur within seven days of onset.

Chlamydial conjunctivitis in adults is a chronic condition lasting months. Gonococcal conjunctivitis can cause serious damage to the globe.

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## Viral conjunctivitis<sup>[15] [19]</sup>

Treatment for most viral conjunctivitis is also supportive.

### Adenoviral conjunctivitis

Adenoviral conjunctivitis accounts for 65–90% of viral conjunctivitis. This is a highly infectious condition (incubation: 3–29 days, infectious for a further two weeks) which can range from mild to severe. There are many serotypes of the causative adenovirus (which is more commonly a cause of respiratory infection). All cause a follicular conjunctivitis but there are two distinct types of presentation:

- **Pharyngoconjunctival fever:** this is the more common form and tends to be mild. It most frequently occurs in children and young adults in association with a respiratory infection, and is highly contagious, transmitted regularly by direct contact but also through eye drops, mascara bottles and even swimming pools. There are systemic symptoms of sore throat, fever and headache; however, corneal involvement is very rare.
- **Epidemic keratoconjunctivitis:** this refers to adenoviral infection involving the cornea. This condition is more severe with formation of subepithelial corneal infiltrates and pseudomembranes. Patients may have photophobia and reduced vision long after the conjunctivitis settles.

## Symptoms

- Symptoms usually begin in one eye, becoming bilateral after a few days.
- There is commonly a history of upper respiratory tract infection or of close contact with someone with a red eye.
- There is a burning or gritty foreign body sensation.
- Patients notice morning crusting.
- Discharge is watery and mucoid rather than purulent and sticky.

## Signs

- The conjunctiva is typically very red and irritated.
- There may be pinpoint conjunctival haemorrhages.
- Eyelid redness and oedema are common.
- Preauricular lymphadenopathy is a classic sign.

- Follicles are typically seen, particularly on the inferior palpebral conjunctiva.
- Corneal involvement is seen in epidemic keratoconjunctivitis but usually not in pharyngoconjunctival fever.

Risk factors include exposure to an infected individual, upper respiratory tract infection and recent ocular examination.

## **Treatment and management of viral conjunctivitis**<sup>[15]</sup> <sup>[19]</sup>

- Management is essentially supportive.
- Cool compresses and artificial tears used several times daily may improve comfort.
- Viral conjunctivitis can last 4–6 weeks and can get worse before it gets better.
- Contact lenses should not be worn until all symptoms and signs of infection have completely resolved and any treatment has been discontinued for 24 hours.
- Lubricant eye drops may reduce eye discomfort; these are available over the counter, as well as on prescription.
- Infected secretions should be cleaned away from eyelids and lashes with cotton wool soaked in water.
- Patients should be advised to wash hands regularly, particularly after touching the eyes, and to avoid sharing pillows and towels.
- It is not necessary to exclude a child from school or childcare if they have infective conjunctivitis, as mild infectious illnesses should not interrupt school attendance. An exception would be if there is an outbreak of conjunctivitis, when advice should be sought from the Health Protection Agency by the school.
- Antibiotic or antiviral drops should not be used unless superinfection is suspected, as there are no effective eye drops against adenovirus.
- Seek specialised advice for epidemic keratoconjunctivitis, as pseudomembranes need removal and steroid eye drops may be used to prevent scarring.

## **Herpes simplex virus (HSV) conjunctivitis**<sup>[20]</sup>

HSV conjunctivitis is usually caused by infection with [herpes simplex virus type 1 \(HSV-1\)](#). This occurs most commonly in young/middle-aged adults (in contrast with herpes zoster virus, which is more commonly found in the elderly). Conjunctivitis is caused by reactivation of dormant virus and usually lasts 2–3 weeks.

Primary infection is often subclinical (94–99% of cases) and normally occurs in childhood or adolescence. When it is symptomatic it typically causes a blepharoconjunctivitis in which lid vesicles and crusting are characteristic. Ocular infection occurs with reactivation of the virus, which lies dormant in the trigeminal nerve.

Reactivation classically causes epithelial keratitis (inflammation of the superficial surface of the cornea).

Risk factors for reactivation include physical stress, psychological stress, environmental stress, immune suppression and recent upper respiratory tract infection.

### **Symptoms**

- Symptoms are usually unilateral (90%).
- Pain, photophobia, watering and redness are usual.
- Vision may be blurred if there is corneal ulceration in the central visual axis.

### **Signs**

- Red, watering eye, with limbal conjunctival injection (redness around the whole of the cornea).
- Follicles are usually present.
- Concurrent herpetic skin vesicles may be seen along the lid margin.
- Palpable preauricular lymph nodes are a classic sign of viral conjunctivitis.
- Signs of deeper infection include a hazy cornea (suggests stromal keratitis) and a fixed irregular pupil (iritis).

- On staining with fluorescein a dendritic ulcer is seen.

In painful red eye conditions, corneal staining is imperative to rule out dendritic ulcers due to HSV. If in doubt, refer to a specialised team to assess for keratitis, which may lead to complications, including scarring, perforation and visual loss.

## Complications of HSV conjunctivitis

- Stromal keratitis - localised inflammation of the corneal epithelial layer, leading to corneal oedema and (rarely) necrosis. It is an immune response rather than a direct effect of the live virus. HSV can also involve the globe of the eye as keratouveitis.

Neonatal infection is more commonly caused by HSV-2 and occurs during vaginal delivery.

Primary HSV infection is acquired from an infected individual. Reactivation occurs with physical or psychological stress, environmental stress and immune suppression.

## Management

Ocular herpes simplex requires urgent referral to ophthalmology for exclusion of uveitis.

- Topical antiviral treatment, such as aciclovir, is the usual treatment.
- Contact lens wear should be discontinued until symptoms have settled and treatment is complete.
- If the keratitis extends deep into the stroma, topical steroids may be used under specialised supervision to prevent scarring.
- Some patients with recurrent HSV keratitis are kept on long-term prophylactic oral antivirals. <sup>[21]</sup>

## Prognosis

- Eyelid and conjunctival lesions tend to resolve over 1-2 weeks.

- Epithelial keratitis resolves over two weeks and has a good prognosis.
- Stromal keratitis is more likely to result in corneal scarring.
- Recurrence is common, particularly in the case of stromal keratitis.

## **Herpes zoster ophthalmicus** <sup>[22]</sup>

This condition is caused by reactivation of dormant varicella-zoster virus, which gives rise to shingles of the innervated dermatome. In 15% of cases of shingles, the eye is affected, so giving rise to herpes zoster ophthalmicus. Unlike herpes simplex eye infection, it is more common in elderly patients.

Risk factors include physical trauma (including surgery), immunosuppression and greater age.

### **Symptoms**

- Prodromal symptoms are typical: fatigue, malaise and low-grade fever for up to one week.
- Eye pain, redness, watering and photophobia may occur.
- Facial pain may precede other symptoms and is typically confined to one dermatome.

### **Signs**

- Erythematous macules appear, then progress to a vesicular rash affecting the forehead, periorbit and tip of the nose.
- Lesions progress to pustules then to crusting, eventually healing over several weeks.
- The pain and rash are confined to one dermatome.
- A periorbital vesicular rash should raise suspicions.
- If the tip of the nose is affected there is significant risk (up to 85%) of ocular complications. This is called Hutchinson's sign - see the separate [Corneal Problems - Acute and Non-acute](#) article): the nasociliary branch of the ophthalmic division of the trigeminal nerve innervates the ciliary body, iris, cornea and conjunctiva and also the sides of the tip of the nose (alae nasae).

If Hutchinson's sign is not present, ocular involvement is less likely but can still occur: it is likely to be present if the patient reports reduced vision, eye pain or photophobia. Reduced corneal sensation is also a useful sign of ocular involvement.

## Management

- Start systemic antiviral treatment as soon as the diagnosis is made (eg, aciclovir, valaciclovir or famciclovir) .
- Refer for ophthalmic review. The eye and surrounding structures may also be affected and slit-lamp examination is needed to exclude corneal involvement or developing uveitis, scleritis, retinitis, neuritis and cranial nerve palsies. Possible sequelae include scarring and glaucoma.

## Molluscum contagiosum conjunctivitis <sup>[23]</sup>

This [oncogenic virus](#) generally infects the skin but occasionally spreads to mucous membranes (including the conjunctiva) of adolescents and young adults. It is commonly found in [AIDS](#) patients. Immunocompromise is the main risk factor.

## Signs

- Molluscum present as unilateral or bilateral, single or multiple, dome-shaped umbilicated shiny nodules on the eyelid or lid margin.
- There may be conjunctival follicles, with or without corneal pannus (conjunctiva creeping across the cornea).

Molluscum usually causes a chronic follicular conjunctivitis as a result of viral proteins spilling into the conjunctiva. It can cause epithelial keratitis, pannus and scarring.

## Management

- Refer to ophthalmologists for excision, cryotherapy or cauterisation of lesions.
- Resolution takes 3–12 months if untreated: early treatment by removal of the lesions reduces complications such as corneal scarring.



# Differential diagnosis

Unilateral conjunctivitis lasting for more than a few days is unusual and should prompt a thorough assessment for the possibility of other, more serious, eye conditions.

## Red flag features

- Moderate-to-severe eye pain or photophobia.
- Marked redness in one eye.
- Reduced visual acuity.

## Common causes of conjunctivitis

- Viral conjunctivitis: a watery discharge and preauricular lymph node are common.
- Bacterial conjunctivitis: a mucopurulent discharge is common but symptoms are generally mild. Gonococcal infection, which is rare, is an exception.
- **Allergic conjunctivitis**: suggested by moderate-to-severe itching, rhinitis or other hay fever symptoms and/or cobblestone elevations on the tarsal conjunctiva.
- A **foreign body** may mimic conjunctivitis. Everting the upper eyelid for examination and staining with fluorescein are recommended if this is suspected.
- Eye trauma, which can be mechanical or chemical.
- **Episcleritis**: mild, acute-onset localised redness in one or both eyes.
- Nasolacrimal blockage – this is common in neonates and results in a sticky, discharging eye. The eye is not red and the baby is otherwise well.
- Blepharoconjunctivitis and meibomianitis are commonly associated with **acne rosacea**.
- **Dry eye syndrome**.

## Serious problems

- **Acute glaucoma:** reduced visual acuity, hazy cornea, fixed pupil and systemic malaise.
- **Uveitis:** marked pain, photophobia and possibly decreased visual acuity, with a red eye not responding to conventional treatment, particularly in patients with previous episodes or with systemic illnesses predisposing to uveitis.
- **Keratitis:** often presents with a unilateral, acutely painful, photophobic, intensely injected eye. Acanthamoeba keratitis may be seen in soft contact lens wearers with poor hygiene, prolonged lens wear, or swimming while wearing lenses.
- **Scleritis:** usually presents with severe, boring ocular pain.
- **Orbital cellulitis:** systemic malaise with red eye, blurred vision, headache, diplopia, eyelid oedema and erythema, restricted ocular motility and pain on movement. The sinuses are often involved. Requires urgent admission.
- **Ocular herpes simplex:** painful, red eye with dendritic ulcer seen on staining with fluorescein.
- **Herpes zoster ophthalmicus:** telltale rash (or severe herpetic pain which can occur before the rash). This may be associated with conjunctivitis.
- **Hyperacute conjunctivitis:** severe sight-threatening ocular infection that warrants immediate ophthalmic work-up and management. The infection is characterised by a copious yellow-green purulent discharge that re-accumulates after being wiped away. The most common pathogens are *N. gonorrhoeae* and *Neisseria meningitidis*.

***Dr Mary Lowth is an author or the original author of this leaflet.***

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## Further reading

- **Yeu E, Hauswirth S;** A Review of the Differential Diagnosis of Acute Infectious Conjunctivitis: Implications for Treatment and Management. Clin Ophthalmol. 2020 Mar 12;14:805–813. doi: 10.2147/OPHTH.S236571. eCollection 2020.

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