Changes

Last revised in August 2012

August 2012 — reviewed. A literature search was conducted in August 2012 to identify evidence-based guidelines, UK policy, systematic reviews, and key RCTs published since the last revision of this topic. No major changes to recommendations have been made.

Previous changes

April 2011 — topic structure revised to ensure consistency across CKS topics — no changes to clinical recommendations have been made.

September to December 2007 — converted from CKS guidance to CKS topic structure. The evidence-base has been reviewed in detail, and recommendations are more clearly justified and transparently linked to the supporting evidence.

The management section and scenarios are now divided into acute infective conjunctivitis, persistent infective conjunctivitis, and neonatal conjunctivitis.


September 1998 — written, replacing guidance on *Bacterial conjunctivitis*.

Update

New evidence

Evidence-based guidelines
No new evidence-based guidelines since 1 August 2012.

HTAs (Health Technology Assessments)
No new HTAs since 1 August 2012.

Economic appraisals
No new economic appraisals relevant to England since 1 August 2012.

Systematic reviews and meta-analyses
Systematic reviews published since the last revision of this topic:


Primary evidence
No new randomized controlled trials in the major journals since 1 August 2012.

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New policies

No new national policies or guidelines since 1 August 2012.

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New safety alerts

No new safety alerts since 1 August 2012.

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Changes in product availability

No changes in product availability since 1 August 2012.

Goals

For people with acute bacterial conjunctivitis:

- To control symptoms
- To reduce unnecessary topical ocular antibiotic prescribing
- To prevent spread of infection

For people with chronic infective conjunctivitis:

- To control symptoms
- To eradicate infection
- To prevent spread of infection

For infants with neonatal conjunctivitis:

- To refer all neonates with conjunctivitis for urgent assessment and management to secondary care

Definition

What is it?

- **Infective conjunctivitis** is inflammation of the conjunctiva due to infection.
- **Infective conjunctivitis** may be caused by bacteria, viruses, or chlamydia.
  - Bacterial conjunctivitis is most commonly caused by *Staphylococcus* species, *Streptococcus pneumoniae*, *Haemophilus influenzae*, and *Moraxella catarrhalis*.
  - Viral conjunctivitis is most commonly caused by adenovirus that may occur in isolation or as an epidemic. The most common strains cause a mild conjunctivitis associated with pharyngitis and fever. Other strains may cause a severe conjunctivitis with corneal involvement causing keratitis.
  - Chlamydia presents with a chronic conjunctivitis in newborns and people who are sexually active.
- **Infectious conjunctivitis** is classified into three types:
• Hyperacute conjunctivitis is rare but severe conjunctivitis that develops very rapidly due to infection with gonorrhoea. It is the most serious cause of neonatal conjunctivitis but may also occur in sexually active adults.
• Acute infective conjunctivitis by definition lasts for no longer than 3 weeks. It may be caused by bacterial or viral infection.
• Chronic infective conjunctivitis by definition lasts longer than 3 weeks. It may be caused by bacteria such as *Staphylococcus aureus* and is commonly associated with blepharitis.
• Neonatal conjunctivitis (previously called ophthalmia neonatorum) is defined as any conjunctivitis of the newborn that occurs within the first 28 days of life. It may be caused by infection or be a toxic response to topical treatments applied to the eye. The most important causes are gonorrhoea because it can result in a serious localized infection, and chlamydia which can be associated with the development of pneumonia.

[Yanoff and Duker, 2004 |conjunctivitis-infective#references/A30895|; Yanoff and Duker, 2009 |conjunctivitis-infective#references/A56954|]

Prevalence

How common is it?

• In general practice 2–5% of all consultations concern the eye [Manners, 1997 |conjunctivitis-infective#references/A27591|].
• Infective conjunctivitis accounts for around 35% of all eye problems presenting in general practice, with 13–14 cases per 1000 population per year [Royal College of General Practitioners and Royal College of Ophthalmologists, 2001 |conjunctivitis-infective#references/A8313|].
• Infective conjunctivitis is most common in children and the elderly [Scott and Dhillon, 1998 |conjunctivitis-infective#references/A35421|].
• Estimates of the proportion of infective conjunctivitis that are bacterial vary widely between studies. Recent studies in primary care estimate that between 33% and 78% of cases are bacterial in origin [Rose, 2007 |conjunctivitis-infective#references/A31262|].

Complications and prognosis

Complications

• Significant complications are rare following bacterial conjunctivitis [Sheikh and Hurwitz, 2001 |conjunctivitis-infective#references/A83221|].
• Pneumonia occurs in 10–20% of infants following chlamydial conjunctivitis.
• Secondary meningitis, cellulitis, or septicaemia can be caused by any bacterial conjunctivitis (especially if the conjunctivitis is caused by *Escherichia coli*, *Staphylococcus aureus*, or *Haemophilus influenzae*). Premature infants are particularly at risk.
• Otitis media may develop in 25% of children with *H. influenzae* conjunctivitis.
• Punctate epithelial keratitis (small multiple erosions of the conjunctiva seen with fluorescein staining) may occur following infective conjunctivitis. It presents with ongoing discomfort following resolution of the infection and may persist for several weeks before resolving spontaneously.

[Yanoff and Duker, 2004 |conjunctivitis-infective#references/A30895|; Yanoff and Duker, 2009 |conjunctivitis-infective#references/A56954|]

Prognosis

• Viral conjunctivitis is a self-limiting illness that resolves spontaneously.
  • Some strains of adenovirus (associated with fever, pharyngitis, and mild conjunctivitis) may last for up to 14 days.
  • Other strains of adenovirus (associated with severe conjunctivitis and corneal involvement causing keratitis) can last for up to 21 days.
• Acute bacterial conjunctivitis resolves spontaneously in most people, without topical ocular antibiotic treatment, within 7 days of onset. Involvement of the cornea, presenting as keratitis, can occur but is uncommon.
- Chlamydial conjunctivitis in adults is a chronic condition lasting months. It may cause keratitis within 2 weeks of infection.
- Neonatal conjunctivitis can result in a severe localized infection of the eye and potentially serious systemic complications.
  - When caused by gonorrhoea it can result in corneal scarring and perforation [American Academy of Ophthalmology, 2011 (conjunctivitis-infective#references/A30689)].
  - When caused by chlamydia it is generally mild and self-limiting but can be severe, resulting in scarring of the cornea and conjunctiva. [Yanoff and Duker, 2009 (conjunctivitis-infective#references/A56954)]

## Diagnosis - infective conjunctivitis

**How do I know my patient has infective conjunctivitis?**

- Assess all people with a unilateral red eye for features of one of the three serious causes of a red eye.
  - If any of the following features are present, acute glaucoma, keratitis and iritis (conjunctivitis-infective#diagnosis#sub2) should be strongly suspected and the person referred for same-day specialist assessment.
    - Moderate to severe eye pain or photophobia.
    - Marked redness of the eye: the greater the redness, the more likely that the cause is serious. Ciliary injection, which is not always obvious, occurs with inflammation of deeper structures. It is indicated by redness and dilated blood vessels seen between the white of the eye and the coloured part (Iris) of the eye.
    - Reduced visual acuity: any loss of visual acuity, as measured with a Snellen chart.
  - If there are no features to suggest a serious cause of a red eye, exclude:
    - Superficial corneal injury — likely when eye pain follows trauma or possible trauma and a foreign body is present. It is confirmed when an abrasion is seen following staining with fluorescein.
    - Subconjunctival haemorrhage — asymptomatic, and other than redness there are no other abnormal findings. The redness is well demarcated, does not cover the cornea and obliterates conjunctival blood vessels.
    - Irritant conjunctivitis — likely when conjunctivitis is associated with an identifiable mechanical or irritant cause such as a displaced contact lens, a foreign body or eye lashes rubbing against the surface of the eye, or a chemical splashing into the eye.
    - Allergic conjunctivitis — likely when conjunctivitis is associated with itching and is recurrent following exposure to a known allergen.

- Identify the characteristic features of infective conjunctivitis. An infective cause of conjunctivitis is more likely when:
  - There is a history of close contact with another affected person.
  - Symptoms of upper respiratory tract infection are present.
  - The eyes are glued together by discharge after sleep, or mucopurulent discharge is seen on examination.
  - Conjunctivitis starts in one eye then spreads to the other.
  - An enlarged lymph node in front of the ear is identified.
  - **Swab the eye to identify the infective cause when infective conjunctivitis is hyperacute or persistent. This is not usually considered useful for people with acute infective conjunctivitis.**

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**Basis for recommendation**

This recommendation is based on expert opinion from the American Academy of Ophthalmology [American Academy of Ophthalmology, 2011 (conjunctivitis-infective#references/A30689)] and expert opinion in a textbook [Yanoff and Duker, 2004 (conjunctivitis-infective#references/A30895); Yanoff and Duker, 2009 (conjunctivitis-infective#references/A56954)].

## Diagnosis - neonatal conjunctivitis

**How do I diagnose neonatal conjunctivitis?**

- Neonatal conjunctivitis is diagnosed in any newborn who presents with conjunctival inflammation (seen as a 'red eye') in the first 28 days of life. Other signs may also be present, such as purulent discharge but these are not required for the diagnosis. Depending on the cause, a serious sight-threatening infection or an associated pneumonia may occur. Urgent referral for further assessment and management is essential.

[http://cks.nice.org.uk/conjunctivitis-infective](http://cks.nice.org.uk/conjunctivitis-infective) 20/03/2015
• A simple sticky eye caused by poor drainage of the lacrimal duct presents with a purulent looking discharge, but importantly is not associated with any conjunctival inflammation. It is a benign condition that does not require urgent specialist assessment.

Basis for recommendation

This information is based on expert opinion in a textbook [Yanoff and Duker. 2009 //conjunctivitis-infective#references/A56954].

Differential diagnosis

What else might it be?

Main causes of red eye

The main serious causes of a red eye

All people with features indicative of a serious cause of a red eye must be referred for same-day assessment to a specialist.

• Acute glaucoma causes markedly raised intraocular pressure; it presents with pain in the eye, headache, and blurring of vision. Signs include:
  • Ciliary injection (conjunctivitis-infective#ldiagnosis#sub).
  • Eye is rock hard and tender.
  • Fixed and dilated pupil.
  • Hazy cornea.
  • Headache and vomiting.
  • Markedly diminished vision.

• Keratitis presents with a unilateral, painful, photophobic, injected eye. Signs include:
  • Ciliary injection (conjunctivitis-infective#ldiagnosis#sub).
  • Corneal ulceration (demonstrated with fluorescein). The ulcer may be dendritic when caused by herpes simplex.
  • Vision may be affected, depending on the site of the ulcer.

• Iritis (uveitis) typically presents with pain and watering of the eye.
  • Ciliary injection (conjunctivitis-infective#ldiagnosis#sub) may be the only sign.
  • The pupil may be fixed and mid-dilated or distorted from previous attacks.
  • Less commonly, vision may be diminished.
  • The person may have a headache.

Allergic conjunctivitis

• Features that make an allergic cause more likely include:
  • Bilateral itchy eyes.
  • Oedema, producing a cobblestone appearance on the deep surface of the upper eyelids when inflammation is chronic.
  • An individual who also suffers from eczema, allergic rhinitis, or asthma.

• Features that make an allergic cause less likely include:
  • History of close contact with another affected person.
  • Eyes glued together by discharge after sleep.
  • Mucopurulent discharge.
  • Symptoms of upper respiratory tract infection.
  • Enlarged lymph nodes in front of the ear.

Irritant conjunctivitis

http://cks.nice.org.uk/conjunctivitis-infective

20/03/2015
• Irritant conjunctivitis may have a mechanical or chemical cause.
  - Common mechanical causes of conjunctivitis include eyelashes rubbing against the surface of the eye (such as occurs with entropion), or a foreign body. A foreign body usually becomes lodged beneath the upper eyelid. If a penetrating injury of the eye from high speed sharp particles may have occurred, refer for same-day assessment by a specialist.
  - Chemical causes such as getting shampoo in the eye, or chlorine from a swimming pool, are usually obvious and the conjunctivitis settles when the underlying cause is removed.

Basis for recommendation

This information is based on expert opinion in a textbook [Yanoff and Duker, 2004 (con conjunctivitis infective# references/A30895); Yanoff and Duker, 2009 (con conjunctivitis infective#references/A56954)].

Scenario: Acute infective conjunctivitis

Age from 1 month onwards

Overview

How do I manage a person with acute infectious conjunctivitis?

• Advise on self-care (con conjunctivitis infective#scenario recommendation:1) measures to relieve symptoms.
• Consider prescribing a topical ocular antibiotic (con conjunctivitis infective#scenario recommendation:2).
• If a topical ocular antibiotic is considered necessary, prescribe chloramphenicol first-line. Fusidic acid is an alternative. See Choice of topical ocular antibiotic (con conjunctivitis infective#scenario recommendation:3).
• Advise the person to urgently seek medical attention if they develop marked eye pain or photophobia, loss of visual acuity, or marked redness of the eye.

Basis for recommendation

The bases for these recommendations are provided in the relevant sections.

Self-care advice

What self-care advice can I give a person with acute infectious conjunctivitis?

Advise people with infective conjunctivitis:

• That infective conjunctivitis is a self-limiting illness that, for most people, settles without treatment within 1–2 weeks. If symptoms persist for longer than 2 weeks they should reconsult for investigation of the cause.
• To urgently seek medical attention if they develop marked eye pain or photophobia, loss of visual acuity, or marked redness of the eye.
• To remove contact lenses, if worn, until all symptoms and signs of infection have completely resolved and any treatment has been completed for 24 hours.
• That lubricant eye drops may reduce eye discomfort; these are available over the counter, as well as on prescription.
• To clean away infected secretions from eyelids and lashes with cotton wool soaked in water.
• To wash their hands regularly, particularly after touching infected secretions, and to avoid sharing pillows and towels to avoid spreading infection.

Basis for recommendation

This self-care advice is based on expert opinion [NGC, 2005 (con conjunctivitis infective#references/A31243)].
Prescribing topical ocular antibiotic
Should I prescribe a topical ocular antibiotic to someone with infective conjunctivitis?

- Advise people with clinical features of infective conjunctivitis that:
  - Most people with infective conjunctivitis get better, without treatment, within 1–2 weeks.
  - For most people, use of a topical ocular antibiotic makes little difference to recovery from infective conjunctivitis.
  - Up to 10% of people treated with topical ocular antibiotics complain of adverse reactions to treatment.
  - The risk of a serious complication from untreated infective conjunctivitis is low.
- Consider offering a topical ocular antibiotic to a person with infective conjunctivitis when:
  - Infective conjunctivitis is severe, or likely to become severe, providing serious causes of a red eye can be confidently excluded.
    - There are no agreed definitions of mild, moderate, or severe conjunctivitis. It would seem reasonable to consider infective conjunctivitis to be severe when the person considers the symptoms to be distressing or signs are judged to be severe from clinical experience.
    - Schools and childcare organizations require treatment before allowing a child to return.
    - They understand the limitations of treatment but still prefer treatment.
- When a topical ocular antibiotic is prescribed because of the person’s preference for treatment, consider advising them to delay starting treatment for 7 days to see if the condition will resolve spontaneously.

Basis for recommendation

These recommendations are based upon evidence from randomized controlled trials. Trials carried out in secondary care show that people with microbiologically-proven bacterial conjunctivitis benefit modestly from treatment with topical ocular antibiotics. However, the likelihood of people with clinically diagnosed infective (bacterial or viral) conjunctivitis responding to treatment is small. Based upon this evidence it seems reasonable:

- To avoid prescribing a topical ocular antibiotic for people with mild-to-moderate infective conjunctivitis where the potential benefits of treatment are limited and the risks of harms from untreated infective conjunctivitis are small:
  - Advice to delay the use of antibiotics, given to people who are prescribed treatment principally because they prefer treatment, is a strategy proven to reduce antibiotic usage in primary care [Everitt et al. 2006 (references/AS1288)].
- To prescribe a topical ocular antibiotic for people with more severe infective conjunctivitis because:
  - They have a greater potential for benefit from treatment than people with mild-to-moderate conjunctivitis.
  - They are probably at greater risk of a complication from infective conjunctivitis and it seems reasonable to try and reduce this risk.

Choice of topical ocular antibiotic
If a topical ocular antibiotic is thought necessary which antibiotic should I prescribe for someone with infective conjunctivitis?

- Prescribe chloramphenicol first-line for empirical treatment of infective conjunctivitis when a topical ocular antibiotic is considered necessary.
- Fusidic acid is an alternative empirical treatment. It is preferred for people who:
  - Are pregnant.
  - Have a personal or family history of blood dyscrasias, such as aplastic anaemia.
  - Are intolerant of chloramphenicol.
  - Prefer a twice-a-day treatment for infective conjunctivitis.

Basis for recommendation

http://cks.nice.org.uk/conjunctivitis-infective  20/03/2015
Chloramphenicol is recommended first-line and fusidic acid as an alternative because:

- Chloramphenicol has a relatively broad spectrum of action against most Gram-positive and Gram-negative bacteria, is generally well tolerated, and is widely recommended by UK experts as the drug of choice [BNF 63, 2012 (/conjunctivitis-infective#references/A68738); HPA and British Infection Association, 2012 (/conjunctivitis-infective#references/A69018)].
  - There is no evidence of significant systemic absorption or serious adverse effects from topical chloramphenicol, but because of these theoretical risks chloramphenicol is not recommended for people with a personal or family history of blood dyscrasias, or women who are pregnant [Walker et al, 1998 (/conjunctivitis-infective#references/A8315); ABPI Medicines Compendium, 2012c (/conjunctivitis-infective#references/A69140); ABPI Medicines Compendium, 2012d (/conjunctivitis-infective#references/A69141)].
- In selecting a suitable alternative empirical option to chloramphenicol, several comparative trials have found topical fusidic acid to be as effective as topical chloramphenicol in treating people with infective conjunctivitis [Hvidberg, 1987 (/conjunctivitis-infective#references/A8207); Horven, 1993 (/conjunctivitis-infective#references/A8206); Carr, 1998 (/conjunctivitis-infective#references/A8216)], and it is less expensive than other topical antibiotic preparations available. However, adverse effects may be more common with fusidic acid [Rietveld et al, 2005 (/conjunctivitis-infective#references/A30169)].
- Note: most randomized controlled trials comparing antibiotics with each other found no significant difference in their clinical or microbiological cure rates. For more information, see Supporting evidence (/conjunctivitis-infective#supportingevidence).

Advice about children in school
What advice should I give about excluding children with infective conjunctivitis from school and childcare centres?

- Advise parents that it is not necessary to exclude a child from school or childcare if they have infective conjunctivitis, unless there is an outbreak of infective conjunctivitis.
- In the event of an outbreak of infective conjunctivitis, advice should be sought from the Health Protection Agency by the school or childcare centre.
  - This advice is included in Health Protection Agency (pdf) [http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947358374] guidance on infection control in schools and other childcare settings.

Basis for recommendation

These recommendations are based upon advice issued by the Health Protection Agency (HPA) [HPA, 2010 (/conjunctivitis-infective#references/A61250)].

- Attendance at school results in children catching and spreading numerous mild, self-limiting, infectious illnesses. The HPA does not recommend excluding children with infective conjunctivitis from school because:
  - It is widely accepted that it is not desirable to exclude children from schools or childcare centres with other mild infectious illnesses (such as the common cold). There is no more reason to exclude children with infectious conjunctivitis than to exclude a child with a common cold.
  - The requirement to exclude a child until they have received a topical ocular antibiotic is equally flawed as there is no evidence to suggest that this reduces their risk of spreading infection, especially when infective conjunctivitis often has a viral cause.

Scenario: Persistent infective conjunctivitis

Age from 1 month onwards

Overview
How do I manage someone with infective conjunctivitis that lasts longer than 2 weeks?
To manage persistent infective conjunctivitis:

- Advise on self-care [con conjunctivitis infective#scenario_recommendation4] measures to relieve symptoms.
- Arrange investigations to determine the cause [con conjunctivitis infective#scenario_recommendation7],
- Manage the underlying cause [con conjunctivitis infective#scenario_recommendation8], guided by microbiological investigations.

Basis for recommendation

These recommendations are based on expert opinion [NGC 2005 / conjunctivitis infective#references/A31243].

Self-care advice

What self-care advice should I give someone with infective conjunctivitis that lasts longer than 2 weeks?

Advise people with infective conjunctivitis:

- To urgently seek medical attention if they develop marked eye pain or photophobia, loss of visual acuity or marked redness of the eye.
- To remove contact lenses, if worn, until all symptoms and signs of infection have completely resolved and any treatment has been completed for 24 hours.
- That lubricant eye drops may reduce eye discomfort; these are available over the counter, as well as on prescription.
- To clean away infected secretions from eyelids and lashes with cotton wool soaked in water.
- To wash their hands regularly, particularly after touching infected secretions, and to avoid sharing pillows and towels to avoid spreading infection.

Basis for recommendation

These recommendations are based on expert opinion [NGC 2005 / conjunctivitis infective#references/A31243].

Determining the cause

How do I determine the cause of infective conjunctivitis that persists longer than 2 weeks?

- Reassess the diagnosis — see Diagnosing infective conjunctivitis [con conjunctivitis infective#diagnosis_subj].
- Assess features suggestive of blepharitis. If present, see the CKS topic on Blepharitis (blepharitis). Features include:
  - Swollen eyelids: the defining sign of staphylococcal blepharitis, but unusual when it is less severe.
  - Inflamed lid margins: usually present.
  - Altered eyelash appearance: including misdirection, crusting, and eyelash loss.
  - Altered eyelid surfaces: may be scaly, oily, or greasy. Ulceration of the anterior lid indicates infection.
- Take swabs for bacteria and chlamydia.
- Consider prescribing a topical ocular antibiotic while awaiting results of swabs.

Basis for recommendation

The recommendation to swab people with infective conjunctivitis that persists for longer than 2 weeks is pragmatic and based upon the established pathophysiology of infective causes of conjunctivitis published in authoritative texts [Yanoff and Duker 2009 / conjunctivitis infective#references/A56954].

- Most bacterial and viral infections resolve spontaneously within 2 weeks.
- Chlamydial infections, and some bacterial infections, can cause chronic conjunctivitis lasting for weeks or months if untreated.
• Microbiological investigations are not considered necessary in primary care when a person presents with a short history of infective conjunctivitis because most cases will settle spontaneously. However, management of chronic infections requires microbiological identification of the causative organism.

Managing the underlying cause
How do I manage the cause of persistent infective conjunctivitis?

For people with:

• Blepharitis associated with chronic conjunctivitis — see the CKS topic on Blepharitis (Blepharitis).
• A positive bacterial culture — prescribe a topical ocular antibiotic directed by sensitivity results if they are still symptomatic.
• A positive chlamydial culture — refer for testing of sexual contacts and systemic treatment.
• A negative bacterial and chlamydial culture — consider repeating the test if symptoms persist for longer than 3 weeks.

Basis for recommendation

Treatment of microbiologically-proven bacterial infective conjunctivitis

• Evidence from good quality trials has shown that treating people with proven bacterial conjunctivitis with a topical ocular antibiotic modestly reduces the severity and duration of conjunctivitis [Sheikh and Hurwitz, 2001 (conjunctivitis-infective#references/A83221)].

Repeating swabs if initial swab is negative but symptoms persist for longer than 3 weeks

• A negative swab result in a person with conjunctivitis of less than 3 weeks’ duration occurs most commonly when there is a viral cause for the conjunctivitis.
• Infective conjunctivitis lasting longer than 3 weeks is unlikely to be due to viral infection but may be due to a false negative result for a chronic bacterial or chlamydial infection.

[Yanoff and Duker, 2004 (conjunctivitis-infective#references/A30895); Yanoff and Duker, 2009 (conjunctivitis-infective#references/A56954)]

Scenario: Neonatal conjunctivitis

Age from 0 months to 1 month

Managing neonatal conjunctivitis
How do I manage neonatal conjunctivitis?

• Urgently refer all infants in the first 28 days of life with conjunctivitis for same-day assessment and management of their conjunctivitis.
  • It is important to distinguish neonatal conjunctivitis, when the conjunctiva is inflamed and red, from a simple sticky eye (when there are no signs of conjunctival inflammation). A simple sticky eye does not usually require specialist assessment.

Basis for recommendation

• Neonatal conjunctivitis may result in a severe and rapidly progressive eye infection, or be associated with a potentially serious systemic infection, both of which require urgent investigation and management in secondary care.
  • Chlamydia is the commonest cause of neonatal conjunctivitis in the United States. An infant born to a mother with chlamydia has a 30–40% chance of developing conjunctivitis, and a 10–20% chance of developing pneumonia.
• Gonorrhoea infection typically results in a rapidly developing severe conjunctivitis associated with a profuse purulent discharge within 48 hours of birth. Corneal ulceration and perforation may occur.

[ Yanoff and Duker, 2009 (//conjunctivitis-infective/#/references/A56954)]

Topical ocular antibiotic

What general information should I be aware of when prescribing a topical ocular antibiotic?

• Eye drops should be used in preference to ointment if other eye drops are being used concurrently (for example for glaucoma).
• When two different eye-drop preparations are used at the same time of day, an interval of at least 5 minutes should be left between application of the two types. This will help prevent any dilution and overflow that may occur if application of one preparation immediately follows another.
• Contact lenses should not be used during treatment with topical antibiotics, or if untreated infection is present. Soft contact lenses should be avoided until at least 24 hours after treatment has been completed. In the rare circumstance of this being unavoidable, preservative-free drops should be used, as some preservatives, particularly benzalkonium chloride, accumulate in soft contact lenses and cause irritation. Eye ointment should not be used when contact lenses are worn.
• Transient blurring of vision can occur with eye drops and people should be warned not to drive or operate machinery unless their vision is clear.
• If symptoms get worse despite treatment with a topical antibiotic, advise the person to seek medical advice.

Topical chloramphenicol

• Topical chloramphenicol has a relatively broad spectrum of action against most Gram-positive and Gram-negative bacteria.
• If symptoms resolve within the first 5 days of treatment, continue chloramphenicol for 48 hours after resolution.

[ABPI Medicines Compendium, 2010a (//conjunctivitis-infective/#/references/A69119); ABPI Medicines Compendium, 2012a (//conjunctivitis-infective/#/references/A69117); ABPI Medicines Compendium, 2012b (//conjunctivitis-infective/#/references/A69118); BNF 63, 2012 (//conjunctivitis-infective/#/references/A68735)]

Avoiding topical chloramphenicol

• Do not use topical chloramphenicol:
  • In people who have experienced myelosuppression during previous exposure to chloramphenicol.
  • In people who have a blood dyscrasia, or who have a family history of blood dyscrasias.
  • Concurrently with other myelotoxic drugs.
  • In pregnant or breastfeeding women, as its safety has not been established.
  • For prolonged periods, since it may increase the likelihood of sensitization and resistance.

Adverse effects

• Adverse effects are usually minor, such as transient stinging or a burning sensation in the eye.
• Aplastic anaemia and bone marrow depression is extremely rare, and concerns about the increased risk of this adverse effect have not been proven.

Topical fusidic acid

• Topical fusidic acid is active against Gram-positive bacteria, especially Staphylococcus aureus.
• Administration of fusidic acid is required only twice a day, which may be of benefit for young children or elderly people who require assistance in applying eye drops.
• If symptoms resolve within the first 5 days of treatment, continue fusidic acid for 48 hours after resolution.
Adverse effects
What are the adverse effects of topical fusidic acid?

- Adverse effects are usually minor, such as transient stinging or a burning sensation in the eye.

Supporting evidence

Topical ocular antibiotics
Evidence on the effectiveness of topical ocular antibiotics for infective conjunctivitis

Evidence for the effectiveness of topical ocular antibiotics in the treatment of infective conjunctivitis comes from randomized controlled trials in secondary and primary care.

- A Cochrane review investigated the effect of antibiotic treatment on the management of acute bacterial conjunctivitis. Central, Medline, Embase, Sigle, NRR, PubMed were searched to the start of 2006, and hand searches of bibliographies were conducted. Pharmaceutical manufacturers were also contacted as necessary [Sheikh and Hurwitz, 2006 /conjunctivitis-infective#references/A69120]. A further literature search for this Cochrane review in 2007 did not find any new evidence requiring an update to the text.
  - Five trials (n = 1034) were found, three secondary care based (n = 527), and the two more recent trials were community based (n = 507).
  - Meta-analysis of data on clinical and biological remission rates reveal that:
    - In early days (2 to 5), topical antibiotics are of benefit in improving clinical (RR 1.24, 95% CI 1.05 to 1.45) and microbiological (RR 1.77, 95% CI 1.23 to 2.54) remission rates.
    - In later days (6 to 10), early advantages in clinical (RR 1.11, 95% CI 1.02 to 1.21) and microbiological cure rates are reduced (RR 1.56, 95% CI 1.17 to 2.09), but persist.
    - Note: in the two primary care trials no statistically significant difference in clinical recovery from infective conjunctivitis was seen in people receiving a topical ocular antibiotic compared with placebo [Ristved et al., 2005 /conjunctivitis-infective#references/A30166]; Rose et al., 2005 /conjunctivitis-infective#references/A31179].
  - Most cases however resolve spontaneously with clinical remission being achieved in 65% (95% CI 59 to 70) by days 2 to 5 in those receiving placebo.
  - The authors concluded that although the use of antibiotics is associated with significantly improved rates of clinical and microbiological remission, the benefits are marginal as in most cases the infection is self-limiting. Therefore, when people with clinically diagnosed infective conjunctivitis are treated, the chances that an individual will benefit from treatment is very small.
  - Of the secondary care based trials, in two trials data from people who were treated and subsequently found not to have bacterial conjunctivitis were excluded from the analysis. In the third trial treatment was delayed until microbiological results were available to guide treatment. Therefore the clinical usefulness of this information is limited because in practice it is not possible to prove that a person has a bacterial infection before starting treatment, unless treatment is delayed until microbiological results are available.
  - A subsequent meta-analysis looked only at primary care evidence and identified three studies (n = 622) comparing topical antibiotics with placebo or no treatment for acute infective conjunctivitis [Jeffers et al., 2011 /conjunctivitis-infective#references/A69023].
    - It found that similar numbers of people in the treatment (246/308, 80%) and control groups (233/314, 74%) were cared at 7 days (risk difference 0.08, 95% CI 0.01 to 0.14), with a small overall significant benefit of antibiotics compared with control (number needed to treat = 13). However, analysis of the data from the two trials that used a placebo found no overall significant effect of antibiotics compared with control. Groups showing significant benefit from antibiotics were people with mild red eye (risk difference 0.10, 95% CI 0.02 to 0.18), and people with purulent discharge (risk difference 0.09, 95% CI 0.01 to 0.17).
• The conclusions were similar to those of the Cochrane systematic review. Most people recovered in a week regardless of whether they were treated with antibiotics. The meta-analysis was limited by the variable quality of the studies, including the fact that only two out of the three trials discussed were placebo-controlled.

Search strategy

Scope of search
A literature search was conducted for guidelines, systematic reviews and randomized controlled trials on primary care management of conjunctivitis - infective

Search dates

Key search terms
Various combinations of searches were carried out. The terms listed below are the core search terms that were used for Medline and these were adapted for other databases. Further details are available on request.


Table 1. Key to search terms.

<table>
<thead>
<tr>
<th>Search commands</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>/</td>
<td>indicates a MeSH subject heading with all subheadings selected</td>
</tr>
<tr>
<td>.tw</td>
<td>indicates a search for a term in the title or abstract</td>
</tr>
<tr>
<td>exp</td>
<td>indicates that the MeSH subject heading was exploded to include the narrower, more specific terms beneath it in the MeSH tree</td>
</tr>
<tr>
<td>$</td>
<td>indicates that the search term was truncated (e.g. wart$ searches for wart and warts)</td>
</tr>
</tbody>
</table>

Sources of guidelines
• National Institute for Health and Care Excellence (NICE) [http://www.nice.org.uk]
• Scottish Intercollegiate Guidelines Network (SIGN) [http://www.sign.ac.uk]
• Royal College of Physicians [http://www.rcp london.ac.uk/d]
• Royal College of General Practitioners [http://www.rcgp.org.uk/]
• Royal College of Nursing [http://www.rcn.org.uk/development/practice/clinicalguidelines]
• NICE Evidence [https://www.evidence.nhs.uk/topics/]
• Health Protection Agency [http://www.hpa.org.ukik]
• World Health Organization [http://www.who.int]
• National Guidelines Clearinghouse [http://www.guideline.gov]
• Guidelines International Network [http://www.g-i-n.net]
• TRIP database [http://www.tripdatabase.com]
• GAIN [http://www.gain-ni.org/index.php/assets/guidelines]
• NHS Scotland National Patient Pathways [http://www.pathways.scot.nhs.uk/]
• New Zealand Guidelines Group [http://www.nzgg.org.nz]
• Agency for Healthcare Research and Quality [http://www.ahrq.gov/]
• Institute for Clinical Systems Improvement [http://www.iCsl.org]
• National Health and Medical Research Council (Australia) [http://www.nhmrc.gov.au/publications/index.htm]
• Royal Australian College of General Practitioners [http://www.racgp.org.au/your-practice/guidelines/]
• British Columbia Medical Association [http://www.health.gov.bc.ca/gpac/index.html]
• Canadian Medical Association [http://www.cma.ca/index.php/cli_id/54316/la_id/1.htm]
• Alberta Medical Association [http://www.topalbertadoctors.org/cgps.php]
• University of Michigan Medical School [http://cppd.med.umich.edu/cme/self-study/]
• Michigan Quality Improvement Consortium [http://mqic.org/guidelines.htm]
Conjunctivitis - infective - NICE CKS

- Singapore Ministry of Health (http://www.moh.gov.sg/content/moh_web/home/Publications/guidelines/cpg.html)
- National Resource for Infection Control (http://www.nrc.org.uk)
- Patient UK Guideline links (http://www.patient.co.uk/guidelines.asp)
- UK Ambulance Service Clinical Practice Guidelines (http://www2.warwick.ac.uk/ie/research/bscr/emerergencycare/irracles_2006/guidelines/)
- Medline (with guideline filter)
- Driver and Vehicle Licensing Agency (http://www.dft.gov.uk/dvla/medical/ataglance.aspx)
- NHS Health at Work (http://www.nhshatwork.co.uk/oh-guidelines.asp) (occupational health practice)

Sources of systematic reviews and meta-analyses
- The Cochrane Library (http://www.thecochranelibrary.com):
  - Systematic reviews
  - Protocols
  - Database of Abstracts of Reviews of Effects
- Medline (with systematic review filter)
- EMBASE (with systematic review filter)

Sources of health technology assessments and economic appraisals
- NHTA Health Technology Assessment programme (http://www.hta.ac.uk/)
- The Cochrane Library (http://www.thecochranelibrary.com):
  - NHS Economic Evaluations
  - Health Technology Assessments
- Canadian Agency for Drugs and Technologies in Health (http://www.cadth.ca)
- International Network of Agencies for Health Technology Assessment (http://www.inahta.org)

Sources of randomized controlled trials
- The Cochrane Library (http://www.thecochranelibrary.com):
  - Central Register of Controlled Trials
- Medline (with randomized controlled trial filter)
- EMBASE (with randomized controlled trial filter)

Sources of evidence based reviews and evidence summaries
- Bandolier (http://www.medicorex.ac.uk/bandolier/)
- Drug & Therapeutics Bulletin (http://dtb.bmi.com/)
- TRIP database (http://www.tripdatabase.com)
- Central Services Agency COMPASS Therapeutic Notes (http://www.medicinesni.com/courses/type.asp[ID=CN])

Sources of national policy
- Department of Health (http://www.dh.gov.uk)
- Health Management Information Consortium (HMIC)

Patient experiences
- Healthtalkonline (http://www.healthtalkonline.org/)
- BMI - Patient Journeys (http://www.bmi.com/bmi-series/patient-journeys)
- Patient.co.uk - Patient Support Groups (http://www.patient.co.uk/selfhelp.asp)

Sources of medicines information
The following sources are used by CKS pharmacists and are not necessarily searched by CKS information specialists for all topics. Some of these resources are not freely available and require subscriptions to access content.

- electronic Medicines Compendium (http://www.medicines.org.uk) (eMC)
- European Medicines Agency (http://www.ema.europa.eu/ema/) (EMEA)
- Medicines and Healthcare products Regulatory Agency (http://www.mhra.gov.uk/index.htm) (MHRA)
- REPROTOX (http://www.reprotox.org/Default.aspx)
- Scottish Medicines Consortium (http://www.scottishmedicines.org.uk/Home)

http://cks.nice.org.uk/conjunctivitis-infective 20/03/2015
Conjunctivitis - infective - Summary

- Infective conjunctivitis is inflammation of the conjunctiva due to infection.
  - Bacterial conjunctivitis is most commonly caused by Staphylococcus species, Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis. Hyperacute conjunctivitis is rare but severe conjunctivitis that develops very rapidly due to infection with gonorrhoea.
  - Viral conjunctivitis is most commonly caused by adenovirus, in isolation or as an epidemic.
  - Chlamydia presents with a chronic conjunctivitis in newborns and people who are sexually active.
- In terms of prognosis:
  - Acute bacterial conjunctivitis usually resolves spontaneously within 7 days of onset, without topical ocular antibiotic treatment. Keratitis is uncommon.
  - Viral conjunctivitis is a self-limiting illness that resolves spontaneously but can last for up to 21 days.
  - Chlamydial conjunctivitis in adults is a chronic condition lasting months. It may cause keratitis within 2 weeks of infection.
- Neonatal conjunctivitis is defined as any conjunctivitis of the newborn that occurs within the first 28 days of life.
  - When caused by gonorrhoea it can result in corneal penetration within 2 days.
  - When caused by chlamydia it is generally mild and self-limiting but can be severe, resulting in scarring of the cornea and conjunctiva and potentially serious systemic complications.
- Serious causes of red eye (such as acute glaucoma, keratitis, and iritis), or superficial corneal injury, subconjunctival haemorrhage, and irritant and allergic conjunctivitis should be excluded.
- Characteristic features of infective conjunctivitis include:
  - History of close contact with another affected person.
  - Symptoms of upper respiratory tract infection.
  - Eyes glued together by discharge after sleep, or mucopurulent discharge present on examination.
  - Conjunctivitis starting in one eye then spreading to the other.
  - An enlarged lymph node in front of the ear.
- When infective conjunctivitis is hyperacute or persistent, a swab should be taken. Swabs are not usually useful in acute infective conjunctivitis.
- People with infective conjunctivitis should be advised:
  - To seek medical attention urgently if they develop marked eye pain or photophobia, loss of visual acuity, or marked redness of the eye.
  - To remove contact lenses, if worn, until all symptoms and signs of infection have completely resolved and any treatment has been completed for 24 hours.
  - That lubricant eye drops may reduce eye discomfort.
  - To clean away infected secretions from eyelids and lashes with cotton wool soaked in water.
  - To wash their hands regularly, and to avoid sharing pillows and towels.
- If a topical ocular antibiotic is necessary for acute infective conjunctivitis, chloramphenicol should be used first-line. Fusidic acid is an alternative.
- For persistent infective conjunctivitis:
  - Investigations should be arranged to determine the cause.
  - The underlying cause should be managed, guided by microbiological investigations.
- Neonates with conjunctivitis should be urgently referred for same-day assessment and management.

Have I got the right topic?

All ages

http://cks.nice.org.uk/conjunctivitis-infective

20/03/2015
This CKS topic covers acute and persistent infective conjunctivitis caused by bacteria, viruses, or chlamydia.

This CKS topic does not cover the management of allergic conjunctivitis, ocular herpes simplex, or herpes zoster ophthalmicus.

There are separate CKS topics on Blepharitis (blepharitis), Conjunctivitis - allergic (conjunctivitis-allergic), Corneal superficial injury (corneal-superficial-injury), Dry eye syndrome (dry-eye-syndrome), and Herpes simplex - ocular (herpes-simplex-ocular).

The target audience for this CKS topic is healthcare professionals working within the NHS in the UK, and providing first contact or primary healthcare.

How up-to-date is this topic?

- Changes
- Update

Goals and outcome measures

- Goals

Background information

- Definition
- Prevalence
- Complications and prognosis

Diagnosis

Diagnosis of infective conjunctivitis

- Diagnosis - infective conjunctivitis
- Diagnosis - neonatal conjunctivitis
- Differential diagnosis

Management

- Scenario: Acute infective conjunctivitis (conjunctivitis-infective#scenario) : covers advice on the management of infectious conjunctivitis of less than 2 weeks' duration.
- Scenario: Persistent infective conjunctivitis (conjunctivitis-infective#scenario1) : covers advice on the management of infectious conjunctivitis of more than 2 weeks' duration.
- Scenario: Neonatal conjunctivitis (conjunctivitis-infective#scenario2) : covers advice on the management of an infant with conjunctivitis in the first 28 days of life.

Prescribing information

Important aspects of prescribing information relevant to primary healthcare are covered in this section specifically for the drugs recommended in this CKS topic. For further information on contraindications, cautions, drug interactions, and adverse effects, see the electronic Medicines Compendium (http://www.medicines.org.uk/emc) (eMC) (http://medicines.org.uk/emc), or the British National Formulary (http://www.evidence.nhs.uk/formulary/bnf/current) (BNF).

Evidence

http://cks.nice.org.uk/conjunctivitis-infective
References


ABPI Medicines Compendium (2012c) Summary of product characteristics for Chloramphenicol 0.5% w/v eye drops. Electronic Medicines Compendium Datapharm Communications Ltd. www.medicines.org.uk [Free Full-text (http://www.medicines.org.uk/EMC/medicine/25612/SPC/Chloramphenicol0.5%wvEyeDrops)]


http://cks.nice.org.uk/conjunctivitis-infective 20/03/2015


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