

## DEFINITION

Conjunctivitis is the inflammation of the conjunctiva. Conjunctival erythema is caused by injection and hyperemia of tortuous superficial vessels.

## IMMEDIATE CONSULTATION REQUIRED IN THE FOLLOWING SITUATIONS

- Significant eye pain
- Any loss in visual acuity or colour vision
- Suspicion of herpes simplex virus (HSV) keratoconjunctivitis often with facial rash or vesicles
- Periorbital cellulitis
- No improvement with treatment in 72-96 hours
- Any suspicion of gonorrheal conjunctivitis usually hyper-acute
- Any suspicion of chlamydial conjunctivitis
- Herpes zoster
- Corneal ulceration
- Constricted pupil
- Dilated pupil
- Photophobia
- Headache with nausea or vomiting
- Irregular pupil
- Papilledema
- Extraocular muscle paresis
- Ciliary flush
- Corneal opacity
- Fixed pupil
- Ulcerative keratitis in contact lens users
- Severe foreign body sensation preventing client from keeping the eye open

## CAUSES

### Viral Conjunctivitis

- Nonspecific follicular conjunctivitis:
  - Usually caused by adenovirus serotypes 1-11
  - Self-limiting
  - More common in children

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- Often associated with upper respiratory tract infection (URTI)
- Duration of disease 3-7 days
- Pharyngo-conjunctival fever:
  - Caused by adenovirus
  - More often unilateral
  - More often in children
  - Associated with pharyngitis and fever
  - Duration usually 2 weeks
  - 5% risk of persistent morbidity
- Hemorrhagic conjunctivitis:
  - Most common cause is adenovirus but can also be caused by enterovirus 70, coxsackievirus, and echovirus
  - Petechial hemorrhages on bulbar conjunctivae
  - Highly contagious
  - Usually complete recovery over 3 weeks
  - Outbreak of acute hemorrhagic conjunctivitis due to coxsackievirus A24
- Epidemic keratoconjunctivitis (EKC):
  - Highly contagious, usually caused by adenovirus serotypes 8, 19, 37
  - Clients develop significant chemosis, pseudomembranes, and keratitis
  - Duration may last 3-4 weeks
  - 30-50% risk of developing chronic dry eye or persistent corneal deposits with light sensitivity and vision loss
  - Wash office area (including doorknobs) after contact with 10% bleach solution
  - Avoid shaking hands with affected clients
- HSV conjunctivitis:
  - May present similarly to adenovirus
  - 4-5% viral conjunctivitis due to HSV without associated skin lesions
  - Usually unilateral

### Bacterial Conjunctivitis

- Acute:
  - Defined as conjunctivitis with duration  $\leq$  3-4 weeks
  - Most common form of bacterial conjunctivitis seen by primary care clinicians

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- Common pathogens are *Haemophilus influenzae*, *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Moraxella*, and *Corynebacterium*
- Hyper-acute:
  - Abrupt onset
  - Profuse thick, yellow-green purulent discharge
  - Ocular injection and chemosis
  - Inflammatory membrane may form
  - *Neisseria gonorrhoea* is most common pathogen
- Chronic:
  - Conjunctivitis with symptoms for  $\geq 4$  weeks
  - Discharge and hyperemia typically mild-moderate
  - Coagulase-positive and coagulase-negative staphylococci are most common pathogens
  - Relapse is common
  - Chlamydial conjunctivitis may also be a frequent cause of chronic conjunctivitis
- Allergic Conjunctivitis:
  - Seasonal pollens or environmental exposure

**PREDISPOSING AND RISK FACTORS**

- Contact with another person who has conjunctivitis
- Exposure to a sexually transmitted disease
- Other atopic (allergic) conditions
- Overcrowding
- Urban settings
- Multi-use eye drops
- Recent URTI
- Immunosuppression
- Contact lens use

**HISTORY**

Viral Conjunctivitis

- Acute onset of redness

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- Watery to mucoid discharge
- Foreign body sensation
- Burning and itching
- Lasts 7-12 days; may be infectious for up to 2 weeks
- Systemic symptoms (e.g., sneezing, runny nose, sore throat)
- Recent contact with others with similar symptoms
- Recent history of upper respiratory symptoms
- Starts in one eye and then second eye 2-3 days later

Bacterial Conjunctivitis

- Acute redness and purulent discharge
- Burning and stinging sensation
- Foreign body sensation
- Sticky eyelids most common with bacterial etiology
- Crusting of lids in the morning
- Otitis media is associated
- Usually no blurred vision, photophobia, or coloured halos
- Usually no pain except acute gonococcal conjunctivitis
- Recent contact with others with similar symptoms

Allergic Conjunctivitis

History of seasonal allergies, eczema, asthma, urticarial, and atopic disorders.

- Watery and red eyes without purulent drainage
- Itching as main complaint
- Usually bilateral, burning sensation
- Does not have photophobia or eye pain
- Swelling of eyelid and periorbital swelling
- Client rubs eyes
- Other allergy symptoms and signs may present
- Seasonal variations in symptoms
- Symptoms may vary with geography and environment
- Enquire about mold and water damage in their homes

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**PHYSICAL FINDINGS**

**Infectious Conjunctivitis (Bacterial and Viral)**

- Vital signs normal
- Visual acuity usually normal
- Pupils equal, round, reactive to light and accommodation (PERRLA); extraocular eye movements normal
- Injection of conjunctiva, chemosis if severe
- Conjunctival injection is prominent in bacterial, moderate in viral
- Pupil anterior chamber depth and intraocular pressure normal
- Unilateral or bilateral diffuse conjunctival redness
- Discharge: purulent in bacterial form, thin and watery, possibly purulent in viral form
- Crusts on lashes in viral and bacterial forms
- Eyelids red or edematous
- Preauricular adenopathy may be present in viral and gonococcal conjunctivitis

**Allergic Conjunctivitis**

- Vital signs normal
- Visual acuity usually normal
- PERRLA, extraocular eye movements normal
- Pupil anterior chamber depth and intraocular pressure normal
- Cornea normal and unaffected
- Normal pupil with no mucopurulent discharge
- No hyperplasia of palpebral conjunctiva
- Eye discharge watery
- Look for signs of dermatitis, eczema
- Eye lid swelling
- Glassy appearance of eye

**DIFFERENTIAL DIAGNOSIS**

- Blepharitis
- Corneal abrasion
- Uveitis (iritis)

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- Herpetic keratoconjunctivitis
- Acute glaucoma
- Acute iridocyclitis
- Keratitis

**COMPLICATIONS**

- Spread of infection to other eye structures (e.g., subepithelial keratitis)
- Spread of infection to other household members, day care and school children if the client attends a school or day care
- Conjunctival scarring
- Lacrimal excretory obstruction
- Symblepharon formation (adhesion of eye lid to eye)

**INVESTIGATIONS AND DIAGNOSTIC TESTS**

- Measure visual acuity.
- Swab and culture exudate only if there is no resolution of symptoms after an empiric course of treatment or severe symptoms and suspicion of gonococcal infection.
- Fluorescein stain if symptoms do not respond to treatment in 2-3 days or concern about foreign body, corneal abrasion, or corneal ulceration which is demonstrated by dye uptake. There is no dye uptake in conjunctivitis.

**MAKING THE DIAGNOSIS**

Infectious Conjunctivitis

The three factors associated with bacterial conjunctivitis:

1. Early morning glued eye
2. Absence of itching
3. Absence of history of conjunctivitis

Allergic Conjunctivitis

- No photophobia, eye pain, lymphoid hyperplasia under lids or cobblestone papillae
- Usually bilateral

No evidence found on diagnostic usefulness of symptoms or signs for differentiating bacterial from viral conjunctivitis.

## MANAGEMENT AND INTERVENTIONS

### Goals of Treatment

- Identify corneal ulcer
- Rule out more serious infections such as gonorrhea or herpes
- Prevent household spread

### Appropriate Consultation

- Suspicion of keratoconjunctivitis or other more serious cause of red eye
- No improvement with treatment in 72-96 hours
- Client wears contact lenses (and would thus be at high risk for Pseudomonas conjunctivitis and keratitis)
- Suspicion of gonorrhea or chlamydial conjunctivitis, either of which requires systemic antibiotics
- No improvement of conjunctivitis after 24 hours of treatment in contact lens users

### Non-Pharmacological Interventions

- Apply cool, clean compresses to eyes, lids, and lashes as frequently as possible. Advise client to stop rubbing eyes.

### Pharmacological Interventions

- Never use steroid or steroid-and-antibiotic combination eye drops because the infection may progress or a corneal ulcer may rapidly form and cause perforation.

### Viral Conjunctivitis

- Cool compresses often provide excellent symptomatic relief (antibiotics are not helpful and are not indicated).

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**Bacterial Conjunctivitis**

Topical antibiotic eye drops for adult and children:

- Polymyxin B/gramicidin (Polysporin) eye drops, 1 drop qid for 5-7 days if the infection is mild  
Or
- Polymyxin B plus trimethoprim (Polytrim) eye drops q3-4h for 7-10 days. Use if methicillin-resistant *Staphylococcus aureus* (MRSA) positive.  
Or
- Erythromycin 0.5 % eye ointment 1.25 cm qid. The dose can be reduced from qid to bid if there is improvement after a few days. Can be used in children < 1 month of age.
- An antibiotic eye ointment may be used at bedtime in addition to the antibiotic eye drops (if same drug is available in both forms) during the day when clear vision is required.

**Allergic Conjunctivitis**

- Cool compresses often provide excellent symptomatic relief (antibiotics are not helpful and are not indicated). Eye lubricants may be used during the day to remove and dilute allergens.
- Topical antihistamines or mast cell stabilizer drops may be helpful if symptoms are not relieved by cool compresses, only after consultation with a physician/RN(NP). Topical antihistamines have a quicker onset than mast cell stabilizers which can take up to 5-14 days for effect.

**Eye Lubricants**

- Dextran 70 0.1% and hypromellose 0.3% drops or polyvinyl alcohol 1.4%
- Eye lubricants can be instilled 1 drop q4-6h for both adults and children
- Benzalkonium chloride as preservative may irritate eyes, especially if used  $\geq$  qid
- Refrigeration of dropper bottle may improve soothing effect

**Client and Caregiver Education**

- Counsel client/caregiver about appropriate use of medications (dose, frequency, instillation, compliance, etc.).



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- Advise client to avoid contamination of tube or bottle of medication with infecting organisms.
- Suggest ways to prevent spread of infection to other household members.
- Instruct client about proper hygiene of hands and eyes.
- For bacterial form: client may need school, day care, or work restrictions for 24-48 hours after treatments are initiated.
- For viral form: contagious for 48-72 hours but may last up to 2 weeks.
- For allergic form: recommend that client avoid going outside when pollen count is high and that protective glasses be worn to prevent pollen from entering the eyes.
- Do not allow client to use an eye patch.
- Do not allow client to use contact lenses until symptoms and signs resolve.

**Monitoring and Follow-Up**

- Clients with moderate or severe symptoms should be seen for follow-up at 24 and 48 hours.
- Viral conjunctivitis: refer if symptoms not resolved after 7-10 days or if corneal involvement.
- Bacterial conjunctivitis: refer if symptoms not improved within 3-4 days of treatment.
- Hyper-acute gonococcal conjunctivitis: follow-up daily, visual acuity daily, and refer if there is no improvement.
- All contact lens users with conjunctivitis should be reassessed after 24 hours. If no improvement, consult with a physician/RN(NP).

**Referral**

- Refer immediately if condition deteriorates, if symptoms persist despite treatment, or if symptoms recur.

**DOCUMENTATION**

- As per employer policy

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