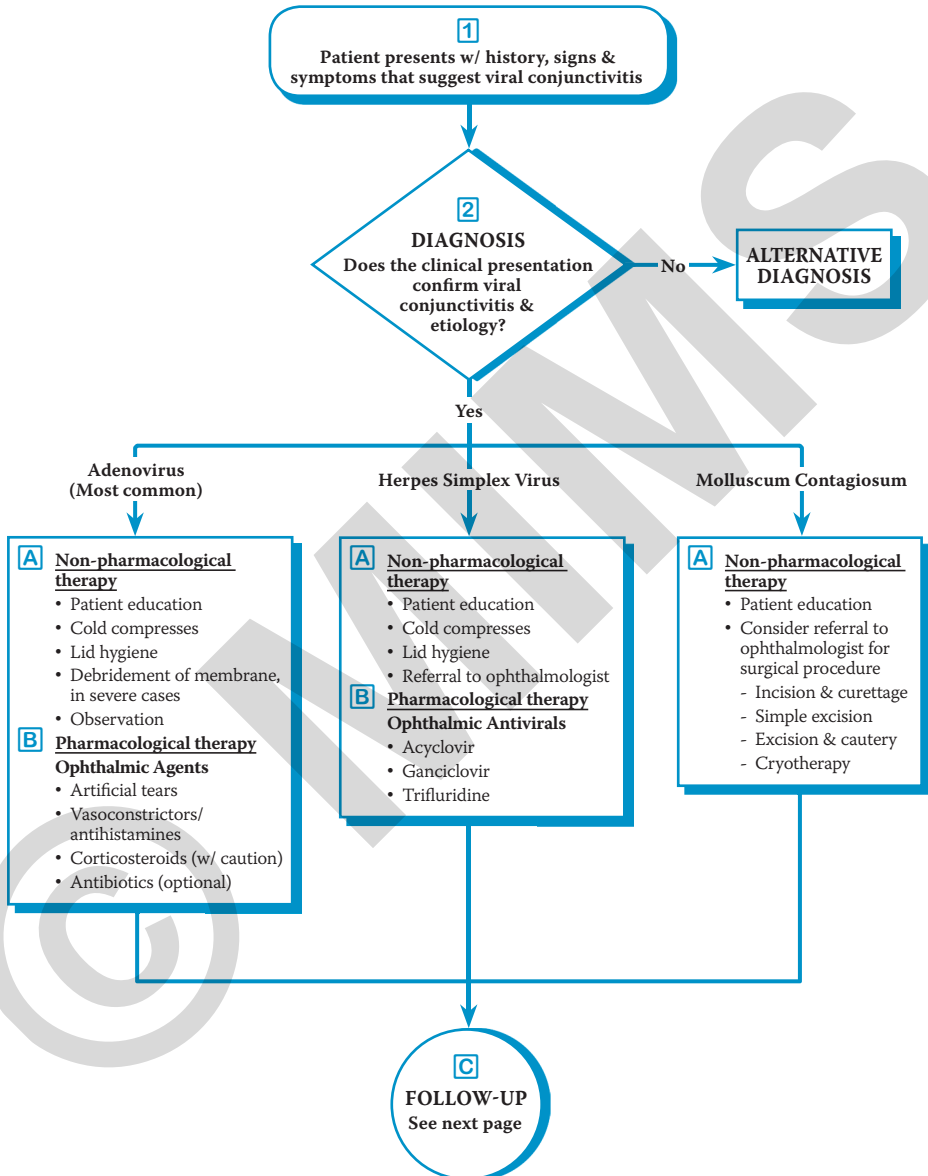


Conjunctivitis - Viral (1 of 6)



Not all products are available or approved for above use in all countries.
Specific prescribing information may be found in the latest MIMS.

FOLLOW-UP IN PATIENTS W/ VIRAL CONJUNCTIVITIS

Is condition responding to therapy?

No

Yes

- Evaluate patient compliance & confirm adequate dosing
- Consider different microorganism, resistant organism or different etiology
 - Review lab results as a guide to change in therapy
 - Consider performing culture & sensitivity studies

- Continue to follow-up & taper medications based on clinical course
- Frequency of follow-up visits may be reduced based on clinical improvement

1 DISEASE PRESENTATION

Viral Conjunctivitis

- Inflammation of the conjunctiva of viral etiology
 - May be a part of a viral prodrome or is the only symptom of a viral illness
 - Symptoms become worse for the first 3-5 days then gradually resolve in 2-3 wk

History, Signs & Symptoms

- Unilateral or bilateral eye redness
- Foreign body sensation
- Follicular conjunctival reaction

2 DIAGNOSIS

ETIOLOGIC DIAGNOSIS

Diagnosis	Epidemiology & Predisposing Factors	Natural History of Disease	Signs & Symptoms
Adenovirus	Relatively common & highly contagious. May occur in epidemics. Usually transmitted through direct physical contact w/ infected person or object	Self-limited w/ improvement w/in 5-14 days	Abrupt onset bilateral conjunctival injection (one eye may precede the other by a few days) w/ follicular reaction esp of the inferior tarsal conjunctiva, watery discharge, preauricular lymphadenopathy. Occasionally present: petechial or subconjunctival hemorrhage, pseudomembrane or true membrane. Superficial multifocal punctate keratitis may occur followed by subepithelial opacities. Filamentary keratitis may occur in patients who maintain their lids closed to minimize ocular discomfort.
Herpes simplex	Primary infection from infected individual	Usually subsides in 4-7 days w/o treatment unless there are complications	Usually unilateral. Conjunctival injection w/ follicular reaction, watery discharge. Primary infection: Follicular conjunctivitis & lid vesicles (blepharodermatitis). May have pseudomembrane, dendritic keratitis, preauricular lymphadenopathy
Molluscum contagiosum	Predominantly older children. Can also occur in immunocompromised patients	Conjunctivitis is associated w/ eyelid lesions which can spontaneously disappear or may last mth-yr	Typically unilateral but can be bilateral. Single or multiple shiny, dome shaped umbilicated lesions on the eyelid or lid margin. Mild to severe follicular reaction, punctate epithelial keratitis. May have corneal pannus in long standing disease

2 DIAGNOSIS (CONT'D)

Lab Tests

- Viral cultures & immunodiagnostic tests are not routinely used to establish diagnosis
- Nucleic acid amplification tests including polymerase chain reaction (PCR) may be available for certain viruses, but they are not validated for ocular specimens

A NON-PHARMACOLOGICAL THERAPY

Adenovirus

Patient Education

- Explain the natural history of the disease, particularly its highly infectious nature
- Educate the patient & family about proper hygiene

Prevention of Spread

- Infected individuals should be taught to wash hands frequently, use separate towels & to avoid close contact w/ others during the period of contagion (usually 7 days after onset of symptoms; some studies suggest contagion lasts 10 -14 days)
- Disinfect exposed surfaces & equipment w/ any appropriate disinfectant

Cold Compresses

- Reduce conjunctival congestion & edema
- Help relieve pain

Lid Hygiene

- Saline may be used as an eyewash along w/ cotton-tipped applicators or cotton balls to wipe off the discharge
- Helps relieve symptoms by mechanically removing debris & discharge & helps to minimize build-up

Debridement of Membrane or Pseudomembrane

- May be performed under topical anesthesia, if the child is cooperative
- Some conjunctival bleeding may occur when peeling true membranes, but this quickly resolves
- Helps improve comfort by mechanically removing debris & discharge

Herpes Simplex Virus

Patient Education

- Explain the natural history of the disease, particularly its potentially recurrent nature
- Educate the patient & family about proper hygiene

Prevention of Spread

- Infected individuals should be taught to wash hands frequently, use separate towels & to avoid close contact w/ others during the period of contagion
- Disinfect exposed surfaces & equipment w/ Na hypochlorite or any other appropriate disinfectant

Cold Compresses

- Reduce conjunctival congestion & edema
- Help relieve pain

Lid Hygiene

- Saline may be used as an eye wash along w/ cotton-tipped applicators or cotton balls to wipe off the discharge
- Helps relieve symptoms by mechanically removing debris & discharge & helps to minimize buildup

Referral to Ophthalmologist

- The potential sequelae & recurrent nature of the disease warrants a specialist referral; particularly if there is corneal involvement

Molluscum Contagiosum

Patient Education

- Explain that the conjunctivitis & the keratitis are due to the viral shedding from the eyelid lesions unto the surface of the eye
- Lesions may spontaneously resolve but can persist for mth-yr

Referral to Ophthalmologist

- For surgical management of the disease in symptomatic patients
- Conjunctivitis may require weeks to resolve after removal of lesions

B PHARMACOLOGICAL THERAPY

Adenovirus

- Treatment is symptomatic, there is no effective treatment against the adenovirus

Artificial Tears

- Provides symptomatic relief
- Assist in washing away debris & discharge

Vasoconstrictors/Antihistamines

- Gives symptomatic relief of itchiness, congestion

Corticosteroids

- Use is controversial, should only be used under the direct supervision of an ophthalmologist
 - Lowest potency & frequency that relieves patient's symptoms should be given
- Only used in severe cases of adenoviral keratoconjunctivitis w/ marked chemosis or lid swelling, epithelial sloughing, or membranous conjunctivitis
 - When used to reduce inflammatory signs, duration of use should be <7 days
- May also be used cautiously to decrease visually significant subepithelial cornea infiltrates
 - Some authorities feel that steroid use prolongs the course of the infiltrates
 - Tapering is usually required once subepithelial infiltrates have resolved
- Indiscriminate use of corticosteroids can possibly lengthen adenoviral infection & worsen HSV infection
- Patients on corticosteroid therapy should be advised precautions against the spread of the disease for an additional 2 wks after symptoms resolve
 - Corticosteroid use may enhance viral replication
- Corticosteroids that are less likely to cause an increase in intraocular pressure is preferred (eg Rimexolone, Loteprednol)

Antibiotics¹

- Optional; toxicity can result from indiscriminate use of topical antibiotics
- May be used as prophylaxis against bacterial infection especially if corticosteroids are used
 - Approximately 19% of patients being treated for adenoviral conjunctivitis have positive bacterial cultures

Herpes simplex virus (HSV)

Antivirals

- Recommended to reduce the severity & duration of the disease.
- May also decrease the chance of corneal involvement

¹Various broad spectrum ophthalmic antibiotics are available. Please see the latest MIMS for specific formulations.

C FOLLOW-UP

Adenovirus

- Patients w/ severe disease who have membranous conjunctivitis should be re-evaluated w/in the wk
- Other patients should be instructed to return in 1-2 wk if they continue to experience symptoms of red eye, decreased vision or eye pain
- Interval history, visual acuity & slit lamp exam are done
- Follow-up may be extended longer as the clinical picture improves (eg decrease in conjunctival reaction & discharge)
- Patients on corticosteroid therapy must also be seen every 4-8 wk; interval history, slit lamp exam & testing of visual acuity are done
 - Measure IOP & pupillary dilation at baseline & periodically
- Patients requiring repeat short-term topical corticosteroid therapy should be informed of its possible complications

Herpes Simplex Virus

- Patients should be re-evaluated w/in 1 wk
- Subsequent follow-up may be extended longer as the clinical picture improves
- Interval history, visual acuity & slit lamp examination are done on each visit
- Advice of possibility of recurrence of the disease in the future, in the form of conjunctivitis, blepharitis or keratitis. This can be brought about by stress or immunocompromised state

Molluscum Contagiosum

- Follow-up until conjunctivitis resolves

Dosage Guidelines

ANTIVIRALS ¹			
Drug	Available Strength	Dosage	Remarks
Aciclovir (Acyclovir)	3% ophth oint	Apply 8 hrly	Adverse Reactions Ocular effects (Transient stinging, itching, superficial punctate keratopathy, blepharitis, conjunctivitis)
Ganciclovir	0.15% ophth gel	Instill 1 drop 3-5x/day	Adverse Reactions Ocular effects (Mild burning or pricking sensation, superficial selective keratitis)
Trifluridine	1% ophth soln	Instill 1 drop 5x/day	Adverse Reactions Ocular effects (irritation, pain, stinging, conjunctivitis, edema & inflammation of eyelids, photophobia, less frequent pruritus, rarely, occlusion of lacrimal duct)
	1% ophth oint	Apply 6-8 hrly	

¹Use of ophthalmic antivirals is recommended for conjunctivitis caused by herpes simplex, but not for cases caused by adenovirus.

EYE CORTICOSTEROIDS			
Drug	Available Strength	Dosage	Remarks
Betamethasone	0.1% ophth soln	Instill 1 drop 6 hrly slowly tapered to the min effective dose	Adverse Reactions - Increased IOP that is dependent on conc, frequency & duration of use; & can lead to secondary glaucoma (irreversible optic nerve damage w/ visual field loss) - May aggravate ocular herpes simplex infection - May slow corneal wound healing; Infection of the cornea/conjunctiva; Cataract formation - Rarely: Transient stinging, burning; Ocular discharge, potential for systemic side effects Special Instructions - Topical corticosteroid treatment should be monitored by an ophthalmologist & is contraindicated inpatients w/ active ocular herpes simplex virus infection
Dexamethasone	0.1% ophth susp, gel		
Fluorometholone	0.02%, 0.1% ophth susp		
Loteprednol etabonate	0.5% ophth drops		
Prednisolone	0.12%, 1% ophth susp		
Rimexolone	1% ophth drops		

All dosage recommendations are for children w/ normal renal & hepatic function unless otherwise stated.

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Products listed above may not be mentioned in the disease management chart but have been placed here based on indications listed in regional manufacturers' product information.

Specific prescribing information may be found in the latest MIMS.

Dosage Guidelines

OPHTHALMIC DECONGESTANTS¹

Drug	Available Strength	Dosage	Remarks
Antazoline/ naphazoline	0.5%/0.025% ophth soln 0.5/0.05% ophth soln	Instill 1 drop 3-4 hrly	Adverse Reactions - Topical effects (transient ocular burning/stinging, bitter taste, blurred vision, mydriasis); Systemic effects (headache, rhinitis, hypertension, dizziness, cardiac irregularities) - More frequent dosing may increase the systemic side effects Special Instructions - Prolonged or overusage may result in rebound congestion - Avoid in patients w/ narrow angle glaucoma or occludable iridocorneal angles
Antazoline/ tetryzoline (Antazoline/ tetrahydrozoline)	0.05%/0.4% ophth soln	Acute treatment (1st 2 days): Instill 1 drop 3 hrly Continuous use: Instill 1 drop 8-12 hrly	
Naphazoline/ pheniramine	0.025%/0.3% ophth soln	Instill 1-2 drops 3-4 hrly or less frequently as required	
Phenylephrine/ pyrilamine	0.12%/0.1% ophth soln	Instill 1-2 drops 3-4 hrly as required	

¹Some ophthalmic antihistamines/vasoconstrictors are combined w/ Zn sulfate. Please see the latest MIMS for specific formulations.

OPHTHALMIC LUBRICANTS²

Drug	Available Strength	Dosage	Remarks
Carbomer	0.3% ophth soln	Instill 1-2 drops 6-8 hrly	Adverse Reactions - Ocular effects (Mild stinging, temporary blurred vision, edema of the eyelids) Special Instructions - Non-preserved artificial tears are preferred if frequent instillation is required - May be chilled prior to use - Carbomer is not recommended for childn <4 yr of age & for use w/ contact lenses
Carmellose (Carboxymethylcellulose)	0.5%, 1% ophth soln		
Hypromellose (Hydroxypropyl methylcellulose)	0.3%, 0.5% ophth soln		
Polyvidone (Povidone, Polyvinylpyrrolidone)	5% ophth soln		
Polyvinyl alcohol	1%, 1.4% ophth soln		
Potassium iodide/ Sodium iodide	0.3% ophth soln		
Propylene glycol	0.3%, 0.6% ophth soln		
Sodium hyaluronate	0.1%, 0.18% ophth soln		

²Many combination lubricant products including combinations w/ buffers & preservatives are available. Please see the latest MIMS for specific formulations.

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Please see the end of this section for the reference list.