Conjunctivitis
A Sight For Sore Eyes

FACULTY: Rachel Fritz OD

Conjunctivitis: A Sight for Sore Eyes

ACTIVITY DESCRIPTION

Conjunctivitis (pink eye) is very commonly misunderstood by the general public and is an often misdiagnosed ocular condition by primary care practitioners. This diagnosis involves three distinct pathologies: allergic, bacterial, and viral conjunctivitis. Mis-diagnosis can result in chronic patient symptoms and discomfort. It is important that pharmacists are aware of the need for proper diagnosis and are comfortable with the most effective topical treatment for each type of conjunctivitis. Patient education and treatment counseling is key to success.

TARGET AUDIENCE

The target audience for this activity is **pharmacists**, **pharmacy technicians**, and **nurses** in hospital, community, and retail pharmacy settings.

LEARNING OBJECTIVES

After completing this activity, the **pharmacist** will be able to:

- Differentiate (including causes, signs, & symptoms) between the 3 most common types of conjunctivitis: bacterial, viral, & allergic.
- Identify the most common and effective eye drops used to treat adults and children with bacterial conjunctivitis.
- Review the topical and palliative treatment of viral conjunctivitis.
- Describe both over the counter and prescription treatment of allergic conjunctivitis.
- Review prevention and patient counseling tips.

After completing this activity, the **pharmacy technicians** will be able to:

- List the three most common types of conjunctivitis.
- List over the counter, and prescription medications to treat those types of conjunctivitis

ACCREDITATION

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PharmCon, Inc. is accredited by the Accreditation Council for Pharmacy Education as a provider of continuing pharmacy education.

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The Eye Center Of Central Pennsylvania

ABOUT THE AUTHOR

Rachel Fritz O.D. is a practicing optometrist at The Eye Center of Central Pennsylvania. She graduated from the Pennsylvania College of Optometry at Salus University in Philadelphia, PA with a Doctor of Optometry degree. She earned a Bachelors of Science degree in Biology from Millersville University.

Dr. Fritz's optometric interests include the management of ocular disease (diabetic retinopathy, macular degeneration, etc.), glaucoma, pediatrics, and contact lenses. She enjoys humanitarian work, and has traveled to El Salvador, in order to provide eye care to the impoverished in remote villages. She is a member of the Gold Key Optometric Honor Society, the Beta Sigma Kappa Optometric Honor Society, the American Optometric Association, and the Pennsylvania Optometric Association. Dr. Fritz resides in Lewisburg, PA with her husband

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Activity
ACCREDITATION

Universal Activity Number
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1.0 contact hour(s)

Activity
INSTRUCTION

Faculty

Rachel Fritz, O.D.
The Eye Center of Central Pennsylvania

Faculty Disclosure
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Learning
OBJECTIVES

Differentiate (including causes, signs, & symptoms) between the 3 most common types of conjunctivitis: bacterial, viral, & allergic.
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Review the topical and palliative treatment of viral conjunctivitis
Describe both over the counter and prescription treatment of allergic conjunctivitis.
Review prevention and patient counseling tips.

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Objectives

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General Info

- Conjunctivitis= inflammation of the conjunctiva
  - Inflammation can be primary or secondary
- The conjunctiva
  - Thin semi-transparent membrane
  - Bulbar section - covers the sclera (white of eye)
  - Palpebral section - covers inside of upper and lower eyelids
  - Highly vascularized

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General Info

- To general public called "pink eye"
  - Covers a wide range of conditions
    - Classified according to underlying condition
      - Allergic - atopic, **simple allergic, seasonal**, vernal, giant papillary
      - Bacterial - **acute** and chronic
      - Viral- **adenoviral**, herpetic
      - Other - chlamydial, contact lens-related, mechanical, traumatic, toxic, neonatal, parinaud oculoglandular syndrome, phlyctenular, and secondary forms
- We will only cover basics of the most common forms today
  - Pathology, signs, symptoms, treatment, patient counseling

Keep in mind….

- Not all red eyes are conjunctivitis!!
- Frequent misdiagnosis by PCP or ER
  - Prolonged patient suffering
  - Additional cost is a burden
    - Extra appointment = time off work, copays, etc.
    - Different prescription needed
- Serious visual impairment can result if pt does not receive appropriate dx and tx for some eye conditions

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Keep in mind….

- If pt is in pain they need to see an eyecare provider
  - Putting off exam can lead to serious ocular complications

- Patients who wear contacts and have any eye redness/irritation need an eye exam, should not be treated by PCP
  - High risk of infectious ulcers (vision threatening)
  - Frequently inflammatory and antibiotics won't help

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Bacterial Conjunctivitis

General Info

- Eye has excellent normal defense mechanisms to prevent infection
  - Bacteriostatic factors in tears, nutrient-poor tears, & blinking
  - Reflex tearing
- Allergic and viral conjunctivitis more common
- Hyperacute (gonorrhea), **acute,** and chronic- longer than 4 weeks (blepharitis)

General Info

- Those at risk
  - More common in children
  - Contact lens wearers (ulcers!)
- Common bacteria involved:
  - *Haemophilus influenzae, Streptococcus pneumoniae, Staphylococcus aureus,* and *Pseudomonas aeruginosa*
- Acute condition is generally self-limiting lasting less than 3 weeks
  - Patient tx to decrease symptoms, decrease duration, and reduce recurrence

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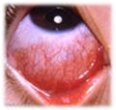
Symptoms

- Typically begins in 1 eye and spreads to other within 24-48 hrs
- Mucopurulent discharge
  - Eyelids matted ("eyelids glued shut in AM")
- Diffuse redness
- Photophobia with tearing
- Ocular discomfort and burning

Signs



- Diffuse injection of conjunctiva
- Mucopurulent discharge (white/cloudy)
- Conjunctival papillary reaction
- Corneal involvement rare

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Treatment

- General Tips
  - Want broad spectrum topical antibiotic
  - Bacterial resistance is becoming a problem in all drug classes especially fluoroquinolones
    - Never taper antibiotic
    - Never rx less than suggested
  - Dosed usually QID for 5-7 days
    - Choose drops with less dosing for better patient compliance and decreased corneal toxicity

Treatment

- General Tips
  - Ointment options available
    - Not used in adults as blurs vision
      - Only used for overnight therapy but not necessary in acute conjunctivitis
    - Great to use QID in crying kids
  - No need to culture unless unresponsive to drops or recurrent

Treatment

Fluoroquinolones

- Good broad spectrum coverage, better gram + in newer generations (MRSA)
- Increasing bacterial resistance in lower generation drops
- Approved for 1 yr of age and older

- Ciprofloxacin (Ciloxan®)
- Ofloxacin (Ocuflox®)
- Gatifloxacin (Zymaxid®)
- Moxifloxacin
  - Moxeza®
    - Xanthan gum allows prolonged contact time (lacks BAK)
    - Approved for those age greater than 4 months old, dose bid in kids
  - Vigamox®
- Besifloxacin (Besivance®) - Suspension

Treatment

Polymyxin B combinations

- Polytrim® (polymyxin B/trimethoprim)
  - Approved for use in ages 2 months and up
  - Available as a solution
- Polysporin® (polymyxin B/bacitracin)
  - Ointment only - can augment daytime drops
  - Broad spectrum
- Neosporin®
  - Solution (polymyxin B/neomycin/gramicidin)
  - Ointment (polymyxin B/neomycin/bacitracin)
  - Minimally used due to type 4 delayed hypersensitivity rxn

Treatment

Aminoglycosides

- Gentamicin (Garamycin®)
- Tobramycin (Tobrex®)
  - Approved for 2 months and older
  - Can be toxic to corneal epithelium if used for extended period
  - Both available in soln and oint
  - Highly efficacious

Treatment

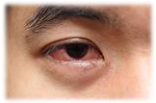
Macrolides

- **AzaSite** (azithromycin)
  - Dosed BID
  - For those 1+ yrs old.
  - Solution

Bacitracin and erythromycin ointments not useful in conjunctivitis treatment, only used ophthalmically in addition to other topical therapies

Treatment

- In some cases patients have concurrent inflammation with infection
  - Conjunctiva is chemotic
  - Papillary reaction severe
  - Keratitis present
  - Severe pt discomfort
- Can add a topical steroid with use of antibiotic
  - Antibiotic/steroid combination drops for easier dosing schedules



Treatment

Antibiotic/steroid combos

- Typically dosed TID-QID with no taper
  - Tobradex® (tobramycin-dexamethasone)
  - Zylet® (tobramycin-loteprednol)
  - Maxitrol® (neomycin-polymixin B sulfate-dexamethasone)

Patient Counseling

- Frequent hand washing
- Use clean washcloth every time during infection
- Limit direct personal contact
- Preservative free artificial tears prn
- Use drops as directed for entire suggested treatment length

Extra Info

- Chlamydial and Gonococcal Conjunctivitis
  - Should be considered with persistent infection despite topical antibiotic treatment
  - Signs vary from each other
  - Must treat underlying STD with PO or IM antibiotics as indicated

Viral Conjunctivitis

Pathology

- Incubation period usually 5-10 days
- Highly contagious for 12-14 days
  - Adenovirus has been recovered from nonporous surfaces for up to 49 days
- Transmission thru direct contact
  - Respiratory or ocular secretions
  - Contaminated towels or equipment

Pathology

- More common in adults
- Most common cause is adenovirus
  - Likely represent the most common external ocular infection
- Commonly result from recent URI or nasal mucosa infection

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Pathology

- 3 types of ocular adenovirus
  - Acute nonspecific follicular conjunctivitis
    - Most common
  - EKC (epidemic keratoconjunctivitis)
    - Most serious - effects cornea (and always + nodes)
    - Affects 20-40 yrs old
  - PCF (pharyngoconjunctival fever)
    - low grade fever and sore throat
    - More common in kids

Symptoms

- Diffuse red eyes
- Photophobia
- Tearing
- Mild discomfort - foreign body sensation
- Usually begins in 1 eye and spreads to the other

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Signs

- On examination find
  - Tender preauricular lymph node
  - Follicles on inside of inferior eyelid
  - Diffuse conjunctival injection
  - Chemosis with injection
  - Clear discharge - tearing
  - Infiltrates / pseudomembranes
  - Petechial hemorrhages on bulbar conj
  - Eyelid edema
  - Advanced signs - punctate keratitis, corneal subepithelial infiltrates

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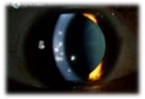
Treatment

- This conjunctivitis is self limiting
  - Usually lasting 10-14 days
- Can also use mild vasoconstrictors and artificial tears
- Patients with severe ocular signs may benefit from mild topical corticosteroid treatment
  - Infiltrates
  - Keratitis
  - Chemosis



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Treatment

- Before initiating steroid tx must be sure that dx is correct!
  - Topical corticosteroids can worsen some ocular conditions
    - HSV and HZV - ocular herpetic lesions can be exacerbated by steroid tx topically
      - Similar patient symptoms but with very different corneal exam findings

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Treatment

Mild topical corticosteroids
- QID dosing
- Can do a fast taper
- Total topical treatment usually 1-2 weeks

- Loteprednol etabonate
  - Lotemax® 0.5%
  - Lotemax® gel
  - Alrex® 0.2%
- Fluorometholone
  - FML® suspension (must shake)
  - FML® ointment

Treatment

Potent Topical corticosteroids
- NOT used unless severe ocular signs
  - Pred Forte® (prednisolone acetate)
    - QID for associated keratitis
  - Durezol® (difluprednate)
    - **should not be used for conjunctivitis**
    - TOO powerful
    - Higher chance of steroid response

Patient Counseling

- Highly contagious nature - pt education is key
  - Hand washing!!
  - Use separate towels (hand towels, washcloths)
  - Limit direct personal contact
- Cold compress to reduce discomfort
- Preservative free artificial tears

Allergic Conjunctivitis

Pathology

- 2 categories
  - Seasonal allergic conjunctivitis
    - Type 1 hypersensitivity reaction
    - Triggered by airborne allergens (pollen)
    - Recurrent, self limiting
  - Simple allergic conjunctivitis
    - Exposure to wide variety of allergens to ocular surface
    - Commonly from eye medications or CL solutions
      - Remove causative agent and rx steroid

Symptoms

- Bilateral recurrent episodes
- Can range from mild to moderate
  - Itching!
  - Very mild conjunctival hyperemia
  - Watering
  - Stringy discharge
- Symptoms typically flare up during seasonal allergy

Signs

- Papillae on inside of lower eyelid
- Clear/stringy discharge
- Typically no conjunctival hyperemia to trace findings
- Chemosis

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Treatment

Topical Allergy Drop Categories

- Antihistamine/mast cell stabilizer
  - Most commonly used today because on fast acting and effectiveness
- Ocular antihistamines
- Mast cell stabilizers
  - Alamast® (pemirolast), Alocril® (nedocromil), cromolyn sodium
  - Drugs must be used prior to histamine release or are ineffective

Treatment

Antihistamine/mast cell stabilizers

- Suppress ocular itching
- Can be used as long term maintenance or for allergy flare ups
- Very good safety profile
  - Most approved for ages 3 and up
- Most are Pregnancy category C

Treatment

Antihistamine/mast cell stabilizers

- Olopatadine hydrochloride
  - Pataday®
    - 0.2% concentration
    - Dosed QAM
  - Pazeo®
    - 0.7% newest concentration
    - Dosed QAM
  - Patanol®
    - 0.1%
    - Dosed BID

Treatment

Antihistamine/mast cell stabilizers

- Lastacaft® (alcaftadine)
  - Dosed QAM
  - Approved for age 2 and older
  - Pregnancy category B
- Elestat® (epinastine HCl)
  - Dosed BID
- Bepreve® (bepotastine besilate)
  - Dosed BID
  - Comes in 10ml bottle size
  - Approved for ages 2 and up

Treatment

Antihistamine/mast cell stabilizers

- Optivar® (azelastine hydrochloride)
  - Dosed BID
- Emadine® (emedastine difumarate)
  - Dosed **QID**

Treatment

Over the counter options

- Antihistamine/mast cell stabilizers
  - Ketotifen fumarate
    - Zaditor®
    - Alaway® - come in 10 ml bottle
    - Refresh® eye itch relief
    - All dosed BID
  - Pheniramine/naphazoline
    - Opcon-A®, Naphcon-A®, Visine-A®
      - Antihistamine and sympathomimetic (reduces redness)

Treatment

Topical corticosteroids

- Can be useful in severe flare ups with significant symptoms and exam signs
- Only used for short periods
- Mild topical steroids used only
  - More potent drops reserved for very severe acute cases
- Dosing differs depending on ocular signs usually QID
  - Amount is then tapered over about 2-4 weeks
  - Pt can then be switched to antihistamine/mast cell stabilizer for long term management

Treatment

Mild topical corticosteroids

- Loteprednol etabonate
  - Lotemax 0.5%
  - Lotemax gel
  - Alrex 0.2%
- Fluorometholone
  - FML suspension (must shake)
  - FML ointment

Treatment

Potent Topical corticosteroids

- NOT used unless very severe ocular signs and pt discomfort
  - Pred Forte® (prednisolone acetate)
    - QID to BID dosing with slow taper

Patient Counseling

- Cold compresses are always helpful
  - Vasoconstric and help stabilize reaction
- Many times once allergy eye symptoms are controlled patients can reduce BID dosing to QAM

Patient counseling

- Many patients tend to dose PRN as symptoms arise throughout the year
  - Pt need educated about what ocular allergy symptoms are
- Supplement with artificial tears as needed
  - Typically dry eye is also a factor in these patients
  - Preservative free is best option

Miscellaneous forms

- GPC - Giant Papillary Conjunctivitis
  - Type of allergic conjunctivitis from contact lens wear
  - Change CL material and decrease wearing, rx mild steroid
- CLARE (contact lens-induced acute red eye)
  - From CL overwear especially sleeping in CL.
  - Pt wakes up with painful red eye, tearing, and photophobia
  - D/C CL wear, rx steroid, future refit into different lens (dailies), change lens hygiene habits
- Chemical conjunctivitis
  - Flush eye thoroughly until pH returns to normal. Rx likely antibiotic/steroid combo, copious lubrication
- Blepharokeratoconjunctivitis
  - From primary eyelid inflammation and flaking

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Exam Questions

1. What is the most appropriate dosing of a fluoroquinolone for acute bacterial conjunctivitis?
    a. Q 1 Hr
    b. QID
    c. BID
    d. QD

2. What is the most appropriate length of treatment when treating bacterial conjunctivitis?
    a. 3 days
    b. 7 days
    c. 10 days
    d. 15 days

3. Which drop is a newer generation fluoroquinolone with great broad-spectrum coverage?
    a. Moxeza
    b. Ciprofloxacin
    c. AzaSite
    d. Ofloxacin

4. An antibiotic/steroid combination drop could be prescribed for treatment of which ocular condition?
    a. Allergic conjunctivitis
    b. Bacterial conjunctivitis
    c. Viral conjunctivitis
    d. Herpes simplex keratitis

5. Mucopurulent discharge is characteristic of which ocular condition?
    a. Allergic conjunctivitis
    b. Bacterial conjunctivitis
    c. Viral conjunctivitis
    d. Herpes simplex keratitis

6. Which ocular condition is highly contagious for 12-14 days?
    a. Allergic conjunctivitis
    b. Bacterial conjunctivitis
    c. Viral conjunctivitis
    d. Herpes simplex keratitis

7. Which topical antihistamine/mast cell stabilizer combo has QD dosing?
    a. Lastacaft
    b. Patinol
    c. Elestat
    d. Bepreve

8. Which ophthalmic drop can be used PRN by a patient as symptoms arise?
    a. Zymaxid
    b. Pred forte
    c. Tobradex
    d. Pataday

9. The biggest symptom of those suffering from allergic conjunctivitis is?
    a. Itching
    b. Burning
    c. Photophobia
    d. Eye redness

10. Which drop category can be used in a patient suffering with a flair up of allergic conjunctivitis with significant signs and symptoms?
    a. Antibiotic
    b. Antibiotic/steroid combo
    c. Mild corticosteroid
    d. Potent corticosteroid