CONJUNCTIVITIS

WHAT IS CONJUNCTIVITIS?

- Commonly Referred to as “Pink Eye”
- An inflammation of the conjunctiva
- Very common among young children particularly those in school and day-care

Parson's " Diseases of the Eye ". BY SIR STEWART DUKE-ELDER.

CONJUNCTIVITIS: COMMON SYMPTOMS

- ✓ Redness
- ✓ Stickiness
- ✓ Grittiness
- ✓ Lacrimation
- ✓ Sometimes photophobia
- ✓ Other possible symptoms include burning sensation and dryness of eye.

Parson's " Diseases of the Eye ". BY SIR STEWART DUKE-ELDER.

CONJUNCTIVITIS: TYPES

- Conjunctivitis is of Two types namely:

➢ Infective

➢ Non Infective

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CONJUNCTIVITIS: COMMON CAUSES

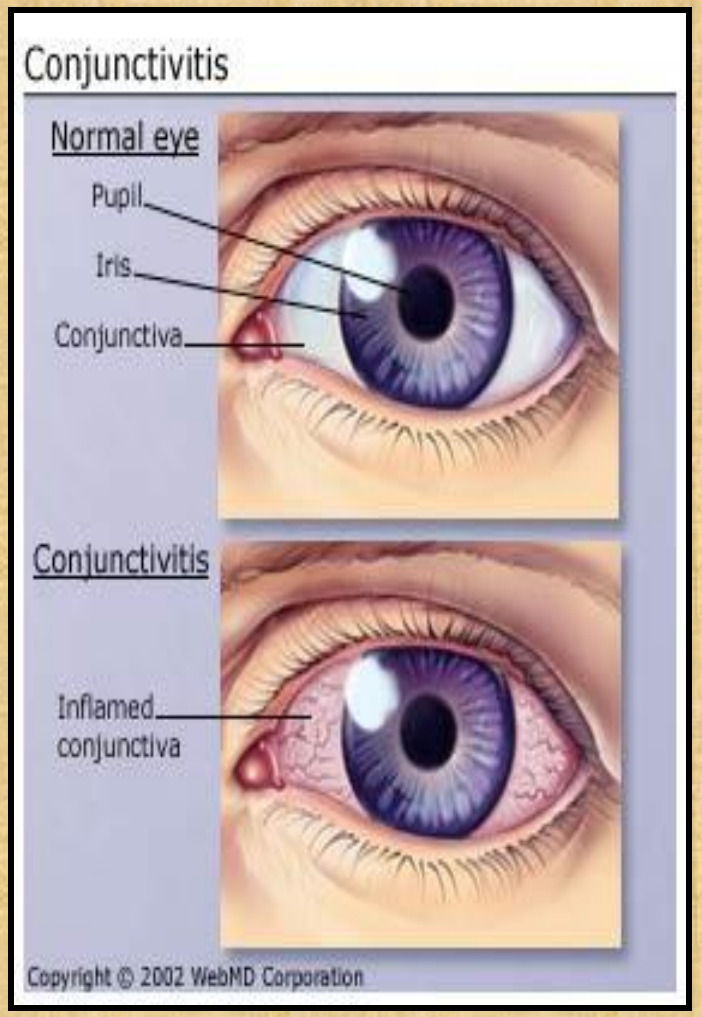
- Infectious conjunctivitis accounts for **70% of cases is caused by Bacteria**

- Non infective accounts for remaining 30% and is caused by Allergies(Pollen or grass), Irritants, Endogenous agents, Toxic(Drug induced or chemicals).

Parson's " Diseases of the Eye ". BY SIR STEWART DUKE-ELDER.

Bacterial Conjunctivitis

- A microbial infection involving the mucous membrane of the surface of the eye
- Usually a benign self-limited illness, Sometimes can be serious or signify a severe underlying systemic disease
- It usually affects one eye but may spread easily to the fellow eye
- It is more common in children than in adults



http://www.ghi.com/WebMD/topics/conjunctivitis.jpg
http://emedicine.medscape.com/article/1191730-overview

Bacterial Conjunctivitis: Prevalence

- Bacterial conjunctivitis is a common condition among young and adults all over the United States
- Some form of conjunctivitis, bacterial and viral, are found in 1.6 percent to 12 percent of all newborn babies in the United states

http://www.scumdoctor.com/disease-prevention/eye-diseases/red-eye/Bacterial-Conjunctivitis-Prevalence-In-United-States.html

Bacterial Conjunctivitis: Prevalence Indian data

- In a survey done to study the etiological agents of conjunctivitis over a period of four years (2001 to 2004), the prevalence of bacterial conjunctivitis was found to be 20.4%

- A predominance of *Staphylococcus aureus* (87.2%) followed by *Streptococcus pneumoniae* (4.7%) and gram negative rods (*E.coli* + *Klebsiella* spp. + *Pseudomonas* spp.) in 8.1% swabs.

Indian J Pathol Microbiol 2005; 48(4):538-541

Bacterial Conjunctivitis: Pathophysiology

- The surface tissues of the eye and the ocular adnexa are colonized by normal flora such as *Streptococci*, *Staphylococci*, and *Corynebacterium* strains.
- Alterations in the host defense or in the species of bacteria can lead to clinical infection.
- Alteration in the flora can occur by external contamination, by spread from adjacent sites, or via a blood-borne pathway.

http://emedicine.medscape.com/article/1191730-overview

Bacterial Conjunctivitis: Risk factors

- Frequent exposure to infected individuals
- Sinusitis
- Immunodeficiency states
- Exposure to agents of sexually transmitted disease at birth.

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AETIOLOGICAL AGENTS

Neonates	Children	Adults
Chlamydia trachomatis	*Haemophilus influenzae*	*Staphylococcus aureus*
Staphylococcus aureus	*Streptococcus pneumoniae*	*Haemophilus influenzae*
Haemophilus influenzae	*Staphylococcus aureus*	*Streptococcus pneumoniae*
Streptococcus pneumoniae	*Moraxella species*	*Chlamydia trachomatis*
Neisseria gonorrhoeae	*Coagulase negative Staphylococci*	*Coagulase negative Staphylococci*

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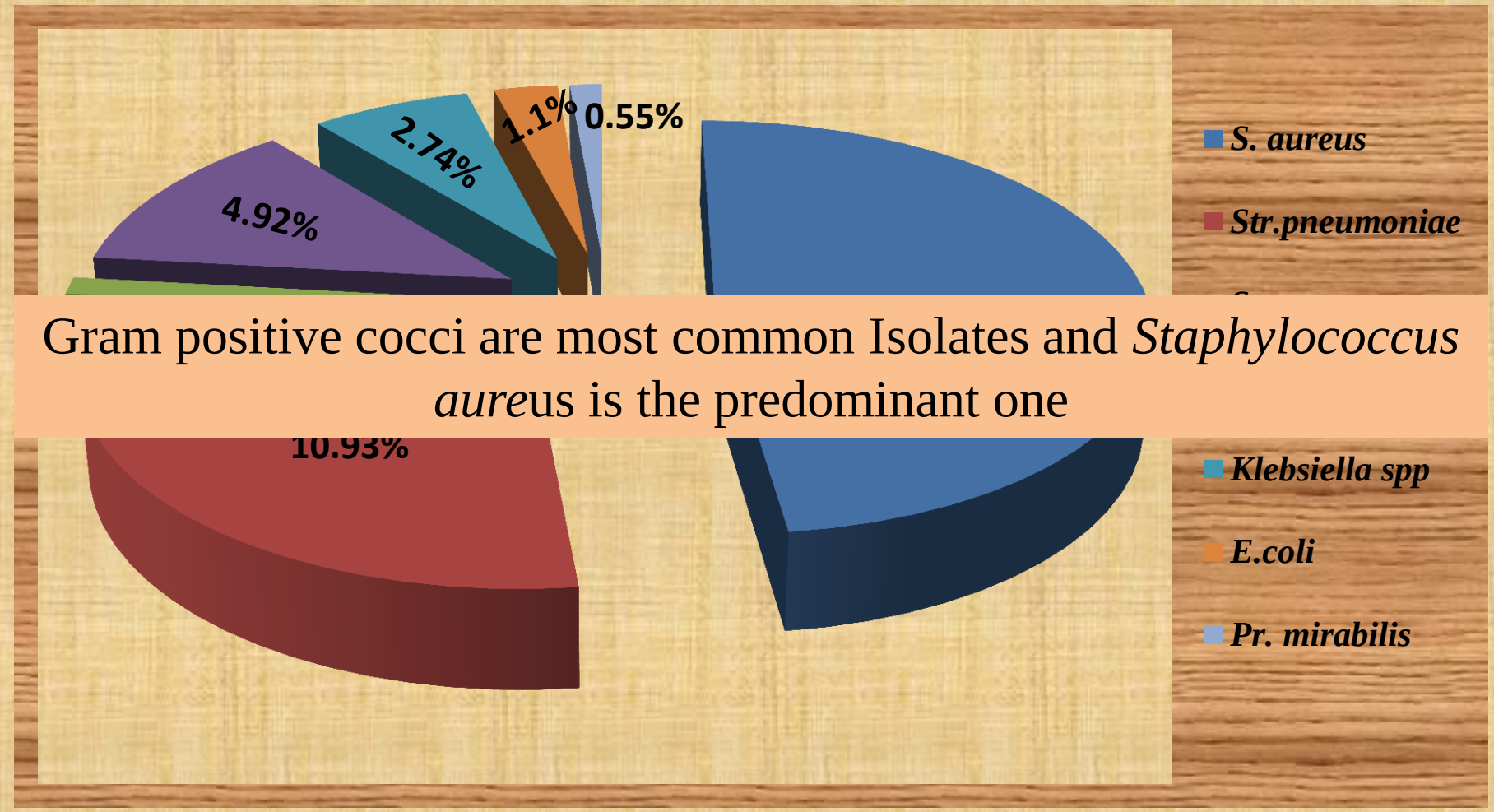
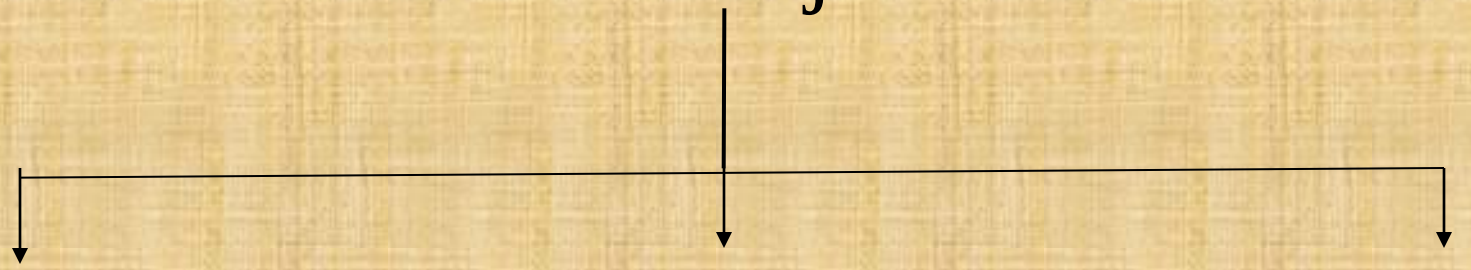
COMMON CAUSES OF INFECTION



Gram positive cocci are most common Isolates and *Staphylococcus aure*us is the predominant one

B L Sherwal, AK Verma. Epidemiology of Ocular Infection Due to Bacteria and Fungus – A Prospective Study. JK SCIENCE .Vol. 10 No.3, July-September 2008

Bacterial Conjunctivitis



HYPERACUTE **ACUTE** **CHRONIC**

Bacterial Conjunctivitis: Symptoms

Etiology	Condition	Onset/Duration	Symptoms
BACTERIAL	Hyperacute	Acute	Purulent discharge, sometimes pain
	Acute	Acute	Tearing, lid crusting
	Chronic	Chronic	Lid crusting, foreign body sensation

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Bacterial Conjunctivitis: Signs

Etiology	Conjunctival Response	Preauricular Lymphadenopathy	Discharge
BACTERIAL	Intense diffuse hyperemia, papillae	Occasional	Copious purulent
	Moderate diffuse hyperemia, papillae	Unusual	Purulent-mucopurulent
	Low-grade hyperemia, mixed follicles/papillae	Unusual	Mucopurulent

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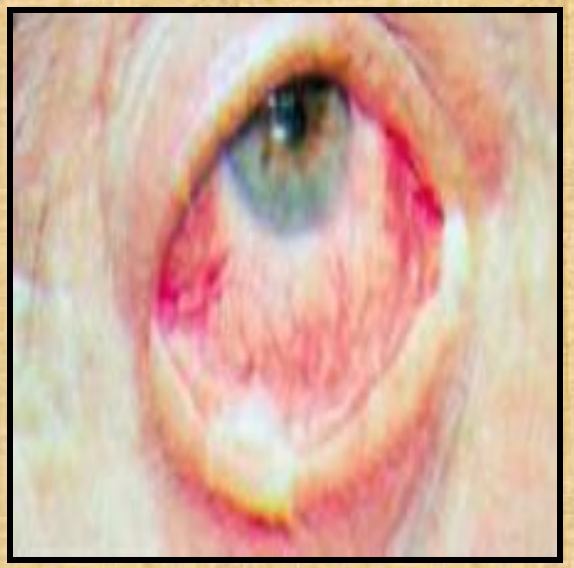
HYPERACUTE BACTERIAL CONJUNCTIVITIS

- *Neisseria gonorrhoeae* is frequent cause in sexually active patients. It also causes conjunctivitis in new born babies (ophthalmia neonatorum).
- In children conjunctivitis is due to *Neisseria meningitidis*
- Incubation period is few hours to 3 days.
- Symptoms and Signs: Eyelid oedema, Severe, continuous and copious purulent discharge, chemosis, discomfort and pain



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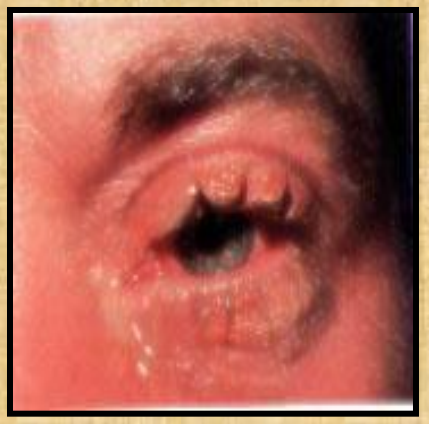
ACUTE BACTERIAL CONJUNCTIVITIS

- **The most common pathogens are:**
  - ❖ *Streptococcus pneumoniae*
  - ❖ *Haemophilus influenzae*
  - ❖ *Staphylococcus aureus*
- **Symptoms and Signs:** Acute onset of unilateral discharge, irritation, and diffuse conjunctival hyperemia.
- The tarsal conjunctiva usually features a papillary response.
- Mucopurulent/purulent discharge is common in acute bacterial conjunctivitis
- Preauricular Lymphadenopathy is generally absent.
- The fellow eye typically becomes involved within 48 hours.



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CHRONIC BACTERIAL CONJUNCTIVITIS

- **The common pathogens are:**
  - ❖ *Staphylococcus aureus*
  - ❖ *Chlamydia trachomatis*

- **Symptoms and Signs:** Patients often experience chronic (longer than 4-week) irritation, foreign body sensation, and low-grade conjunctival hyperemia.

- A papillary or follicular reaction can occur, and mucoid discharge may be present.

- Chronic conjunctivitis is often accompanied by lid hyperemia and eyelid crusting that are typically present in the morning

Chlamydia may cause three clinical syndromes:

Trachoma

Acute inclusion conjunctivitis

Inclusion conjunctivitis from Chlamydial infection. Note the mucopurulent discharge in the lower left corner.

Neonatal conjunctivitis

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MEMBRANOUS CONJUNCTIVITIS

- The conjunctival surface is covered by fibrinous membrane.

- The aetiological agents are:
- *Corynebacterium diphtheriae*
- *Streptococcus*
- *Pneumococcus*

- Symptoms and Signs: Swelling of lids with mucopurulent discharge. White membrane develops which may be True or Pseudomembrane. Preauricular adenopathy. Throat infection and fever may be present.

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Bacterial Conjunctivitis: Diagnosis

- **Laboratory Studies:** Conjunctival scrapings and cultures most often are used in laboratory studies.
- Conjunctival scrapings can be performed with topical anesthetic and gentle use of a platinum spatula or similar blunt metallic object
- Cultures can be completed for viral, chlamydial, and bacterial agents.
- If testing for *N gonorrhoeae*, specific procedures should be followed to optimize the yield.

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CONTD…..

- Gram stain is useful to identify bacterial characteristics.
- Giemsa stain is helpful to screen for intracellular inclusion bodies of *Chlamydia*.
- Additionally, the nature of the inflammatory reaction is reflected in the cellular response.

✓ Lymphocytes: viral infections
✓ **Neutrophils: Bacterial infections**
✓ Eosinophils : allergic reactions

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DIFFERENTIAL DIAGNOSIS

	AC	VKC	AKC	GPC	DES	Bacterial	Viral
SIGNS							
Chemosis	+	+/-	+/-	+/-	-	+/-	+/-
Lymph Node	-	-	-	-	-	-	+/-
Discharge	**Clear Mucoid**	**Stringy Mucoid**	**Stringy Mucoid**	**Clear White Mucoid**	**± Mucoid**	**Mucopurulent**	**Clear Mucoid**
Lid Involvement	-	+	+	-	-	+	-

AC- Allergic conjunctivitis
AKC- Atopic keratoconjunctivitis
GPC- Giant papillary conjunctivitis
VKC- Vernal Keratoconjunctivitis
DES- Dry eye syndrome

Immunol Allergy Clin N Am 28 (2008) 1–23

CONTD….

Symptoms	AC	VKC	AKC	GPC	DES	Bacterial	Viral
Pruritus	+	++	++	++	-	-	-
Burning	-	-	-	-	+	-	++
Gritty Sensation	+/-	+/-	+/-	+	+++	+	+
Seasonal Variation	+	+	+/-	+/-	-	+/-	+/-

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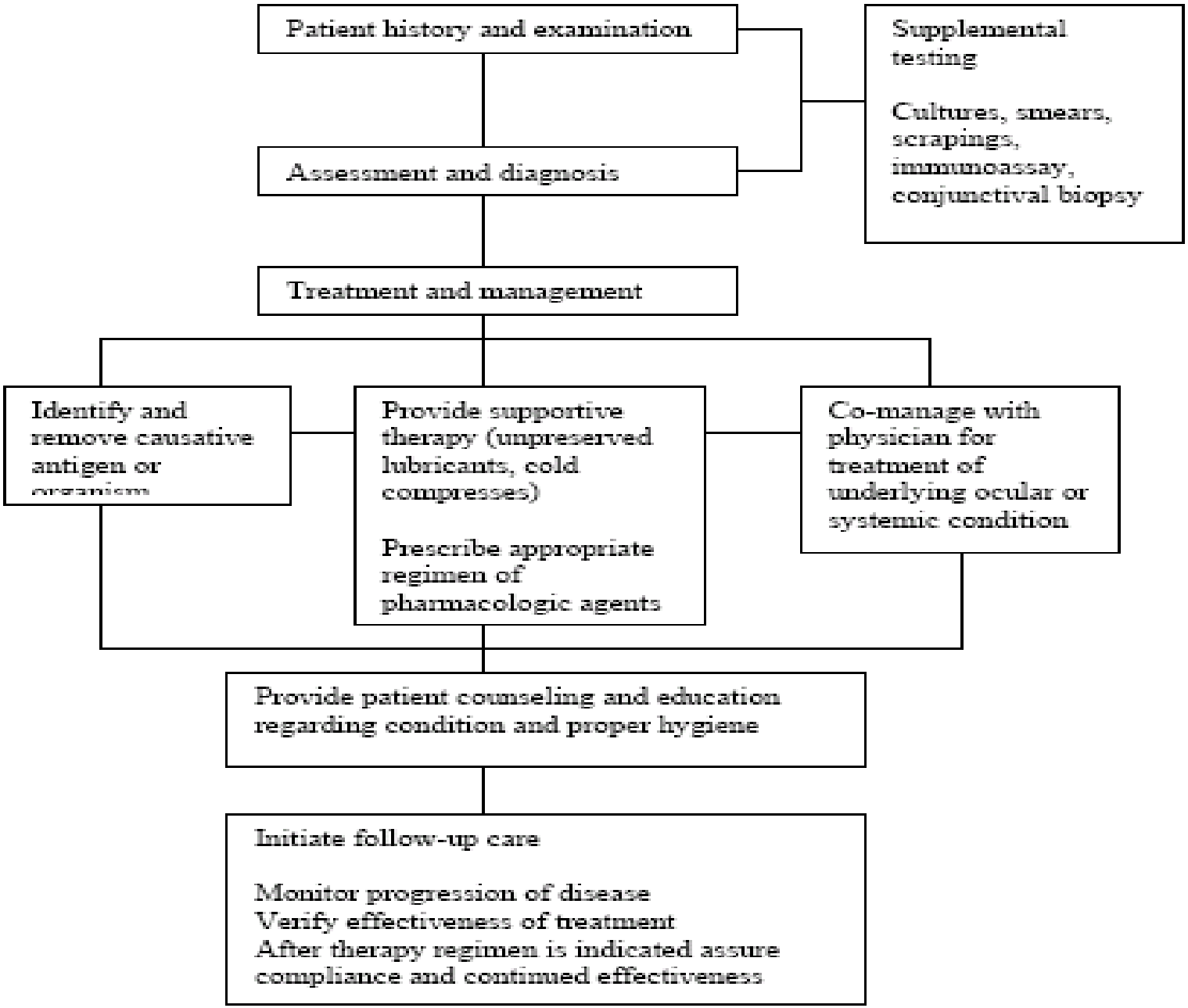
Optometric Management of the Patient With Conjunctivitis

A Brief Flowchart



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Bacterial Conjunctivitis: Medical Management

- The mainstay of medical treatment of bacterial conjunctivitis is topical antibiotic therapy
- Systemic antibiotics are indicated for *N gonorrhoeae* and chlamydial infections.
- Practice patterns for prescribing topical antibiotics vary.
- Most practitioners prescribe a broad-spectrum agent (Moxifloxacin, Gatifloxacin) on an empirical basis without culture for a routine, mild-to-moderate case of bacterial conjunctivitis.

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Type of Antimicrobial Agent	Spectrum of Activity (Genus or Species)	Concentration	Frequency of Administration
Aminoglycoside (gentamicin/tobramycin)	*Staphylococcus*, *Streptococcus*, *Haemophilus*, *Proteus*, *Escherichia coli*, *Moraxella*, *Pseudomonas*	0.3%	q.2h. to qid.
Bacitracin zinc	*Staphylococcus*, *Streptococcus*, *Neisseria*	500 U/g (ointment)	q.h.s. to qid.
Chloramphenicol	*Staphylococcus*, *Haemophilus*, *Proteus*	1.0% (ointment) 0.5% (solution)	q.2h. to qid.

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Type of Antimicrobial Agent	Spectrum of Activity (Genus or Species)	Concentration	Frequency of Administration
Erythromycin	*Staphylococcus, Streptococcus, Neisseria, Haemophilus*	0.5% (ointment)	q.h.s. to qid.
Fluoroquinolone (ciprofloxacin, ofloxacin, levofloxacin)	*Staphylococcus, Streptococcus, Haemophilus, Pseudomonas*	0.3%–0.5%	q.2h. to qid.
Polymyxin B/neomycin	*Staphylococcus, Proteus, Moraxella, Pseudomonas*	16,250 U; 3.5 mg/ml	qid.
Polymyxin B/trimethoprim sulfate	*Staphylococcus, Streptococcus, Proteus, Escherichia coli, Haemophilus*	10,000 U; 1 mg/ml	q.3h.

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Type of Antimicrobial Agent	Spectrum of Activity (Genus or Species)	Concentration	Frequency of Administration
Sodium sulfacetamide	*Streptococcus*, *Haemophilus*, *Moraxella*	10%–30%	q.2h. to qid.
Sulfisoxazole diolamine	*Streptococcus*, *Haemophilus*, *Moraxella*	4.0%	qid.
Tetracycline	*Staphylococcus*, *Neisseria*, *Escherichia coli*	1.0%	q.2h. to qid.

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Treatment Of Neonatal Conjunctivitis

- *Chlamydial* infection of the newborn requires systemic treatment of the neonate, the mother, and at-risk contacts.

❖ The neonate may be treated with erythromycin orally in liquid form 50 mg/kg/day in 4 divided doses for 2 weeks.

❖ The mother and at-risk contacts may be treated with doxycycline 100 mg orally twice daily for 7 days.

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Treatment Of Neonatal Conjunctivitis

- ***N gonorrhoeae* infection of the newborn also requires systemic treatment of the neonate, the mother, and at-risk contacts.**

  - The neonate may be treated with intravenous aqueous penicillin G 100 units per kg per day in 4 divided doses for 1 week.
  - The mother and at-risk contacts may be treated with a single dose of intramuscular Ceftriaxone 125 mg followed by oral doxycycline 100 mg twice daily for 7 days.

- Prophylaxis against ophthalmia neonatorum is a major force in the worldwide effort to prevent blindness.

- Common regimens are the instillation of 1% silver nitrate solution, 1% tetracycline ointment, or 0.5% erythromycin ointment.

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Bacterial Conjunctivitis: Prognosis and Follow up

Frequency And Composition Of Evaluation And Management Visits For Conjunctivitis

Condition	Frequency of Follow-up	History	Visual Acuity
Bacterial conjunctivitis	Mild: Every 5-7 days Moderate: Every 3-5 days Severe: Every 1-3 days	Yes	Yes

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Condition	Slit Lamp Biomicroscopy	Ophthalmoscopy	Management Plan
Bacterial conjunctivitis	Yes	As indicated	Identify organism and specific antimicrobial agent. Hyperacute form: obtain smears and cultures, do saline lavage. Prescribe topical and/or systemic antibiotics. Obtain consultation for evaluation and treatment of underlying systemic condition. Educate patient.

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Bacterial Conjunctivitis: Complications

- Bacterial conjunctivitis seldom leads to complications.

- General concerns include:

❖ Membrane formation and subsequent scarring of the Punctum

❖ Corneal ulcer when the epithelium is not intact

❖ Symblepharon from severe inflammation.

- In eyes with previous intraocular surgery, particularly with filtering blebs, endophthalmitis could result.

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Thank you