DIFERENTIATE RED EYE DISORDERS

- Needs immediate treatment
- Needs treatment within a few days
- Does not require treatment
SUBJECTIVE EYE COMPLAINTS

- Decreased vision
- Pain
- Redness

Characterize the complaint through history and exam.
TYPES OF RED EYE DISORDERS

- Mechanical trauma
- Chemical trauma
- Inflammation/infection
ETIOLOGIES OF RED EYE

1. Chemical injury
2. Angle-closure glaucoma
3. Ocular foreign body
4. Corneal abrasion
5. Uveitis
6. Conjunctivitis
7. Ocular surface disease
8. Subconjunctival hemorrhage
RED EYE: POSSIBLE CAUSES

- Trauma
- Chemicals
- Infection
- Allergy
- Systemic conditions
# RED EYE: CAUSE AND EFFECT

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Itching</td>
<td>Allergy</td>
</tr>
<tr>
<td>Burning</td>
<td>Lid disorders, dry eye</td>
</tr>
<tr>
<td>Foreign body sensation</td>
<td>Foreign body, corneal abrasion</td>
</tr>
<tr>
<td>Localized lid tenderness</td>
<td>Hordeolum, chalazion</td>
</tr>
</tbody>
</table>
### RED EYE: CAUSE AND EFFECT (Continued)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep, intense pain</td>
<td>Corneal abrasions, scleritis, iritis, acute glaucoma, sinusitis, etc.</td>
</tr>
<tr>
<td>Photophobia</td>
<td>Corneal abrasions, iritis, acute glaucoma</td>
</tr>
<tr>
<td>Halo vision</td>
<td>Corneal edema (acute glaucoma, uveitis)</td>
</tr>
</tbody>
</table>
Equipment needed to evaluate red eye
Refer red eye with vision loss to ophthalmologist for evaluation
RED EYE DISORDERS: AN ANATOMIC APPROACH

- **Face**
- **Adnexa**
  - Orbital area
  - Lids
  - Ocular movements
- **Globe**
  - Conjunctiva, sclera
  - Anterior chamber (using slit lamp if possible)
  - Intraocular pressure
Disorders of the Ocular Adnexa

Skin
Orbicularis oculi muscle
Hair follicle
Perifollicular glands
Eyelash

UPPER EYELID:
ANTERIOR ANATOMY
Disorders of the Ocular Adnexa

Hordeolum
Chalazion
HORDEOLUM/CHALAZION: TREATMENT

- **Goal**
  - To promote drainage

- **Treatment**
  - Acute/subacute: Warm-hot compresses, tid
  - Chronic: Refer to ophthalmologist
BLEPHARITIS

- Inflammation of lid margin
- Associated with dry eyes
- Seborrhea causes dried skin and wax on base of lashes
- May have Staphylococcal infection
- Symptoms: lid burning, lash mattering
Collarettes on eyelashes of patient with blepharitis
BLEPHARITIS: TREATMENT

• Lid and face hygiene
  – Warm compresses to loosen deposits on lid margin
  – Gentle scrubbing with nonirritating shampoo or scrub pads
• Artificial tears to alleviate dry eye
• Antibiotic or antibiotic-corticosteroic ointment
• Oral doxycycline 100 mg daily for refractory cases
Preseptal cellulitis
Orbital cellulitis
ORBITAL CELLULITIS: SIGNS AND SYMPTOMS

- External signs: redness, swelling
- Motility impaired, painful
- ± Proptosis
- Often fever and leukocytosis
- ± Optic nerve: decreased vision, afferent pupillary defect, disc edema
ORBITAL CELLULITIS: MANAGEMENT

- Hospitalization
- Ophthalmology consult
- Eye consult
- Blood culture
- Orbital CT scan
- ENT consult if pre-existing sinus disease
ORBITAL CELLULITIS: TREATMENT

- IV antibiotics stat: Staphylococcus, Streptococcus, H. influenzae
- Surgical debridement if fungus, no improvement, or subperiosteal abscess
- Complications: cavernous sinus thrombosis, meningitis
Lacrimal System Disorders

The lacrimal apparatus:

- Lacrimal gland
- Upper punctum
- Upper canaliculus
- Upper canaliculus
- Lacrimal sac

Lacrimal system
Dacryocystitis
NASOLACRIMAL DUCT OBSTRUCTION: CONGENITAL

- Massage tear sac daily
- Probing, irrigation, if chronic
- Systemic antibiotics if infected
NASOLACRIMAL DUCT OBSTRUCTION: ACQUIRED

- Trauma a common cause
- Systemic antibiotics if infected
- Surgical procedure after one episode of dacryocystitis (dacryocystorhinostomy) prn
Ocular Surface Disorders

Palpebral conjunctiva
Bulbar conjunctiva

CONJUNCTIVA
Dilated conjunctival blood vessels
ADULT CONJUNCTIVITIS: MAJOR CAUSES

- Bacterial
- Viral
- Allergic
# CONJUNCTIVITIS: DISCHARGE

<table>
<thead>
<tr>
<th>Discharge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purulent</td>
<td>Bacterial</td>
</tr>
<tr>
<td>Clear</td>
<td>Viral*</td>
</tr>
<tr>
<td>Watery, with stringy; white mucus</td>
<td>Allergic**</td>
</tr>
</tbody>
</table>

* Preauricular lymphadenopathy signals viral infection
** Itching often accompanies
BACTERIAL CONJUNCTIVITIS: COMMON CAUSES

- *Staphylococcus* (skin)
- *Streptococcus* (respiratory)
- *Haemophilus* (respiratory)
BACTERIAL CONJUNCTIVITIS TREATMENT

- Topical antibiotic: qid x 7 days (aminoglycoside, erythromycin, fluoroquinolone, sulfacetamide, or trimethoprim-polymyxin)
- Warm compresses
- Refer if not markedly improved in 3 days
Copious purulent discharge: Suspect Neisseria gonorrhoeae.
Viral conjunctivitis
VIRAL CONJUNCTIVITIS

- Watery discharge
- Highly contagious
- Palpable preauricular lymph node
- History of URI, sore throat, fever common

If pain, photophobia, or decreased vision, refer.
Ocular Surface Disorders

Allergic conjunctivitis
ALLERGIC CONJUNCTIVITIS

- Associated conditions: hay fever, asthma, eczema
- Contact allergy: chemicals, cosmetics, pollen
- Treatment: topical antihistamine/decongestant drops
- Systemic antihistamines if necessary for systemic disease
  Refer refractory cases.
NEONATAL CONJUNCTIVITIS: CAUSES

- Bacteria (N. gonorrhoeae, 2–4 days)
- Bacteria (Staphyloccocus, Streptococcus, 3–5 days)
- Chlamydia (5–12 days)
- Viruses (eg, herpes, from mother)
Ocular Surface Disorders

Neonatal gonococcal conjunctivitis
Neonatal chlamydial conjunctivitis
NEONATAL CHLAMYDIAL CONJUNCTIVITIS: TREATMENT

- Erythromycin ointment: qid x 4 weeks
- Erythromycin po x 2–3 weeks
  40–50 mg/kg/day for 4
Subconjunctival hemorrhage
TEARS AND DRY EYES

• Tear functions:
  – Lubrication
  – Bacteriostatic and immunologic functions

• Dry eye (keratoconjunctivitis sicca) is a tear deficiency state
TEAR DEFICIENCY STATES: SYMPTOMS

- Burning
- Foreign-body sensation
- Paradoxical reflex tearing
- Symptoms can be made worse by reading, computer use, television, driving, lengthy air travel
TEAR DEFICIENCY STATES: ASSOCIATED CONDITIONS

- Aging
- Rheumatoid arthritis
- Stevens-Johnson syndrome
- Chemical injuries
- Ocular pemphigoid
- Systemic medications
DRY EYES: TREATMENT

- Artificial tears, cyclosporine drops
- Nonpreserved artificial tears
- Lubricating ointment at bedtime
- Punctal occlusion
- Counseling about activities that make dry eyes worse
Thyroid exophthalmos: one cause of exposure keratitis
EXPOSURE KERATITIS: CAUSES AND MANAGEMENT

- Due to incomplete lid closure
- Manage with lubricating solutions/ointments
- Tape lids shut at night
- Do not patch
- Refer severe cases
Pinguecula
Ocular Surface Disorders

Pterygium
INFLAMED PINGUECULA AND PTERYGIUM: MANAGEMENT

- Artificial tears
- Counsel patients to avoid irritation
- If documented growth or vision loss, refer
Anterior Segment Disorders

Anterior chamber

Iris

Ciliary body

Lens

Cornea

Bulbar conjunctiva

ANTERIOR SEGMENT
ACUTE CORNEAL DISORDERS: SYMPTOMS

• Eye pain
  – Foreign-body sensation
  – Deep and boring

• Photophobia

• Blurred vision
Irregular corneal light reflex and central corneal opacity
Fluorescein dye strip applied to the conjunctiva
Corneal abrasion, stained with fluorescein and viewed with cobalt blue light
CORNEAL ABRASION

- Signs and symptoms: redness, tearing, pain, photophobia, foreign-body sensation, blurred vision, small pupil
- Causes: injury, welder’s arc, contact lens overwear
CORNEAL ABRASION: MANAGEMENT

• Goals:
  – Promote rapid healing
  – Relieve pain
  – Prevent infections

• Treatment:
  – 1% cyclopentolate
  – Topical antibiotics
    • Drops (eg, fluoroquinolone, others) or ointment (eg, erythromycin, bacitracin/polymyxin)
  – ± Pressure patch x 24–48 hours
  – ± Oral analgesics
Applying a pressure patch
CHEMICAL INJURY

- A true ocular emergency
- Requires immediate irrigation with nearest source of water
- Management depends on offending agent
Chemical burn: acid
Chemical burn: alkali
Corneal ulcer

Giant papillary conjunctivitis
INFECTIOUS KERATITIS

- Frequently result from mechanical trauma
- Can cause permanent scarring and decreased vision
- Early detection, aggressive therapy are vital
Bacterial infection of the cornea
Primary herpes simplex infection
Corneal herpes simplex dendrites, stained with fluorescein
TOPICAL STEROIDS: SIDE EFFECTS

- Facilitate corneal penetration of herpes virus
- Elevate IOP (steroid-induced glaucoma)
- Cataract formation and progression
- Potentiate fungal corneal ulcers
Anterior Segment Disorders

Hyphema
INFLAMMATORY CONDITIONS CAUSING A RED EYE:

- Episcleritis
- Scleritis
- Anterior uveitis (iritis)
Anterior Segment Disorders

**Episcleritis**

**Scleritis**
Anterior Segment Disorders

IRITIS

**Signs and Symptoms**
- Circumlimbal redness
- Pain
- Photophobia
- Decreased vision
- Miotic pupil

**Rule Out**
- Systemic inflammation
- Trauma
- Autoimmune disease
- Systemic infection

Recognize and refer.
UVEITIS: SLIT LAMP FINDINGS

White cells in anterior chamber

Hypopyon

Keratic precipitates
Anterior Segment Disorders

NORMA] AQUEOUS FLOW

Conjunctiva
Episcleral
everin
Aqueous vein
Schlemm's canal
Ciliary body

Trabecular meshwork
Iris

ANGLE-CLOSURE GLAUCOMA

Aqueous flow
Lens
ACUTE GLAUCOMA: SIGNS AND SYMPTOMS

- Red eye
- Severe pain in, around eye
- Frontal headache
- Blurred vision, halos seen around lights
- Nausea, vomiting
- Pupil fixed, mid-dilated, slightly larger than contralateral side
- Elevated IOP
- Corneal haze
Acute angle-closure glaucoma
ACUTE GLAUCOMA: INITIAL TREATMENT

- Pilocarpine 2% drops q 15 min x 2
- Timolol maleate 0.5%, 1 drop
- Apraclonidine 0.5%, 1 drop
- Acetazolamide 500 mg po or IV
- IV mannitol 20% 300–500 cc
COMMON RED EYE DISORDERS:
TREATMENT INDICATED

- Hordeolum
- Chalazion
- Blepharitis
- Conjunctivitis
- Subconjunctival hemorrhage
- Dry eyes
- Corneal abrasions (most)
VISION-THREATENING RED EYE SIGNS & SYMPTOMS: REFERRAL INDICATED

- Decreased vision
- Ocular pain
- Photophobia
- Circumlimbal redness
- Corneal edema
- Corneal ulcers/ dendrites
- Abnormal pupil
- Elevated IOP
VISION-THREATENING RED EYE DISORDERS: URGENT REFERRAL

- Orbital cellulitis
- Scleritis
- Chemical injury
- Corneal infection
- Hyphema
- Iritis
- Acute glaucoma
MANAGING THE RED EYE: PCP AND OPHTHALMOLOGIST

• Clinical expertise
• Cooperation
• Communication