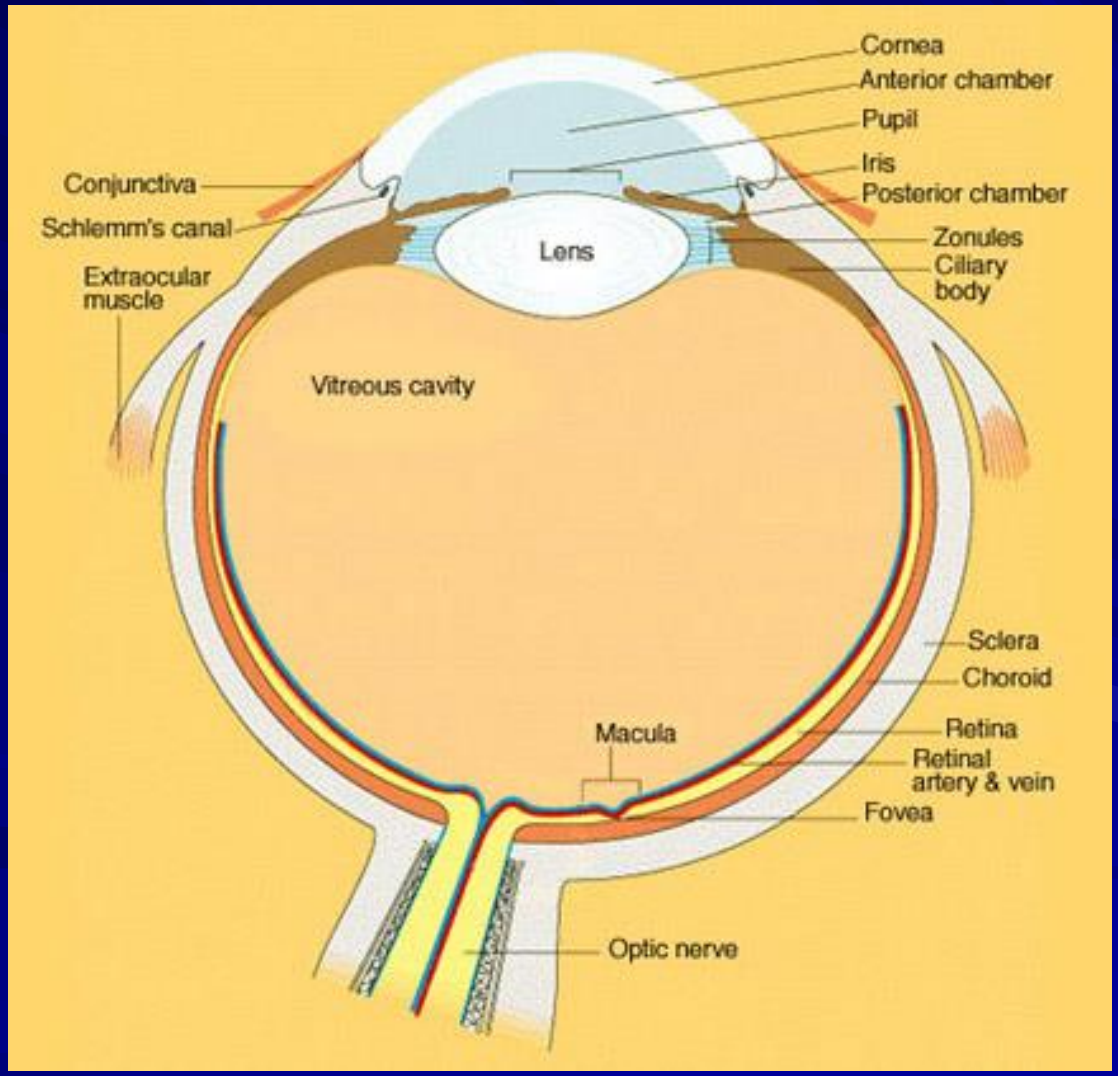
Learning Objectives

Review:

- Ocular anatomy, danger signs, subjective pearls, eye examination & pearls, ocular injection, antibiotics
- Non- vision threatening red eye
- Vision-threatening red eye & emergencies
- STDs
- Clinical pearls & indications for referral
- Avoiding medical eye liability

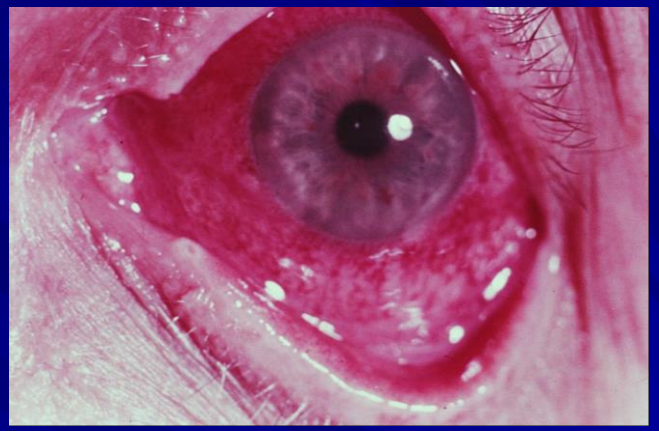
Supplemental handout for reference only

Ocular Anatomy



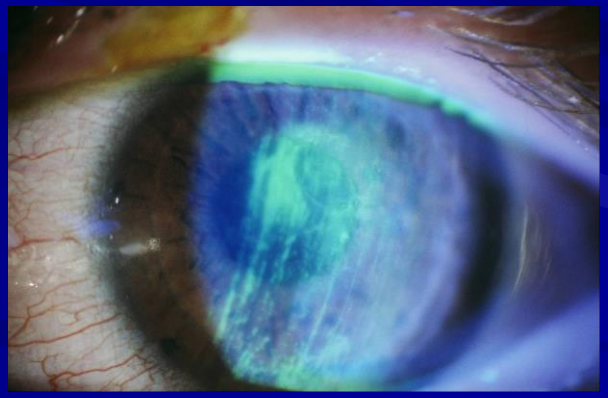
Red Eye Danger Signs

- Decreased visual acuity
- Pain
- Ciliary flush
- Pupillary asymmetry
- Irregular corneal light reflex
- Corneal infiltrate
- Photophobia
- Trauma



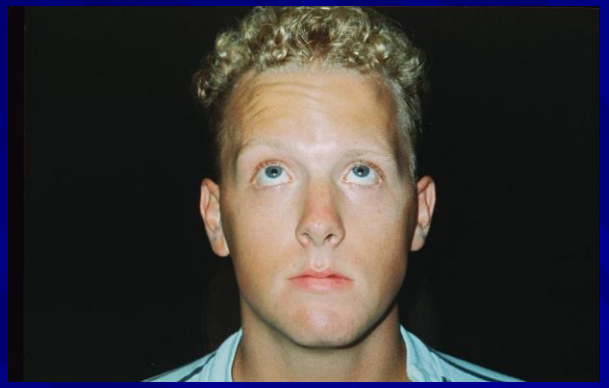
Additional Ocular Danger Signs

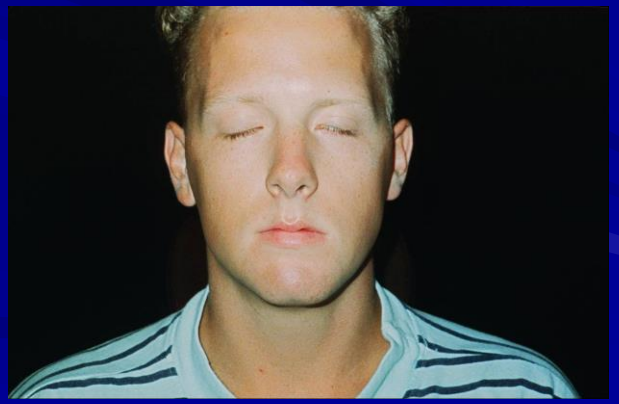
- Chemical burn
- Double vision
- Lid droop
- Colored halos
- Flashes
- Floaters
- Loss of vision
  with or without pain
- Trauma
  including foreign body



Subjective Pearls

- Listen
- History
  - *90% of diagnosis*
  - *eye, medical*
  - *pain (1 – 10)*
  - *medications, allergies*
- Communication





Emergency Eye Examination

- Visual acuity
- External examination
- Pupils
- Extraocular muscles
- Injection
- Discharge
- Preauricular lymphadenopathy
  - *(usually viral)*
- Follicles
  - *(usually viral; chronic – r/o chlamydial)*
- Papillae
  - *(usually allergy)*

Follicles

Papillae

Emergency Eye Examination, *cont'd.*

- Cornea-fluorescein test
- Evert lid
- IOP
- Confrontational fields
- Ophthalmoscopy
- Lab & radiology testing
- Treat/refer/consult

Morgan lens

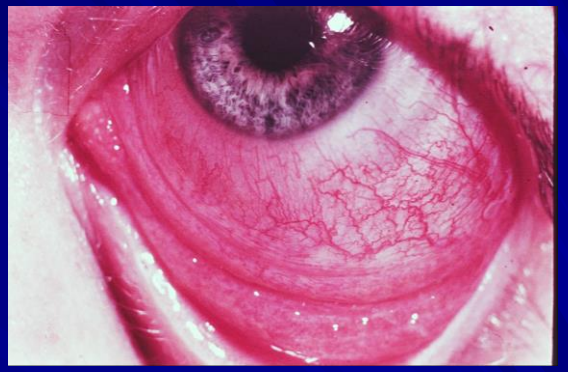
Pearls

- Infection control
- Chemical injuries, irrigation STAT, Morgan lens
- Compare both eyes
- Iritis

Ocular Injection

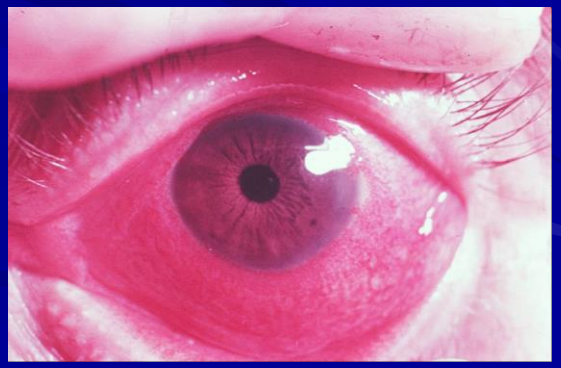
Conjunctival injection

- Conjunctivitis



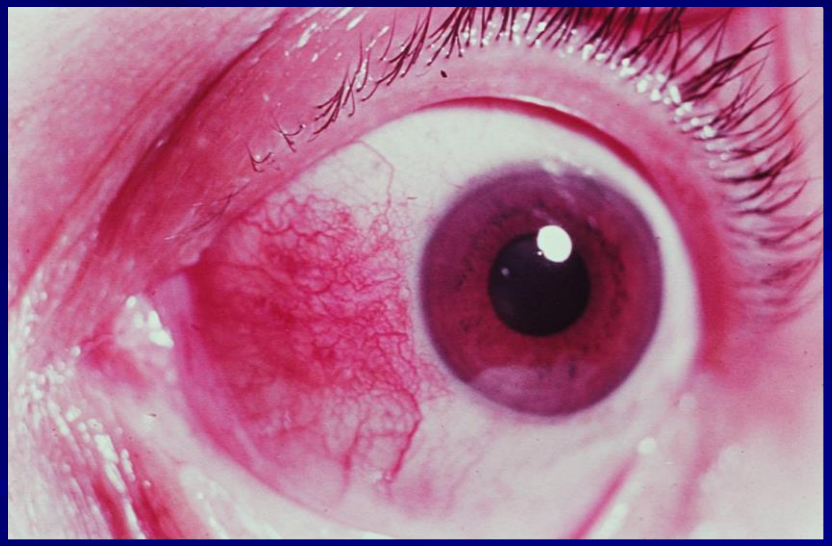
Ciliary (circumcorneal) injection

- Keratitis
  - *including corneal abrasions, foreign bodies*
- Iritis
- Glaucoma



Ocular Injection

Segmental injection



- Episcleritis
- Injected pinguecula
- Embedded foreign body
- Marginal keratitis
- Phlyctenular limbal keratoconjunctivitis

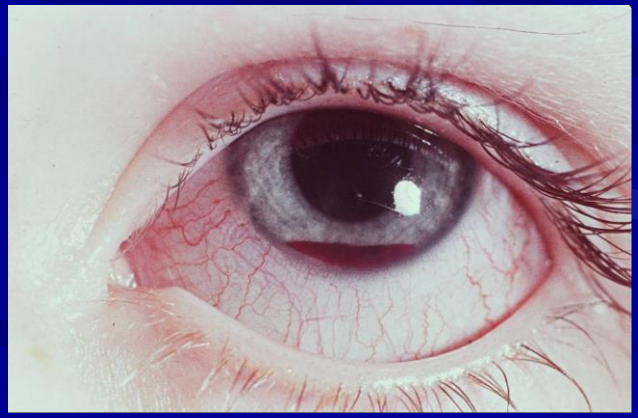
Ocular Injection

Subconjunctival hemorrhage

- *r/o intraocular damage with trauma*

Hyphema

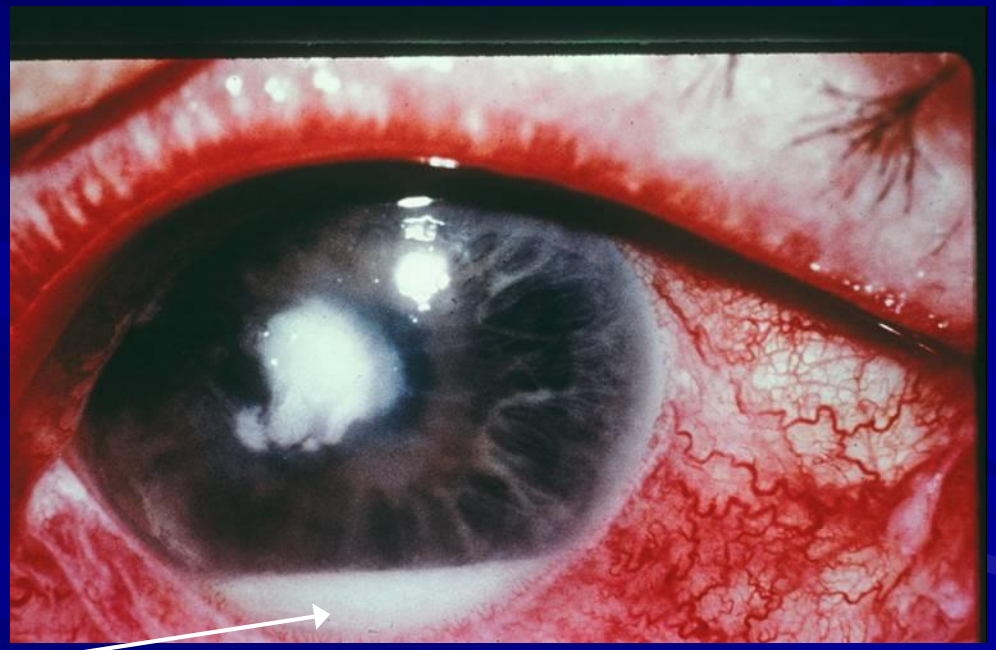
- *r/o intraocular injury*



Hypopyon

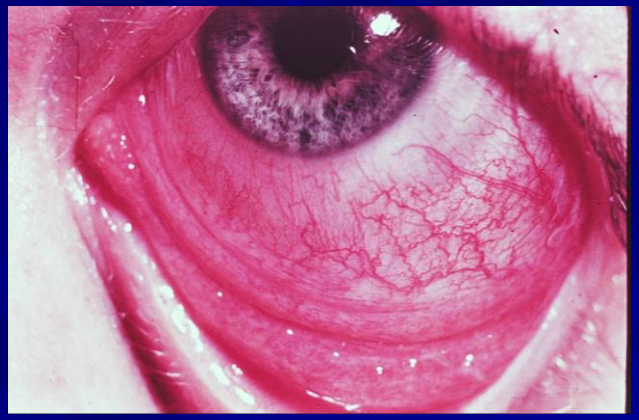
White blood cells (pus) in anterior chamber

"Tells you it's bad"



Non- Vision Threatening Red Eye

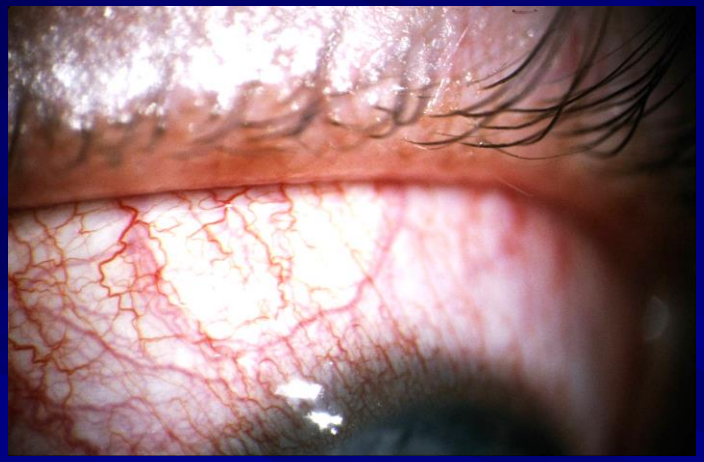
- Conjunctivitis
- Stye (hordeolum)
- Chalazion
- Blepharitis
- Conjuctival foreign bodies

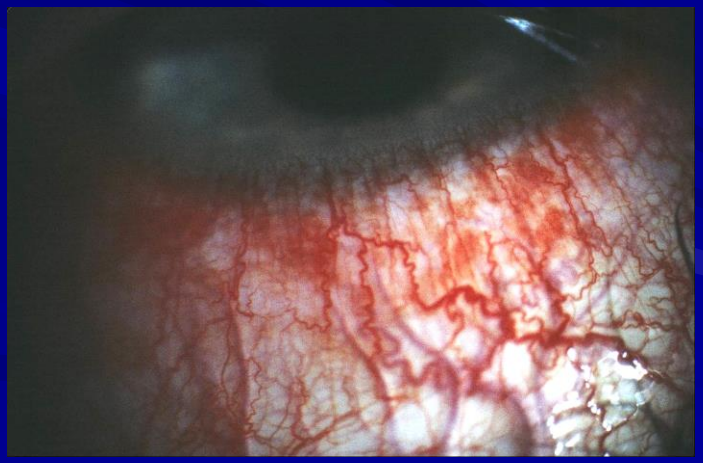


Conjunctivitis Overview

	Discharge	Comments
Bacterial	Mucopurulent or purulent	Common causes: Staph. aureus; strep pneumoniae; haemophilus species; rarely chlamydial
Viral	Scant, watery	Follicles; URI; preauricular adenopathy
Allergic	Stringy, whitish	Papillae; conj. swelling (chemosis); medicamentosa
Chemical	Usually tearing	Irrigate with water/saline; bases worse than acids; Morgan lens

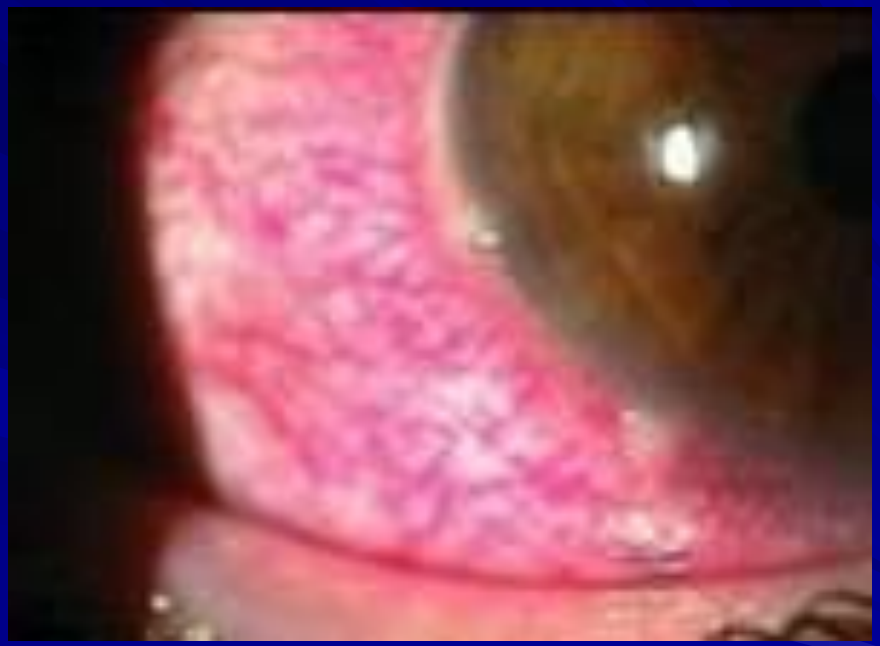
Bacterial Conjunctivitis



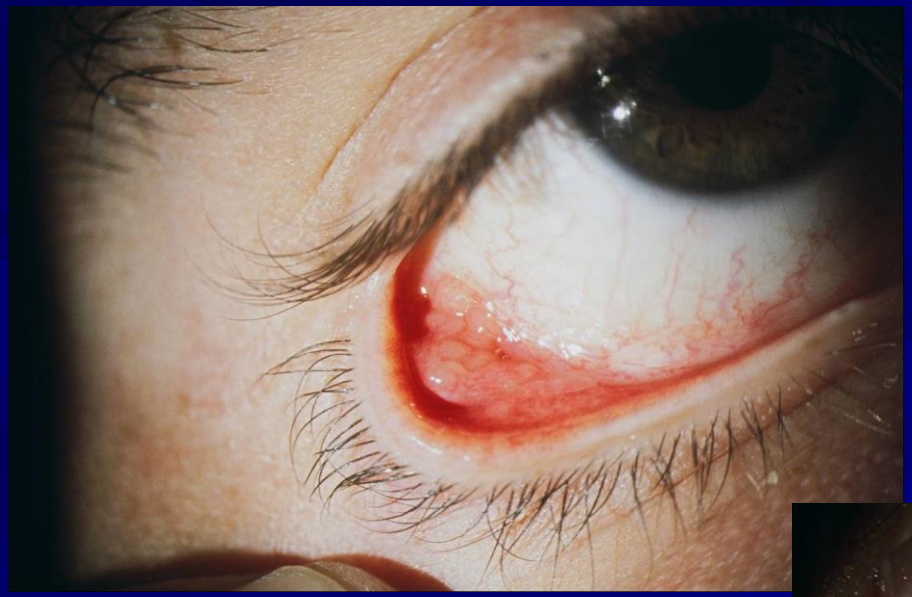


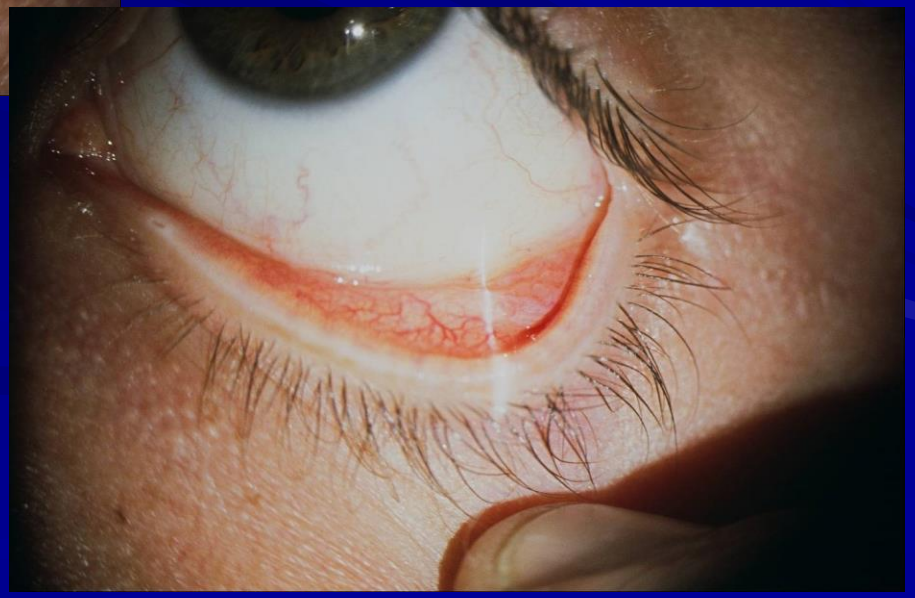
Phlyctenular Conjunctivitis

- Blister (phlyctenular)
  - *staph aureus*
  - *TB (rare)*

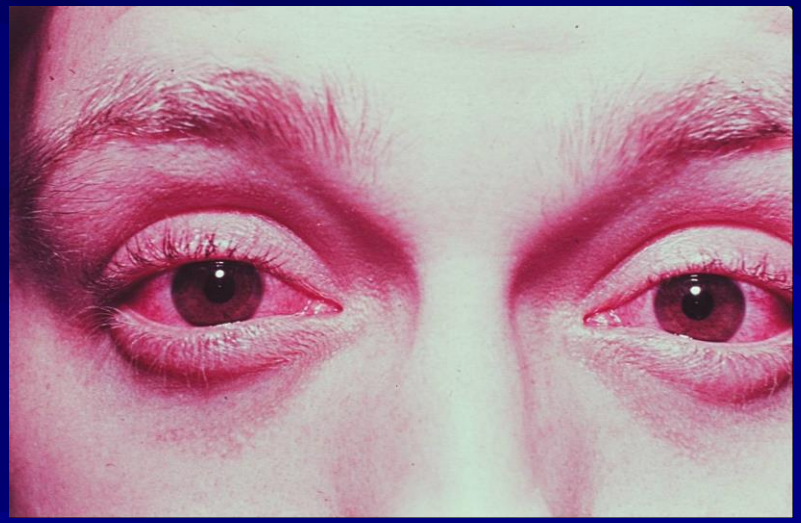


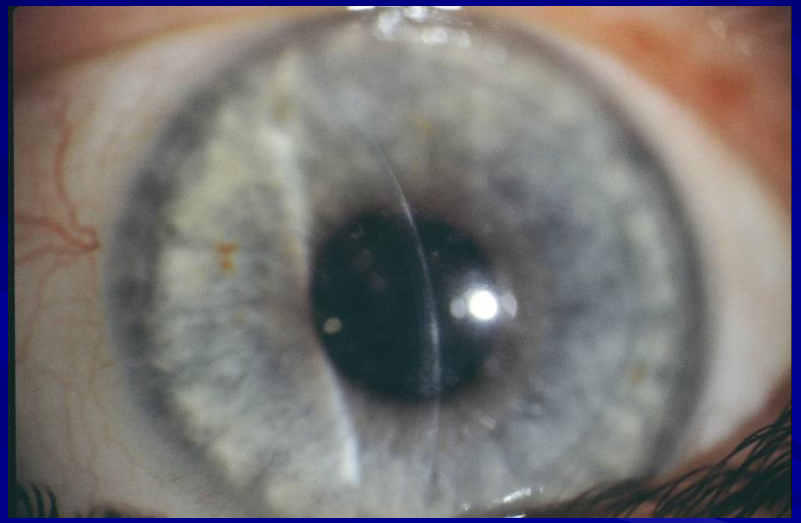
Chlamydial Conjunctivitis



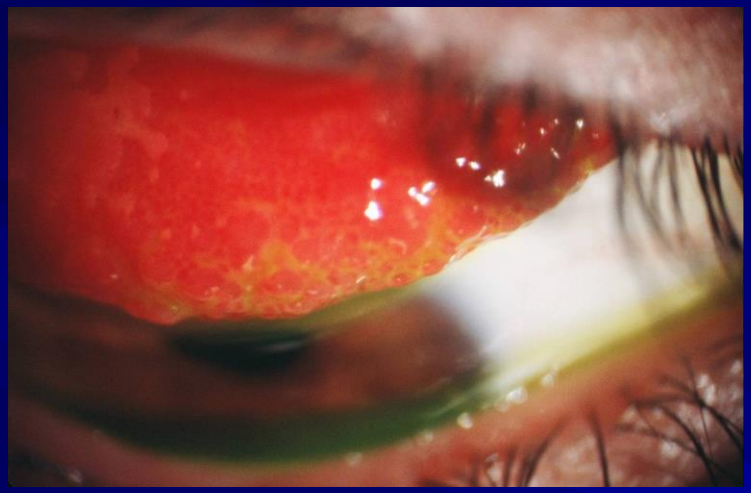


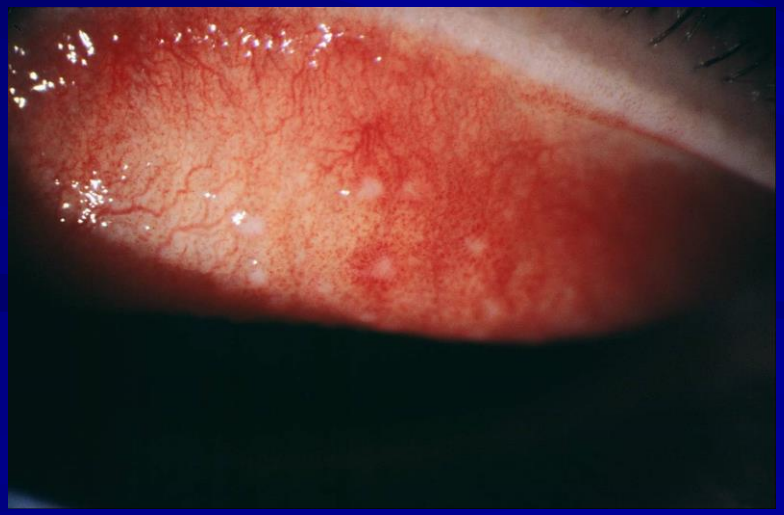
Viral Conjunctivitis





Allergic Conjunctivitis





Chemical Conjunctivitis

- Chemosis

- Morgan lens

Cultures and Testing

- **Routine bacterial culture not recommended**
- **Culture if:**
  - no treatment response after 2 – 3 weeks
  - recurring
  - severe, purulent
- **Chlamydial assay if:**
  - follicular conjunctivitis lasting longer than 2 – 3 weeks **and**
  - pt. sexually active
    - *sexual partners, genital symptoms (approx. 75% asymptomatic?)*

Topical Antibiotics

Aminoglycosides

- Tobrex
  - *gentamycin, neomycin*

Macrolides

- Ilotycin (erythromycin)
- Azasite (azithromycin)

Peptides

- Bacitracin
- Polysporin (polymixin B/ bacitracin)
- Polytrim (polymixin B/ trimethoprim)

Sulfonamides

4th Generation Fluoroquinolones

Options:

- Zymar, Allergan (gatifloxacin)
- Vigamox, Alcon (moxifloxacin)

Benefits:

- lower incidence of resistance
- may shorten infection
- more effective for gram $^{+}$
- potency, concentration
- active – pseudomonas aerunginosa
- permeability, solubility
- comfort

2nd and 3rd Generation Fluoroquinolones

2nd Generation

- Ciloxan (ciprofloxacin)
- Ocuflox (ofloxacin)

3rd Generation

- Quixin (levofloxacin 0.5%)

- Iquix (levofloxacin 1.5%) – approved for corneal ulcers

New Topical Antibiotic

- AzaSite (azythromycin eye drop)
  - "Z-Pack" for the eye
  - bacterial conjunctivitis
  - expensive
  - easy dosing
  - studies vs. 4th generation fluroquinolones?
  - muco adhesive
  - good for rosacea – anti inflammatory and anti infective properties

Prescribing Decisions

- Resistance concerns
  - *ophthalmic use less a factor than systemic use?*
- Decision making
  - medical standard of care
  - literature review
  - clinical experience

Topical Corticosteriods

Don’t prescribe

- **Side effects**
  - Herpes simplex
  - Bacterial infection
  - Wound healing
  - Glaucoma
  - Cataract
  - Fungal (mycotic)
  - Corneal melting, perforation

Conjunctivitis

Pearls

- Red, painful eye w/o mucous: usually not conjunctivitis
  - *r/o corneal abrasions, foreign bodies, keratitis, iritis, glaucoma (rare)*
- Preauricular adenopathy
  - *usually viral*
  - *can be present in acute hordeolum or chlamydial*
- Systemic medications
  - *eg. Accutane – dry eye, conjunctivitis, night vision problems*
- Medicamentosa

When to refer

- Unsure of diagnosis
- Severe mucopurulent discharge
- Unresolved within 2 weeks
- Corneal involvement suspected

Subconjunctival Hemorrhage

Pearls

- **No trauma**
  - *normal vision, no pain, self-limited, benign*
- **Trauma**
  - *r/o intraocular injury*
- Worse day 2?
- BP
- Treatment?
  - *ASA?*

When to refer

- Concommitant trauma

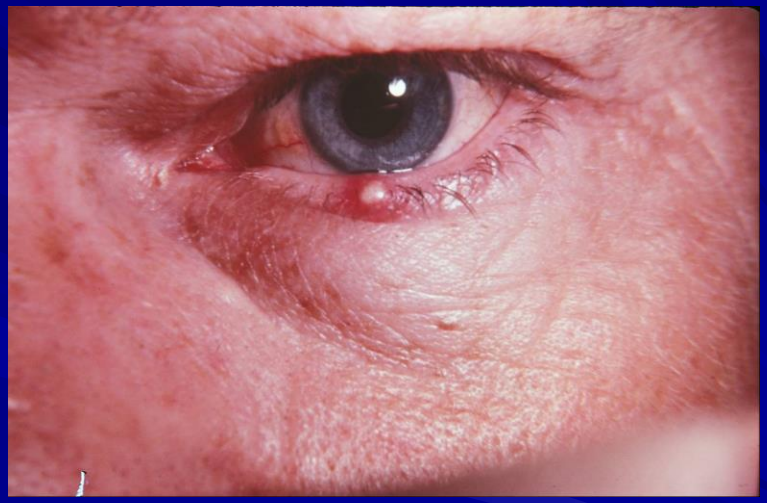
Stye (hordeolum)

Infection

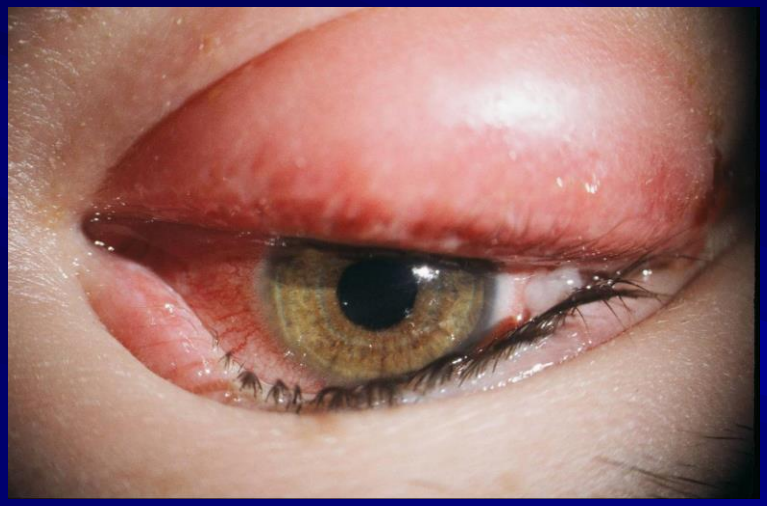
- Usually staph aureus

Treatment

- WC
- P.o pain medication
- Topical antibiotics
- Systemic antibiotics
  - *lid cellulitis or pain?*



Stye (hordeolum)



Pearls

- R/o
  - Rosacea
  - Lid cellulitis (preseptal)
  - Orbital cellulitis
  - Malignancy with recurrent lesions

When to refer

- Not resolving x 1 week
- Suspicion of orbital cellulitis
  - fever
  - decreased vision
  - restricted ocular motility

Cyst (chalazion)

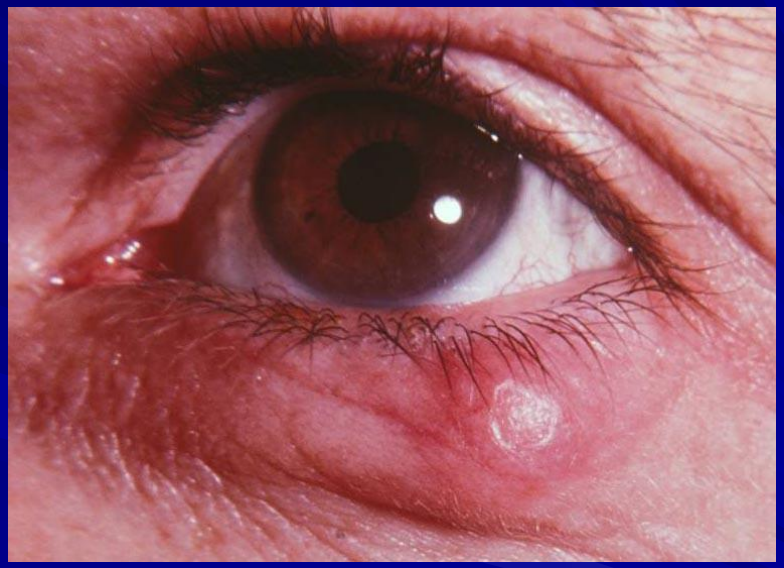
Inflammation

Treatment

- WC
- Near lid margin
  - steroid injection

Pearls

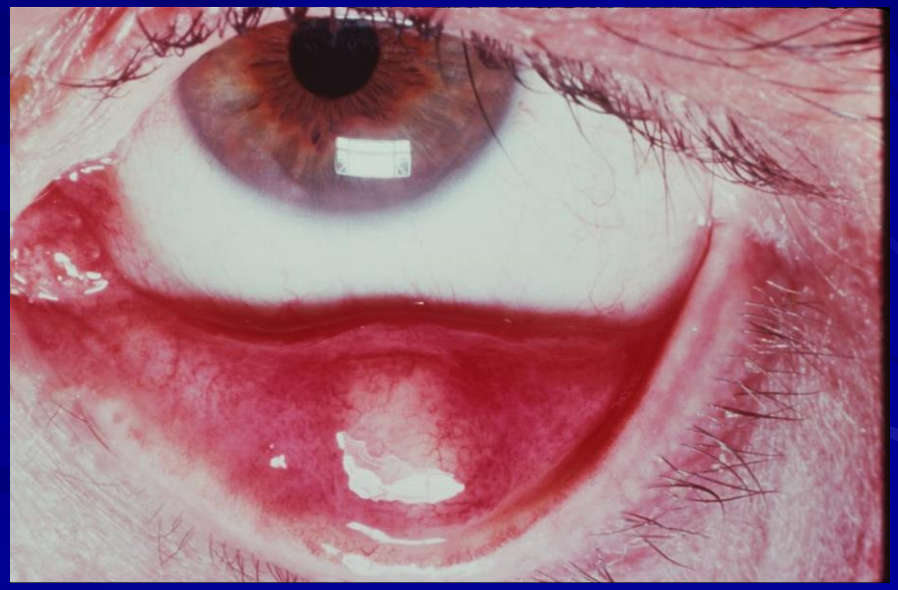
- R/o
  - rosacea
  - malignancy w/recurrence
- Systemic doxycycline



Cyst (chalazion)

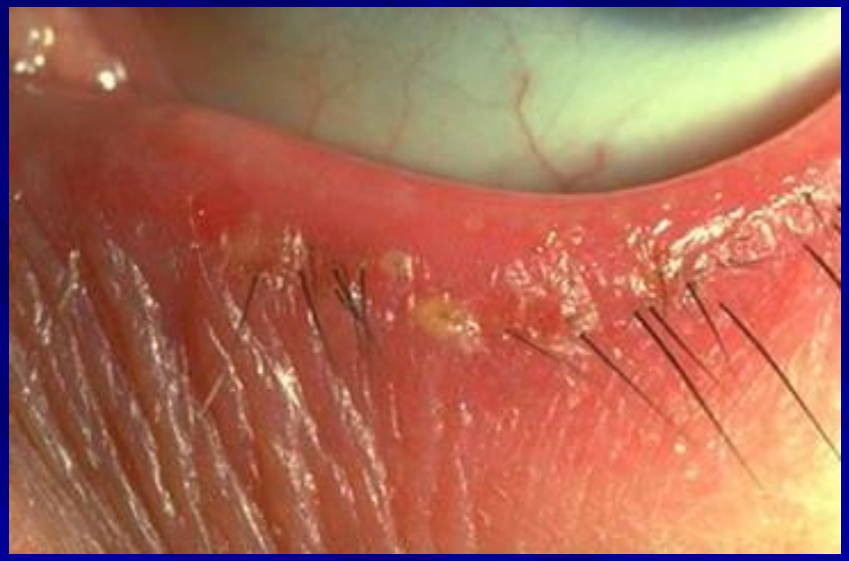
When to refer

- Not resolving in 2 – 3 weeks
- Cosmetic
- Vision
- Lid margin



Blepharitis

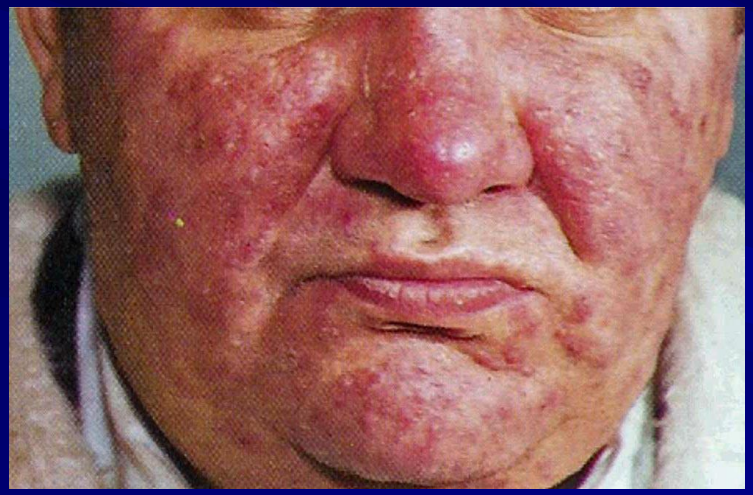
- Staph aureus
- Seborrhea
- Combination



Pearls

- Rosacea
  - Macules, papules, pustules, forehead, nose, cheeks, telangiectasia, rhinophyma of nose

Blepharitis



Treatment

- WC
- Lid hygiene
  - *Sterilid, Ocusoft, Lid Hygenix*
  - *½ baby shampoo?*
- Topical antibiotic
- Topical antibiotic steroid
- Systemic antibiotic
- Topical rosacea med?
- Dryness
  - *AT*
  - *omega 3s*
  - *other?*

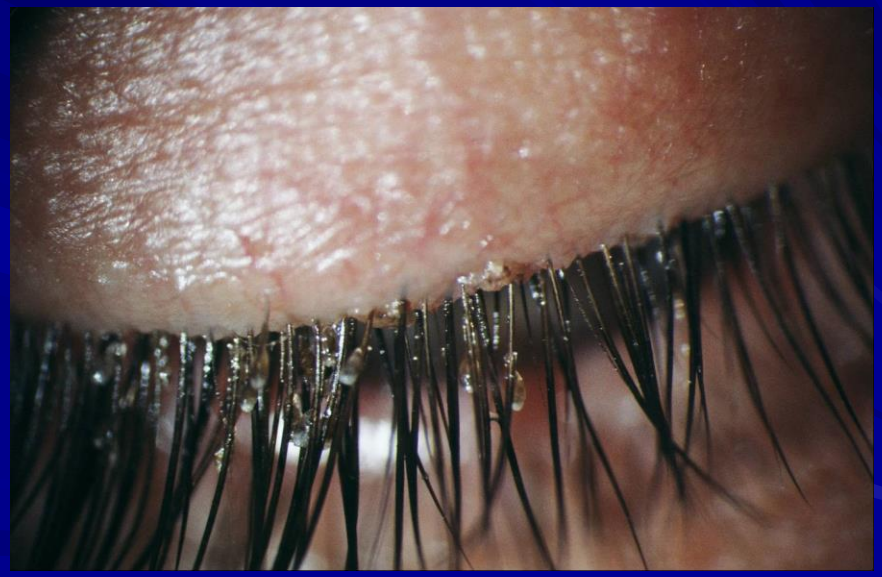
Lice, Crabs (pediculosis, phthiriasis)

Treatment

- Mechanical removal
- Bland ophthalmic ointment

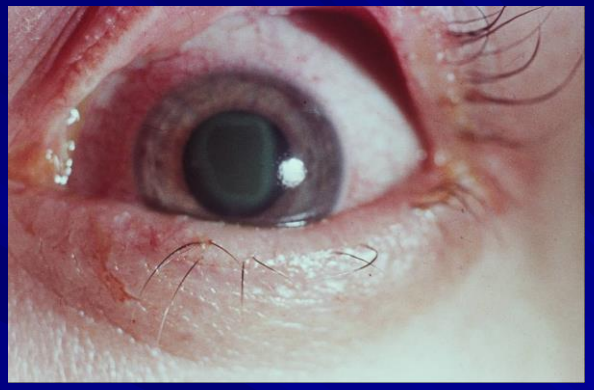
Pearls

- Anti-lice lotion to other involved body parts
- Sexual partners
- R/o other STDs



Vision-Threatening Red Eye & Emergencies

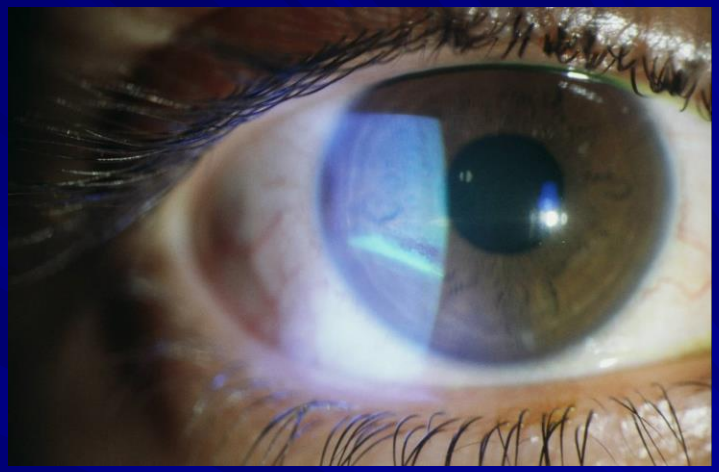
- Corneal abrasions
- Conjunctival & corneal foreign bodies
- Keratitis
- Iritis
- Hyphema
- Blow-out fracture
- Retinal detachment
- Papilledema

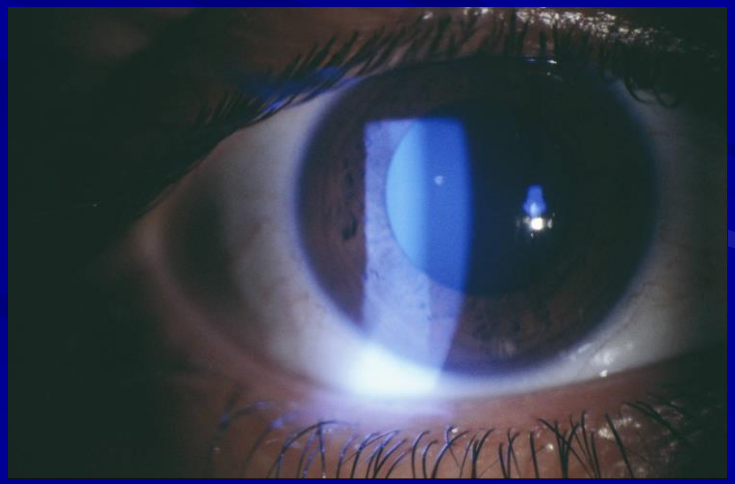


Corneal Abrasions

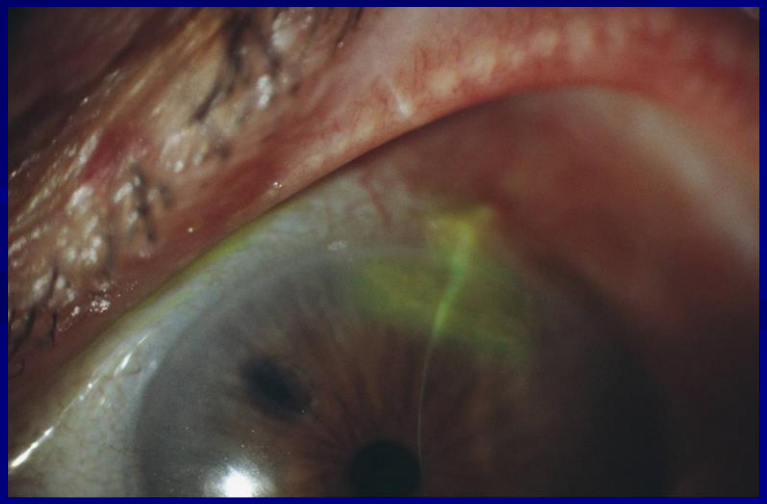
Treatment

- Topical antibiotics
- Drops vs. ointment
- Ointment @ bedtime
- Topical NSAIDs? – acular ls off label
- Cyclopegics – refer
- PO pain medication
- Pressure patch or bandage contact lens?





Corneal Abrasions



Pearls

- Gram-negative infection
- Aminoglycosides – toxicity
- Patching – 24 hours
- Healing time – 50% daily?
- Topical anesthetics
  - *not for take-home use*

When to refer

- Large abrasions
  - *> 3 mm*
- Central abrasions
  - *especially large ones*
- Without daily improvement
  - *or total improvement in 3 days?*

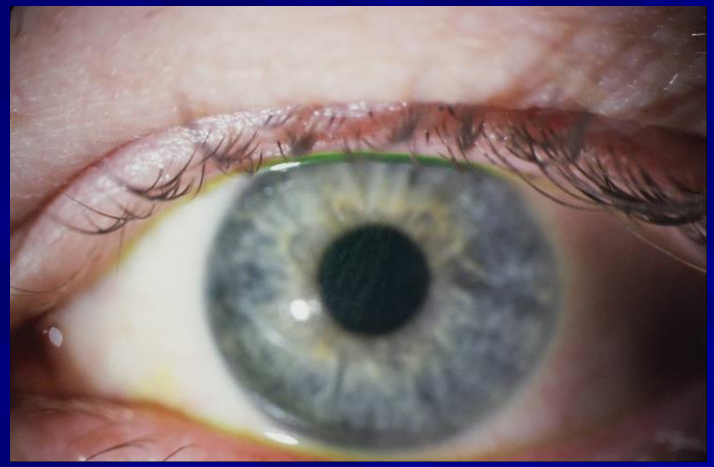
Conjunctival Foreign Bodies

Pearls

- Remove w/o anesthetic if possible (why?)
- Lid inversion
- “Blind swipe”
- Treat residual corneal abrasion

When to refer

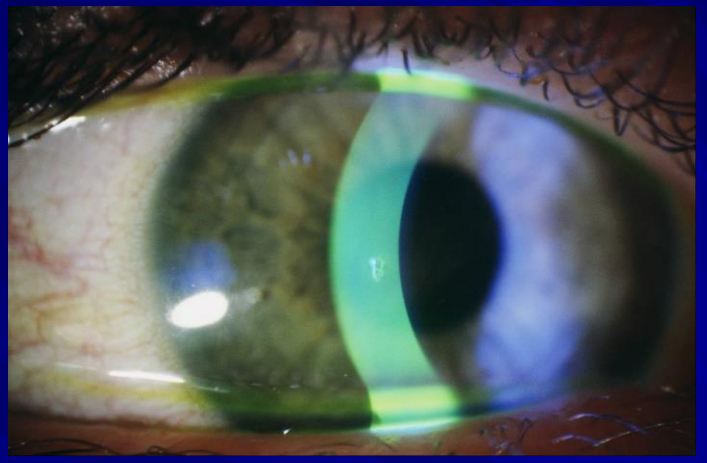
- Unable to find, remove fb
- If fb sensation persists

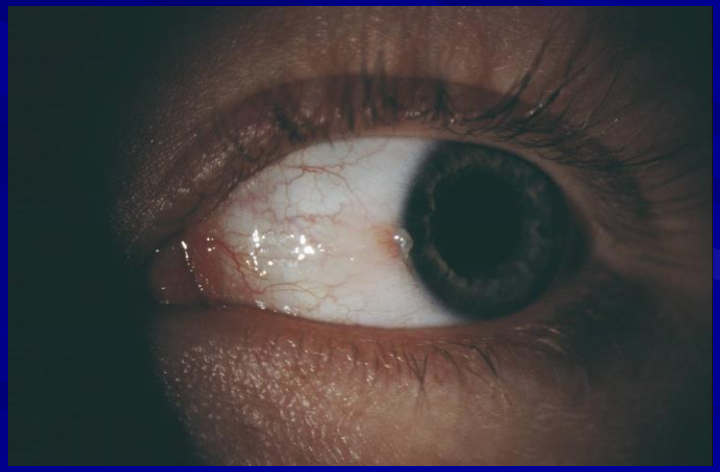


Corneal Foreign Body

Refer to eye doctor

- Remove only if:
  - small
  - peripheral
  - non-metallic
  - superficial
  - non-penetrating
- Technique
- Residual corneal abrasion

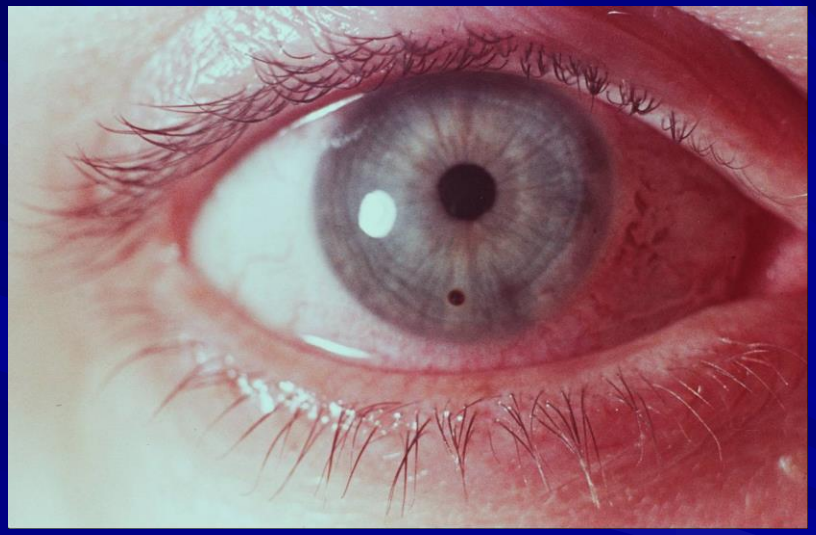




Corneal Foreign Body

Pearls

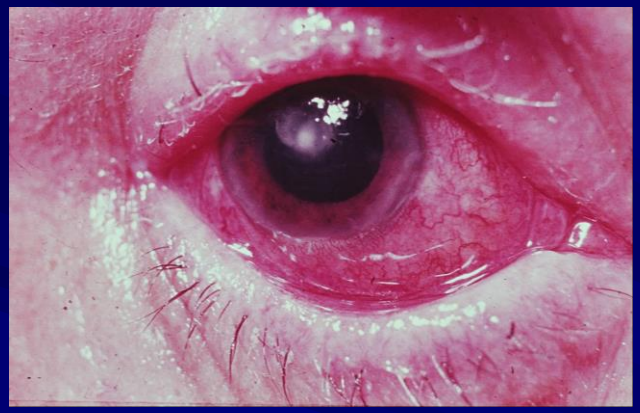
- Slit lamp
- Anesthetic
- MRI – metallic fb
- Limbal pledge



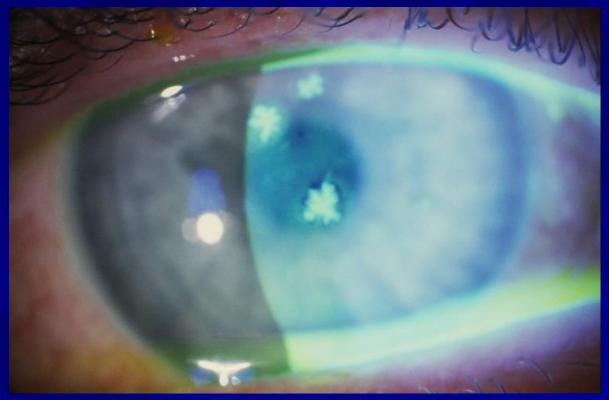
When to refer – STAT

- Central
- Metallic
- Velocity – dilation
- Cannot remove
- Penetrating

Keratitis

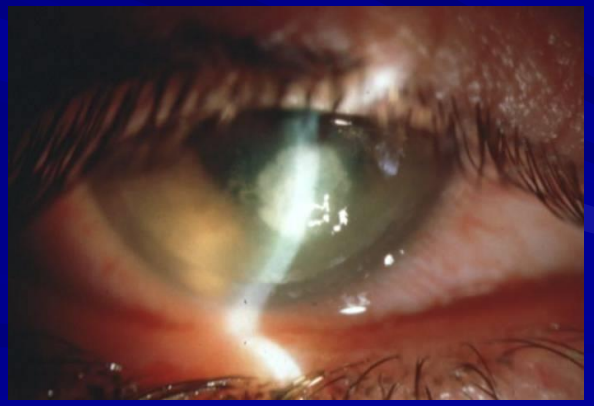


Bacterial



Viral

Acanthamoeba

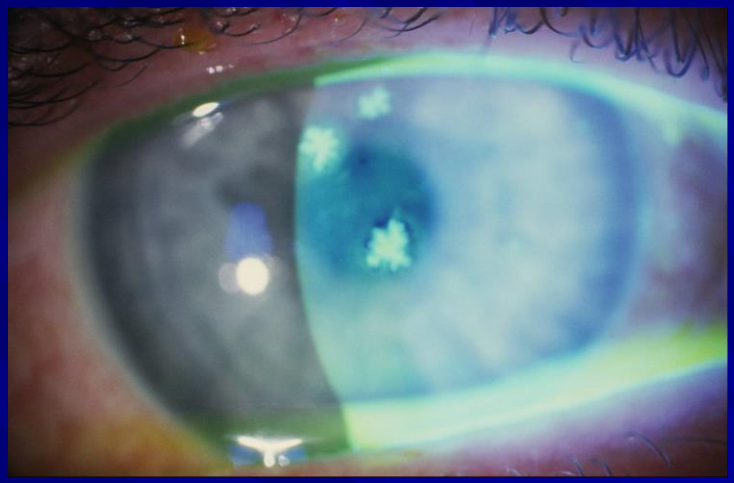


Fungal

Keratitis

Pearls

- 4th generation fluoroquinolones including Iquix
- Contact lenses
- G- infection
- Systemic pain meds
- Daily follow-up



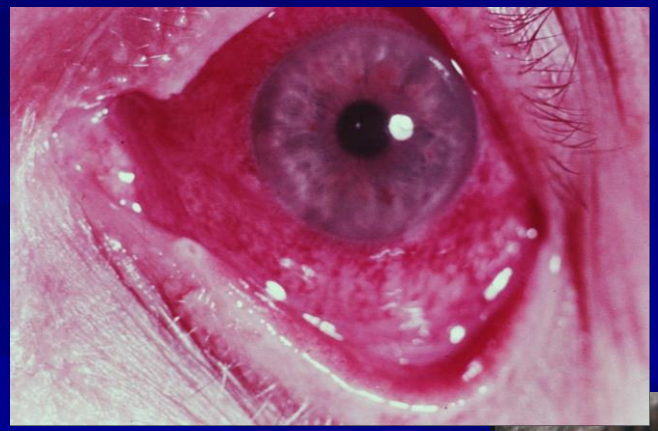
When to refer – same day

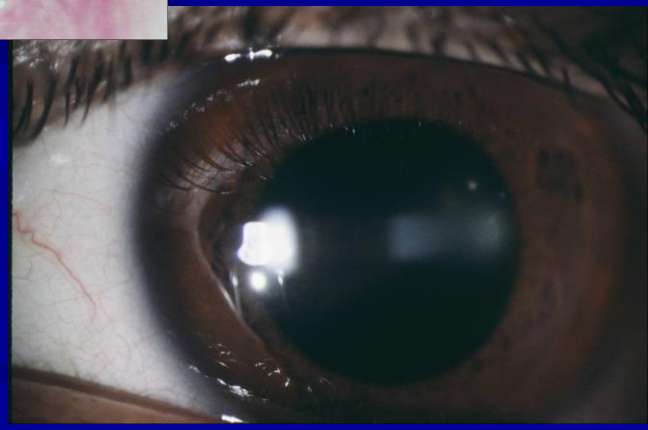
- **Central**
- **Larger than 3 mm w/o daily improvement**
- **If not bacterial**
- **Hypopyon**
- **Severe pain**

Iritis

Signs, symptoms

- Pain
- Photophobia
- Decreased vision
- Tearing
- No mucous
- No corneal staining
- Ciliary injection
- Constricted pupil?
- Sympathetic pain
- Cells in anterior chamber

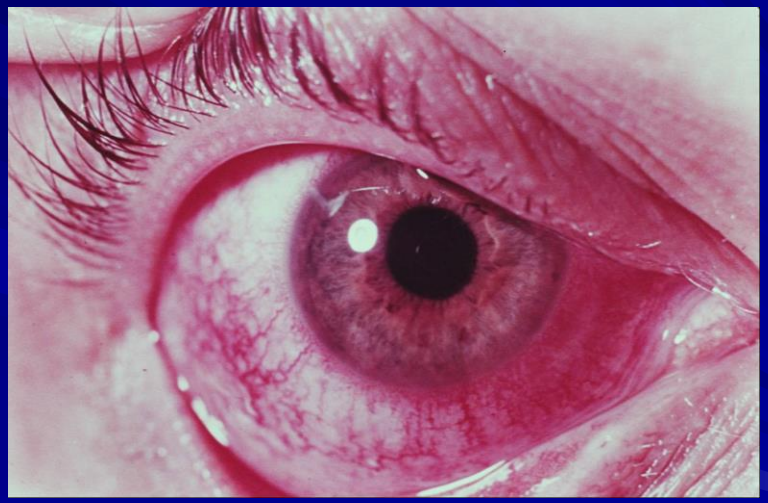




Iritis

Types: traumatic, non-traumatic

- Refer for slit lamp exam
  - *Cells in anterior chamber pathognomonic for iritis*
- Systemic causes
- Medical workup



Initial treatment

- Topical steroids
- Cyclopegics
- Ro glaucoma
- Systemic disease
- Other treatments

Refer always – same day

Hyphema

Blood in anterior chamber

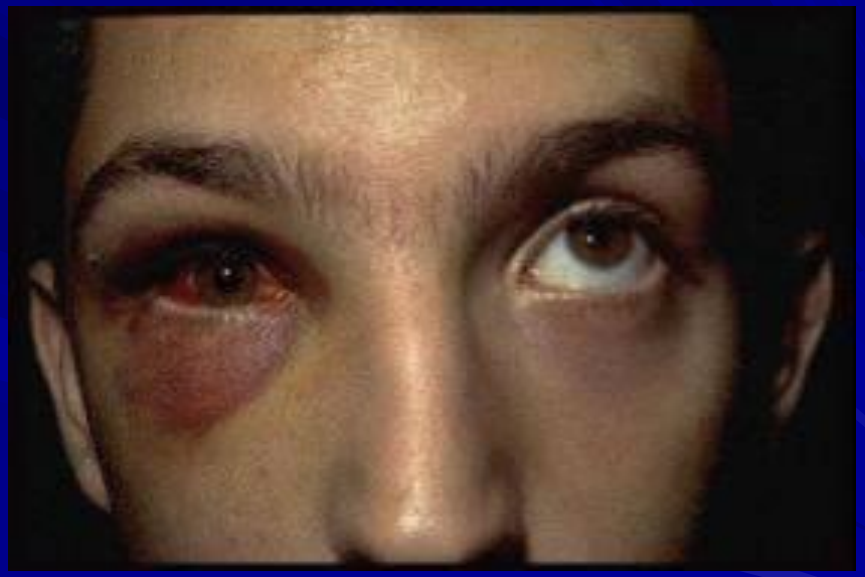
Pearls

- Fox shield
- ASA
- Bed rest; 30˚
- Glaucoma
- Sickle cell disease

Refer always - STAT

Orbital Floor or Blow-Out Fracture

- Trauma
- Orbital floor – most common
- Symptoms
  - Diplopia
  - Restricted eye movement
  - Hyposthesia
  - Air accumulation
  - Sunken eye
  - View globe inferior
  - Crepitus – nose blowing



Orbital Floor or Blow-Out Fracture

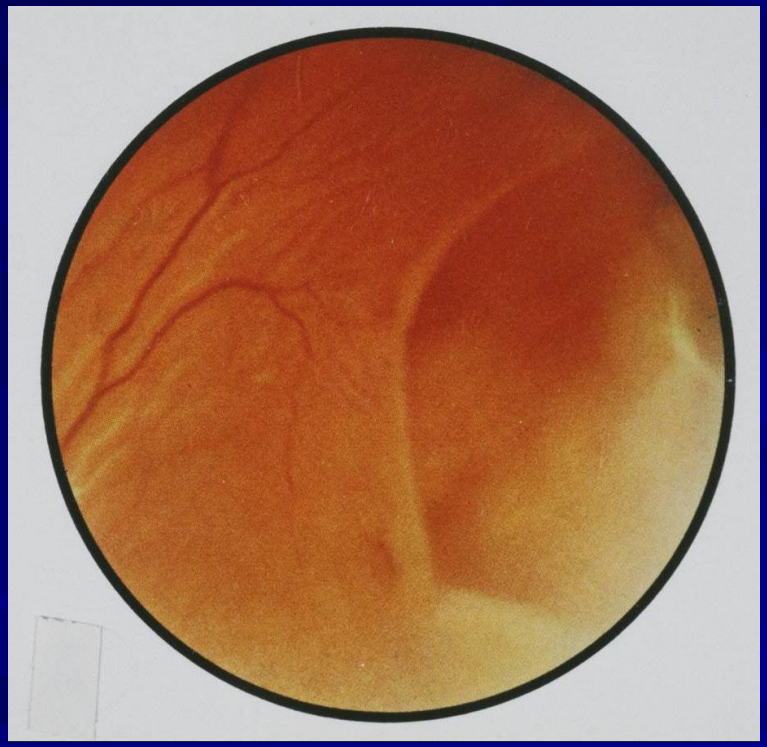
Pearls

- Broad-spectrum po antibiotic
- Cold compress – ice pack
- Nasal decongestants
- Nose blowing 
- Retinal detachment – coup, counter-coup
- CAT scan of orbit

Refer always, same day

- Opthalmology, ENT

Retinal Detachment



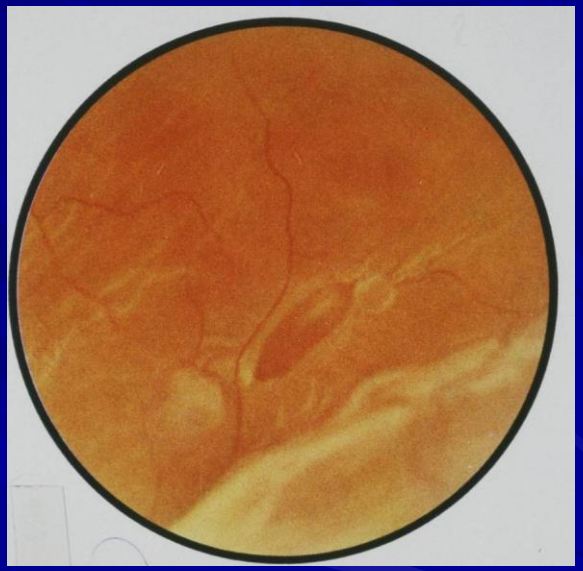
Symptoms

- Flashes
- Floaters
- Vision loss
- Asymptomatic?
- Monocular
- Migraine differential

Retinal Detachment

Risk Factors

- High myopia
- Trauma (5-10%)
- Previous ocular surgery,
- Diabetic retinopathy
- Tumor, inflammation, lesions
- RD in non-involved eye (10 – 20%)



Pearls

- Late retinal detachment
- Medical/legal

When to refer – STAT

Papilledema

Possibly life-threatening

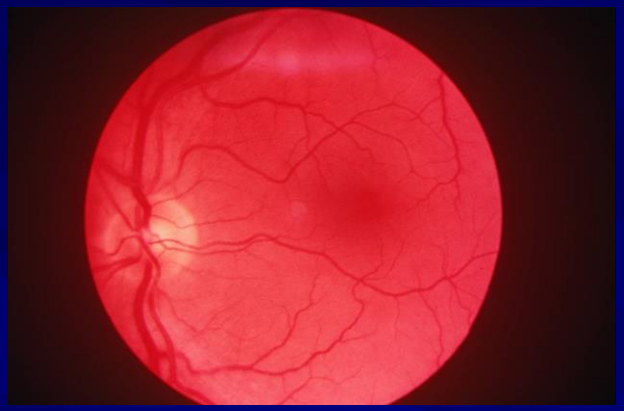
Optic nerve swelling

- *Cause: increased intracranial pressure*
- *Develops in hours; dissipates over months*

Look for

- Bilateral swollen, hyperemic discs
- Blurred disc margins
- Elevated discs
- Cupping?
- Spontaneous venous pulsation (SVP)?
- Disc hemorrhages
- Concentric folds

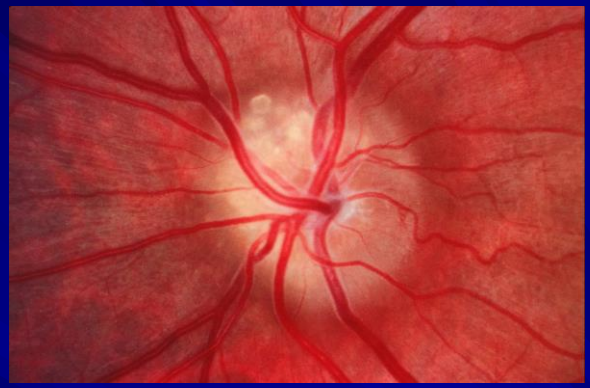
Papilledema

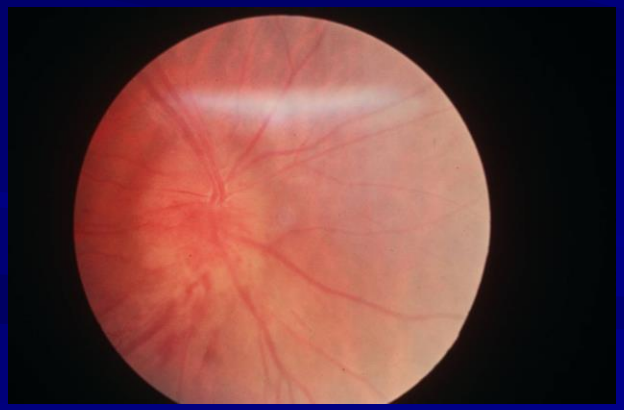


Normal

Normal

(Drusen)





Swollen, blurred,
no cupping or SVP,
disc hemorrhages

Concentric folds

Papilledema

Rule out most common

- Primary, metastatic intracranial masses
- Pseudotumor cerebri
  - *overweight women?*

Pearls

- Neuroimaging- head, orbit
- Lumbar puncture?

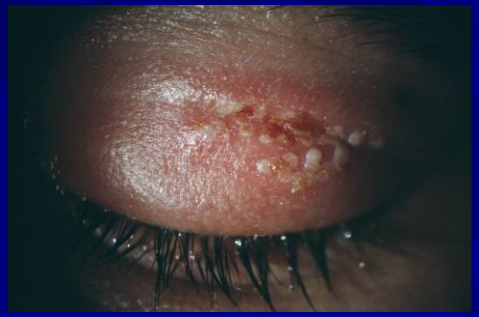
When to refer - STAT

Sexually Transmitted Eye Diseases

- Lice of lashes
- Chlamydial conjunctivitis
- Syphilis
- Gonorrhea

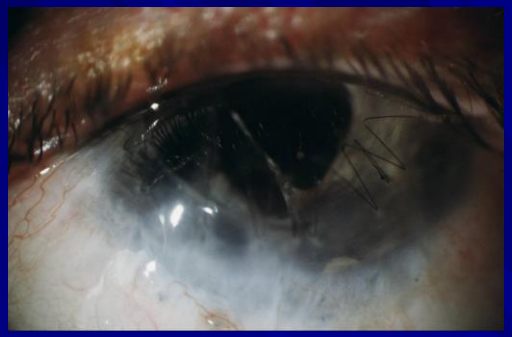
Not always STD:

- Herpes simplex keratitis
- HIV infection/cotton wool spots, cmv retinitis, etc.

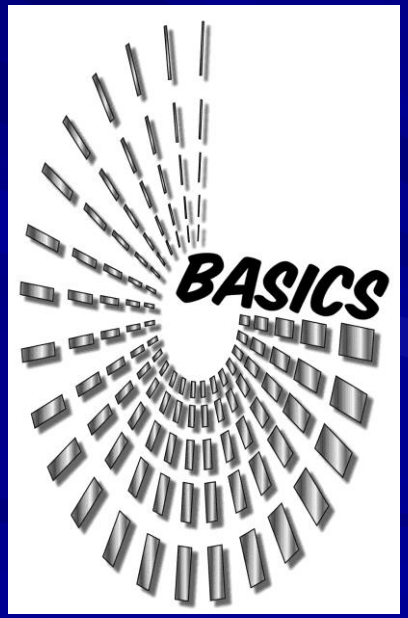


Ocular Trauma and Alcohol

- Educational opportunities



- BASICS
  - **B**rief **A**lcohol **S**creening and **I**ntervention for **C**ollege **S**tudents
  - Non-judgmental interview



Avoiding Eye Liability

- Act like a healthcare professional
  - Show you care
  - “Captain of the ship”
- Document, document, document
  - “If it’s not in the chart, it wasn’t done”
- Lead, follow or get out of the way
  - Comfort level with case
- “Sunshine is the best disinfectant”
  - Be honest

Avoiding Eye Liability

- Standards of care
  - Visual acuity on everyone
  - Don’t prescribe, dispense topical steroids
  - Don’t prescribe topical anesthetics
  - Refer papilledema STAT
  - Warn of signs, symptoms of retinal detachment
  - Don’t ignore red eye & ocular danger signs
  - Informed refusal
    - Patient, witness signatures

More Pearls

- **African descent**
  - Glaucoma
  - Sarcoidosis
  - Sickle cell disease
  - BP
- **Red, painful eye w/o mucous usually not conjunctivitis**
  - *R/o corneal abrasions, ocular fb, keratitis, iritis, glaucoma*
- **“Zebras”**
  - *The not-so-simple red eye*
- **Don’t go sailing by yourself**