Common Ophthalmic Problems:

Ocular Triage and Treatment

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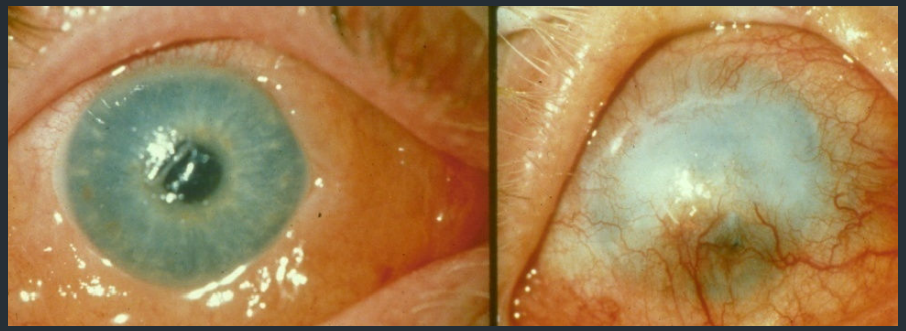
No Financial Disclosures

The Front Line in Eye Care

- *Eye specialists*
- *Emergency Departments*
- *Family Physicians*

- Must be able to quickly and accurately triage eye problems.
- Many problems require referral, you may be able to perform initial key therapy to reduce morbidity.

Ocular Triage and Treatment

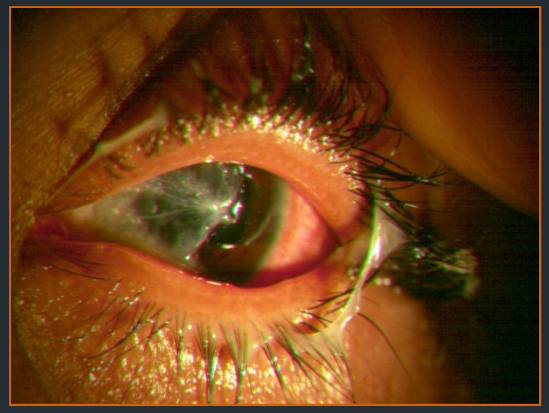


- Chemical Burn
  - A true ocular emergency
  - Quick triage and immediate treatment
    - Essential – you may make the difference in outcome
    - Copius irrigation
- Poison Control Center has product information including pH of solutions
  - Alkali more serious than acid
- If significant refer to ED
  - Further irrigation
  - Monitor pH
  - Check for foreign bodies

Eye Trauma: Incidence

- 1.3 Million eye injuries per year in the U.S.
- 40,000 of these injuries lead to visual loss
- Highest incident in young males
- Most are preventable

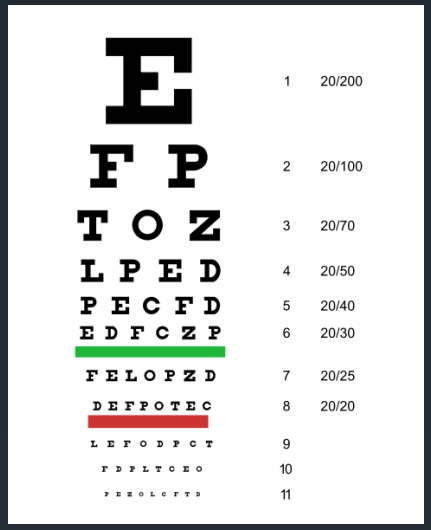
Triage



- Mechanism of injury
- Time of injury
- Actions taken
- Symptoms besides decreased vision/ eye pain?
- Duration of symptoms
- Any surgery prior to trauma? Contact lens wear.
- One or both eyes affected?
- Vision at the time of examination?
- Vision prior to trauma?
- Double vision – one eye or both?

Eye Examination

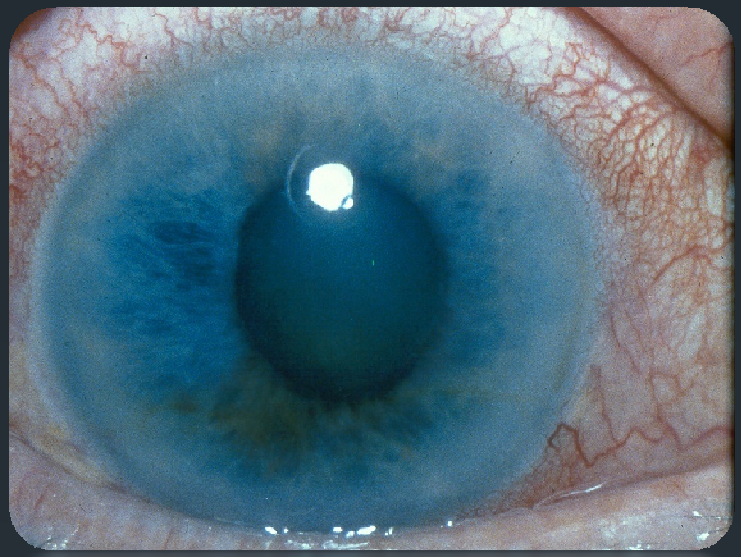
- Vision
  - Near/distance
  - Correction
- External Exam
- Pupils
  - Shape, Reactivity
- Motility Exam
- Anterior Segment
  - Slit Lamp- Magnified
  - Pen light/cobalt filter



- Ophthalmoscopy
- Pressure
  - Unless penetrating injury suspected
- Visual Field
  - Confrontation

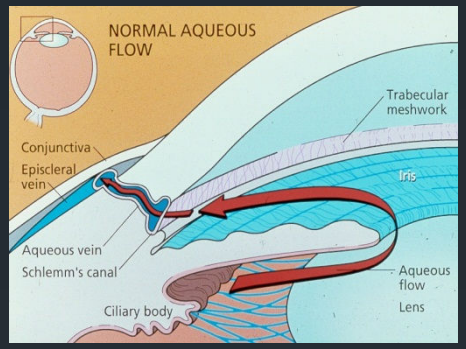
Triage

- 50 year old woman presents with:
  - Red, painful eye
  - Decreased vision, halos around objects
  - Headache, Nausea, Vomiting
- Exam reveals:
  - Mid-dilated, fixed pupil
  - Cloudy cornea
  - Shallow anterior chamber



- What is the most likely diagnosis?
  A. Corneal Abrasion
  B. Iritis
  C. Acute Angle Closure Glaucoma
  D. Conjunctivitis

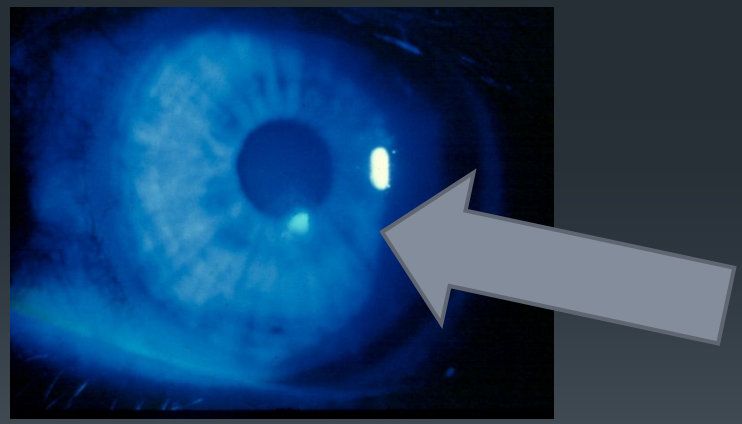
C. Acute Angle Closure Glaucoma



- Increased eye pressure due to mechanical obstruction of aqueous outflow.
  - Symptoms and signs classic, IOP elevated.
  - True ocular emergency.
- Treatment:
  - Refer for IOP reduction and reversal of angle closure
    - Medical Intervention
      - Pilocarpine 2% drops, Timolol maleate 0.5%, Prednisolone Acetate 1% q 15 min x 4
      - IV Acetazolamide 500mg
      - Oral or IV hyperosmotic (glycerine/isosorbide, Mannitol)
    - Surgical: Laser PI, Trabeculectomy

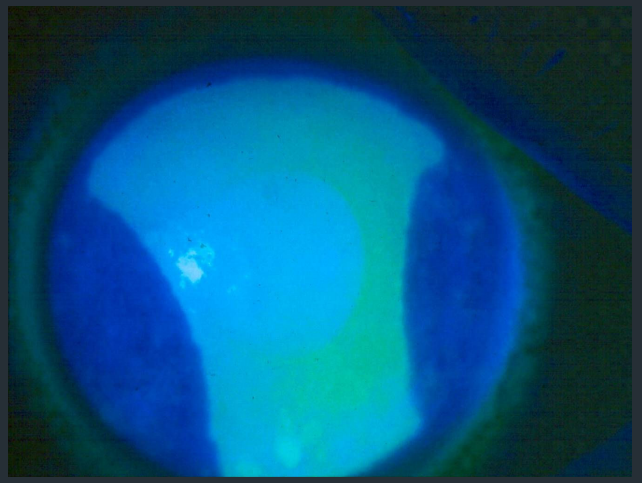
Triage

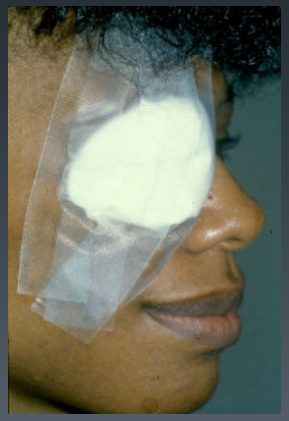
- 15 year old girl presents after poking her eye with a mascara wand this morning. She complains of pain, foreign body sensation, photophobia, epiphora, blurred vision.
- Exam with fluorescein dye reveals staining



Corneal Abrasion

- Treatment
  - Topical Antibiotic
  - Topical NSAID
  - Patch versus No Patch
    - Never Patch Contact Lens Wearers
- Refer
  - Frequent Follow up until resolved
  - Recurrent erosion syndrome



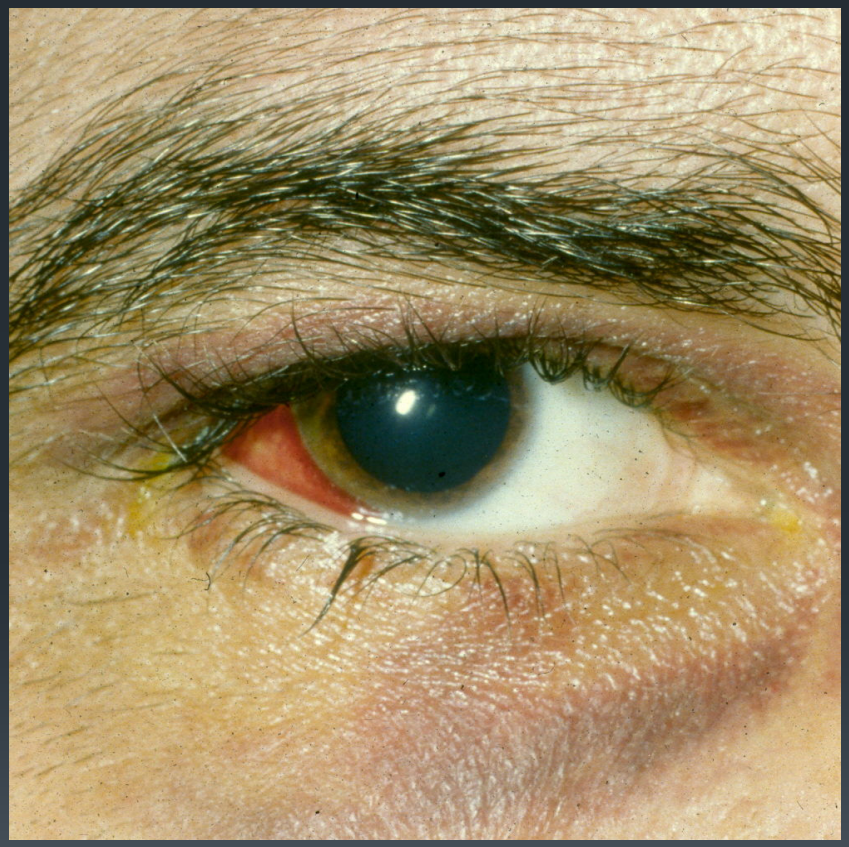


Triage

- 30 year old man presents after he was hit in the eye with the ball while playing racquetball. His chief complaint is blurred vision, photophobia, eye pain, redness.

- Differential Diagnosis?
  - Subconjunctival hemorrhage
  - Corneal abrasion
  - Traumatic iritis
  - Hyphema
  - Suspect vitreous hemorrhage, retinal edema or detachment, ruptured globe, orbital fracture, traumatic iris sphincter tear

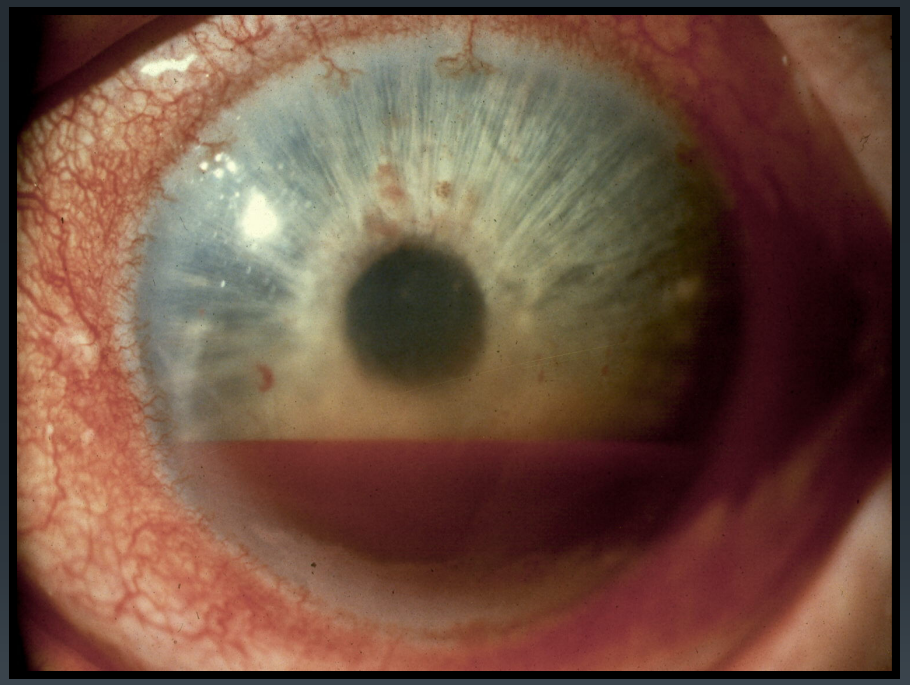
Subconjunctival Hemorrhage



- Broken blood vessel within conjunctiva
- Typically benign
  - Often spontaneous
- No treatment necessary
- Associated injuries possible
  - Abrasion, Iritis, Orbital fracture

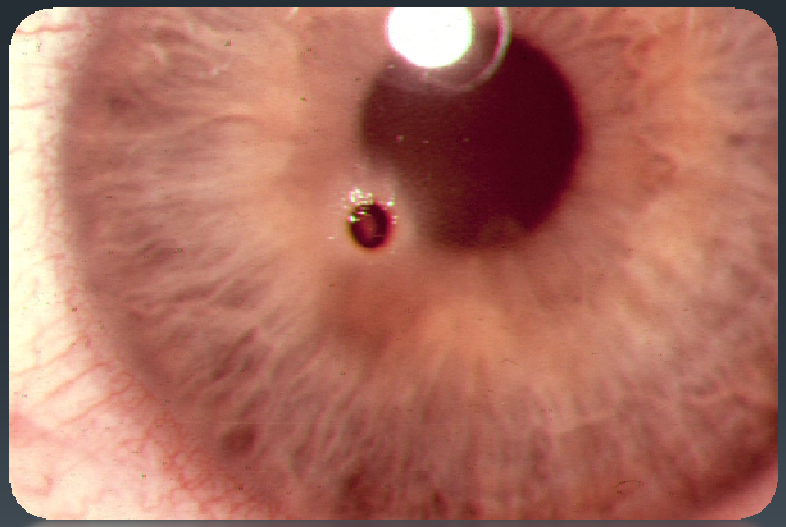
Hyphema

- Blood in anterior chamber
- 25% chance of associated ocular injury
  - Vitreous Hemorrhage
  - Retinal Detachment
  - Ruptured Globe
- Treatment
  - **Refer**
    - HOB 45’
    - Topical Steroid, cycloplegic
    - Risk of rebleed in 3-5 days, increased IOP
    - Daily monitoring



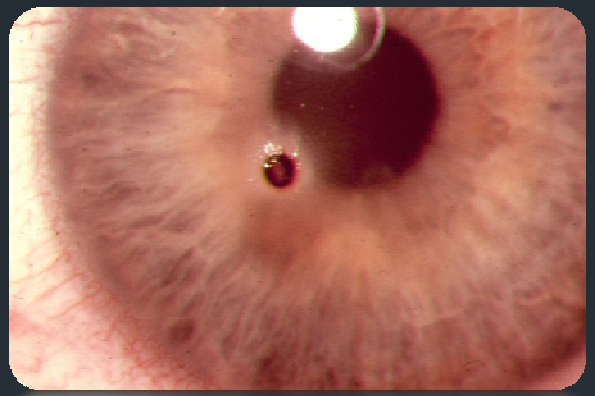
Triage

- 40 year old male working under his car had something fall in his eye. He presents with symptoms of foreign body sensation, tearing, photophobia. Penlight exam reveals a 1.5mm foreign body in the cornea.



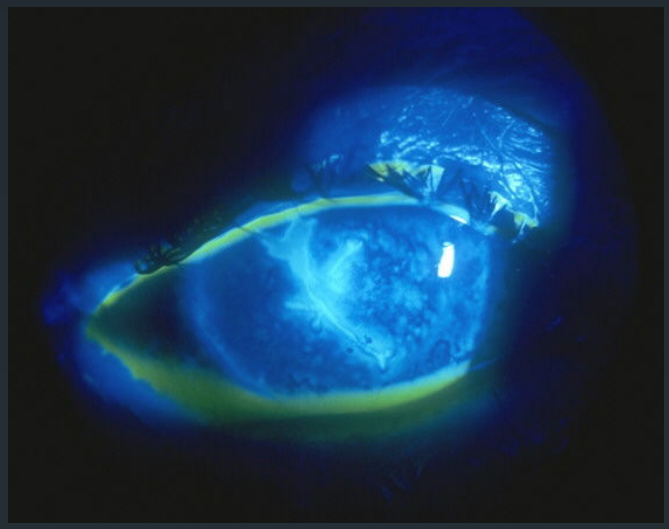
Corneal Foreign Body

- Often metallic
  - Iron causes rust ring and
  - Inflammatory effect
- Suspect penetrating injury if high speed mechanism involved
  - Hammering metal on metal, Mowing
- Refer for Removal
  - Always removed at the slit lamp under high magnification
  - Lids everted to check for FBs



Triage

- 50 year old woman presents with 2 day history of right eye irritation, foreign body sensation, photophobia and tearing. She was at the beach and may have had sand blow in her eye although she doesn't recall a specific incident.
- Examination with fluorescein dye is performed, see image.

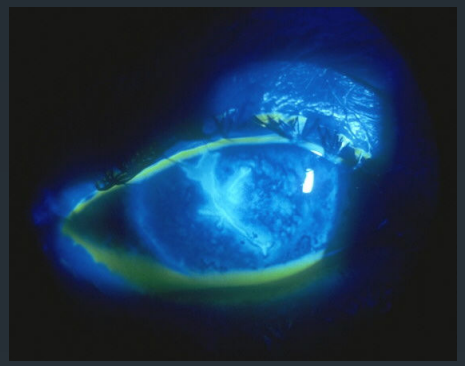


- What is your diagnosis?

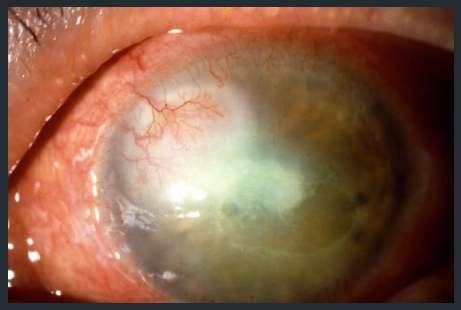
A. Corneal Abrasion
B. Corneal Foreign Body
C. Iritis
D. Herpes Simplex Dendritic Keratitis

Infectious Epithelial keratitis

- Herpetic Keratitis is the leading cause of corneal blindness in the U.S.
  - 20,000 new cases annually, 28,000 reactivations
- Active viral replication
- Treatment
  - Refer – frequent monitoring
    - Can resolve spontaneously in 3 weeks
    - Treatment minimizes stromal damage and scarring
    - Epithelial debridement, topical ganciclovir, trifluridine, Oral therapy

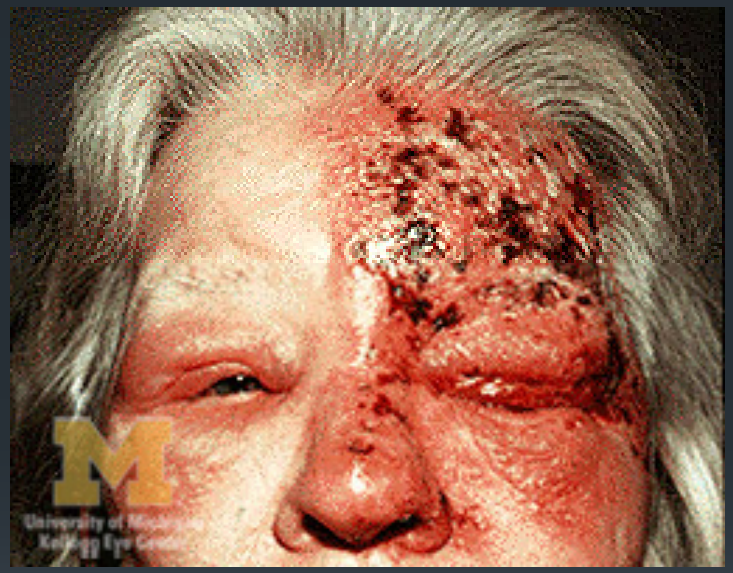


Recurrent Herpes Simplex keratitis*



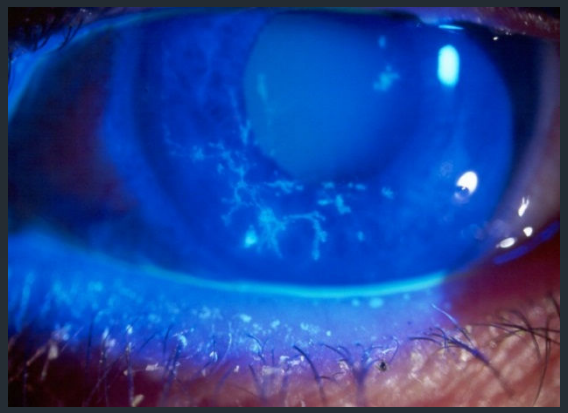
- HSV keratitis may be divided into 4 categories:
  - Infectious epithelial keratitis
  - Neurotrophic Keratopathy
    - Impaired corneal innervation
    - Non preserved lubricants, patching, bandage contact lenses, autologous serum, tarshorraphy. Stromal thinning may lead to perforation and surgery.
  - Stromal keratitis and Endotheliitis
    - Immune response to virus or antigen
    - ?Active virus in stroma
    - Steroid antiviral combination
    - Necrotizing form can lead to perforation
  - A leading indication for corneal transplantation

Triage



- 68 year old woman presents with 3 day history of burning and pain on left side of forehead and scalp. Eye swollen shut.
- Examination reveals vesicles on face in Trigeminal V1 distribution. Hutchinson's sign.
  - 10% of all cases
  - 50% will develop ophthalmic involvement

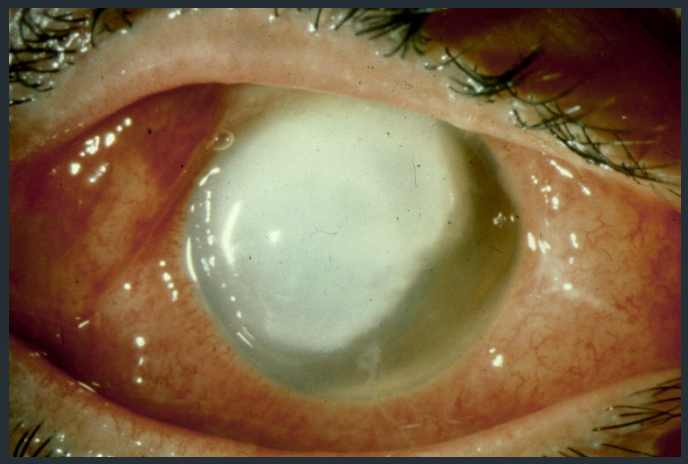
Herpes Zoster Ophthalmicus: Triage



- Symptoms:
  - Foreign body sensation, photophobia, blurred vision
  - May Occur: Days, Weeks after Rash
- Findings:
  - Conjunctivitis, epithelial keratitis (pseudo-dendritic), stromal keratitis, anterior uveitis, optic neuritis, retinitis, cranial nerve palsies
- Ocular Disease may be active for years
  - Can lead to chronic uveitis, corneal disease, glaucoma
  - Often need chronic topical steroid therapy
- Treatment: Refer for ophthalmic evaluation

Triage

- 30 year old contact lens wearer complains of redness, irritation, photophobia, tearing, and decreased vision.
- Seen and patched overnight. Today with increased discomfort, she removed patch this am and noticed a white spot on eye.

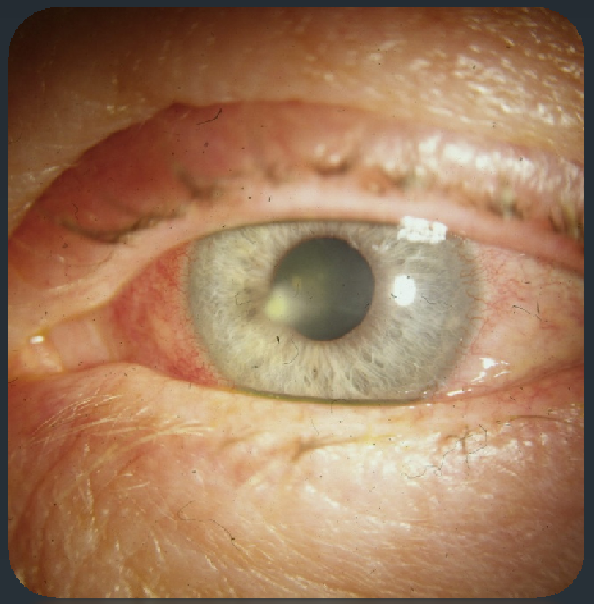


- What is the likely diagnosis?

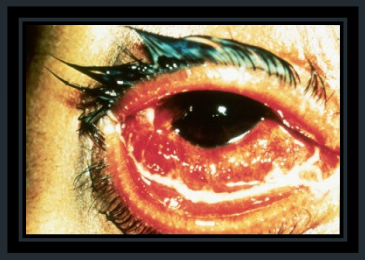
A. Corneal Ulcer
B. Corneal Abrasion
C. Iritis
D. Conjunctivitis

Corneal Ulcer

- Infectious Keratitis
  - Immunocompromised, Injury
  - CL Wearers
    - Pseudomonas, Staph, Strep most common
    - Acanthamoeba, fungal
- Treatment:
  - Refer Immediately
  - Ophthalmic Emergency
    - Ophthalmology will perform scraping and plating cultures
    - Fortified Broad Spectrum Topical Antibiotics



The Red Eye…



- Very common cause for office visit
  - Causes range from benign to serious
  - May be sight threatening
  - Every case thus far associated with red eye
- FP frequently triage these patients
  - Remember
    - Foreign body sensation may be dry eye related or a sign of more serious corneal problem.
    - Pain and photophobia are often associated with corneal disease or iritis. Refer.

Classification of Red Eye

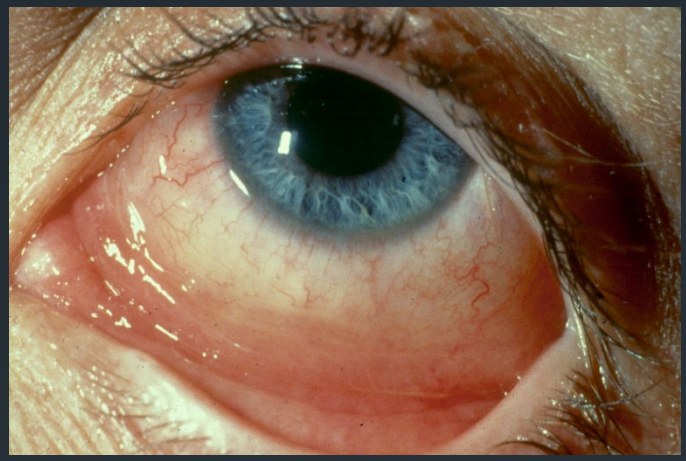
- Anatomical
  - Conjunctivitis
  - Keratitis/Ulcer
  - Iritis
  - Episcleritis
  - Scleritis
  - Lids/Adenexa
  - Acute Glaucoma
- Pathophysiological
  - Allergic
  - Bacterial
  - Viral
  - Fungal
  - Toxic
  - Dry Eye
  - Immunologic
  - Trauma

Symptoms & Etiology

Symptom	Probable Diagnoses
Itching	Allergy
Scratching sandy & burning, fbs	Dry eyes, lid problems, corneal problems
Lid tenderness	Chalazion, sty
Intense pain	Corneal abrasion, iritis, scleritis, acute glaucoma, sinusitis
Photophobia	Corneal abrasion, iritis, acute glaucoma, HSV keratitis

Viral Conjunctivitis

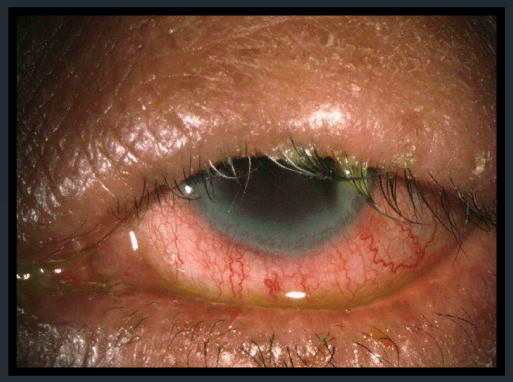
- Triage:
  - Watery - serous discharge
  - Conjunctival injection
  - Eye lid edema
  - Pre-auricular lymph node
  - One eye first, then other

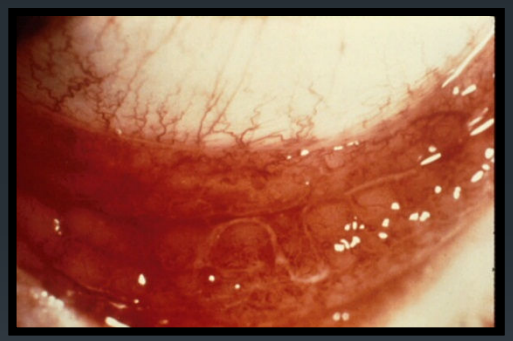


- Most common:
  - EKC, PCF Pharyngoconjunctival fever
  - URI, sore throat, fever may be associated
- Typical mild viral conjunctivitis requires no treatment and will resolve in days-week

Epidemic Keratoconjunctivitis (EKC)*

- Acute onset, follicular conjunctivitis
  - Adenovirus (types 8,19,27,37)
  - Bilateral, often asymmetrical
- Triage:
  - FBS, pain, mucoid discharge,
  - blurred vision, photophobia (10days)
  - Findings: lid edema, preauricular node
    - Subconjunctival hemorrhage
    - Pseudomembranes in 1/3

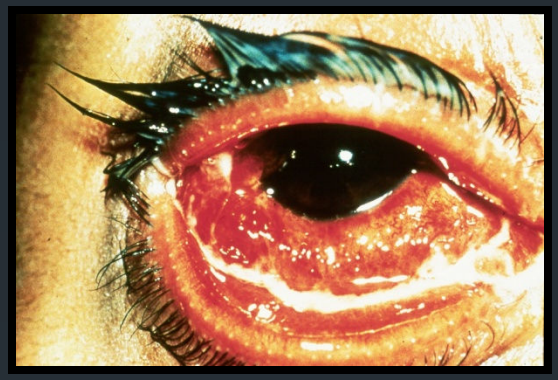


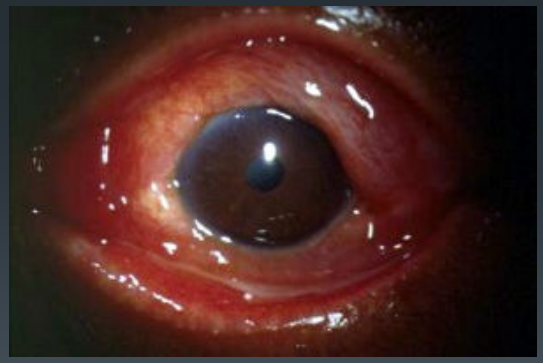


- Conjunctivitis lasts 2-3 weeks, 10-14 d corneal involvement occurs, lasts 6-12months
- Treatment: Refer for treatment of keratitis

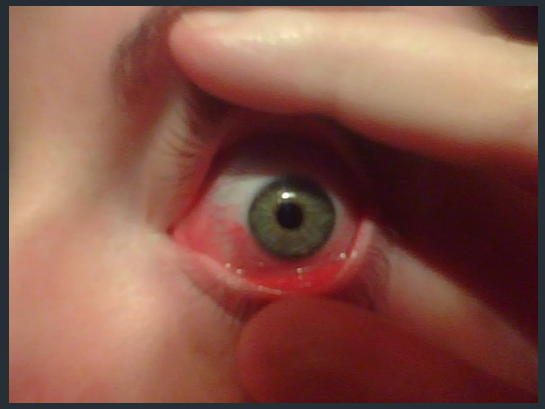
Bacterial Conjunctivitis

- Acute onset, papillary conjunctivitis
  - Staph, Strep, Pseudomonas, Haemophilus
  - Bilateral, often one eye first
- Triage
  - Symptoms: Redness, irritation, discharge
  - Findings
    - Injection with papillary reaction
    - May be hemorrhagic, chemosis
    - Mucopurulent discharge
    - Eyelids and lashes matted
- Treatment: Refer
  - Culture, Topical antibiotics
    - Polytrim, Fluoroquinolone
  - Some forms can lead to corneal perforation
  - Hyperacute - Neisseria – GC -Systemic antibiotics





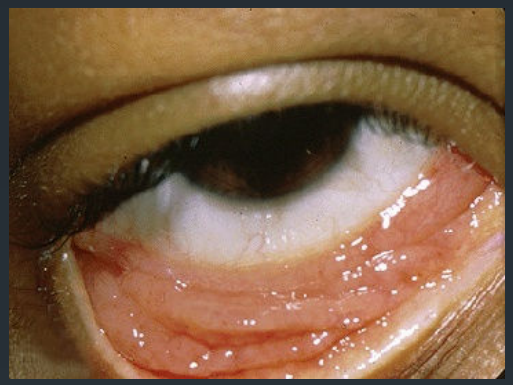
Seasonal Allergic Conjunctivitis



- Very common
  - Symptoms present based on specific allergens
  - Pollen, Ragweed
- Triage:
  - Itching, burning, watery discharge
  - Associated symptoms (nasal congestion, sinusitis)
- Findings
  - Lid edema
  - Conjunctival injection/chemosis
  - Papillary reaction
- Treatment
  - Avoid allergens, desensitization
  - Tears, cool compresses
  - Topical antihistamines & vasoconstrictors, mast cell stabilizers. OTC Naphcon, Zaditor, Rx Patanol, Lastacaft
  - Refer
    - Topical NSAIDS
    - Steroids - rarely

Perennial Allergic Conjunctivitis

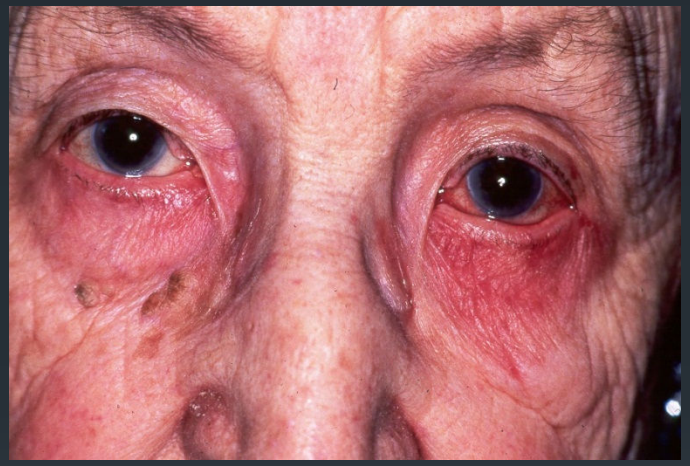
- Chronic conjunctivitis can be difficult to differentiate
- Triage
  - Signs & symptoms similar to SAC, but present all year
  - Dust mites, cockroaches, & pet dander



- Treatment
  - Avoid allergens, desensitization, tears, cool compresses, topical antihistamines & vasoconstrictors, mast cell stabilizers
  - Refer
    - Cultures
    - NSAIDS
    - Steroids

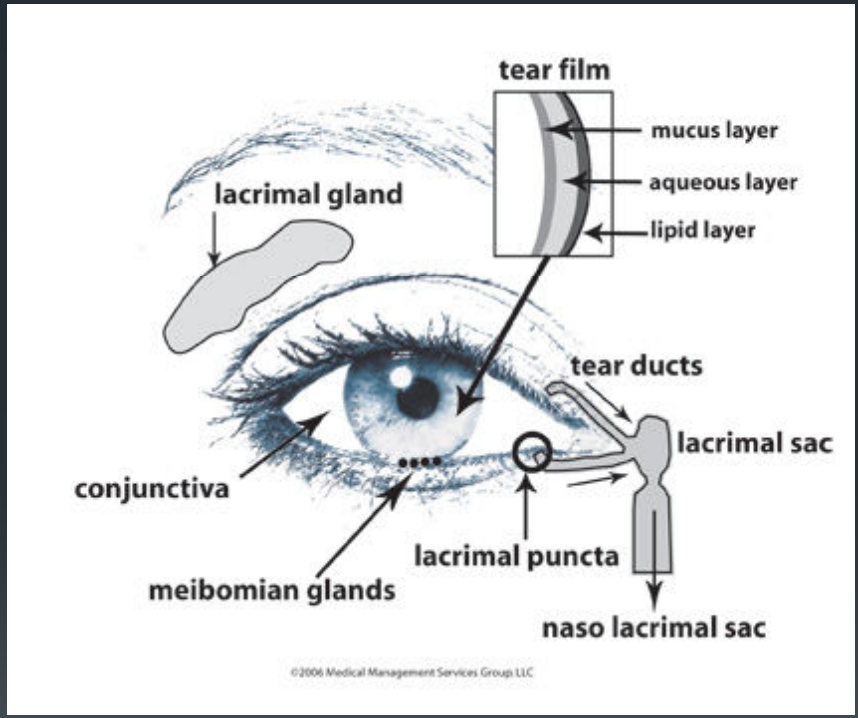
Contact Allergic Conjunctivitis*

- Any contact to ocular area
  - Lotions, detergents, perfumes
  - Ocular medications and Solution preservatives are frequent offenders
    - Neomycin, Glaucoma therapeutics, Thimerosol, BAK & others
- Triage
  - Unilateral or bilateral
  - Redness, itching, burning, fbs, tearing
  - Findings:
    - Skin of lids typically red, lichenification
    - Conjunctival injections
    - Palpebral follicles, may have papillae
- Treatment
  - Avoid allergens, tears, cool compresses, topical antihistamines & vasoconstrictors, mast cell stabilizers
  - Refer
    - If on topical therapy
    - Treatment of conjunctivitis may lead to CAC
    - NSAIDS, Steroids



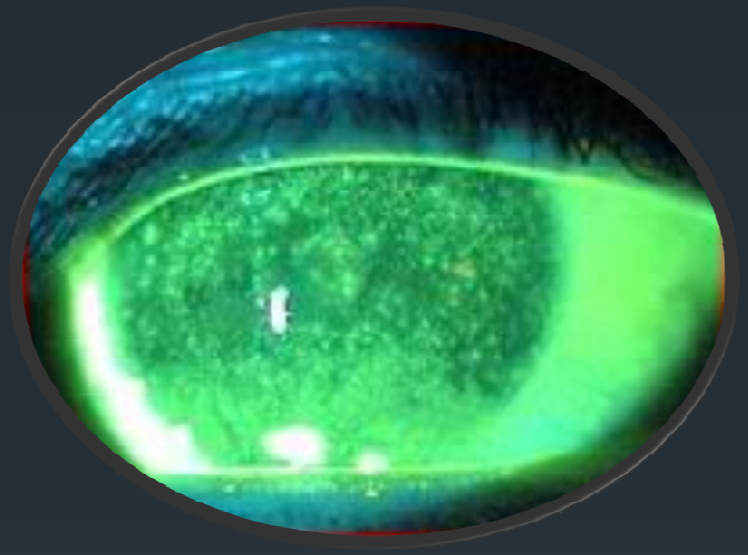
Dry Eye

- Very Common cause of red irritated eyes
- 15 – 20 % over age 40
- Impact on quality of life
  - Moderate dry eyes = moderate angina
- Causes functional visual loss and many ophthalmologist office visits.

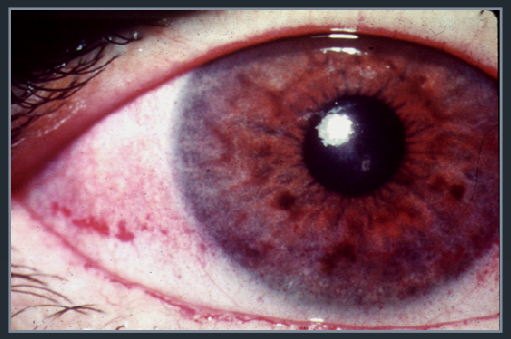


Dry Eye

- Systemic Associations
  - Auto immune disease
  - Rosacea
  - Sequella of SJS, Zoster
  - Mucous membrane pemphigoid
  - Chemotherapy related, GVHD related
  - Hormonal changes
  - Thyroid disease



Dry Eye

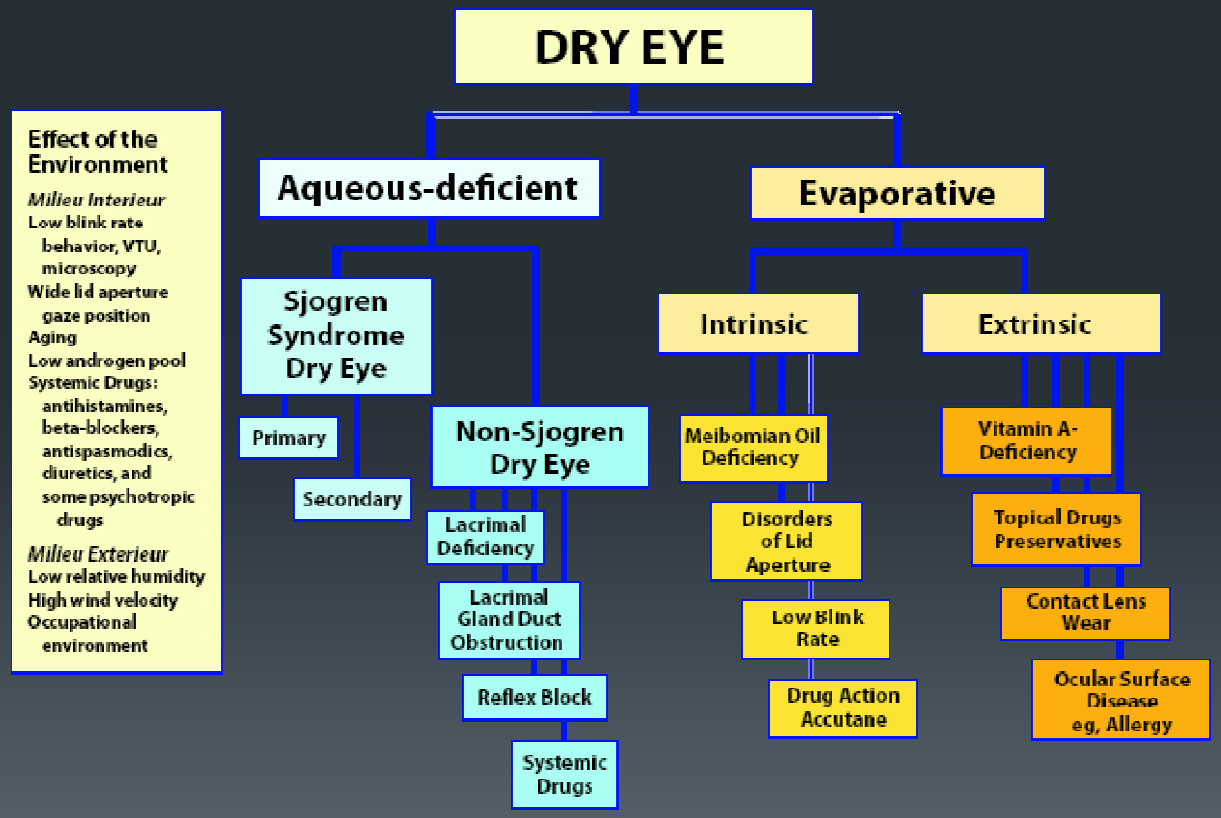


- Medications
  - Anti-hypertensives
  - Diuretics
  - Many psychotrophic meds
  - Anti-allergy
  - Decongestants
  - Topical eye drops

Dry Eye

- Environmental/personal
  - Wind, cold
  - Dry environment, low relative humidity
    - Air conditioning, Heat (heated air dryer than desert)
  - Chemicals
    - Cleaning, cosmetics, fragrances, smoking
  - Contact lenses
  - Age
  - Wide lid aperture
  - Low blink rate

Dry Eye "Flow" Sheet



Triage

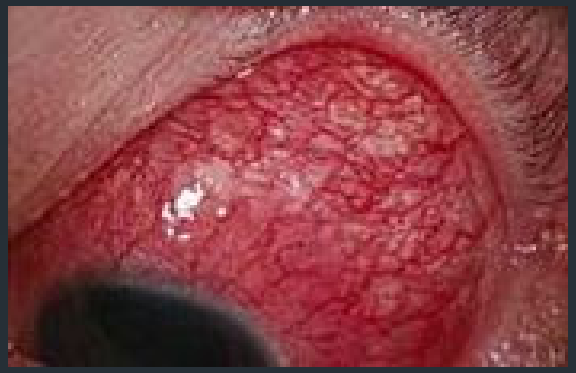
- Symptoms:
  - Discomfort, soreness
    - relief with eye closing
  - Burning, stinging, redness
  - Foreign-body sensation, sandy-gritty feeling
  - Blurry, fluctuating vision-
    - Usually clears with blink
  - Photophobia
  - Paradoxical tearing
  - Intolerance to certain environmental conditions

Dry Eye Treatment

- Lubricant drops, gels, ointment
  - Mild - Drops 4x/day, or at computer/while reading
  - Avoid vasoconstrictors
  - Environmental changes (humidifier, car vents, no fans)
- Refer
  - Mild to Severe – Drops and gels every 1-2 hours ointment at night
    - Avoid preservatives over 4x/day dosing (and severe KCS)
    - Restasis, Steroids, Autologous Serum
    - Punctal plugs
    - Environmental changes (moisture chamber)

Scleritis

- Triage
  - Severe pain, tenderness
  - Photophobia and tearing
- Findings
  - Marked inflammation
  - Dilation of superficial and deep episcleral vessels
  - Scleral edema
  - Bluish-red appearance
  - Sectoral ,diffuse, nodular necrotizing



Scleritis

- 50% associated with systemic disease
  - Rheumatoid Arthritis, Systemic Lupus
  - Ankylosing Spondylitis, Wegner's Granulamotosis
  - Herpes Simplex, Gout, Syphilis
- Ocular complications
  - Cataracts, glaucoma, choroidal or retinal detachment, optic atrophy
- Treatment - Refer
  - Topical steroids, systemic steroids, NSAID, other immune modulating drugs.

Iritis*

- Triage:
  - Pain-dull in and around eye
  - Photophobia, decreased vision,
  - redness
- Findings
  - Injection, perilimbal flush
  - Pupil : sluggish reaction
  - AC: flare and cells
  - Severe may form hypopyon
  - Cornea: keratitic precipitates
- Treatment: Refer
  - Steroids and cycloplegics,
  - May be associated with systemic disease

Iritis*

- Ankylosing spondylitis
- Herpes simplex
- Lyme disease
- Ulcerative colitis
- Reiter's syndrome
- Psoriatic arthritis
- Juvenile chronic arthritis
- Sarcoidosis
- Bechet's disease
- TB/ Syphilis
- Unknown/idiopathic

- CBC, ESR, VDRL, FTA-Abs, HLA-B27, Lyme titer
- RF, ANA, ACE
- PPD
- Chest x-ray
- Lumbosacral and hand x-rays

Differential Diagnosis

	Conjunctivitis	Iritis	Scleritis	Acute Glaucoma
Vision	normal	normal	normal	decreased
Discharge	present	0	rarely	0
Pain	none	mild-mod	mod-severe	severe
Pupil	normal	normal/ constricted	normal	mid-dilated
Light Response	normal	normal/ Sluggish	normal	non-reactive
Conj. Injection	diffuse	limbal flush	diffuse or segmental	diffuse
Cornea	clear	clear/KP	clear	hazy/irreg. reflex

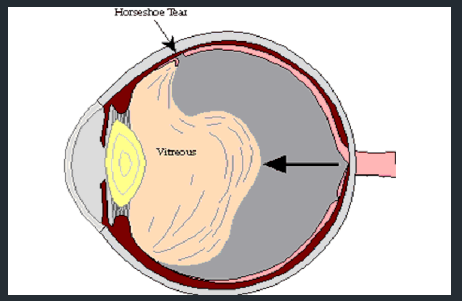
Transient Visual Disturbance: What is the Differential Diagnosis?

- 65 year old woman presents with new onset flashes of light in her left eye. No decrease in vision.
  - What is in your differential diagnosis?
    - Vitreous detachment
    - Retinal hole or detachment
    - Ocular migraines

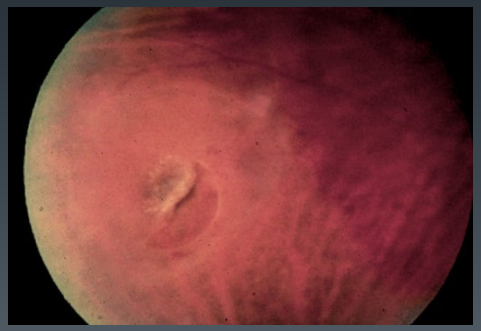
Transient Visual Disturbance: Ocular Migraine

- Triage
  - Scintillating scotoma, zigzag patterns, or complete loss of vision lasting usually 10–60 min and sometimes followed by headache
- Often in young patients
- Clinical evaluation
  - Differentiate from vitreous detachment (quick flashes, floaters), amaurosis fugax (seconds to minutes of vision loss, curtain coming down in vision)

Transient Visual Disturbance: Vitreous Detachment



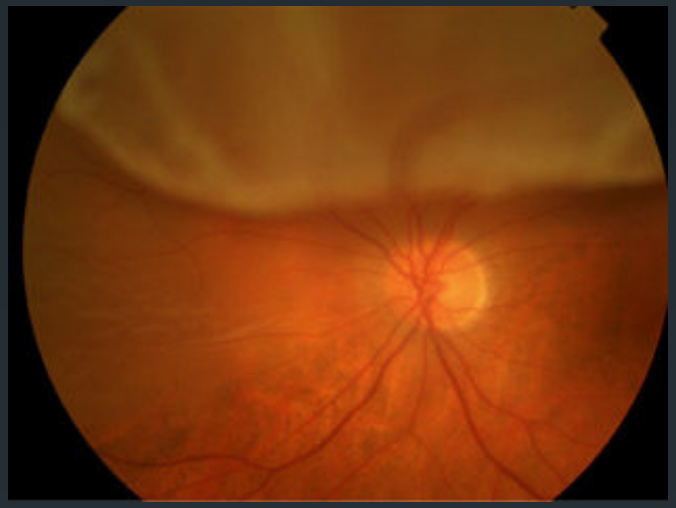
- Triage:
  - Sudden appearance of floaters (specks, circles, cobwebs), sometimes accompanied by quick light flashes
- Vitreous separation from retina
  - Typically benign, normal change in vitreous
  - Risk factors: > 50, myopia, trauma
- Treatment:
  - Refer for dilated retinal exam
  - Evaluate for retinal hole, detachment



Sudden Vision Loss:
What is the Differential Diagnosis?

- 80 year old woman presents with sudden significant loss of vision in her right eye only.
  - What is in your differential diagnosis?
    - CRAO
    - CRVO
    - Vitreous Hemorrhage
    - Retinal Detachment
    - Acute Glaucoma
    - Temporal Arteritis
    - NAION
  - What would be your differential diagnosis if she were 37 years old?
    - Retinal Detachment, Vitreous hemorrhage, Optic neuritis

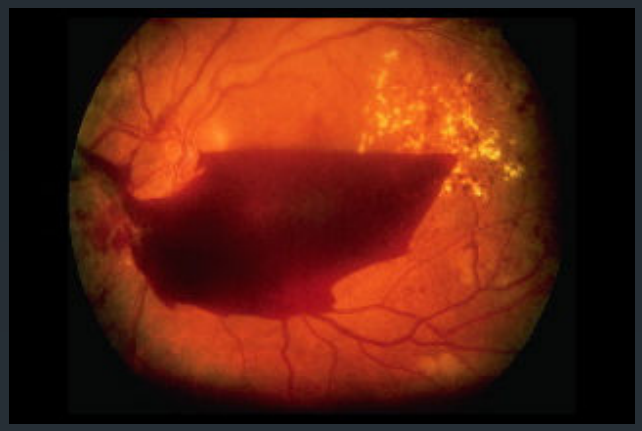
Retinal Detachment



- Triage:
  - Increase in floaters, photopsias (flashing lights)
  - Shadow in peripheral vision, loss of part/all vision
  - Visual field defect, retinal tear/detachment or vitreous hemorrhage
- Risk factors:
  - Trauma, eye surgery, mod-severe myopia
- Treatment:
  - Refer
    - Retinal hole may require laser
    - Retinal tear/detachment may require surgical intervention

Vitreous Hemorrhage

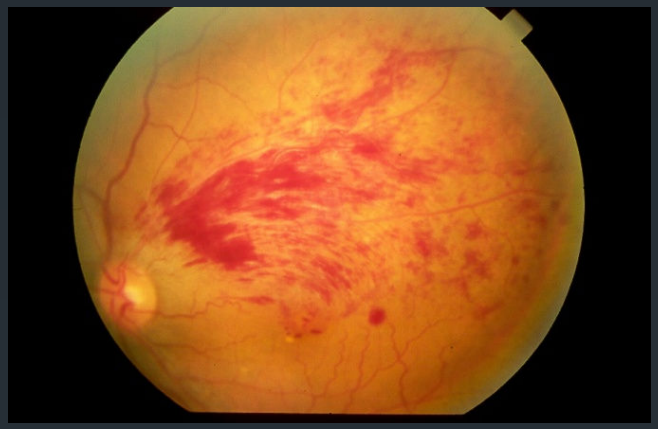
- Triage:
  - Previous floaters or spider web in vision
  - Often red seen, increasing over time
  - Fundus exam: limited or no view of retina
- Risk factors
  - Diabetes, retinal tear, sickle cell anemia, trauma

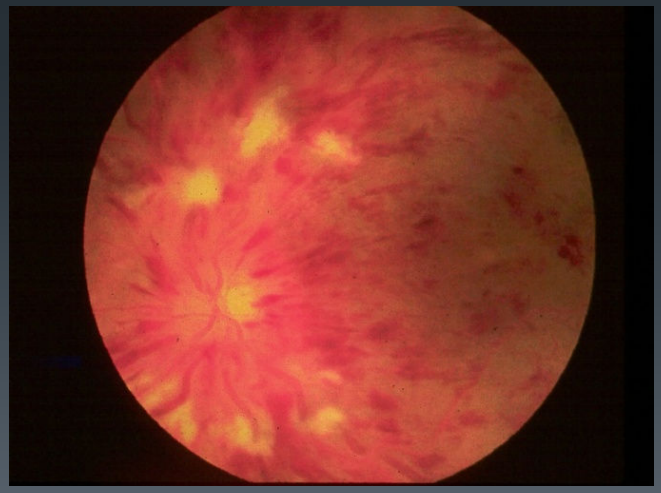


- Treatment:
  - Refer for evaluation
    - If limited view - ultrasonography to assess retina
    - Monitor, surgery

Central retinal vein occlusion

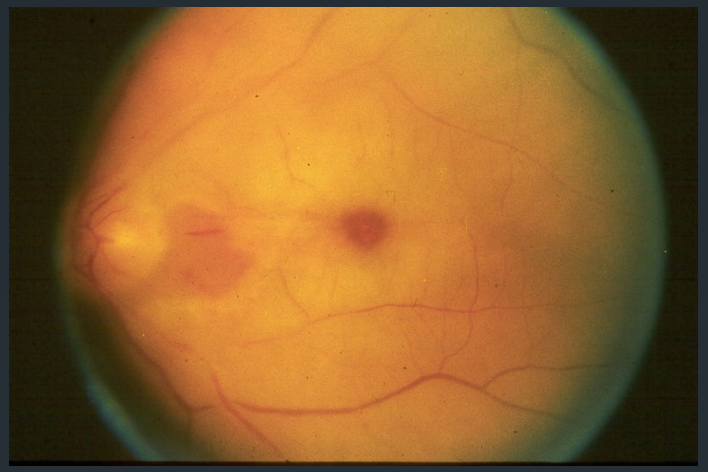
- Triage:
  - Sudden decrease in vision. Asymptomatic.
  - Multiple widely distributed retinal hemorrhages, cotton wool spots on ophthalmoscopy
- Risk factors
  - Glaucoma, hypertension, hyperviscosity syndrome
- Treatment
  - Refer, treat underlying conditions
  - Monitor for macular edema, neovascularization, neovascular glaucoma
    - Intravitreal injections, laser

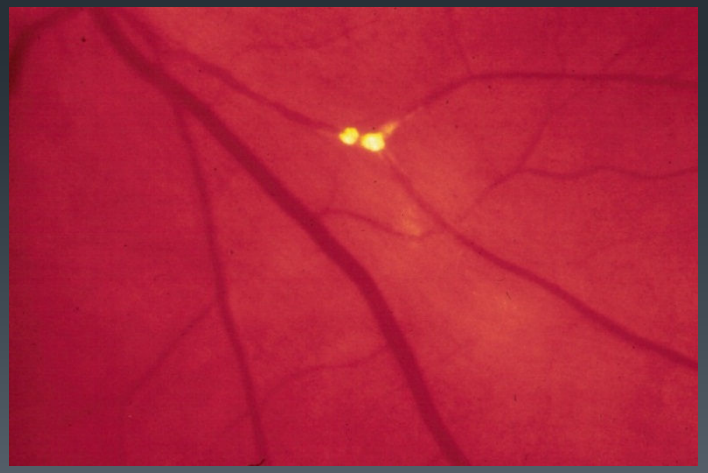




Central Retinal Artery Occlusion

- Triage:
  - Sudden onset of severe vision loss.
  - CRAO: Pale retina, cherry-red fovea
  - BRAO: May see Hollenhorst plaque (refractile object at the site of arterial occlusion)
- Risk factors for vascular disease
- Treatment:
  - 90 minutes to reverse
    - Ocular massage
    - Decrease IOP anterior chamber paracentesis
    - TPA – not for CRAO
  - ESR to exclude giant cell arteritis
  - Stroke/Cardiovascular evaluation
    - EKG, Carotid doppler, Echo, Holter Monitor





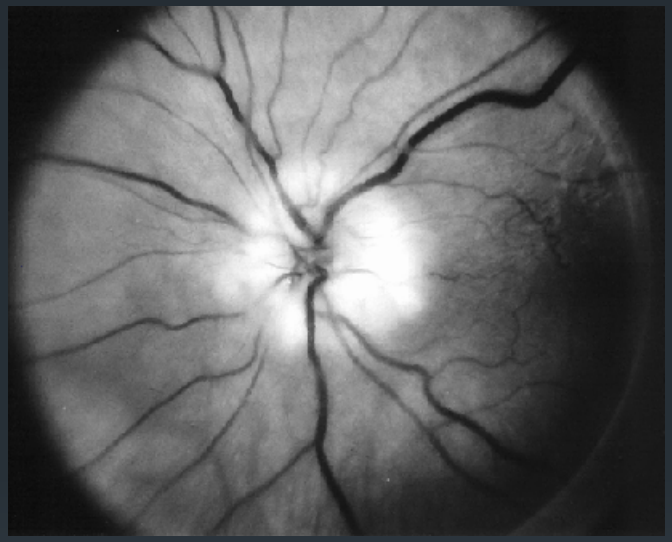
Temporal Arteritis (GCA)

- Visual loss one of the most significant causes of morbidity
  - True Neuro Ophthalmic emergency
  - 33% have visual symptoms within a few weeks of the onset.
    - 45% transient (amaurosis/diplopia)
    - 55% permanent (partial/complete) anterior ischemic optic neuropathy (AION)
    - 65% of untreated patients will develop visual loss in the second eye within weeks of the first.

- Triage
  - Sudden profound painless loss of vision
  - Systemic prodromal symptoms
    - Anorexia, fever, malaise, myalgia
  - Headache, scalp tenderness
    jaw claudication
  - Age>50 years
  - History of Polymyalgia

Temporal Arteritis: Ophthalmic findings

- Most common cause of vision loss is anterior ischemic optic neuropathy (AION)
  - Optic disc edema, chalky white
    - May have splinter hemorrhages
  - Visual field defect:
    - Inferior altitudinal or nasal sectoral
    - Central scotoma
  - May present also with
    - Retrobulbar ischemic ON
    - CRAO, BRAO, Choroidal ischemia
    - Diplopia, ptosis, INO, nystagmus



Temporal Arteritis: Testing and Treatment

- ESR elevated (moderate or >100mm/h)
- C-Reactive Protein
  - (greater than 2.45 mg/dL associated with positive temporal artery biopsy, can be followed serially to monitor treatment)
- Treatment
  - High Dose Steroids
    - 22 fold increased chance of vision improvement if started within 24 hours. Damage may be irreversible if delayed beyond 48 hours.
  - Temporal Artery Biopsy (focal granulomatous arteritis with giant cells and skip lesions)
  - Refer: Rheumatology, Neuro-ophthalmology

Sudden Vision Loss

- Triage
  - Painless vs painful
  - Transient vs permanent
  - Age
  - May or may not be ‘eye’ related
- Visual Disturbance
  - Vitreous detachment
  - Ocular migraine
  - Amaurosis fugax
  - Visual hallucinations
- Sudden Vision Loss
  - Retinal hemorrhage
  - Retinal detachment
  - Retinal artery or vein occlusion
  - Stroke (field cut) - bilateral
  - Acute Glaucoma
  - Optic neuritis
  - Temporal arteritis
  - Medication induced

Summary

- Always evaluate vision.
- Red eye:
  - Treat conjunctivitis, refer if associated significant photophobia associated – may have keratitis or iritis
  - Don’t patch contact lens associated red eyes
  - Refer if considering topical steroids
- Sudden Loss of Vision
  - Check for bilateral vs unilateral loss.
  - Use the ophthalmoscope
- Refer when in doubt

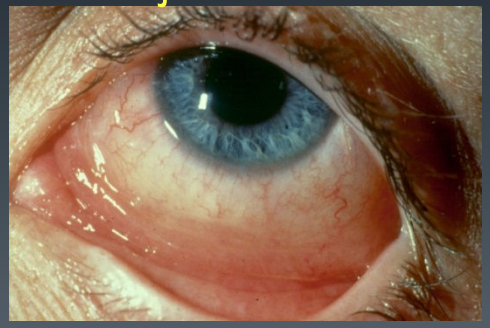
Thank You

Summary

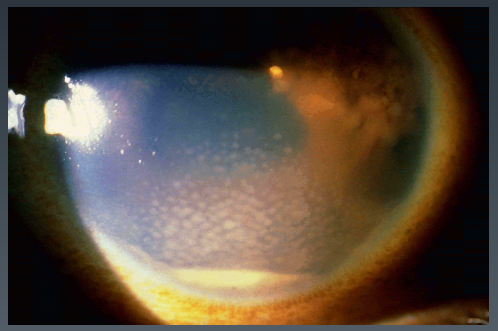
- Triage of common eye problems

- Three days ago my right eye started to get red and slightly irritated with some teary discharge, now my left eye has the same thing.
- Over the past week my right eye has become more red, painful and now very light sensitive.
- My coworker noticed that part of my eye was suddenly red this morning, no pain, no symptoms - gradually worse

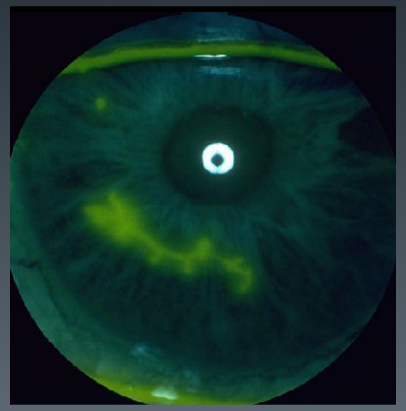
Viral Conjunctivitis



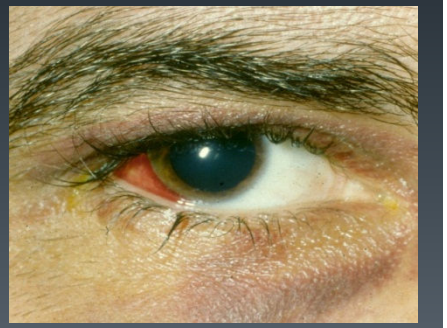
Iritis



Herpetic Dendrite



Subconjunctival Hemorrhage

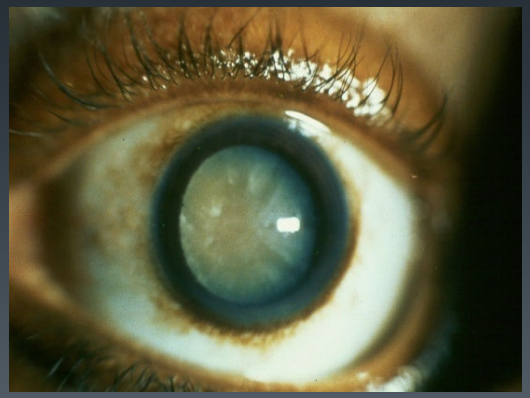


Summary

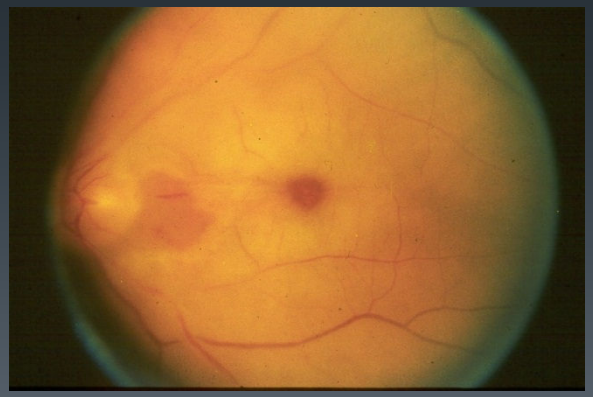
- Triage of common eye problems

- I woke up this morning and had no vision in my left eye.

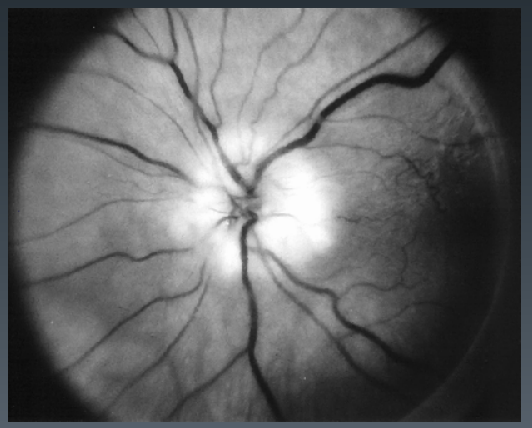
Mature Cataract



Central Retinal Artery Occlusion



Temporal Arteritis



Dry Eye Treatment Goals

- Identify and halt progression
- Prevent or reduce ocular surface injury
- Eliminate or reduce patients discomfort
- Emotional support
  - Chronic disease, varying therapy
  - Partnership
- Ameliorate symptoms
  - Artificial tears
- Preserve existing tears
  - Punctal occlusion
  - Increased humidity
  - Moist chamber goggles
- Increase tear volume
  - Taping, tarsorrhaphy
- Anti-inflammatory treatment
  - cyclosporin