

## I. Introduction

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## II. Objectives

- Epidemiology of Ocular Injuries
- Review of Anatomy
- Examination of eye
- Examine eye for trauma and foreign bodies
- Manage chalazia, styes, corneal abrasions, foreign bodies

## Ocular Trauma

- "Epidemiological data on eye injuries are still rare or totally lacking in large parts of the world." J Clin Opth Res 2016
- 90 % are preventable
- Prevalence rates vary a great deal (5-15%)
- Approx 50% work-related
- Non-traumatic ocular illnesses (allergic conjunctivitis) grossly underreported

## Occupational Ocular Trauma

- In US, 280,000 work-related tx in ED 1999 (Am J Ind Med 2005)
- 2002, BLS est 65,000/year
- 2009, BLS est. 2.9/10,000 full time workers requiring 2 or more days off
- NIOSH Work-RISQS query shows 134,000 in 2015

## Occupational Ocular Trauma

- Majority are males
- Most are in age 25-44
- Metalworkers at highest risk
- Others: agriculture, construction, manufacturing
- Types of injuries: Abrasions, FB/splash, Conjunctivitis, Burns, Contusion, Open/Penetrating wound,

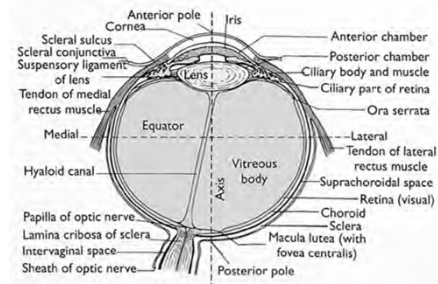
## Risk Factors- Ocular Trauma

- BLS est. 60% fail to wear proper eye protection incl. side/top shields
- Use of tools (unskilled use increases risk 48X)
- Performing unusual task (< 1 day/week)
- Working overtime (3X inc risk)
- Distraction, fatigue, Rushed
- Assoc with sleep duration not stat signif

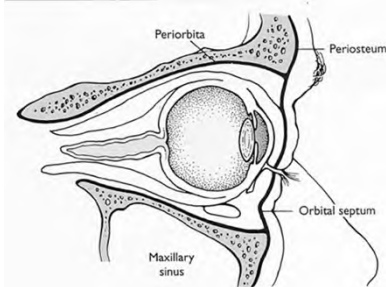
### PPE Effect- Ocular Trauma

- 44% reported eye injury despite PPE (Occ Med, Jan 2009)
- Reported increase use of PPE during work following eye injury (from median 20% to 100%) (Workplace Health Safety, 2012)
- Role of provider education in prevention....Yuge!

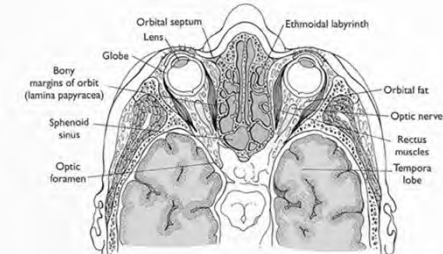
### Anatomy



### Anatomy of the orbital septum



### Anatomy of the eye and surrounding structures



### IV. Elements of Eye Examination

- Visual Acuity
- Pupil light reflexes and corneal reflexes
- Extraocular muscles/cover test
- Visual fields- confrontation and Amsler grid
- Red reflex/ophthalmoscopy
- Biomicroscopy (slit lamp examination)
- Intraocular Pressure (IOP)

### Elements of Eye Examination- Office equipment

- Penlight
- Topical anesthetic (tetracaine, ophthaine)
- Dilating drops (Mydracyl, Cyclogyl)
- Eye pads/ paper tape/tincture of benzoin/ointment (Lacrilube or E-mycin)
- Irrigating solution (Dacriose)
- Fluorescein strips
- Woods light
- Sterile swabs
- Occluder
- Snellen chart/tumbling E chart/Allen cards

### V. Pediatric/Well child eye exam

- Newborn
- Red Reflex- dark room, use ophthalmoscope at 1 foot
- Pupillary response
- Observe for eye deviation
- Observe for congenital cataracts

### Pediatric eye exam

- Infants ( 6 months – 3 years)
- In addition to above:
- Fixation and Following (CN III, IV, VI)
- Corneal light reflex (Hirschberg)
- Cover test

### Pediatric eye exam

- Children ( 3 years – 5 years)
- Start to use visual acuity tests- Snellen, Tumbling E

### Pediatric eye exam

- Children age 6 years and older
- Use Snellen chart for visual acuity

### V. Developmental landmarks

- Newborn- Unable to fix and follow before age 3 months
- 6 months-2 years: Fix and follow a face, toy, or light
- 3 yrs-5 yrs: 20/40 or better
- 6 yrs: 20/30 or better

### VI. Frequency of examinations

- High risk infants (premature, maternal factors, child abuse, Systemic disease)
- High risk children and young adults
- African-American over 20 yrs
- Hx of eye disease/problems
- Hx of systemic illness
- Family hx of eye disease (glaucoma)

## Frequency of Examinations

- Age 20 – 39: At least one exam
- Age 40-64: Exam every 2-4 years
- Age > 65: Exam every 1-2 years

## Screening methods for refraction in infants and children

Screening Technique	Age to Use	Comments
Measure visual acuity in each eye	Earliest age, 3 years	Useful and specific, but done too late to correct amblyopia easily
Red reflex from direct ophthalmoscope	Newborn or older	Easy, but detection of refractive errors requires experience
Photorefraction	Newborn or older	Requires considerable equipment and expertise; may be too sensitive for screening; best used in older population, and this misses early detection to prevent amblyopia
Referral based on historical guides	Newborn or older	Use to "capture" high-risk populations, such as premature infants, neurologically impaired infants, or those with a family history of foveal or refractive problems
Referral if symptoms are noted	Any age	Not a selective process and leaves much to be desired as a planning tool in improving overall detection; will remain an important part of health-care planning

## Vision development

Variable	Newborn	1 Month	2 Month	3 Months	6 Months	12 Months
Function						
Visual acuity [1]						
Preferential Looking		-1 cyclo-degree	-2 cyclo-degree	-3 cyclo-degree	-6 cyclo-degree	-8 cyclo-degree
Visual evoked potential		~20/500	~20/300	20/200	20/100	20/80
Motion detection						
monocular optokinetic nystagmus [2]	Have optokinetic nystagmus		Respond best to targets moving from temporal side to nasal side		Respond equally well in either horizontal direction	
Alignment [3]				70% have straight eyes	97% have straight eyes	
Stereopsis [4]	None	None		Four-crossed disparities detected earlier than uncrossed disparities	1° arc	
Color [5]	Probably none	Not see color; do not distinguish red, green, or yellow from each other	Distinguish red, blue, and green from white; cannot distinguish yellow or yellow-green		Recognize similar hues within a color group (eg, greens)	
Field [6]	17° to 24° binocular hemifield		29° to 38°	40° to 50°	70% to 84%	Still not to adult limit of 80° to 100°
Contrast sensitivity [7]	Low	< 1/10 that of adults		Some improvement	Improvement in sensitivity and spatial scale	
Accommodation [8]			Most infants accommodate appropriate amounts			

## Ophthalmia neonatorum



## Hirschberg Test and Purkinje Images Pseudostrabismus



## Child with esotropia



**Modified fluorescein dye disappearance test**



**VI. Visual Acuity**

- Blurred vision is the most common eye chief complaint
- Snellen fraction: Numerator is testing distance, denominator is distance at which object subtends angle of 5 minutes of arc/or distance at which normal eye can see the object
- Recorded without (sc) and with (cc) correction at 20 feet (optical infinity) and 16 inches.
- Right eye, left eye, both eyes (OD, OS, OU)

**Visual Acuity**

- Recording of results:
  - 20/20
  - 20/60 -2
  - 10/400
- Counting fingers (CF at 5 feet)
- Hand motion (HM at 5 feet)
- Light perception (LP) or No light perception (NLP) with or without projection

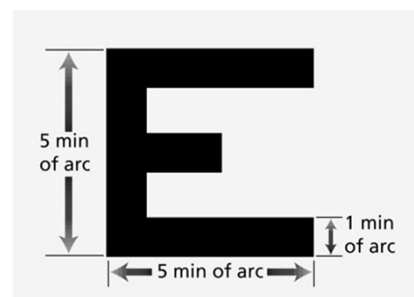
**Visual acuity**

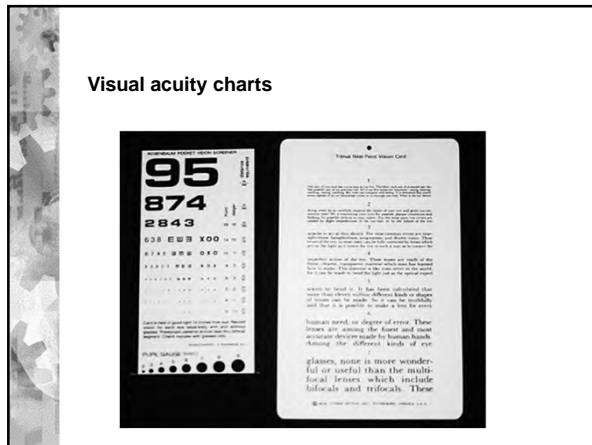
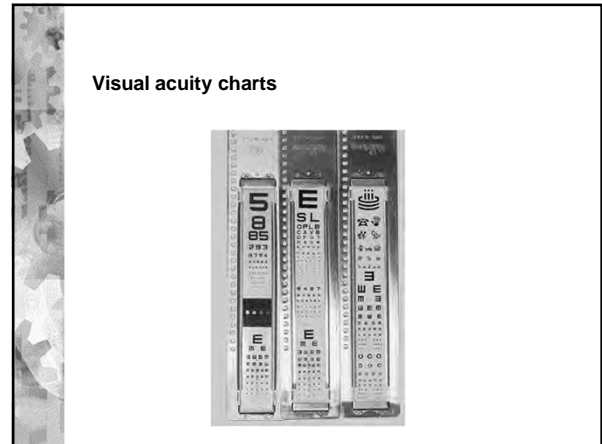
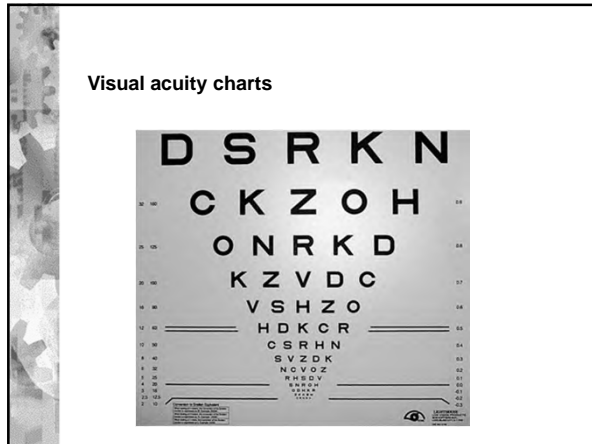
- Pinhole: If VA is worse than 20/30
- If VA improves, patient has uncorrected refractive error otherwise suspect media opacity, retinal disorder, or optic nerve disease

**Visual Acuity**

- Macular function can be tested using "auto-ophthalmoscopy" or "entoptic phenomenon"
- Intact macula: patient sees images of retinal vessels

**The Snellen optotype**





Visual acuity notations

A. Visual acuity notations

MAR, min of arc	Snellen Fraction		Decimal Notation	Grating Equivalent cycles/degree	LogMAR
	English, ft/ft	Metric, m/m			
0.50	20/10	6/3.0	2.00	60.0	-0.30
1.00	20/20	6/6.0	1.00	30.0	0.00
1.25	20/25	6/7.5	0.80	24.0	0.10
1.50	20/30	6/9.0	0.67	20.0	0.18
2.00	20/40	6/12.0	0.50	15.0	0.30
2.50	20/50	6/15.0	0.40	12.0	0.40
3.00	20/60	6/18.0	0.33	10.0	0.48
4.00	20/80	6/24.0	0.25	7.5	0.60
5.00	20/100	6/30.0	0.20	6.0	0.70
10.0	20/200	6/60.0	0.10	3.0	1.00

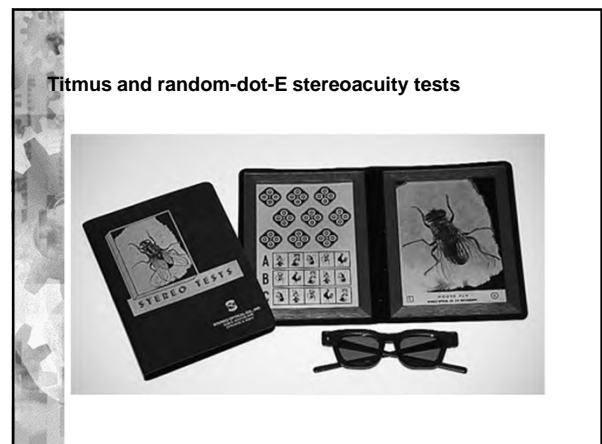
LogMAR: 0.2 = 20/20; 0.5 = 20/40.

Notations for recording near visual acuity

B. Notations for recording near visual acuity

Near, in/in	Distance Equivalent, ft/ft	Jaeger System	Point System	M System Tested at 40 cm
14/14	20/20	1+	3	0.4
14/18	~20/23	1	4	0.5
14/22	~20/30	2	5	0.6
14/28	~20/40	3	6	0.8
14/35	~20/50	4	8	1.0
14/45	~20/70	7	9	1.2
14/55	~20/90	8	12	1.3
14/70	~20/100	10	14	2.0
14/140	~20/200	15	20	3.0

Approximate equivalents.



Titmus and random-dot-E stereoacuity tests



## VII. Pupillary exam

- Normal round, 3-5 mm
- Anisocoria-unequal sized pupils, normal in up to 20%
- Semi-dark room, bright light,
- Direct and consensual reaction should be equal

## Pupillary exam

Afferent pupil defect: optic nerve  
Direct light: pupil dilates  
Consensual and near response: normal

## Pupillary Exam

- Efferent defect: Either in Parasymp or Sympathetic system
- CN III defect: no direct response, pupil dilated, no near response, no consensual
- Adie's Tonic pupil: slow direct, near and consensual response, pupil dilated (decreased peripheral reflexes)
- Argyll-Robertson: miotic pupil, no direct or consensual response, normal near response (light-near dissociation)- midbrain lesion seen in sarcoid, multiple sclerosis

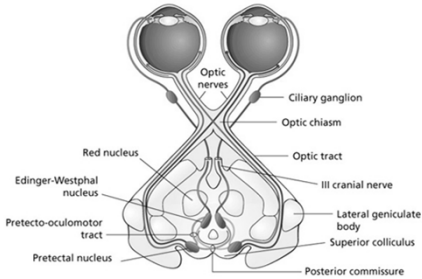
## Pupillary Exam

- Sympathetic system:
- Horner's syndrome: pupil constricted, normal reactions to light, near (ptosis, miosis, anhidrosis)

## Pupillary exam

- Physiologic anisocoria
- Unequal size, normal reaction to light, near, consensual
- Amaurotic/blind eye: dilated pupil, no reaction to light, near, consensual

**Pupillary light reflex**



**Evaluating the pupillary light response**



**Evaluating pupil size**



**Evaluating pupil size**



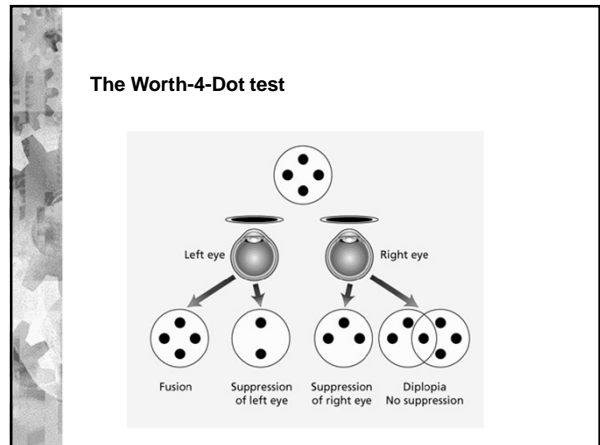
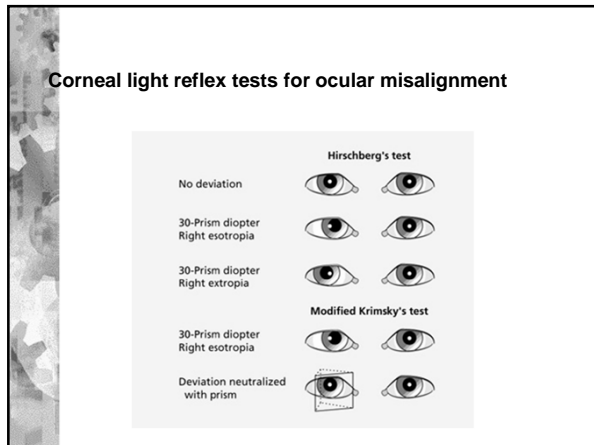
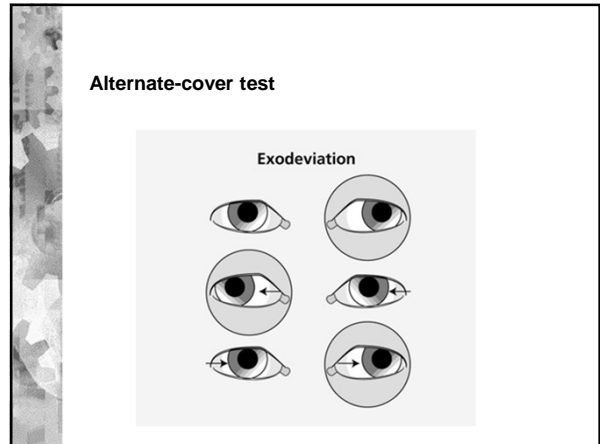
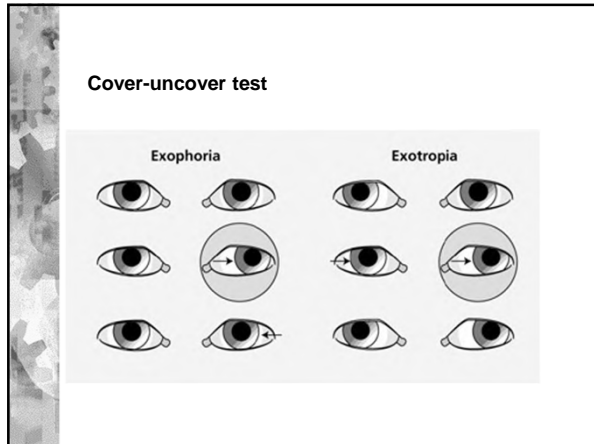
**Diagnosing relative afferent pupillary defect in the presence of an efferent pupillary defect**



**Extraocular muscle exam**

- EOM actions (LR6 SO4)3
- Primary position of gaze
- Corneal light reflex- nasal to center of cornea
- Cover/Uncover test to test for phoria or tropia
- Alternate cover test- can measure amount of deviation
- Red lens test/Maddox rod test
- Six cardinal positions of gaze- note limitations





Use of glasses to correct accommodative esotropia



Use of bifocal glasses to correct accommodative esotropia



Use of bifocal glasses to correct accommodative esotropia



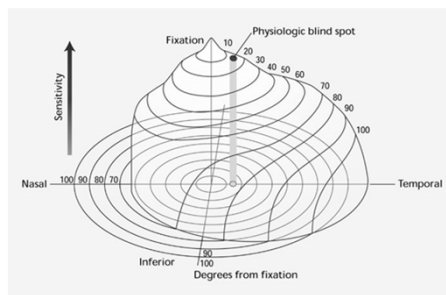
Child with esotropia



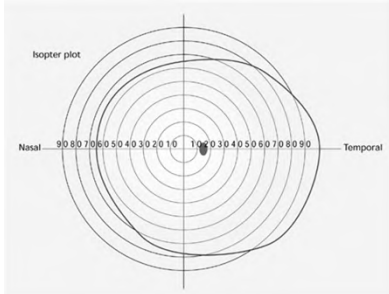
### VIII. Visual field exam

- Normal visual field: Superior 50, Nasal 60, Inferior 70, Temporal 90
- Test each quadrant- count fingers
- Simultaneous temporal and nasal fields- checks for extinction phenomenon (count fingers or red bottle tops)
- Amsler grid- central 10 degrees- monocular

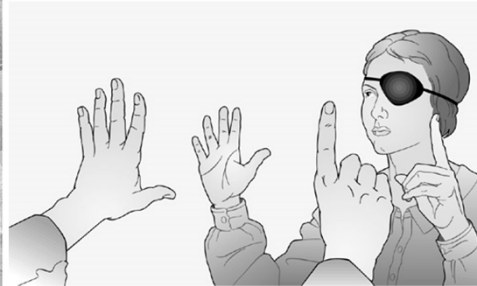
Traquair's island of vision



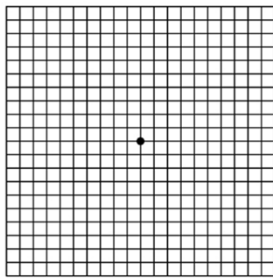
**Traquair's island of vision**



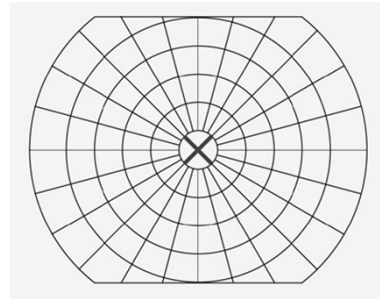
**Confrontation visual field testing**



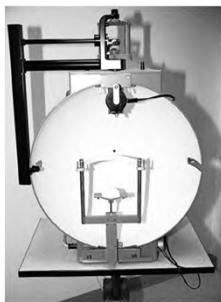
**Amsler grid**



**Tangent screen**

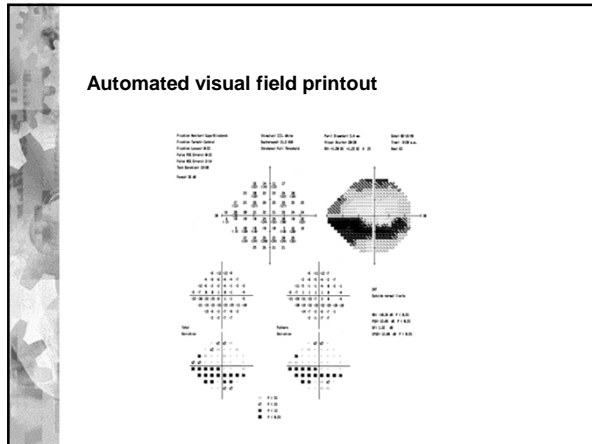


**Goldmann manual kinetic perimetry**

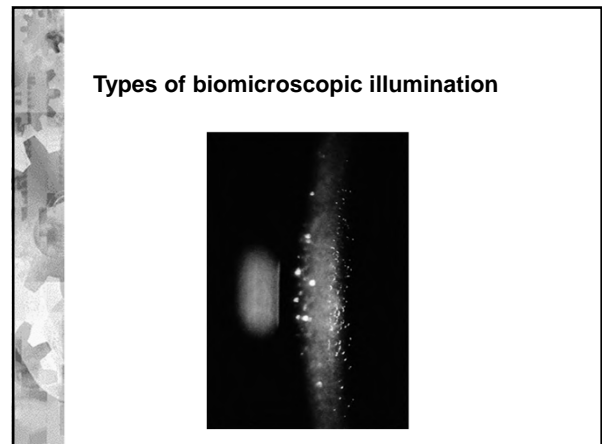
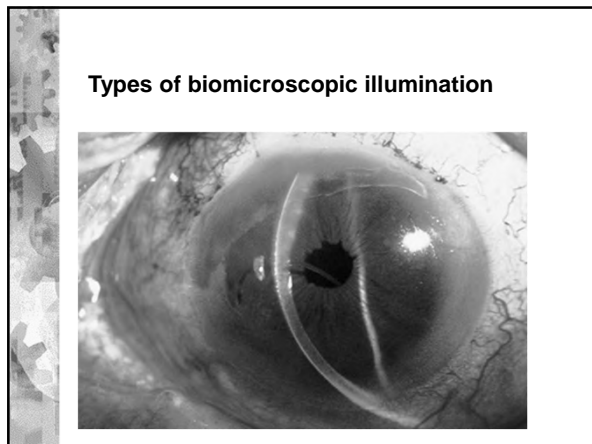
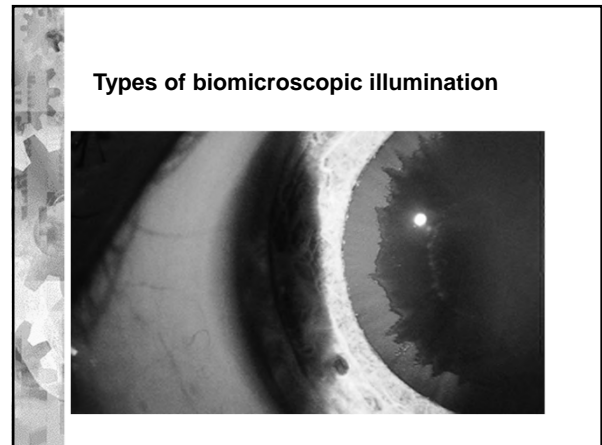
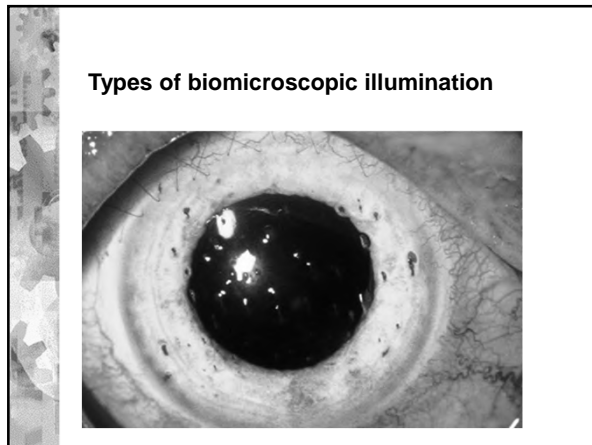


**Automated static perimetry**

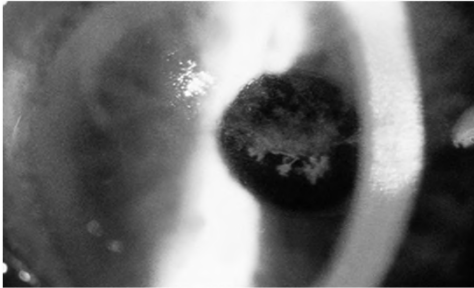




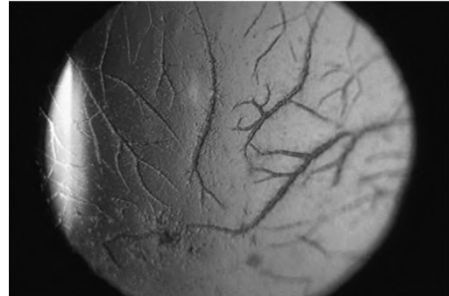
- IX. Biomicroscopy (Slit lamp)**
- General inspection
  - Cornea
  - Anterior chamber
  - Conjunctiva
  - Lids/lashes
  - Lens



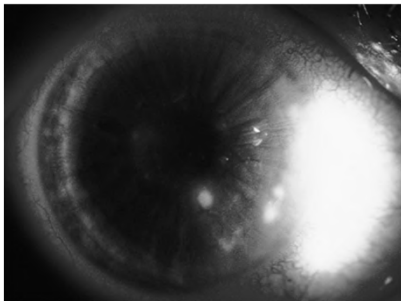
**Types of biomicroscopic illumination**



**Types of biomicroscopic illumination**



**Types of biomicroscopic illumination**



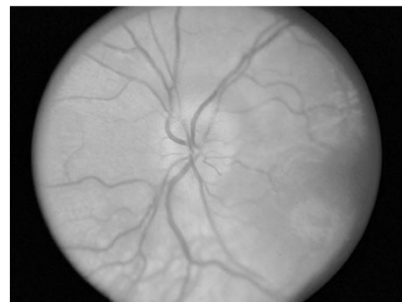
**X. Fundus exam**

- Direct ophthalmoscopy
- Start with plano (0) power at 10 inches
- Note red reflex then add + power to focus on front of eye then add - power to focus from front to back of eye as you get closer to eye with scope
- Optic nerve head- note size of disc and central depression (cup) as a ratio called cup to disc ratio (CDR)- normal ratio is .3 or less and bilaterally symmetric
- Fovea and light reflex is lateral (temporal) to disc
- Note retinal artery and vein size as A/V ratio (normally 2/3 or greater)

**Fundus exam**

- Dilated exam
- Tropicamide (Mydracyl) 1%
- Neosynephrine 2.5%

**Papilledema**



## XI. The Red Eye

- Differential Dx
- Acute conjunctivitis
- Acute iritis
- Acute glaucoma
- Corneal trauma/abrasion

## Evaluation of Red Eye

- Is vision affected?
- Check visual acuity!
- Foreign body sensation?
- Photophobia?
- Trauma?
- Contact lens wearer?
- Corneal fluorescein staining?
- Discharge?-purulence- bacterial

## Red Eye Evaluation

General observation-penlight exam  
Topical anesthetic (Tetracaine, Opthaine)?  
Keratitis-corneal abrasion/contact lens  
overwear, photophobia  
Iritis- no fb sensation, photophobic  
Angle closure glaucoma- general distress, HA,  
malaise, nausea, vomiting, dull ache,  
decreased acuity, mid-dilated pupil, poor  
direct response

## Red Eye Evaluation

- Pupil reaction- small if iritis, keratitis, abrasion
- Pattern of redness- "ciliary flush"- injection at limbus and indicates iritis, angle closure, or keratitis
- Corneal opacity/fb? White area= infectious keratitis
- Anterior chamber- hypopyon or hyphema?

## Red Eyes Managed by Primary Care

- Conjunctivitis (bacterial, viral, allergic)
- Corneal abrasion
- Corneal foreign body
- Contact lens overwear
- Subconjunctival hemorrhage
- Blepharitis
- Stye
- Chalazion

## Red Eyes- Referral Needed

- Angle closure glaucoma
- Hyphema
- Hypopyon
- Iritis
- Keratitis/corneal ulcer

### Acute conjunctivitis/bacterial conjunctivitis

- Common
- Moderate to copious discharge/matting of lashes
- No effect on vision
- No pain
- Clear cornea
- Staph A., H.influenza, Strep pneu, Pseudomonas a.

### Bacterial conjunctivitis

- Empirical therapy
- Broad spectrum- Polytrim, Ocuflax, Quixin, Sulfacetamide
- Erythromycin ophthalmic oint at night
- If cornea intact- Tobradex, Maxitrol, Pred-G, Vasocidin
- Use qid to q1h depending on severity
- Advise patient very contagious/hygiene

### Viral Conjunctivitis

- Serous discharge, pre-auric nodes, injection, lid edema, fever, sore throat (PCF), corneal infiltrates, bilateral (EKC), subconj. hemorrhage
- Adenoviruses
- Highly contagious
- Usually self-limiting

### Viral Conjunctivitis

- No work or school until no discharge
- Hygiene
- Topical steroids/combo med if cornea intact- Pred Forte/Tobradex bid-qid
- Tell patients- sx get worse for 7-10 days before getting better, resolve in 3-6 weeks

### Chlamydial Conjunctivitis

- Consider if chronic red eye no better with other therapy
  - Corneal pannus, corneal infiltrates, follicles, pre-auric node, mucus or stringy discharge
- Sexually active teens, young adults, neonatal
- Tx- Oral TCN for 3 weeks, Erythromycin for 3 weeks, Doxycycline for 1 week, or Azithromycin 1 gram- single dose
- Topical tx- Erythromycin, sulfacetamide tid x 3 weeks

### Allergic conjunctivitis

- Hx of seasonal allergies/itching, photophobia, burning and conj injection
- Thin, watery discharge if seasonal
- Ropy, thick discharge with large papillae if vernal conjunctivitis
- Pre-treatment with Crolom, Alomide, Alocril, Alamast, Optivar, Patanol x 4 weeks with recurrent seasonal allergies
- Tx- mild cases, cold compresses, artificial tears, Lacrilube, OTC topical decongestants
- Avoid rubbing eyes!
- Moderate to severe- Patanol or Livostin, topical NSAID (Acular, Voltaren)
- Topical steroids (Alrex, Vasocidin, Vexol, Flarex) if very symptomatic
- Topical Cyclosporine 2% gtts qid if steroids ineffective
- Oral antihistamines

### Giant Papillary Conjunctivitis (GPC)

- Associated with soft contact lens wear
- Fb sensation, itching, excess mucus and large (1 mm) papillae on upper lid conj
- Weeks to years after starting CL wear (mean= 18 months)
- Tx= stop CL wear, new lenses, preservative free solutions
- Artificial tears, Topical antihistamines (Patanol), topical steroids in severe cases

### XII. Corneal/Conjunctival Foreign Body

- Check for corneal perforation/anterior chamber
- Fluorescein- look for aqueous leakage thru wound (Seidel's sign)
- Topical anesthetic (ophthaine, tetracine)
- Evert upper eyelid
- Remove with swab, spud, needle, or burr under slit lamp
- If fb is in visual axis, advise regarding possible scarring and loss of acuity

### XIII. Corneal Abrasion

- Visual acuity, Size, shape, location, depth
- Anterior chamber reaction (may have secondary iritis)
- Topical anesthetic- limit instillation
- Woods Lamp or Slit Lamp with fluorescein (5%); topical antibiotics, analgesia. Severe pain- topical NSAIDs (Acular, Voltaren)
- Patching may help pain if abrasion over 50% of cornea- not if contact lens wearers because of risk of infection
- If CL wearer-Ciloxan, Ocuflax, Tobrex

### XIV. Chalazion

- Painless nodules in lids
- Granulomatous inflamm of Meibomian glands
- Topicals won't help
- Hot compresses/massage qid
- Kenalog 10/ml- use up to 0.3ml from palpebral side and 30 gauge needle
- Depigmentation may occur- don't use if dark skin
- Biopsy if recurrent to r/o sebaceous gland Ca

### XV. Hordeolum (stye)

- Painful, swollen lid with pustule (this differentiates from chalazion)
- Staph infection of glands
- Topicals won't help
- Oral antibiotics (Diclox, E-mycin, TCN, Amoxil x 10 days)
- I&D if external
- May result in chalazion if chronic

### XVI. Preseptal cellulitis

- Painful, swollen lid, normal vision and motility; no proptosis
- Not systemically ill/may follow sinusitis
- Staph, Gr. A Strep, Strep pyogenes
- Limit spread to posterior septum with immediate oral antibiotics (Amoxicillin, Augmentin, E-mycin, IV Nafcillin, Oxacillin if severe)



### XVII. Orbital cellulitis

- Pain, red, swelling, proptosis, vision loss, loss of motility, systemically ill, fever
- Spread from teeth, sinus, lid penetration
- Staph, Strep, H. flu
- Potential- intracranial infection, septicemia, cavernous sinus thrombosis
- Immediate hospital/ IV antibiotics (Cefuroxime, Cefoxitin, Ceftriaxone, Ticar/Clavulanate)

### XVIII. Blepharitis

- Inflamm of lid margins and lashes
- Red, collarettes (fibrin around lashes), madarosis (loss of lashes), trichiasis (inturned lash), plugged glands, conjunctivitis
- Lid hygiene- tearless shampoo, commercial scrubs (Ocu-clear, Lid Scrub, Lid Wipes)
- Moderate, severe, chronic- topical or oral meds: Sulfacetamide, Tobramycin, E-mycin, Polysporin bid-qid
- Excessive inflammation and pain- use combo meds: Tobradex, Maxitrol, Blephamide, Vasocidin

### XIX. Dacryocystitis

- Nasal aspect, lower lid
- Mucopurulent discharge
- Fever, severe red swelling
- Anaerobes: Pepto-streptococcus, Propionibacterium, Fusobacterium most frequent pathogens
- If afebrile- oral antibiotics (Augmentin, Ceclor), topical antibiotics, warm compresses
- If febrile- hospitalized with IV Ancef

### XX. Episcleritis

- Sectoral injection, cornea clear, mild pain
- Young adults, self-limiting (2-3 days), usually idiopathic, may be associated with RA, SLE, IBD, Gout, Sarcoidosis
- Topical mild steroids (FML, Pred-mild) q 4 h; cold compresses, artificial tears

### XXI. Scleritis

- Severe, boring pain, photophobia, decreased vision, tearing
- Scleral vessels dilated, deep red in sector or diffuse pattern
- Tx- cycloplegia, topical steroid, oral NSAID, oral prednisone
- Consider underlying systemic disorder: RA, SLE, Gout, Syphilis, Zoster, Ankylosing spondylitis, Wegener's granulomatosis
- Tests: CBC, ESR, RF, ANA, HLA-B27, FTA-ABS, CXR, S-I joint films

### XXII. Pinguecula/itis

- Yellow, lipid-like deposits at limbus of exposed conjunctiva
- Degeneration of collagen in conjunctiva results in dryness, irritation,
- Older population, environmental exposures, Solar/UV light
- Ocular lubricating drops: Tears Naturale II, Lacrilube, Refresh PM
- Topical steroids: Pred Mild, Vexol, Pred Forte, Inflammase Forte

### XXIII. Pterygium

- Raised, red, triangular wedge, fibrovascular growth on nasal limbus
- UV light exposure, warm dry climates or dust/smoke
- Topical decongestants (Naphcon-A); steroids (FML, Vexol, Pred-mild)
- Surgery if in visual axis/ cosmesis

### XXIV. Ocular Trauma

- Have A,B,Cs been addressed?
- What was vision before injury and after injury?
- Is there past hx of amblyopia
- Did it occur at work?
- Eye protection and what type?
- Chemical exposure/eye irrigated?
- Paresthesias around the eye?
- Last oral intake?

### Ocular Trauma

- Visual acuity is most important element
- Examine bony structure of orbit for displacement
- Blowout fx accompanies blunt trauma
- Enophthalmos, restricted motility, lid anesthesia
- Tx broad spectrum antibiotics
- Thorough check for globe perforation
- Hyphema- tx strong cycloplegia and bed rest x3-5 days. Check IOP.

### Ocular Trauma

- Iris check with transillumination-tears, anisocoria, mydriasis
- Lens instability (phacodonesis) due to rupture of zonules
- Traumatic cataract
- Traumatic vitreous hemorrhage
- Retinal trauma- hemorrhage, fb, choroidal tears, retinal tears, commotio retinae
- Intraocular fb- remove within 12-24 hours

### Blow Out Fracture

- Signs: edema, ecchymosis of lid
- Restriction of motility especially vertical
- Orbital crepitus (subcut emphysema)
- Hypoesthesia of ipsilateral cheek, entrapment of infraorbital nerve,
- Risk of medial wall fracture is orbital cellulitis
- CT of orbits- axial and coronal views
- If entrapment, with diplopia, surgery in 10-14 days to allow for resolution of hemorrhage and edema
- Medial wall fracture- start Keflex, E-mycin qid x14 d. Medial wall fracture resolves spontaneously in 3-

### Ocular trauma-chemical burn

Alkali more serious than acid

Acids create initial burn then cease, alkali penetrates cornea to destroy stroma, and endothelium

Copious flush with saline

Test with litmus paper; If pH 6-8, debride

Debride necrotic tissue with slit lamp

Swabs in fornices

Cycloplegic and broad spectrum antibiotic

Pressure patch if large area (50%)

Add topical 1% prednisolone acetate q 2-4.

Monitor IOP

**Comotio retinae**



**Hordeolum**



**Adenovirus infection: clinical features, diagnosis, and treatment**



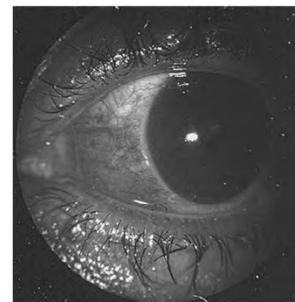
**Subconjunctival hemorrhage**



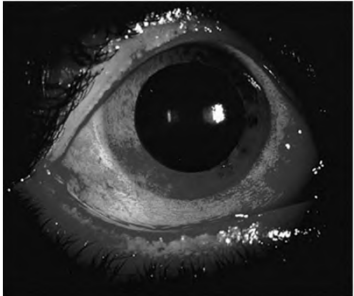
**Giant papillary conjunctivitis**



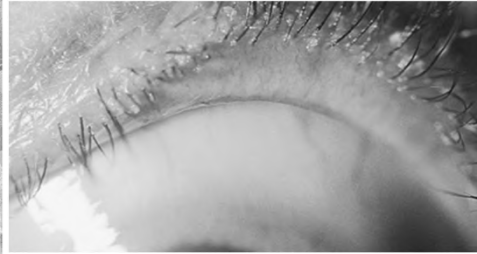
**Scleritis**



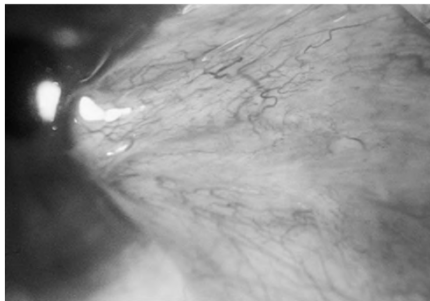
**Episcleritis in rheumatoid arthritis**



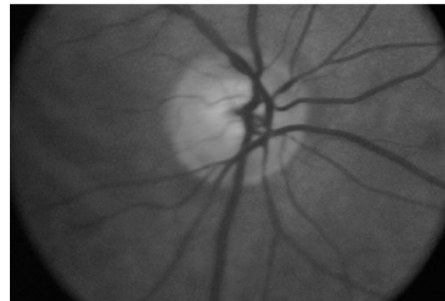
**Seborrheic blepharitis is probably the most common cause of anterior lid margin involvement**



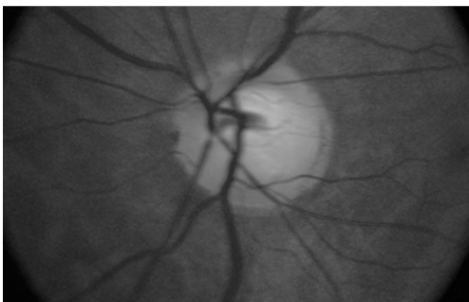
**Correlation of recurrence with pterygium morphology**



**Asymmetry of the optic cups**



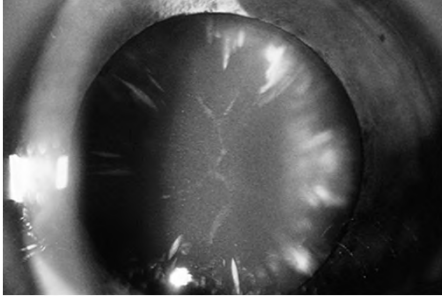
**Asymmetry of the optic cups**



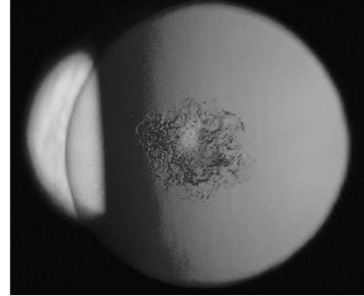
**Traumatic hyphema**



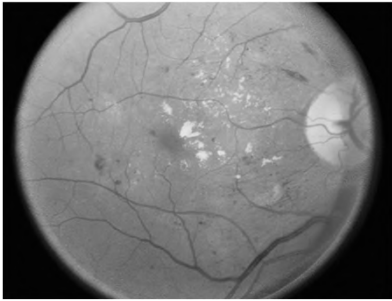
**Cortical cataract**



**Posterior subcapsular cataract**



**Less severe nonproliferative diabetic retinopathy**



**Preseptal cellulitis**



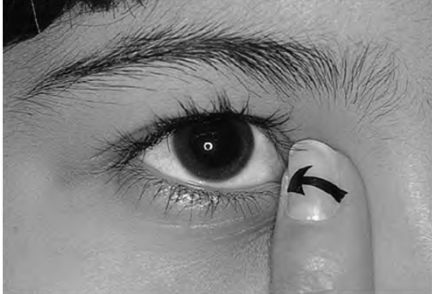
**A 14-year-old girl who presented with a red, sensitive right lower eyelid**



**Streptococcal bacterial cellulitis secondary to orbital trauma**



**Nasolacrimal sac massage**



**Dacryocystitis**



**Conjunctivitis**



**Dacryocystitis in a boy aged 16 years**



**Hemorrhagic conjunctivitis**



**Dacryocystitis in a neonate aged 2 weeks**



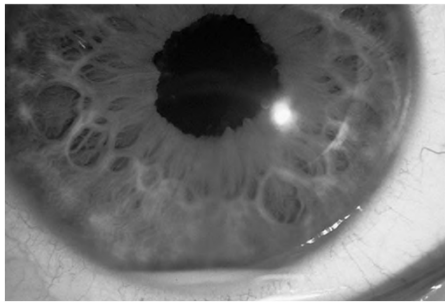
**Acute conjunctival chemosis**



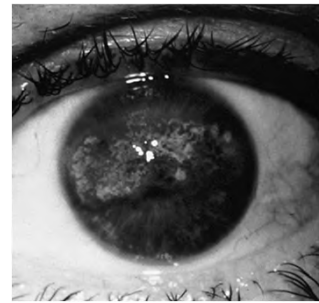
**An 8-year-old girl with "allergic shiners"**



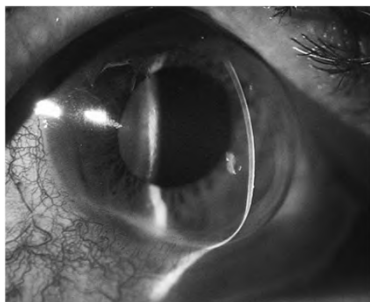
**Hypopyon in juvenile rheumatoid arthritis**



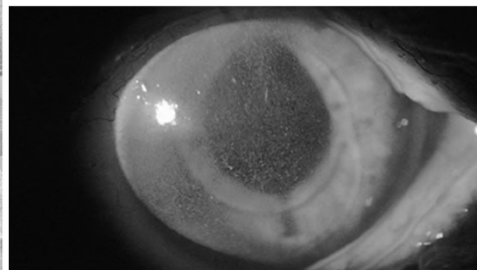
**Band keratopathy in juvenile rheumatoid arthritis**



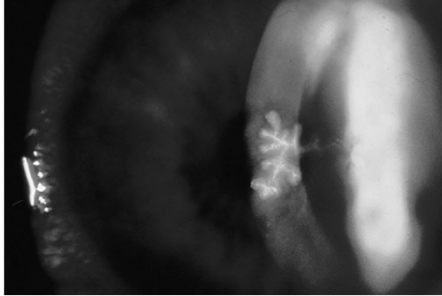
**Peripheral thinning of the cornea**



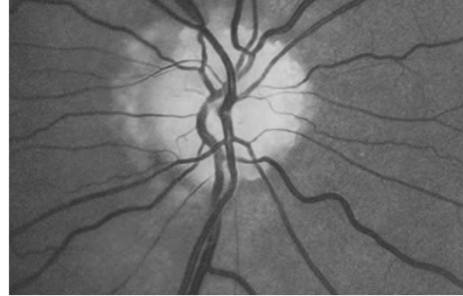
**Punctate epithelial erosions, punctate epithelial keratitis, and punctate subepithelial infiltrates**



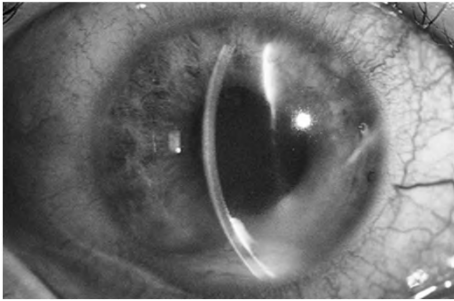
Herpes infection of the eye



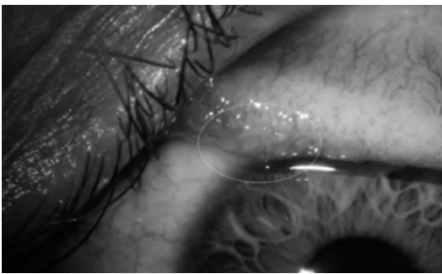
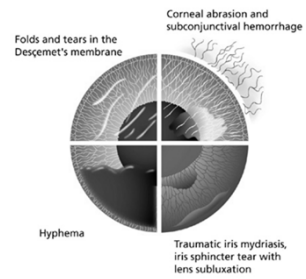
Optic nerve drusen



Acute anterior uveitis



Anterior segment complications of closed-globe injury



Thelazia gulosa





## XXVI. Skills Stations

- Slit Lamp Evaluation of the Eye
- Eyelid eversion using slit lamp
- Corneal foreign body removal with slit lamp
- Fluorescein staining of the eye/Woods Lamp