

## HEENT part 2: THE EYE

<p>1. <b>EQUIPMENT</b> - ophthalmoscope, penlight, eye chart, 3x5 index card</p> <p>2. <b>ASSESS VISUAL ACUITY</b></p> <ul style="list-style-type: none"> <li>• Using standard <b>Snellen chart</b>, stand at 20 feet with corrective lenses if worn, covering one eye at a time with their palm. Determine smallest line read w/o error.</li> <li>• Using a <b>Pocket chart</b>, viewed at 14 inches, the patient is again asked to read the smallest line possible</li> </ul> <p>3. <b>VISUAL FIELDS</b> - assess by confrontation (normal = 30°)</p> <ul style="list-style-type: none"> <li>• At eye level 3 feet in front of pt, have them fix central gaze on your nose. Perform exam yourself simultaneously for a frame of reference.</li> <li>• Close opposite eyes (pt. right, Dr. left) and raise 1 or 2 fingers on both fists within your visual field and ask patient to count numbers. Move to upper &amp; lower quadrants changing finger numbers, then switch eyes.</li> <li>• <b>Blind spot</b> normal at 15-20° temporally; May also test peripheral vision from behind with finger motions</li> </ul> <p>4. <b>OCCULAR MOVEMENTS</b></p> <ul style="list-style-type: none"> <li>• <b>Assess Eye Alignment</b> - using penlight directly in front of patient observe location of reflected light on cornea. A deviation is indicative of a strabismus</li> <li>• <b>Perform Cover Test</b> - have pt fix gaze on distant object while covering one eye with 3x5 card. Observe uncovered eye simultaneously to note any compensatory movement to focus on the distant object. If so, positive for deviation.</li> <li>• <b>Evaluate Gaze (“H in space”)</b> - keeping pts chin steady and centered, follow H in space pattern approx 10 inches in front of them, pausing at the endpoints. <b>Note:</b> end-point nystagmus normal on lateral gaze</li> </ul> <p>5. <b>PUPILLARY ASSESSMENT (PERRLA)</b></p> <ul style="list-style-type: none"> <li>• Examine pupils for equal size and symmetry</li> <li>• <b>Pupillary light reflex</b> - assessed by having pt focus in distance and introducing light source from side. Should note direct and consensual pupillary responses.</li> <li>• <b>Accommodation</b> - tested by introducing finger or object within 5 inches of gaze, noting convergence and pupillary constriction normally</li> </ul> <p>*<b>Note:</b> When pupils react to accommodation but not light (Argyll-Robertson) consider syphilis, diabetes, CNS dz. * Anticholinergics cause dilated pupils. Opiates → pinpoint</p>	<p>6. <b>OBSERVE EYELIDS, CONJUNCTIVAE, &amp; SCLERA.</b> Look for xanthelasma (suggests ↑ cholesterol), drooping or unequal palpebral fissures (clue to ptosis), scleral yellowing (implies jaundice), Kayser-Fleischer ring (copper), redness of eyes, discharge, congestion of lacrimal glands.</p> <p>7. <b>NOTE:</b></p> <ul style="list-style-type: none"> <li>• <b>Local injection</b> = foreign body, abrasion/corneal ulcer</li> <li>• <b>Conjunctival Injection</b> - tends to spare area around the iris; mainly on periphery of sclera, worse on palpebral</li> <li>• <b>Ciliary injection</b> - Inflammation or injury to cornea, iris or ciliary body found around iris → sign of inflammation of deeper structures.</li> <li>• <b>Blepharitis</b> - inflammation around margins of lid; usually due to chronic Staph infections</li> <li>• <b>External Hordeolum (Sty)</b> - localized infection on the external margin of the lid; painful &amp; red on lower lid; involves glands of Zeiss or Moll; more painful; Staph aureus is the most common pathogen</li> </ul> <p>8. <b>INTERNAL HORDEOLUM</b> - Meibomian glands involved; less painful; tend to become chronic- termed <b>chalazion</b></p> <p>9. <b>EVERT THE LIDS TO INSPECT FOR:</b></p> <ul style="list-style-type: none"> <li>• <b>Foreign bodies</b> - not uncommon</li> <li>• <b>Papillary changes</b> - red bumps under eyelid on palpebral conjunctiva; see with bacterial or allergic conjunctivitis</li> <li>• <b>Follicular changes</b> - small pale round patches; sometimes indication of Chlamydia &amp; viral conjunctivitis</li> </ul> <p>10. <b>OPHTHALMOSCOPIC EXAM OF FUNDI</b></p> <ul style="list-style-type: none"> <li>• First note <b>red reflex</b>, then concentrate on visualizing the optic disc and tracing its perimeter. Dial up and down 1 or 2 diopters in each direction on the fundoscope after you have visualized an edge of the disc to fine tune disc clarity.</li> <li>• <b>Follow course of vessels</b> from fundus outwards into all four quadrants. Note where veins and arteries cross; look for nicking and other abnormalities.</li> <li>• <b>Note opacities</b> of the lens and fundus abnormalities (arteriovenous nicking, hemorrhages, exudates, arteriolar narrowing); check for papilledema. The fundoscopic exam is especially important in dzs with microvascular changes (Hypertension, Diabetes).</li> </ul>
<p><b><u>PAINFUL EYE SYMPTOMS (Non-visual)</u></b></p> <ul style="list-style-type: none"> <li>• <b>Foreign body sensation</b> (foreign body, Corneal abrasion)</li> <li>• <b>Burning</b> (uncorrected refractive error, conjunctivitis, Sjorgen’s syndrome)</li> <li>• <b>Throbbing, aching</b> (Acute iritis, Sinusitis)</li> <li>• <b>Tenderness</b> (Eyelid inflammations, conjunctivitis, iritis)</li> <li>• <b>Headache</b> (refractive errors, migraine, sinusitis)</li> <li>• <b>Drawing sensation</b> (uncorrected refractive error)</li> </ul>	<p style="text-align: center;"><b><u>COMMON VISUAL EYE SYMPTOMS</u></b></p> <ul style="list-style-type: none"> <li>• <b>Loss of Vision</b> (Optic neuritis, detached retina, retinal hemorrhage, central retinal vascular occlusion, acute narrow glaucoma, CNS dz)</li> <li>• <b>Spots</b> (no pathological significance - may precede a retinal detachment or may be associated with ingestion of fertility drugs)</li> <li>• <b>Flashes</b> (Migraine, retinal or posterior vitreous detachment)</li> <li>• <b>Loss of visual fields</b> or presence of <b>shadows or curtains</b> (retinal detachment, retinal hemorrhage)</li> <li>• <b>Glare, photophobia</b> (iritis, meningitis)</li> <li>• <b>Distortion of vision</b> (Retinal detachment, macular edema)</li> <li>• <b>Difficulty seeing in dim light</b> (Myopia, Vitamin A deficiency, Retinal degeneration)</li> <li>• <b>Colored haloes around lights</b> (Acute narrow angle glaucoma, Opacities in lens or cornea)</li> <li>• <b>Colored vision changes</b> (Cataracts, Drugs (digitalis increases yellow vision))</li> <li>• <b>Double vision</b> (Extraocular muscle paresis or paralysis)</li> </ul>
<p><b><u>PAINLESS EYE SYMPTOMS (Non-visual)</u></b></p> <ul style="list-style-type: none"> <li>• <b>Itching</b> (Dry eyes, eye fatigue, allergies)</li> <li>• <b>Tearing</b> (emotional states, hypersecretion, blockage)</li> <li>• <b>Dryness</b> (Sjorgens syndrome, ↓ secretionism as of aging)</li> <li>• <b>Grittiness</b> (conjunctivitis)</li> <li>• <b>Fullness of eyes</b> (Proptosis (bulging), lids - aging changes)</li> <li>• <b>Twitching</b> (Fibrillation of orbicularis oculi)</li> <li>• <b>Eyelid heaviness</b> (fatigue, eyelid edema)</li> <li>• <b>Dizziness</b> (Refractive error, cerebellar dz, vestibular dz)</li> <li>• <b>Excessive blinking</b> (Local irritation, facial tic)</li> <li>• <b>Eyelids stick together</b> (Inflammatory dz of lids or conjunctivae)</li> </ul>	

DIFFERENTIATION OF WHITISH LESIONS OF THE FUNDUS					
	COTTON-WOOL SPOTS		FATTY EXUDATES	DRUSEN/COLLOID BODIES	CHORIO-RETINITIS
<b>ETIOLOGY</b>	Hypertension Diabetic retinopathy Dermatomyositis	AIDS SLE Papilledema	Diabetes mellitus Retinal venous occlusion Hypertensive retinopathy	Normal with aging	Toxoplasmosis Sarcoidosis
<b>BORDER</b>	Fuzzy		Well defined	Well defined, non-pigmented	Often large with ragged edge, heavily pigmented
<b>SHAPE</b>	Irregular		Small, irregular	Round well circumscribed	Very variable
<b>PATTERNS</b>	Variable		Often clustered in circles or stars	Variable, symmetric in both eyes	Variable
<b>COMMENTS</b>	Caused by an ischemic infarct of nerve fiber layer of retina, obscures retinal blood vessels; usu several in number		In deep retinal layer	Often with fatty exudates; deep to retinal blood vessels	Acute with white exudate; healed lesion with pigmented scar

RETINAL CHARACTERISTICS OF COMMON DISEASES				
CONDITION	PRIMARY FINDINGS		DISTRIBUTION	SECONDARY FINDINGS
<b>Diabetes</b>	Microaneurysms Neovascularization Retinitis proliferans *		Posterior pole	Hard exudates + Deep hemorrhages Retinal venous occlusions Vitreous hemorrhages
<b>Hypertension</b>	Arteriolar narrowing Flame hemorrhages	“Copper wiring” Atriovenous nicking	Throughout retina	Hard and soft exudates Retinal venous occlusions Macular stars
<b>Papilledema</b>	Hyperemia of the disc Retinal hemorrhages Loss of spontaneous venous pulsations Cotton wool spots	Venous engorgement Disc elevation	On or near disc	Hard exudates + Optic atrophy, late
<b>Retinal venous Occlusion</b>	Hemorrhages Neovascularization		Confined to area drained by affected vein	Exudates +
<b>Retinal arterial occlusion</b>	Pallor of retina Embolus possibly visible	↓ width of artery	Confined to area supplied	Optic atrophy, late
<b>Arteriolar sclerosis</b>	Widening of light reflex Atriovenous nicking	“Copper wiring”	Throughout retina	Decrease in retinal pigment
<b>Blood dyscrasias</b>	Diffuse hemorrhages (common) Roth spots (hemorrhagic lesions with white centers)	Venous dilation		
<b>Sickle cell disease</b>	Sharp cutoff of arterioles, Atriovenous anastomoses Neovascularization in “sea fan” formations		Peripheral retina	Vitreous hemorrhages Retinal detachments

\* Growth of light colored sheet of opaque connective tissue over inner surface of retina. Neovascularization of this tissue is seen. These vessels bleed easily.

+ Exudate is the term used for small intraretinal lesions caused by etinal disturbances in a variety of disorders

DIFFERENTIAL DIAGNOSIS OF THE RED EYE				
PRESENT-ATION	ACUTE CONJUNCTIVITIS	ACUTE IRITIS	NARROW ANGLE GLAUCOMA	CORNEAL ABRASION
<b>History</b>	<ul style="list-style-type: none"> <li>Sudden onset</li> <li>Exposure to conjunctivitis</li> <li>(bacterial, viral or allergic)</li> </ul>	<ul style="list-style-type: none"> <li>Fairly sudden onset</li> <li>Often recurrent</li> </ul>	<ul style="list-style-type: none"> <li>Rapid onset</li> <li>Sometimes hx of previous attacks</li> <li>↑ incidence among Jews, Swedes and Inuit Eskimos</li> </ul>	<ul style="list-style-type: none"> <li>Trauma</li> <li>Pain</li> </ul>
<b>Vision</b>	Normal	Impaired if untreated	Rapidly lost if untreated	Can be affected if central
<b>Pain</b>	Gritty feeling	Moderate	Severe	Exquisite
<b>Bilaterality</b>	Frequent	Occasional	Ocassional	Usually unilateral
<b>Vomiting</b>	Absent	Absent	Common	Absent
<b>Cornea</b>	Clear (epidemic keratoconjunctivitis has corneal deposits)	Variable	“Steamy” (like looking through a steamy window)	Irregular light reflex
<b>Pupil</b>	Normal, reactive	Small, irregular, non-reactive	Partially dilated, oval, nonreactive	Normal, reactive
<b>Iris</b>	Normal	Normal (seeing rainbows can be an early sx of an attack)	Difficult to see owing to corneal edema	Shadow of corneal defect may be projected onto the iris with penlight
<b>Ocular Discharge</b>	Mucopurulent or watery	Watery	Watery	Watery or mucopurulent
<b>Systemic effect</b>	None	Few	Many	None
<b>Prognosis</b>	Self-limited	Poor if untreated	Poor if untreated	Good if not infected