REFERRAL GUIDELINES for the PRIMARY CARE PHYSICIAN:
Visual symptoms

Fadi El Baba, MD and Patrick Sibony, MD

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Note: These guidelines are intended to help the primary care physician decide if and when a patient needs to be referred for a variety of visual complaints. Hopefully this might reduce the need for specialty care. Needless to say it is impossible to anticipate every possible clinical circumstance and distill the problem into a one page summary per symptom that applies in all instances. There will be exceptions to every recommendation in this handout. Ultimately the decision must be based on clinical judgement and experience in dealing with eye problems. In some instances you may want to call and discuss the case by phone for advice. If there still remains some doubt about how to proceed then we suggest that you refer the patient.

Sources:
Preferred Practice Patterns of the American Academy of Ophthalmology (AAOO);
Trobe JD The Physician’s Guide to Eye Care 1993 AAOO;
Berson FG Basic Ophthalmology 1993 AAOO;

Department of Ophthalmology State University of New York at Stony Brook School of Medicine and Ophthalmology Section, Surgical Service, Northport Veterans Administration Hospital
ASYMPTOMATIC PATIENT

A. LOW RISK ADULT

<table>
<thead>
<tr>
<th>AGE 20-40</th>
<th>Every 3 years</th>
</tr>
</thead>
</table>

Check visual acuity. Refer if abnormal or if the patient has visual symptoms.

<table>
<thead>
<tr>
<th>AGE &gt; 40</th>
<th>Every 2 years</th>
</tr>
</thead>
</table>

Complete examination every 2 years. Every 2-4 years thereafter for presbyopic corrections and check for glaucoma.

B. HIGH RISK ADULT

- **H/O RETINAL DETACHMENT, OCULAR TRAUMA, VISION LOSS**
- **HYPERTENSION, SICKLE CELL DISEASE**
- **FH GLAUCOMA OR OTHER HERITABLE DISEASE**
- **BLACK PATIENTS (RISK OF GLAUCOMA IS MUCH HIGHER)**
- **> 65**
- **DIABETES (SEE BELOW)**

Refer non urgently if risk factors present
Exam every 1-2 years thereafter, unless otherwise indicated

C. DIABETICS

<table>
<thead>
<tr>
<th>Risk for</th>
<th>background diabetic retinopathy</th>
<th>proliferative diabetic retinopathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>diabetes 3 - 4 years</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>diabetes &gt;15 years</td>
<td>80%</td>
<td>25%</td>
</tr>
</tbody>
</table>

I. DIABETES ONSET ages 0 - 30

Recommendation: Examination 5 years after onset, yearly thereafter.

II. DIABETES ONSET age > 30

Recommendation: Examination at the time of diagnosis, yearly thereafter

III. DIABETES PRIOR TO PREGNANCY

Recommendation: prior to or early in the first trimester; every 3 m thereafter
### CHRONIC or PROGRESSIVE VISION LOSS

#### DIFFERENTIAL DIAGNOSIS

- refractive errors
- cataracts
- diabetic retinopathy
- age related macular degeneration (ARMD)
- glaucoma
- optic neuropathies
- maculopathies
- corneal diseases
- psychogenic

#### HISTORY

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>One eye or both.</td>
<td>Refractive problems usually bilateral and symmetrical</td>
</tr>
<tr>
<td>Blur at near or distance.</td>
<td>Refractive usually affects one or other</td>
</tr>
<tr>
<td>Selective visual field loss.</td>
<td>Optic neuropathies, keratopathies</td>
</tr>
<tr>
<td>Blur improves by squinting or pinhole.</td>
<td>Refractive</td>
</tr>
<tr>
<td>Loss of color vision, color desaturation</td>
<td>Optic neuropathy, maculopathy</td>
</tr>
<tr>
<td>Flare or halos with headlights or street lights</td>
<td>Posterior subcapsular cataracts, keratopathy</td>
</tr>
<tr>
<td>Metamorphosia(wavy distortion of straight line)</td>
<td>Maculopathy</td>
</tr>
</tbody>
</table>

#### EXAMINATION:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual acuity improves with pinhole or glasses</td>
<td>Refractive</td>
</tr>
<tr>
<td>Corneal or lens opacification</td>
<td>Corneal scar</td>
</tr>
<tr>
<td>Afferent pupillary defect (swinging flashlight sign)</td>
<td>Retinal or optic nerve dysfunction</td>
</tr>
<tr>
<td>No red reflex or difficulty viewing posterior pole</td>
<td>Cataract</td>
</tr>
<tr>
<td>Optic disc edema or pallor</td>
<td>Optic neuropathy</td>
</tr>
<tr>
<td>Pale nerve with cupping</td>
<td>Glaucoma</td>
</tr>
<tr>
<td>Drusen of the retina (soft yellow exudate-like deposits)</td>
<td>ARMD</td>
</tr>
<tr>
<td>Retinal hemorrhages, exudates</td>
<td>Diabetes</td>
</tr>
<tr>
<td>Monocular field cuts</td>
<td>Optic neuropathies, maculopathies</td>
</tr>
<tr>
<td>Bitemporal hemianopsias</td>
<td>Chiasmal syndrome, pituitary adenoma</td>
</tr>
<tr>
<td>Homonymous hemianopsia</td>
<td>Hemispheric stroke or tumor</td>
</tr>
</tbody>
</table>

#### REFER NON URGENTLY

- All patients with unexplained or undiagnosed chronic progressive visual loss

---

5 slow, progressive decline in vision not otherwise explained by refractive errors, glaucoma or other funduscopically visible process (e.g. diabetes, ARMD, maculopathy) is tumor (due to compressive optic neuropathy) until proven otherwise. All patients with unexplained vision loss must be carefully evaluated.
SUDDEN MONOCULAR BLINDNESS

DIFFERENTIAL DIAGNOSIS:

- Retinal detachment (RD)
- Vitreous hemorrhage
- Arterial occlusions (CRAO)
- Vein occlusions
- Age related macular degeneration (ARMD)
- Anterior ischemic optic neuropathy (AION)
- Optic neuritis
- Choroidal neovascular membranes
- Psychogenic
- Sudden appreciation of long-standing blindness

HISTORY:

<table>
<thead>
<tr>
<th>Floaters and photopsia</th>
<th>Retinal detachment, vitreous hemorrhage,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromatopsia</td>
<td>Retinal artery occlusion (green or blue), vit heme (red)</td>
</tr>
<tr>
<td>Headaches, jaw pain, polymyalgia (GCA)</td>
<td>Retinal artery occlusion, AION</td>
</tr>
<tr>
<td>Painful eye movements</td>
<td>Optic neuritis</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Retinal artery occlusion, vein occlusion, AION</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Vitreous hemorrhages</td>
</tr>
<tr>
<td>FH of retinal detachment</td>
<td>Retinal detachment</td>
</tr>
<tr>
<td>Prior H/O neurological symptoms</td>
<td>Optic neuritis/MS; TIA/stroke (CRAO, AION)</td>
</tr>
</tbody>
</table>

EXAMINATION:

<table>
<thead>
<tr>
<th>Afferent pupil defect</th>
<th>CRAO, AION, retinal detachment, optic neuritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinal edema, cherry red spot</td>
<td>CRAO</td>
</tr>
<tr>
<td>Macular hemorrhage</td>
<td>ARMD, Choroidal neovascular membrane</td>
</tr>
<tr>
<td>Drusen (soft yellow exudate like deposits)</td>
<td>ARMD</td>
</tr>
<tr>
<td>Numerous, scattered hemorrhages throughout</td>
<td>Vein occlusions</td>
</tr>
<tr>
<td>Optic disc edema</td>
<td>Optic neuritis (papillitis), Vein occlusions</td>
</tr>
<tr>
<td>Normal posterior pole</td>
<td>optic neuritis, psychogenic, peripheral RD</td>
</tr>
<tr>
<td>No red reflex, no view of fundus</td>
<td>vitreous hemorrhage, small pupil</td>
</tr>
<tr>
<td>Embolus</td>
<td>CRAO, Branch retinal artery occlusion</td>
</tr>
</tbody>
</table>

REFER IMMEDIATELY:

- Central retinal artery occlusion:
  - painless, retinal edema, cherry red spot, afferent pupillary defect; consider carotid disease, cardiogenic emboli and giant cell arteritis
- Branch retinal artery occlusion:
  - same as CRAO but confined to one quadrant + embolus
- Ischemic optic neuropathy:
  - (i.) Non-arteric
  - (ii.) Arteritic:
  - normal ESR, H/O atherosclerosis, hypertension or diabetes
- Retinal detachment:
- Vitreous hemorrhage:
- elevated retina, H/O photopsia and floaters
- without diabetes may be due to retinal tear or detachment

REFER URGENTLY (within 48 hours)

- Optic neuritis:
  - young patient, painful eye movements, normal or swollen optic disc, apd, symptoms of MS
- Retinal vein occlusion:
  - numerous retinal hemorrhages confined to one quadrant (branch vein occlusion) or the entire posterior pole (central vein occlusion), optic disc edema
- ARMD
- Vitreous hemorrhage:
  - localized hemorrhage confined to macular region, elderly
  - w/ diabetes indicative of proliferative retinopathy.

TRANSIENT VISION LOSS (TVL)
TRANSIENT BINOCULAR VISION LOSS (TBVL)

- Optic disc edema (Transient visual obscurations) [def: TVOs are momentary blackouts lasting seconds]
- Vertebrobasilar TIA (1-10 min)
- Migraine (15-45 min)

B. TRANSIENT MONOCULAR BLINDNESS (TMB)

<table>
<thead>
<tr>
<th>THROMBOTIC/EMBOLIC</th>
<th>NON THROMBOTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carotid (1-10 min) TIA</td>
<td>Optic disc edema (TVOs)</td>
</tr>
<tr>
<td>Cardiogenic: valvular, dysrhythmia</td>
<td>Retinal migraine</td>
</tr>
<tr>
<td>Vasculitis: Temporal arteritis, Lupus, etc.</td>
<td>Angle closure, epithelial keratopathies</td>
</tr>
<tr>
<td>Hyperviscosity: P Vera, Essential thrombocytethemia</td>
<td>Optic disc anomaly (optic disc drusen)</td>
</tr>
<tr>
<td>Hypercoagulability: Estrogens, Antiphospholipid Antibody syndromes, Protein C or S deficiency</td>
<td>Benign, idiopathic of the young</td>
</tr>
<tr>
<td>Optic disc edema (TVOs)</td>
<td>Demyelinating (Uhthoffs)</td>
</tr>
<tr>
<td>Retinal migraine</td>
<td>Compressive</td>
</tr>
<tr>
<td>Angle closure, epithelial keratopathies</td>
<td></td>
</tr>
<tr>
<td>Optic disc anomaly (optic disc drusen)</td>
<td></td>
</tr>
<tr>
<td>Benign, idiopathic of the young</td>
<td></td>
</tr>
<tr>
<td>Demyelinating (Uhthoffs)</td>
<td></td>
</tr>
<tr>
<td>Compressive</td>
<td></td>
</tr>
</tbody>
</table>

HISTORY:

Associated cerebral ischemic symptoms
diplopia, dysarthria, vertigo, ataxia
isilateral hemispheric symptoms
Vertebrobasilar TIA (cardiac, Atheroemboli)
Carotid, cardiogenic

Atherosclerotic risk factors
Carotid TMB, Posterior TIA

Rheumatic, prosthetic valves, atrial fib, sick sinus
Cardiogenic emboli

Constitutional symptoms
Vasculitis, hyperviscosity
Migraine, hypercoagulability

Birth control pill, pregnancy, post partum
Migraine, hypercoagulability

Head or neck trauma
Carotid or vertebrobasilar dissection

Postural induced
TVOS, high grade carotid stenosis, orthostatic

Altitudinal pattern of vision loss (like a curtain)
Embolic mechanism: carotid or cardiogenic

Precipitated by hot shower or exertion?
Uhthoff’s, (old optic neuritis)

Palpitations, chest pain?
Cardiogenic emboli

Headache
Migraine, giant cell arteritis

Syncope, lightheadedness
Orthostatic hypotension, valvar

Gaze induced TMB
Compressive, hematoma or tumor of the orbit

Light induced TMB
Carotid stenosis

Scintillations
Migraine, Vasculitis, AVM, Focal occipital seizures, occipital tumor

EXAMINATION:

 Needless to say a the patient needs complete physical examination specifically looking for a murmer, carotid, ocular or cranial bruits, diminished pulses, tenderness over the temporal arteries, hypertension, postural hypotension, focal neurological signs etc. The eye examination is oftentimes normal, however, there are some helpful findings which when present may support a specific diagnosis. The eye exam might be notable for an afferent pupillary defect (optic neuritis, Uhthoffs), retinal emboli (carotid, cardiogenic), retinal vasculitis, optic disc edema (transient visual obscurations), narrow angles, ocular hypertension (angle closure glaucoma).

REFER URGENTLY6 (within 24 hours)

- Amaurosis fugax with elevated ESR or symptoms of GCA, start prednisone then refer
- Frequent episodes of TVL in rapid succession,
- TVL followed by persistent visual field loss (see sudden monocular blindness p 4)
- Transient visual obscurations with optic disc edema

REFER NON URGENTLY

- Rule out thrombotic-embolic causes, then refer if the etiology remains uncertain.

DIFFERENTIAL

RED EYE

6Note: Transient vision loss is a complaint that does not lend itself to simple universal recommendations. So much depends on the clinical setting. In many instances the patient requires a medical or neurological workup rather than an eye exam. Ultimately it is a judgement call. In general, patients can be referred of an eye exam non urgently (within 1-3 weeks). While TVL can be the harbinger of sudden and permanent blindness or stroke, this outcome is fortunately rare.
- Conjunctivitis
- Blepharitis
- Stye
- Subconj heme
- Angle closure glaucoma
- Uveitis
- Keratitis (herpes, corneal ulcers)
- Neovascular glaucoma
- Orbital pseudotumor
- Thyroid orbitopathy
- Orbital cellulitis
- Scleritis, episcleritis

HISTORY

**Visual acuity**
- Vision normal in conjunctivitis

**Pain**
- Angle closure, keratitis, scleritis, episcleritis are painful

**Photophobia**
- Keratitis, uveitis

**Halos**
- Sign of corneal edema in angle closure

**Itchy**
- Allergic conjunctivitis

**Discharge?**
- Purulent: Bacterial conjunctivities
- Serous: Viral conjunctivitis

**Eyelids matted and stick together in AM**
- Bacterial conjunctivitis

**Floaters**
- Uveitis

**EXAM:**

- **Check the vision**
  - Vision abnormal in angle closure, uveitis, keratitis,

- **Pupil**
  - Fixed/mid dilated (angle closure), small/fixed or irregular (uveitis)

- **Tension**
  - Elevated in angle closure, may be low in uveitis

- **Fluorescein staining**
  - Keratitis

- **Proptosis**
  - Thyroid, orbitopathy, orbital pseudotumor, scleritis

- **Ophthalmoplegia**
  - Thyroid, orbitopathy, orbital pseudotumor, scleritis

- **Localized injection**
  - Episcleritis, scleritis

- **Chemosis**
  - Thyroid, orbitopathy, orbital pseudotumor, scleritis allergic conjunctivitis

- **Eyelid**
  - Marginal erythema (blepharitis), upper lid retraction (thyroid), ptosis and swelling(pseudotumor, scleritis, orbital cellulitis)

- **Corneal haze (edema)**
  - Angle closure, neovascular glaucoma, keratitis, (uveitis)

- **White corneal infiltrate**
  - Bacterial corneal ulcer

**REFER IMMEDIATELY:**

- **Angle Closure Glaucoma:**
  - Painful red eye, hazy cornea, mid dilated fixed pupil, elevated pressure

- **Corneal Ulcer:**
  - Opacified, white corneal infiltrate, red eye, purulent discharge

**REFER URGENTLY (within 24 - 48 hours):**

- **Pain**
  - Photophobia

- **Proptosis**
  - Ophthalmoplegia

- **Irregular corneal refex**
  - Epithelial defect

- **Worsenig after 3 d treatment**
  - Compromised host

**TREAT:**

**Blephartis:** gritty, burning, matting, scaling or flaking of lid, mild conjunctival injection. Apply Bacitracin ophthalmic to eyelid HS, Commercial lid hygiene solution (e.g. Eye-scrub qAM) Refer non urgently if symptoms persist.

**Conjunctivitis:**
- **Bacterial:** topical antimicrobial medications (e.g. Polytrim QID), refer if redness fails to resolve after 3 days

- **Viral:** frequent handwashing, non communal activity, no antibiotics needed. Refer urgently if vision blurs, photopic or other signs of keratitis develop.

**Stye:** warm compresses, antibiotic eyedrops, Bacitracin ophthalmic ointment at bedtime. Refer non urgently if it fails to resolve after 1 week, for incision and drainage

**Allergic conjunctivitis:** topical decongestants (e.g. Naphcon A QID) for symptomatic relief of itch.

**Subconjunctival hemorrhage:** spontaneous, benign, no treatment required.
FLASHES, PHOTOPSIA AND SCINTILLATIONS

DIFFERENTIAL

<table>
<thead>
<tr>
<th>RETINAL PHOTOPSIA</th>
<th>CORTICAL SCINTILLATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>momentary bright flashes of light</td>
<td>scintillating zig zag lines or colored lights</td>
</tr>
<tr>
<td>lasting seconds at most</td>
<td>lasting 2-45 minutes +/- scotomas</td>
</tr>
</tbody>
</table>

- Retinal traction
- Retinal tear
- Posterior vitreous detachment (PVD)
- Retinal detachment
- Migraine (15-45 min)
- Vertebrobasilar TIA (2-10 min)
- Seizure
- Arteriovenous malformation

HISTORY and EXAM

Duration is single most helpful clue
- Seconds: retinal
- 2-10 min: TIA
- 15-45 min: migraine

Scintillations march across the visual field (“spectral march”)  Migraine (seizures are stereotyped and stationary)
Induced by eye or head movement  Retinal photopsia
Floaters  Retinal hole, retinal detachment, PVD
Headache (typically throbbing, unilateral etc)  Migraine
Vertigo, diplopia, ataxia, speech etc  TIA
H/O myopia, FH retinal detachment or trauma  Retinal tear, retinal detachment
Audible cranial bruits, h/o seizures  AVM
Associated homonymous hemianopsia  Migraine, TIA, AVM

REFER EMERGENTLY
- Observed retinal detachment, absent red reflex or vitreous hemorrhage,
- Photopsia associated with decreased vision, visual field cut or floaters.
- Cortical scintillations with persistent neurological deficits: hemianopsias, hemiparesis (obtain MRI); refer to neurology.

REFER URGENTLY (within 48 hours)
- New onset photopsia or marked worsening of pre-existant chronic photopsia

REFER NON URGENTLY
- Chronic or recurrent flashes
- Vertebrobasilar TIA: start antiplatelets, neurovascular workup, R/O cardiogenic or vasculitis

TREAT
- Migraine
# FLOATERS

*Grey spots, cobwebs, black spots that appear to drift or lag with eye movement*

## DIFFERENTIAL

<table>
<thead>
<tr>
<th>Condition</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiologic entopic phenomena</td>
<td>Physiologic retinal detachment</td>
</tr>
<tr>
<td>Posterior vitreous detachment (PVD)</td>
<td>Vitreous hemorrhage</td>
</tr>
<tr>
<td>Retinal tear, hole</td>
<td>Vitreous inflammation (uveitis)</td>
</tr>
</tbody>
</table>

## HISTORY

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudden onset in an elderly or a high myope</td>
<td>PVD, vitreous degeneration</td>
</tr>
<tr>
<td>Showers of floaters, associated with flashes and/or decreased vision</td>
<td>Retinal tear, retinal detachment</td>
</tr>
<tr>
<td>New onset floaters in a diabetic</td>
<td>Vitreous hemorrhage</td>
</tr>
<tr>
<td>Red eye, pain, photophobia, blurred vision</td>
<td>Vitreous inflammation</td>
</tr>
</tbody>
</table>

## REFER URGENTLY

- New onset floaters associated with vision loss (see SUDDEN MONOCULAR BLINDNESS)
- New onset floaters in diabetics, vitreous hemorrhage
- Red eye and floaters

## REFER NON URGENTLY

- Chronic floaters
# TEARING (EPIPHORA)

**DIFFERENTIAL**

<table>
<thead>
<tr>
<th>OVERPRODUCTION</th>
<th>POOR DRAINAGE</th>
<th>REFLEX TEARING</th>
</tr>
</thead>
</table>
| • Blepharitis   | • Eyelid deformity  
(poor apposition of the lower eyelid)  
- cicatricial lid retraction  
- facial nerve palsy  
- ectropion  
- others | • Dry eyes  
- idiopathic  
- Keratitis Sicca  
- Corneal foreign body  
- Trichiasis (eyelash) |
| • Conjunctivitis| • Nasolacrimal outflow obstruction:  
- congenital  
- dacryocystitis  
- trauma  
- nasolacrimal tumor  
- sinus tumor | |
| • Keratitis     |               |                |
| • Uveitis       |               |                |
| • Orbital inflammatory disease |               |                |
| • Thyroid orbitopathy |               |                |
| • Orbital cellulitis etc. |               |                |

*See red eye p. 6*

**HISTORY and EXAM**

<table>
<thead>
<tr>
<th>Red eye, pain, photophobia</th>
<th>Inflammatory (see RED EYE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenderness, swelling, erythema over lacrimal sac</td>
<td>Dacryocystitis</td>
</tr>
<tr>
<td>Purulent reflux from canaliculus induced by pressure on the sac</td>
<td></td>
</tr>
<tr>
<td>History of Bell’s palsy, facial burn, trauma</td>
<td>Appositional lid deformity</td>
</tr>
<tr>
<td>Unilateral, since birth</td>
<td>Congenital nasolacrimal duct obstruction</td>
</tr>
<tr>
<td>Dry mouth, rheumatic disease</td>
<td>Keratitis sicca</td>
</tr>
</tbody>
</table>

**REFER URGENTLY**

- See RED EYE if this appears to be inflammatory in origin.
- Dacryocystitis
- Embedded foreign bodies not removable with cotton swab

**REFER NON URGENTLY**

- Refer newly acquired cases, if due to eyelid deformity
- Dry eyes that fail to respond to topical lubricants
- Progressive or intolerable epiphora

**TREAT:**

- Foreign body, if easily removed
- Symptomatic dry eye with topical lubricants
- See guidelines for RED EYE
**DIFFERENTIAL**

<table>
<thead>
<tr>
<th>MONOCULAR DIPLOPA:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent diplopia with monocular occlusion, localizes to one eye due to an optical aberration</td>
</tr>
<tr>
<td>                                                                                                                                                                                                                                                                                                                                                                                       &amp;n...</td>
</tr>
<tr>
<td>BINOCULAR DIPLOPA</td>
</tr>
<tr>
<td>Diplopia with both eyes viewing, resolves with monocular occlusion of either eye; due to an ocular motor misalignment</td>
</tr>
<tr>
<td>                                                                                                                                                                                                                                                        &amp;...</td>
</tr>
</tbody>
</table>

- Cataracts
- Refractive error
- Vitreous opacity
- Corneal scar
- Retinal elevation (rare)
- Cerebral polyopia (rare)
- Psychogenic
- Ocular myopathy: thyroid, myasthenia
- Orbital tumor or fracture
- Cranial neuropathy: iii, iv, vi
- Central : nuclear, internuclear or supranuclear e.g.
- Internuclear ophthalmoplegia, skew deviation due to midbrain, pontine, cerebellar or medullary dysfunction.
- Vergence disorders: e.g. convergence insufficiency
- Decompensated strabismus
- Convergence spasms (psychogenic)

**HISTORY:**

<table>
<thead>
<tr>
<th>Monocular “ghost” image</th>
<th>Refractive or cataract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical or horizontal separation</td>
<td>Distinguishes between horizontal vs vertical recti</td>
</tr>
<tr>
<td>Worsens at distance or near</td>
<td>Abduction weakness worse at distance, adduction weakness worse at near. Convergence insufficiency symptomatic when reading.</td>
</tr>
<tr>
<td>Worsens with left or right gaze</td>
<td>Strabismus constant in all directions of gaze, ophthalmopelgia worsens when looking towards the field of action of a paretic muscle.</td>
</tr>
<tr>
<td>Worsens with head tilt left or right</td>
<td>Superior oblique palsies typically worsen on ipsilateral head tilt.</td>
</tr>
<tr>
<td>Ptosis</td>
<td>iii rd nerve palsies, myasthenia, orbital tumors</td>
</tr>
<tr>
<td>Headache</td>
<td>Ischemic cranial neuropathies, aneurysmal iii n palsies, orbital pseudotumor, concurrent trigeminal neuropathy (cavernous sinus syndrome).</td>
</tr>
<tr>
<td>Red eye or proptosis</td>
<td>Orbital pseudotumor, thyroid orbitopathy, carotid cavernous fistula, orbital tumors</td>
</tr>
<tr>
<td>Blown pupil</td>
<td>Pupil involving iii n palsies often due to aneurysms but less commonly can also be ischemic</td>
</tr>
<tr>
<td>H/O amblyopia, eye muscle surgery</td>
<td>Strabismus</td>
</tr>
<tr>
<td>History of trauma</td>
<td>Cranial neuropathy, orbital fractures, convergence insufficiency</td>
</tr>
<tr>
<td>Other neurological complaints</td>
<td>Cranial neuropathy, central</td>
</tr>
<tr>
<td>Diurnal variation: worse in AM</td>
<td>thyroid orbitopathy</td>
</tr>
<tr>
<td>worse in PM</td>
<td>ocular myasthenia, decompensated strabismus</td>
</tr>
</tbody>
</table>

**Examination:**

In addition to a careful evaluation of eye movements in all the cardinal positions of gaze, the patient must be careful examined for signs of ptosis, anisocoria, pupil reactivity, lid swelling, proptosis, redness, corneal sensation, facial sensation and bruits.

**REFER URGENTLY 7**

- Acquired and persistent binocular diplopia
- Acquired, painful, pupil involving III n palsy (without a history of diabetes) is aneurysmal or neoplastic until proven otherwise. Obtain MRI/MRA urgently.

**REFER NON URGENTLY**

- Monocular diplopia, transient diplopia, intermittent diplopia when reading, chronic binocular diplopia.

---

7 Note: Imaging studies in recently acquired cases of diplopia are not always necessary e.g. IV n palsies, thyroid orbitopathy, many disorders of vergence, decompensated phoria, ocular myasthenia, pupil sparing diabetic III nerve palsies.
**ANISOCORIA**

**DIFFERENTIAL**

**SMALL PUPIL**
- Horner's syndrome
- Iris synchia: old uveitis, previous surgery
- Chronic Adies tonic pupil
- Physiologic anisocoria

**DILATED, FIXED PUPIL**
- Iris pathology: sphincter tear, iris atrophy
- Mydriatics: atropine, scopolamine, mydriacil, cyclogyl
- Adies tonic pupil
- III rd nerve palsy
- Physiologic anisocoria

---

**LOOK FOR PTOSIS IPSILATERAL TO THE SMALLER PUPIL**
- Normal light reflex in both eyes
- Anisocoria worse in dark
- Look for ptosis
- Physiologic anisocoria
- Horner's syndrome

**CHECK LIGHT REFLEX**
- Poor light reflex in one eye
- Anisocoria worse in light
- Look for ptosis or ophthalmoplegia
- Isolated fixed and dilated pupil

**COMPARE ANISOCORIA IN DARK AND LIGHT**
- PTOSIS or OPHTHALMOPLEGIA
- Near response present Vermiform movements Loss of accommodation
- IIIrd Palsy
- Adies Tonic Pupil
- Mydriatic

**H/O SURGERY/TRAUMA/UVEITIS**
- Iris pathology: sphincter tear, iris atrophy
- Mydriatics: atropine, scopolamine, mydriacil, cyclogyl
- Adies tonic pupil
- III rd nerve palsy
- Physiologic anisocoria

---

**REFER URGENTLY**
Anisocoria with ptosis or ophthalmoplegia

**REFER NON URGENTLY**
Isolated anisocoria
# OCULAR TRAUMA

## TREAT ON SITE AND REFER IMMEDIATELY

- Acid or alkalai burn

## REFER IMMEDIATELY

| Severe pain | New onset subnormal acuity | Irregular pupil |
| Severe pain | Severe lid swelling | Corneal clouding |
| Eyelid lacerations which involve the lid margin | Corneal or scleral laceration | Severe conjunctival chemosis |
| Canaliculus | Hyphema | Proptosis |
| Deep, prolapsed fat | ? intraocular foreign body | |

## REFER URGENTLY (within 48 hours)

- Pain
- Foreign body sensation
- Suspected orbital wall fracture
- Photophobia
- Large corneal abrasion
- Moderate eyelid swelling or chemosis with normal vision
- Diplopia
- Suspected contusion of globe

## TREAT

- Minor corneal abrasions
- Removable foreign bodies (note if there is a history of risk of high velocity foreign body patient needs dilated exam to check for occult penetration of the eye)
- Superficial brow and lid lacerations that do not involve the lid margin or canaliculus
- Periorbital soft tissue injury without change in vision or evidence of ocular contusion
# Systemic Drugs: Ocular Toxicity

(Recommendations for Monitoring)

<table>
<thead>
<tr>
<th>DRUG</th>
<th>Complications</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMIODARONE</td>
<td>• All corneal deposits (&quot;whorls&quot;) • Reversible when stopped • Symptoms of halos, blur are unusual • Optic neuropathy (rare)</td>
<td>• Refer patients with subnormal vision or symptoms. Discontinue if symptomatic. • The mere presence of deposits is not in and of itself a reason to discontinue</td>
</tr>
<tr>
<td>ANTICHOLINERGIC</td>
<td>• Loss of accommodation • Angle closure glaucoma</td>
<td>• Refer for refraction if symptomatic • Refer if angle is narrow or for painful red eye • Open angle glaucoma is not a contraindication</td>
</tr>
<tr>
<td>CHLOROQUINES</td>
<td>• &gt;300 g total cumulative dose (3 yrs) • &quot;bulls eye&quot; maculopathy • Corneal deposits</td>
<td>• Baseline exam • Follow up q 6 months</td>
</tr>
<tr>
<td>CORTICOSTEROIDS</td>
<td>• Cataracts, • Glaucoma • Pseudotumor cerebri</td>
<td>• Refer for slow, decline in vision or transient visual obscurations. • Eye exam q6 months</td>
</tr>
<tr>
<td>DIGITALIS</td>
<td>• Xanthopsia (yellow vision) • Flickering or snowy distortion • Rarely optic neuropathy</td>
<td>• Check blood level and adjust accordingly. • Refer if blood level is normal with symptoms or subnormal vision.</td>
</tr>
<tr>
<td>DILANTIN</td>
<td>• Vestibulocerebellar signs and symptoms • Diplopia, oscillopsia, blurring • Gaze evoked nystagmus</td>
<td>• Check dilantin level and adjust accordingly if in the toxic range.</td>
</tr>
<tr>
<td>ETHAMBUTOL</td>
<td>• Dose related optic neuropathy as early as 1 m after starting the drug. Reversible early on. • At 15 mg/kg incidence &lt; 1% • At 20 mg/kg incidence 5%</td>
<td>• Refer for baseline exam • Follow-up every 6 months. • Refer urgently for any visual decline.</td>
</tr>
<tr>
<td>THIORIDAZINE</td>
<td>• Pigmentary retinopathy at doses of &gt;1000mg /d</td>
<td>• Maximum dose recommendation 800mg/d • Refer for symptoms</td>
</tr>
</tbody>
</table>
# Ophthalmic Medications
## Systemic and Ocular Side Effects

<table>
<thead>
<tr>
<th>CLASS</th>
<th>DRUG</th>
<th>OCULAR</th>
<th>SYSTEMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANESTHETICS</td>
<td>• Paracaine</td>
<td>• Epithelial keratopathy</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Tetracaine</td>
<td>• should be restricted for exam only, never to be used as an analgesic</td>
<td></td>
</tr>
<tr>
<td>ANTIMICROBIALS</td>
<td>• Neomycin (many brands)</td>
<td>• Eyelid or facial dermatitis</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Gentamicin (many brands)</td>
<td>• Keratitis with long term use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tobramycin (Tobrex)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Erythromycin (Ilotycin)</td>
<td>• none</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Ciprofloxacin (Ciloxan)</td>
<td>• corneal deposits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Norfloxacin (Chibroxin)</td>
<td></td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Polymixin</td>
<td>• none</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Trimethoprim-polymixin (Polytrim)</td>
<td>• none</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Sulfacetamide</td>
<td>• eyelid dermatitis</td>
<td>Stevens Johnson</td>
</tr>
<tr>
<td>ANTIVIRALS</td>
<td>• Trifluridine (Viroptic)</td>
<td>• epithelial keratopathy</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Vidarabine (Vira A)</td>
<td>• conjunctivitis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Idoxuridine (Herplex, Stoxil, Dendrid)</td>
<td>• lacrimal punctal stenosis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Acyclovir (Zovirax)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARTIFICIAL TEARS</td>
<td>many brands</td>
<td>• none</td>
<td>• none</td>
</tr>
<tr>
<td>GLAUCOMA</td>
<td>• Epinephrine (Epifren, Glaucen)</td>
<td>• conjunctival hyperemia</td>
<td>tachycardia</td>
</tr>
<tr>
<td></td>
<td>• Dipivefrin (Propine)</td>
<td>• black conjunctival deposits</td>
<td>PVCs</td>
</tr>
<tr>
<td></td>
<td>• Timolol (timoptic)</td>
<td>• no significant complications</td>
<td>hypertension, syncope</td>
</tr>
<tr>
<td></td>
<td>• Betaxalol (betoptic)</td>
<td></td>
<td>reduced libido, impotence</td>
</tr>
<tr>
<td></td>
<td>• Levobunolol (Betagan)</td>
<td></td>
<td>lethargy and depression</td>
</tr>
<tr>
<td></td>
<td>• Carteolol (Ocupress)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Metipranolol (Optipranolol)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Acetazolamide (Diamox)</td>
<td>• induced myopia</td>
<td>Stevens Johnson</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Renal stones</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Paresthesias</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nausea</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dysgeusia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Anorexia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lassitude</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Loss of libido, impotence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acidosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aplastic anemia</td>
</tr>
<tr>
<td>CHOLINERGICS</td>
<td>• Pilocarpine</td>
<td>• constriction</td>
<td>Headache or brow ache</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• conjunctival injection</td>
<td>cramping, vomiting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• induced myopia</td>
<td>diarrhea</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>diaphoresis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>bronchospasm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>unstable BP</td>
</tr>
<tr>
<td>STEROIDS</td>
<td>• Prednisilone (many brands)</td>
<td>• ocular perforations in patients with necrotizing inflammation</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td>• Dexamethasone (many brands)</td>
<td>• glaucoma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Medrysone (HMS)</td>
<td>• cataract</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fluoromethalone (FML)</td>
<td>• exacerbate viral and fungal keratitis</td>
<td></td>
</tr>
</tbody>
</table>
HIEROGLYPHICS OF THE EYE EXAM

**LIDS:**  
LF = lid fissure

**PUPILS:**  
APD = afferent pupillary defect

**SLE:**  
= (SLIT LAMP EXAMINATION)

**CONJ:** (= CONJUNCTIVA)
**CORNEA:** (= K)
**A/C:** (= ANTERIOR CHAMBER)
**IRIS:**  
PI = peripheral iridectomy
**LENS:**  
PSC=posterior subcapsular cataract, NS=nuclear sclerotic cataract  
GRADING CATARACT DENSITY : 1+ (mild) to 4+(severe)
    PCIOIL = POSTERIOR CHAMBER INTRAOCULAR LENS,
    ACIOIL = ANTERIOR CHAMBER IOL

**V**ision tested  
with glasses  
(or without corrections)

**CF**= Counting fingers at 2 feet  
HM=Hand motion  
LP= Light perception  
NLP= No light perception

Near vision  
expressed in "Jaeger" units  
J1+ = 20/20  
J1 = 20/25  
J3 = 20/40  
J10 = 20/100  
etc

**Ishihara book of .. color plates read total plates shown;**

Intraocular pressure  
Normal < 22 mm Hg

**T**ension  
24 mm  
16 mm  
Applanation  
5:30 pm  
Betoptic 4pm

**W**earing  
+2.00 - 50 x 180  
plano  
20/20

**R**fraction  
+3.00 - 50 x 180  
plano  
20/200

Best corrected vision after refraction

**E**xpressed in mm from corneal apex to orbital rim.  
> 2 mm difference is abnormal

Right eye always above left

Snellen acuity 20/25, plus 1 letter on next line;  
(-) minus indicates number of missed letters on same line

Pinhole vision; improvement indicates uncorrected refractive error

Iris = (SLIT LAMP EXAMINATION)
MOTILITY:

- **OCULAR MISALIGNMENT EXPRESSED IN PRISM DIOPTERS (PD)**
  
  1 PD = light displaced by 1cm at 1 m

- **PHORIA** is a latent misalignment

- **TROPIA** is a manifest misalignment.

**NOTATION USED TO QUANTITATE MISALIGNMENT:**

1. **ORTHO** = both eyes aligned
   
   EX = 0

2. **AT DISTANCE** -
   
   a. **ESODEVIATIONS** (eyes crossed)
      
      E = esophoria
      ET = esotropia
   
   b. **EXODEVIATIONS**
      
      X = exophoria
      XT = exotropia
   
   c. **HYPERDEVIATIONS** (one eye higher relative to the other; by convention lateralize to the upper eye even if the lower eye is abnormal)
      
      RH = right hyperphoria
      RHT = right hypertropia
      LH = left hyperphoria
      LHT = left hypertropia

3. **AT NEAR**
   
   same as above with PRIME e.g. ET', X', LHT'

4. **Example:** Grid shows misalignment in patient's cardinal positions of gaze i.e. 12 prism diopters of left hypertropia in right gaze, 2 prism diopters of left hyperphoria in left gaze, etc. This particular example demonstrates an incomitant vertical misalignment that worsens when looking down and to the right which is typical of a IV nerve palsy. This grid can also be used to document the direction of the fast phase of nystagmus in various positions of gaze by using arrows of varying size to also document its amplitude or intensity.

<table>
<thead>
<tr>
<th>RIGHT</th>
<th>LEFT</th>
<th>UP</th>
<th>DOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 LHT</td>
<td>2 XT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 LHT</td>
<td>4 LHT</td>
<td>2 LH</td>
<td></td>
</tr>
<tr>
<td>16 LHT</td>
<td>5 LHT</td>
<td>4 ET</td>
<td></td>
</tr>
</tbody>
</table>
FUNDUS EXAMINATION: (dilated; undilated)

Diagrams are often used to document fundus findings. Examples of common abbreviations and notations used to document a variety of abnormalities are shown below.
## COMMON ABBREVIATIONS:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AION</td>
<td>Anterior ischemic optic neuropathy</td>
</tr>
<tr>
<td>ALT</td>
<td>Argon laser trabeculoplasty</td>
</tr>
<tr>
<td>AMD or ARMD</td>
<td>Age related macular degeneration</td>
</tr>
<tr>
<td>APD</td>
<td>Afferent pupillary defect</td>
</tr>
<tr>
<td>BDR</td>
<td>Background diabetic retinopathy</td>
</tr>
<tr>
<td>BRAO</td>
<td>Branch retinal artery occlusion</td>
</tr>
<tr>
<td>BRVO</td>
<td>Branch retinal vein occlusion</td>
</tr>
<tr>
<td>CRAO</td>
<td>Central retinal artery occlusion</td>
</tr>
<tr>
<td>CRVO</td>
<td>Central retinal vein occlusion</td>
</tr>
<tr>
<td>CSME</td>
<td>Clinically significant macular edema</td>
</tr>
<tr>
<td>CWS</td>
<td>Cotton wool spot</td>
</tr>
<tr>
<td>FRP</td>
<td>Focal retinal photocoagulation</td>
</tr>
<tr>
<td>HE</td>
<td>Hard exudate</td>
</tr>
<tr>
<td>LTG</td>
<td>Low tension glaucoma</td>
</tr>
<tr>
<td>NVD</td>
<td>Neovascularization at disc</td>
</tr>
<tr>
<td>NVE</td>
<td>Neovascularization elsewhere</td>
</tr>
<tr>
<td>PACG</td>
<td>Primary angle closure glaucoma</td>
</tr>
<tr>
<td>PDR</td>
<td>Proliferative diabetic retinopathy</td>
</tr>
<tr>
<td>POAG</td>
<td>Primary open angle glaucoma</td>
</tr>
<tr>
<td>PPDR</td>
<td>Preproliferative diabetic retinopathy</td>
</tr>
<tr>
<td>PRH</td>
<td>Preretinal hemorrhage</td>
</tr>
<tr>
<td>PRP</td>
<td>Panretinal photocoagulation</td>
</tr>
<tr>
<td>PVD</td>
<td>Posterior vitreous detachment</td>
</tr>
<tr>
<td>RD</td>
<td>Retinal detachment</td>
</tr>
<tr>
<td>RPE</td>
<td>Retinal pigment epithelium</td>
</tr>
<tr>
<td>SRF</td>
<td>Subretinal fluid</td>
</tr>
<tr>
<td>SRNV</td>
<td>Subretinal neovascularization</td>
</tr>
<tr>
<td>TRD</td>
<td>Traction retinal detachment</td>
</tr>
<tr>
<td>VH</td>
<td>Vitreous hemorrhage</td>
</tr>
</tbody>
</table>