RED EYE DIFFERENTIAL

Conjunctivitis
Foreign body
Uveitis (iritis)
Nonglaucoma glaucoma
Keratitis

Pediatric Eye Exam

Get the visual acuity!

Snellen Chart – Older kids and adults
Allen chart: animals and objects - 2yo and under

Fix & Follow – cover one eye with your thumb or other another object and have the patient follow a light or a toy. Do they fight to look around the thumb?? Possibly not seeing well (blind) in that eye.

Pinhole Visual Acuity Test: place a pinhole in a piece of paper (you do not need the actual pinhole device like the one depicted below, a dark piece of paper works just fine) with a hole made from a paperclip. The child should be able to read 2 lines lower then they could without glasses. This is close to their best-corrected vision when they do not have their glasses with them.
Light reflex: sit centered in front of the patient and place the light directly between the eyes 12 inches from the nasal bridge. When the child is looking forward with both eyes open there should be a red reflex in both pupils and the reflection of the light should be in the middle of each pupil.

No light reflex – possible mass

White reflex – retinoblastoma or traumatic cataract

Reflection is not symmetric: strabismus.

Develop a systematic approach to the exam and use it

Lids/Lashes/Lacrimal:

Evert the lid to look for a FB. Use paper clip to keep the eyes open.

Lid - erythematous? Bites, trauma
Cornea:

Look with your naked eye and a light first. You can often see the defect without a fluorescein stain

Fluorescein Stain:

Wood’s lamp or slit lamp exam (SLE) for older kids will be the definitive exam for defects.

Confrontational Visual Fields – Correct Positioning

Don’t cover your eye; just have the patient cover one eye.

Use the 1, 3 or 5 fingers. 2 and 4 fingers confuse the patient.
Disease Processes:

HSV 1 most common in all comers.
HSV 2 most likely post partum.
HSV Can result in corneal grafting.

Iritis
Definition: vessel on vessel chemosis, pain, cells in anterior chamber
Think about it with any painful red eye especially post trauma, and post surgical.

Glaucoma:
Instead of the usual triad (loss of peripheral vision, cupping and Increased IOP) look for megalocornea (Big-A Eyeball, cornea > 13mm) in a child with congenital glaucoma.
Acute angle closure is unusual in a child: triad increased IOP, pain, and erythema
Use the Tono-Pen to measure pressure (the Tono-Pen is a random number giver so be suspicious of the pressures it gives you; if you think the pressure is high than err on the side that it actually is high even if the Tono-Pen says it’s not), palpate the IOP with your finger while patient looking down or use the Goldmann Tonometer (on the slit-lamp) to confirm.

Hyphema:
Usually not threatening, but look for an open globe.
8-ball hyphema (red/black-out of the pupillary space) = ocular emergency.
Tear in the iris that bleeds (iridodialysis) – can cause glaucoma from blocking the aqueous flow at the trabecular meshwork.
Measure a pressure, if it’s sky high then emergent ophtho consult.

At least call Ophtho before you let the patient go and let them decide if they need to see the patient.

Most hyphemas that are 50% or greater should be seen that night.

Myth: the patient does not need to stay upright; they can really lay down. Don’t worry about making them sit up all night!

Inter-ocular FB:

Looks like a traumatic cataract if large.

You will see the FB if small and in the anterior segment with a slit lamp, small and in the posterior segment with a CT scan.

You may carefully remove FB’s in the cornea with a 27 gauge needle after the eye is anesthetized. Ophtho should probably remove the FB’s directly in the visual axis.

Pre-septal and Orbital cellulitis:

Fever is the thing to look for to differentiate pre-septal from septal!

Fever, Pain with EOM, and sensitivity to light make it more likely to be orbital cellulitis.

Most common cause: sinusitis

Open Globe:/

Place no pressure on the eye!

Shield the eye, no IOP checks!

Emergent Ophtho consult

Seidel sign/test: aqueous fluids snaking down the pupil with fluorescein.

Peaked pupil.

Diplopia in upward or downward gaze
Blow out:

Diplopia in the extremes of upward gaze and downward gaze on exam.

If continued diplopia they need an operation around 2 weeks from the injury because there needs to be time for the swelling to resolve and for the patient to have regained maximum ocular range of motion.

Red glass:

Place the red glass over one eye (by convention, could be either eye even if it is the unaffected eye) and nothing over the other eye. Shine light in front of patient and have them follow the light with both of their eyes in all the cardinal planes of gaze. They will see 2 lights (diplopia – split image) if there is muscle entrapment.

You can make one with red cellophane or just use a piece of red glass if you have one.

Trick to drops:/

Place the child on their back. Put a drop in the medial canthus and wait for them to finally open….Yell, “look Russian paratroopers!” unless you are in Russia and then yell, “look American paratroopers!”

Older child: tell them you DON’T want to get any drops in the eye so have them close the eye and then put the drop on the closed lids. Fake-wipe the lid where the drop was placed and has pooled like you’re wiping the drop away. Then tell them you want to make sure we didn’t get anything in the eye so just open a little bit…. (suckers) and watch the drop go in the eye.
Corneal Abrasions Treatment:

- Homatropine 2% drops
- Ketorolac or Voltaren drops for pain control
- Erythromycin ointment for lubrication and bacterial coverage.

In non-contact lens wearers it is probably OK to patch lid for comfort to prevent continued lid abrasions. If they are a contact lens wearer then they will need pseudomonas coverage.

Corneal Ulcers:

- DO NOT PATCH!
- Ophtho to see within 24hrs.
- Start Fluoroquinolones.

Allergic Conjunctivitis:

- Puritis
- Cobblestoning

Tx:

- Vasocon (ocular antihistamine)
- Ketoralac and Voltaren (ocular NSAIDS)

Viral Conjunctivitis

- Cobblestoning
- Pre-auricular lymph nodes

Shed for 2 weeks
HSV:/

Dendritic lesion on stain
Ganciclovir gel
NO STEROIDS!

Zoster:/

Usually NOT a tree branching lesion, but sometimes IT CAN BE!
Ophtho needs to see this sooner than later to make sure, IT CAN FOOL YOU.

Acid and Base:/

pH>7 is normal.
Irrigate, irrigate and irrigate some more. When you’re done irrigating than irrigate again and call Ophtho to see the pt.

Hordeolum:/

Warm soaks 20-30min 4 times a day: get a basin with water as warm as tolerated without burning the skin. Alternate two washcloths to keep a continual warm compress on lid.
Use Johnson’s and Johnson’s No Tears Baby Shampoo (or any no tears baby shampoo) and fill cap with 50% water and 50% shampoo. Wash the lid margins with mix before each soak.

How to flip a lid:

Have the pt look down
Pull the eyelid away from the eyeball until the “suction-cup” breaks its’ seal
Put a q-tip or ballpoint pen at the top of the tarsal plate on the skin side and push down towards the feet.
Pt must continue to look down or the eyelid will revert to its’ normal anatomical position.
Foreign bodies live at the grove right under the lid margin most of the time. Once you evert the lid the FB will be right there waiting for you.

Use a 25/27 gauge foreign body to retrieve FB on the lid.

When in doubt: CONSULT and OPHTHALMOLOGIST!!