Learn · Connect · Succeed

JCAHPO Regional Meetings
2015
IT'S ALL FUN AND GAMES...
PEDIATRIC EXAMINATION TECHNIQUES
FOR THE GENERAL TECHNICIAN

Jessica M. Barr, COMT, ROUB
- Clinical Supervisor, Division of Ophthalmology at The Children’s Hospital of Philadelphia
- Co-Director and Adjunct Professor, Ophthalmic Medical Technician Program at Camden County College

FINANCIAL DISCLOSURE
- I have no financial interests in this presentation.

COURSE OBJECTIVES
- Introduce the general ophthalmic technician to basic pediatric screening techniques.
- Change the exam results from ‘UNABLE’ to something tangible and quantifiable.
- Inform technicians about rapport with pediatric patients and families.
- Learn how to have fun! And play games!
- Teach the merits of silly noises and funny faces.
- Instill excitement instead of aversion to the pediatric patients in the general ophthalmology practice.

DISPELLING MYTHS...
- You CAN get an exam from a totally non-verbal, teeny, tiny child.
- Something is ALWAYS better than nothing.
- All you can do is the best you can do.
- All you can get is the best you can get.
- Size, age, even cooperation doesn’t mean you can’t get some type of an exam... BUT HOW??? Let’s find out...

HISTORY TAKING
- Parents usually give the most comprehensive history and greatest detail.
- This doesn’t mean that children should not be included. Verify what the parents are saying and ask the children for enhancing details about what the parents are telling you.
- A minor child’s involvement should increase commensurate with the child’s age.
- In a small child, history starts with the parents (this helps make the child comfortable, and builds rapport with them)
- In an older child, history starts with the patient, and is verified or added to by the parent.

HISTORY TAKING
- Kids love birthdays – when performing your two patient identifiers, make this a talking point with them! If their birthday was recent, or upcoming, ask about what they did or are planning to do.
- Rapport is super important with kids. They’ve don’t always know why they are there, or that they even have a problem. Making them feel comfortable and even (gasp!) excited about their eye exam is totally possible.
- You will get a better exam from a cooperative patient. This underscores the importance of rapport.
Start your physical exam while you’re eliciting a history:

- Do the eyes look straight?
- Is there nystagmus?
- Is there ptosis?
- Is the child visually engaging and tracking?
- Is there a head tilt or face turn?
- Are there any obvious lesions?
- Is there redness?
- Is there mucous discharge?
- Does the child appear to be in pain? (Wong-Baker pain scale)
- Does the child appear to have photophobia?
- Careful observation during history taking informs your physical exam techniques.

HISTORY TAKING - OBSERVATIONS

WONG-BAKER PAIN SCALE

Pediatric vision assessment ranges from unsophisticated to the standard adult techniques.

- Light Averse
- Reaction to light
- Eye popping
- Fix and Follow
- Central, steady, maintained
- Preferential looking test (Teller Acuity Cards or Cardiff Cards)
- Allen or Lea Symbols – Matching and/or single optotypes
- HOTV matching
- Tumbling E’s
- Numeric eye chart
- Snellen acuity

VISUAL ACUITY/ASSESSMENT

VISUAL ACUITY/ASSESSMENT

Fix and Follow

- Patient is able to fixate
- Patient is able to follow the target

Fix, No Follow

- Patient is able to fixate on the target but can’t see well enough to track the object
- No Fix, No Follow
- No visual engagement with the target

VISUAL ACUITY/ASSESSMENT

CSM – Central, Steady, Maintained

- Similar to fix and follow but quantifies visual function a little bit more.
- Central – are they looking straight at the object? Like FIX
- Steady – is their gaze steady, with no nystagmus?
- Maintained – Are they able to maintain fixation? Like FOLLOW

CUSM – Central, unsteady (w/ nystagmus), maintained

CSUM – Central, steady, unmaintained

CUSUM – Central, unsteady, unmaintained

*These can also be abbreviated CNSM, CSNM, or CNSNM**
VISUAL ACUITY/ASSESSMENT

- Preferential looking test – Teller Acuity
  - Large cards with black stripes at one end
  - Eye is reflexively drawn to the black lines
  - Lines get finer until they eventually blend with the gray background
  - Peep hole in the center of card so the examiner can observe the patient
  - Cards typically held horizontally, though can be tested vertically (for horizontal nystagmus patients).
  - Lines correspond to Snellen equivalents
  - As kids get older, they can point to the lines.

Teller Acuity continued...

- Typically test binocular first to get an idea of the range of acuity
- Then test each eye individually
- Hold cards face down on the examiners lap, in the correct order.
- Examiner is “blind” to which side of the card the stripes are on.
- Examiner holds up card, looks through peephole, then observes where the child looks.
- If the child looks on the side with the stripes, it means they saw the stripes. If you are unsure, flip the card around a couple of times and re-test.

VISUAL ACUITY/ASSESSMENT

- Results are measured in cycles per centimeter and recorded in cycles per degree. This conversion is on the back of each card.
- Standard testing distance is 55cm – about the length of the card.
- Lines correspond to Snellen equivalents
- Most importantly, results get graphed into normative ranges based on age.

VISUAL ACUITY/ASSESSMENT

- HOTV/LEA/ALLEN MATCHING
  - Make a game out of it, “Let’s play a matching game!”
  - Great for kids who don’t know their letters yet.
  - Give words of encouragement, tell them they’re “winning!”
  - Incentivize with a sticker or a “ride” in the exam chair.
  - Empower them to choose and get them engaged. Let them choose between Lea or HOTV matching.

VISUAL ACUITY/ASSESSMENT

- Tumbling “E” and Lambolt “C”
  - Can be read as a linear chart or played as a matching game.
  - Most useful for mentally delayed older children, illiterate, or non-english speaking patients.
  - I don’t use this very much with kids, but definitely most useful in the absence of a symbol/picture chart.
**VISUAL ACUITY/ASSESSMENT**

- Snellen Acuity
  - Most accurate
  - Kids may know some letters but not all
  - They can trace the letter in the air
  - Or give them extra letters, acknowledging that if they get a majority of letters correct, it counts.
  - Kids are shy
  - Kids like team work
    - Ask if they need help
    - "Let's work together as a team. I'll help you get started. The first one is an E. What's the next one?"
    - Sometimes just giving them the first letter helps them get momentum.

**VISUAL ACUITY/ASSESSMENT**

- Tips and tricks
  - Test the problem eye first (if OS amblyopic, check that one first)
  - Remember, if they get half of the line, it counts, don’t make them read 5 optotypes on all five lines
  - Time is of the essence
  - Try checking binocular vision, then casually occluding each eye
  - Push, encourage, get excited for them! Words of praise go a long way
  - Fogging for nystagmus
  - Avoid mirrored rooms, when possible. The mirrored system confuses kids.
  - Kids tend to malinger. Try giving them a “magic” plano lens to see if it improves vision.

**REFRACTOMETRY**

- Manifest VS. retinoscope
  - Subjective VS. objective
  - Young children must have an objective refraction via retinoscopy.
  - It is possible to perform a subjective, manifest refraction on children as young as 6.
  - Teenagers should always be offered a subjective/manifest refraction.
  - Refracting should be about 20/happy not always 20/20.

- Cycloplegia
  - Children have exceptional accommodative ability (up to 20 diopters at birth) and must have a “wet”, AKA cycloplegic refraction.

**REFRACTOMETRY**

- Dry VS. wet refractions
  - Dry refractions can be done, but are not as accurate.
  - Dry refractions could be useful for diagnostic purposes only, but should not be performed when the goal is to RX glasses.
  - Break from the pre-dilation refraction rule we use for adults and wait until 30 minutes after the child has been given drops.
**Tools of Retinoscopy:**
- Skiascopy
- Loose lenses
- Trial Frames
- Lens clips

**REFRACTOMETRY**

**PUPIL ASSESSMENT**
- Play with the pen light, make it flash
- Twinkle, twinkle little star
- Make some commentary, something is better than nothing
  - Brisk
  - Sluggish
  - No obvious APD
  - Difficult to Assess, no obvious APD
  - Equal
- PERRL(A) - Remember, “A” stands for accommodation and you probably aren’t checking this.

**MOTILITY ASSESSMENT**
- Evaluating eye movement
  - Kids lose interest, use different stimuli for the patient
  - Flashing light in distance, use worth 4 dot flash light, parent can hold
  - Hold child’s head while evaluation versions and ductions.

**MOTILITY EVALUATION**
- Least sophisticated to most sophisticated
  - Hirschberg
  - Krimsky
  - Cover tests
  - Maddox rod

**MOTILITY EVALUATION**
- Hirschberg – Uses the angle kappa (aka corneal light reflex – CLR) to assess alignment.
  - CLR should be center in the pupil and symmetric with the other eye
  - 30/60/90 rule – 30pd if CLR at pupil margin, 60pd if CLR midway on iris, and 90pd if CLR at the limbus
  - 1mm of CLR decenteration is equivalent to 15pd deviation.
  - Very easy to make a quick assessment

**MOTILITY EVALUATION**
- Krimsky – This method combines the hirschberg technique with prisms to re-center the CLR.
  - Useful for uncooperative children and young children unable to fixate
  - Not very accurate, but something is better than nothing!
MOTILITY EVALUATION

- Cover tests: Alternate cover, cover-uncover, and simultaneous prism cover testing can be used to evaluate the extent of deviation in multiple positions of gaze.
  - Most useful in older children, but some young kids are surprisingly cooperative.
  - Use a sticker on your nose for near testing, or a lang stick, or a toy.
  - Help child position head, or hold head, in the lateral and secondary gazes.
- Maddox rod
  - Most difficult because it requires the greatest cooperation from the patient. The patient not only has to fixate but also tell you where a light is in relationship to the line created by the maddox rod.

MOTILITY EVALUATION

- Maddox rod
  - Most difficult because it requires the greatest cooperation from the patient. The patient not only has to fixate but also tell you where a light is in relationship to the line created by the maddox rod.
  - Does not delineate between phoric and tropic components.
  - Most useful for vertical deviations overlaying horizontal deviations.
  - Vertical deviations are poorly compensated for and tend to have a very small, if any, phoric component.

CONFRONTATION VISUAL FIELD

- Kids cannot resist the impulse to look!
- Make it a staring contest, “catch” them if they look away from fixating!
- Instead of holding fingers in periphery, consider just flashing them quickly.

STEREO VISION

- “Magic glasses”
- Grab his wing!
- Which animal is trying to jump out at you?
- Is one of those circles sticking out like a button? Try to push the button.

COLOR VISION

- Using a standard Ishihara
  - Kids struggle with higher numbers. They know 4 and they know 5 but they may not know 45. Let them identify each number individually.
  - Tracing with their finger.

ADMINISTERING MEDICATIONS

- Kids are fearful. Here are some tips:
  - “Princess” and “Superhero” drops.
  - Put a drop on their hand to show them it doesn’t hurt.
  - Consider using proparacaine first.
  - Ask if they like swimming. Drops feel like getting pool water in the eye.
  - Distract them after the drops are put in. Wiggle your feet, clap your hands, shake your head.
  - Encourage sitting on parents laps or holding parents hands.
  - Have the child put their head back and close their eyes. Put the drops on their inner canthus and let them blink the drops in.
  - Tell them they are giggle drops but they’re not allowed to laugh. It pleasantly distracts them and keeps them smiling.
Get them positioned correctly!

- Recline the exam chair
- Papoose
- Seated on a parent's lap
  - Recline the child into your lap
  - Call in the heavy artillery

Recline the exam chair

Papoose board

Seated on a parent's lap

Team work

Call in the heavy artillery
PAY BACK!

Portatble slit lamp – great for getting a magnified view on the move!
• Adjust your desired settings before getting in the kids face with a strange object.
• Show them what you’re going to do ahead of time.

PHYSICAL EXAM

Pen light – You may not be able to detect cell or flare, but you can make some commentary on the physical appearance of the eye.
• Lids/Lashes – no lesions, chalazia, no sties, ptosis, stents in place
• Conj – white and quiet, injected, Sch
• Corneal – clear
• A/C – formed, deep, no view
• Irid – round and reactive, surgical, coloboma
• Lens – clear, clouded

The PLE is less threatening, may be most appropriate for the technician exam.

PHYSICAL EXAM

Slit lamp
• "Riding a bike"
• Looking into the distance
• Ideal way to examine the eye
• If a child is too short to sit in the exam chair, have them stand up at the slit lamp. This is also useful for short grown ups.

PHYSICAL EXAM

Portable slit lamp – great for getting a magnified view on the move!
• Adjust your desired settings before getting in the kids face with a strange object.
• Show them what you’re going to do ahead of time.

PHYSICAL EXAM

Get the most important information first.
• Don’t make the child sit in the exam chair until you’re ready to examine. It’s fine to sit with Mom, or on the floor, while you take a history.
• Get as much exam as possible, but if child is getting agitated and resisting, considering deferring to the MD. You don’t want to exacerbate the child and have them totally uncooperative for MD.
• Time is of the essence! Try to keep things moving along, kids have a short attention span.
• Do something unexpected! Grrrrr....
• Remove your white coat before entering the room.
• Use apps on your smart phone to keep them interested/fixtures.

GENERAL ADVICE

PEDIATRICS

The Children’s Hospital of Philadelphia
REFERENCES

- www.intelihealth.com
- TESTING VISUAL ACUITY IN CHILDREN AND NON-VERBAL ADULTS, Lisa Rovick, CO, COMT
- www.ophthebook.com
- BIG THANKS TO FACULTY AND STAFF AT CHOP:
  - Monte Mills, MD
  - Stefanie Davidson, MD
  - Melissa Wong, MD
  - Veeral Shah, MD
  - Bill Katowitz, MD
  - Lori DiMento, COA
  - Michelle Menticchio, COA
  - Ivy Ruhn, CRNP