Baby Steps to Eyecare for Infants and Young Children

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Disclosures

- None

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What We Really Want To Know

- Does the history suggest a problem?
- Can the baby see?
- Are the eyes straight?
- Are the eyes healthy?
- Is development progressing appropriately?
- Is intervention necessary?

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Step One

Office Preparation Prior To The Examination

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Before The Appointment

- Have infant history information completed before the visit
  - sent by mail to parent or have the history form online or on website
- Get the information when the parent has time – NOT IN THE OFFICE
  - Primary concern
  - Special concerns & special conditions
- Schedule infants in the morning but avoid regular nap time

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Before the Appointment

- What to bring
  - Bottle, treats, pacifier, finger food
  - Favorite toys,
  - Security blanket
- What not to bring
  - Siblings (unless accompanied by a designated babysitter)
- Change baby's diaper just before exam

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Office Planning

- Designated exam room with equipment for the infant and young child
- Procedures for Staff to be prepared to work efficiently
  - History, Pre-testing, Dilation
  - Clean up protocols
- "Friends" in key places to make the babies more comfortable such as a stuffed animal

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Baby Steps

- Insert Polling Question 1

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"Special" Equipment for the Office

- Toys
  - Fixation Targets: quiet, noisy, dynamic, large, small, light up, flash
  - Security toys to hold on to
- Examination
  - Trial lenses / Lens bar
  - Loose prisms / Prism bar

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Your Best Special Equipment!

- Office Assistants!!!
  - First contact with parent/patient
  - History
  - Any pre-testing
  - Sets the stage

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Special Equipment

- Hand-held instruments
  - Retinoscope
  - Biomicroscope / MIO / BIO
  - Autorefractor / Autokeratometer
  - Retinoscope / Ophthalmoscope
  - Transilluminator
- Non-verbal visual acuity tests
- Young child stereo tests

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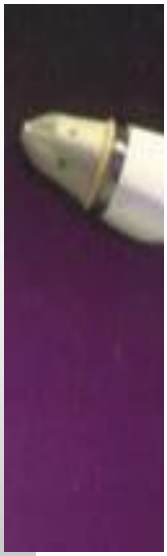

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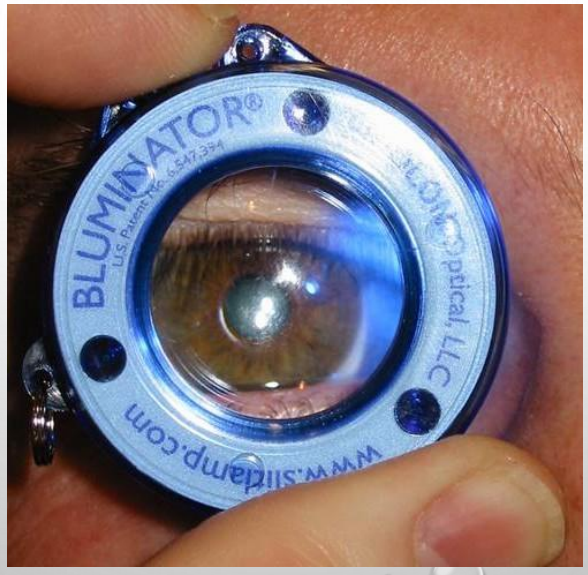

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STEP TWO

PREPARE YOURSELF

WHY IS THIS IMPORTANT?

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Social /Emotional Milestones – 12 Mos - AAP

- Shy or anxious with strangers
- Cries when mother or father leaves
- Enjoys imitating people in his play
- Shows specific preferences for certain people and toys
- Tests parental responses to her actions during feedings
- Tests parental responses to his behavior
- May be fearful in some situations
- Prefers mother and/or regular caregiver over all others
- Repeats sounds or gestures for attention
- Finger-feeds herself
- Extends arm or leg to help when being dressed

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Cognitive Milestones

- Explores objects in many different ways (shaking, banging, throwing, dropping)
- Finds hidden objects easily
- Looks at correct picture when the image is named
- Imitates gestures
- Begins to use objects correctly (drinking from cup, brushing hair, dialing phone, listening to receiver)

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- Caring for Your Baby and Young Child – author: Steven Shelov and Robert Hannermann; publisher Bantam Books – 1991 - latest edition 2004

Elements of the Examination

- History
- Ocular Motility
- Alignment and Binocularity
- Refraction
- Visual Acuity
- Eye Health
- Parent Education

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The Child is Delivered

Now What Do You Do?

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Step Three

The Examination

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During the Examination

- Remove the white coat?
- What does staff wear? May be more important – sets the stage
- Have equipment & materials ready for easy access during the exam

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Pediatric History

- Expand on pertinent points from parent history
- Premature or full term?
- Do the parents perceive a problem?
- Have they been sick a lot?
- Family risk factors?
- Is the child meeting developmental milestones?
  - How is vision involved in developmental milestones

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During the Examination

- Lighting will help control attention
- No interruption notice!!
- Welcome “Friend” in exam chair
- Staff assistance for target control, scribe, etc.
- Seat the infant on parent’s lap, in parent’s arms, or on lap pillow

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During the Examination

- Be prepared to work quickly and be flexible
- Allow cool down period if the baby becomes too fussy
- Watch the child's reaction to your voice tone & movements
- Avoid words like "drops" or "hurt"
- Talk to the baby at their eye level where it is easiest for them

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Parents and Siblings

- The Parents
  - Cell phone free zone
- Siblings
- Bring small silent toys for them to play with
- Be aware of interaction between parent and siblings as that will later assist in development of the plan

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Parents

- Very briefly explain to Mom or Dad as you go along – no long discussions
- Reassure parents when the baby is doing well during the exam
- Tactfully control the parent's comments
- Do not try to explain complications until testing is completed
- Answer questions but don't stop
- Use parents as targets or as puppet masters to hold the baby's attention during certain procedures

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Baby Steps

- Insert Polling Question 2

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Areas of Assessment

- Ocular motility
- Binocular function
- Refraction
- Visual acuity
- Eye Health

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Ocular Motility and Alignment

Binocular tests should be completed before moving to monocular tests

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Fixation

- Red Finger Peek-a-boo
- Colorful, Lighted Targets
- Face-like Targets
- Silent Visual Targets

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Alignment

- Strabismus vs Pseudo-strabismus
- Hirschberg
  - Binocular evaluation of reflex
- Krimsky
  - Prism neutralization of Hirschberg

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Alignment

- Steele method
  - Use of retinoscope is most efficient
  - Problem eye has a darker reflex
- Brückner
  - Problem eye is brighter

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Brückner Test

- Strabismus, amblyopia, & anisometropia
- 80 - 100 cm away in dim illumination
- Ophthalmoscope light on both eyes simultaneously
- Observe color, brightness of retinal reflex
- Note pupil size

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Brückner Test

- Anisometropia: higher refractive condition is brighter
- Strabismus: non-fixating eye brighter
- Amblyopic eye's pupil will first constrict weakly, then dilate immediately

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Alignment

- Cover test
  - observation with occlusion using thumb (direct or alternate)
  - loose prism / prism bar
- Prism flippers
  - with dynamic targets
  - lighted targets best for observing alignment reflex
- Stereo testing
  - Tests should be oriented towards an infant

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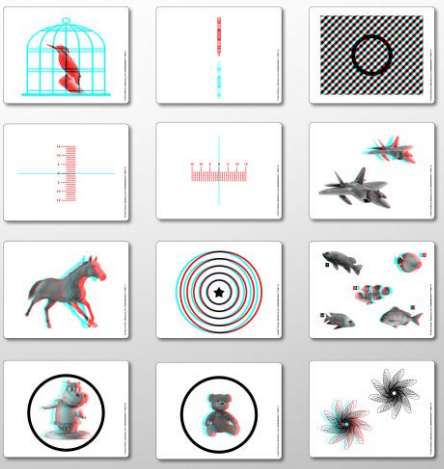
New Test from Bernell – FBAT

Functional Binocular Assessment Test



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Visual Acuity

- Is response to acuity testing equal?

  (Interocular Acuity Difference - IAD)
- Best Tests
  - High contrast optotypes
  - Forced choice or matching
  - Decreased test distance (=/< 10 ft) – don't push 20 foot test distance

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Visual Acuity

- Preferential Looking/Viewing
- Evaluate patient response to patterned and plain targets
  - Stripe Cards best for < 1 yr but can be useful with older toddlers (Teller, Lea Gratings or Patti Pics)
  - Richman Face Dot Paddles
  - IAD > 2 sequential cards for Teller/Keeler PL cards is significant

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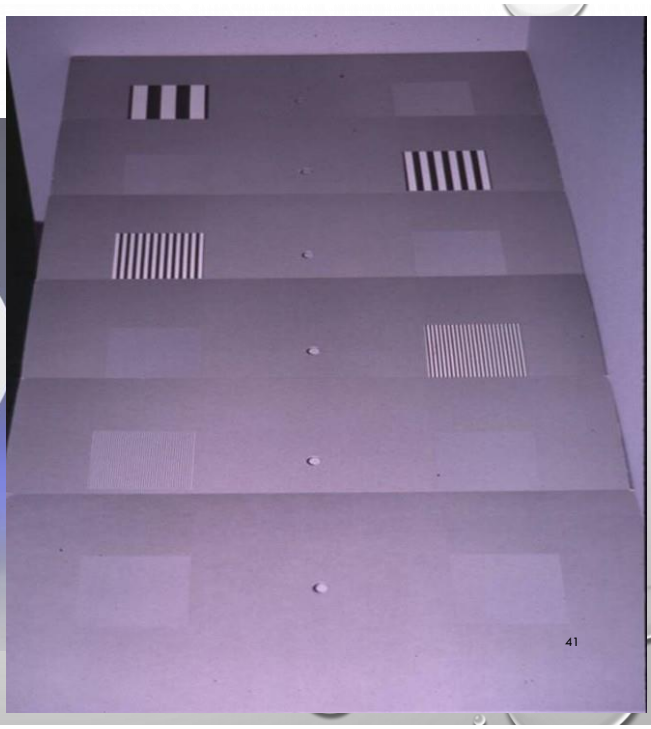

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Visual Acuity – When Best Tests Do Not Work

- Reaction to occlusion
- Fix – Follow - Maintain
- Fixation Preference with 10^{Δ} BU
  - Alternates fixation equally
  - Holds briefly but one eye dominates
  - Can be done at the same time as binocularity testing

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Determination of Refraction

- Refraction
  - Near Dynamic Retinoscopy
  - Auto-refraction
  - Distance Retinoscopy
  - Mohindra Retinoscopy
- Retinoscopy can be used for so much more than refraction – do not limit the use of a retinoscope
- Roe and Guyton – An Ophthalmoscope is not a Retinoscope

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Baby Steps

- Insert Polling question 3

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Dynamic Retinoscopy

- My preferred method of refractive assessment – Just Look!
- Watch the visual response as the baby or patient is changing from target to target for the quality of response
- Think of your retinoscopy as a video rather than a snapshot or photo such as anisometropia and alignment
- Autorefraction averages over time into a single number
- The variations are meaningful, and I want to observe all

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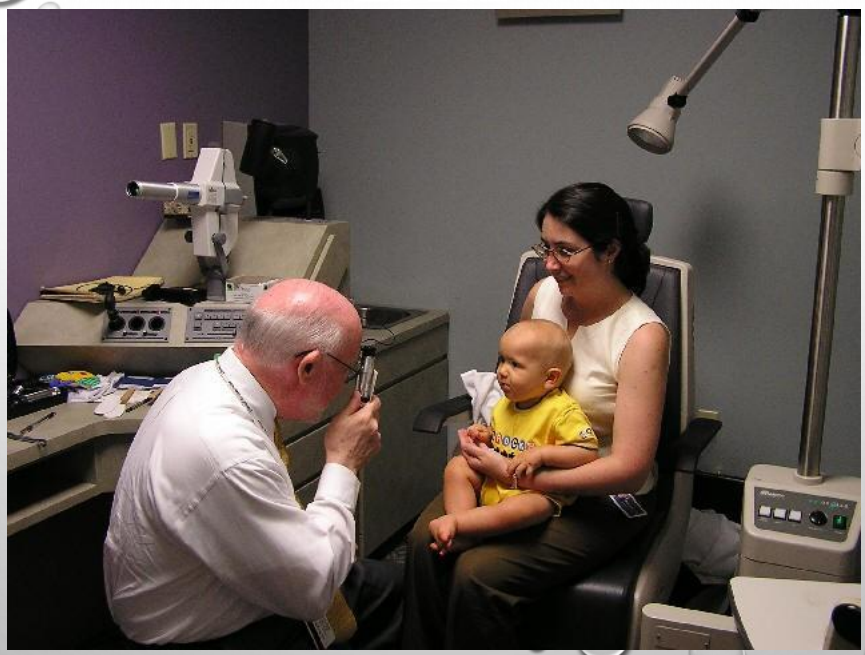

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CJ

- Right XT distance and near
- DVA OD 20/80
- OS 20/20
- No response to Randot stereo testing
- Retinoscopy observations:

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Observations

- Difference in brightness between eyes
- Modulations (variability) in right eye
- Difference in configuration between right and left eyes – left eye full reflex but right eye in constant modulation
- Marked pupil constriction when cover was removed from left eye
- Where was he focused when left eye was covered?
- Considerations for management, especially patching?

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Emmetropization

- Usually shows moderate hyperopia at birth
- Decreases through the developmental years
- Myopia and astigmatism also show the emmetropization process
- Gradually moves toward emmetropia
- Allow this process to take place
  - 3 X 3 Rule

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3 X 3 Rule

- If refractive posture suggests a risk factor
  - Compare the measures in three and six months to ensure appropriate movement toward the expected
  - Intervene at any time there is no change or a change for the worse

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Prescribing

- Refractive Compensation should be considered for stable refractive conditions of abnormal degree or when significant anisometropia or ametropia is present increasing the risk for amblyopia
- 3 x 3 rule

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"Normal" Range Limits AAO

- Significant refractive conditions in children 12 months and younger – AAO Preferred Practice Patterns:
  - > 6.00 D hyperopia in any meridian
  - > 4.00 D myopia (20% with ROP)
  - > 2.50 to 3.00D astigmatism
  - > 2.00 D anisometropia (esp. if higher ametropic eye is >+3.00D)

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"Normal" Range Limits AOA

- Significant refractive conditions in children 12 months and younger – AOA CPG on Amblyopia):
  - > 5.00 D hyperopia in any meridian
  - > 8.00 D myopia
  - > 2.50 D astigmatism
  - > 1.50 D anisometropia

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Prescribing

- Where do you start?
- Prescribing based on the concept that vision develops and continues to develop
- Greater range is normally present in infants and young children than in adults
- Consider the "norms" from AAO and AOA

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Prescribing

- Measurements show considerable variability depending on where they are in the process of development
- Where do you get the initial brightening of the retinoscopic reflex indicating contact with the target?

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Ocular Health

- General observation
- Anterior segment
- Pupils
- Intraocular pressure measurement
- Visual fields
- Posterior segment

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Step Four

Case Presentation

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Case Presentation

- Baby occupied while consulting with parents
- Not easy to have a conference with parents even if only to suggest the timing of the next visit when the baby is already "finished"
- Prioritize by risk or symptoms
- Eye Health – top priority when there are problems

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Case Presentation

- Visual Ability and Refractive Condition
- Binocular function
- Vision Development – have guidelines handy

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Case Management

- Prescribe for every patient that comes into your office as prescribing involves more than glasses
- Have a set of activities involving vision that promotes overall development
- Determine a time for follow-up or the next evaluation

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Case Management

- Follow-up for non-well cases
- Explain:
- What is being followed
- Why it is being followed
- What are the expected outcomes
- What might be the consequences
- Consultation (OD, other health provider)

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Case Management – Follow-up

- Compliance – how have they done with previous recommendations
- Monitor emmetropization response
- Glasses indicated? (polycarbonate or Trivex)
- Consultation (OD, other health provider)

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You Be The Doctor

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Patient SR 7 months

- History - Parents note no problems
- Ocular motility - full EOM with sustained fx
- Binocularity – alignment on Hirschberg
- Ocular health - shows expected appearance

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Patient SR 7 months

- Global stereo on Bernell Stereo Test
- Refraction - +2.25 with 0.75 cyl axis 180
- Visual Acuity – Lea Gratings at 37 cm = 20/80

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What Is Your Plan?

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Parent Education

- Parents
  - Educate & Explain
  - Each parent, and indeed each family, has a philosophy of childcare
  - Not always in words but in actions, attitudes, questions, protests, etc
  - It's not that they don't care – It's that they don't know – and it is our responsibility to raise their level of awareness

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What We Really Want to Know

- Does the history suggest a problem?
- Can the baby see?
- Are the eyes straight?
- Are the eyes healthy!
- Is development progressing appropriately?
- Is intervention necessary?

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Thank You!

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