Baby Steps to Infant Eye Care

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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?

Before the Appointment

• Have Infant History form
  – Send by mail to parent
  – Have the history form online on website
• Get the information when the parent has time – NOT IN THE OFFICE

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)

Before the Appointment

• Name & Age
• Primary concern
• Special concerns & special conditions
• Schedule infants in the morning
• Avoid nap time
• Change baby just before exam

The Baby is Delivered

Now what do you do?
Elements of the Examination

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

Early Warning Signs?

Pediatric History

- Expand on pertinent points from history
- First examination?
  - If not, what has been recommended?
- Premature or full term?
- Do the parents perceive a problem?
- Sick a lot?
- Family risk factors?
- Meeting developmental milestones?

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)
Cognitive Milestones

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Office Planning Helps

• Designated exam room with infant assessment equipment
• 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

“Special” Equipment

• 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
Your Best Special Equipment?

- Office Assistants!!!
  - First contact with parent/patient
  - History
  - Any pre-testing
  - Sets the stage
- It is no accident that the name of the background in these slides is teamwork

Special Equipment

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

During the Examination
- Remove the white coat?
- What does staff wear? May be more important – sets the stage
- Have a designated Pediatric Exam room
- Have equipment & materials ready for easy access during the exam

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

During the Examination
- Be prepared to work quickly, with flexibility
- Allow cool down period if the baby becomes too fussy
- Watch the baby’s reaction to your voice tone & movements
- Avoid words like “test,” “drops,” “hurt”
- Talk to the baby at their eye level where it is easiest for them
- Use the name Mom & Dad use

Parents and Siblings
- The Parents
  - Cell phone free zone
  - “Joey is having a hard time hearing me”
- Siblings
  - “You are much more exciting than I am so you have to be still and quiet”
Parents

• Have parents present at any age
• Explain to Mom or Dad as you go along
• Reassure parents when the baby is doing well during the exam
• Tactfully control the parent’s comments
• Answer questions but don’t stop
• Use parents as targets or as puppet masters to hold the baby’s attention during certain procedures

Introduction of Equipment

• Laugh when you introduce it
• Put a toy on it
• Give it a fun name
• Play the game with Mom or a toy first if they hesitate
• Encourage them to touch with each game

Ocular Motility and Alignment

Binocular tests should be completed before moving to monocular tests

Fixation

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

Alignment

• Strabismus vs Pseudostrabismus
  • Hirschberg
    – Binocular evaluation of reflex
  • Krimsky
    – Prism neutralization of Hirschberg
  • Steele method
    – Use of retinoscope is most efficient
  • Brückner
    – Problem eye is brighter
**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

**Brückner Test**

- Anisocoria, larger pupil is brighter
- Anisometropia: higher refractive condition is brighter
- Strabismus: non-fixating eye brighter
- Amblyopic eye’s pupil will first constrict weakly, then dilate immediately
Bruckner reflex: OD esotropia

Alignment

- Cover test
  - observation with occlusion
  - 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
Visual Acuity and Refractive Conditions

Visual Acuity

- Is acuity equal? (Interocular Acuity Difference - IAD)
- Best Tests
  - High contrast optotypes
  - Forced choice or matching
  - Decreased test distance (<= 10 ft)

Visual Acuity

- Candy bead (>1yr)
- Reaction to occlusion
- Fix – Follow – Maintain
- Fixation Preference with 10Δ BU
  - Alternates fixation equally
  - Holds briefly but one eye dominates
  - Can be done at the same time as binocularity testing

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

Lea Grating Testing
Determination of Refraction

- If you use retinoscopy for refraction
  - Auto-refraction
  - Distance Retinoscopy
  - Near Dynamic Retinoscopy
  - Mohindra Retinoscopy
- Retinoscopy can be used for so much more

Dynamic Retinoscopy

- My preferred method of refractive assessment – Just Look!
- Watch the visual response as the baby or patient is changing from task to task
- Think of it as a video rather than a snapshot
- Development Seminar: Retinoscopy GSPart2.wmv

Emmetropization

- Usually born with moderate hyperopia
- May also show myopia and astigmatism
- Gradually moves toward emmetropia
- Allow this process to take place
  - 3 X 3 Rule

3 X 3 Rule

- If refractive posture that 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

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
**“Normal” Range Limits AAO**

- Significant refractive conditions in children 12 months and younger - AAO:
  - > 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)

**“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

**Prescribing**

I generally recommend “Partial corrections” for infants and toddlers
- greater range is normally present in infants than in adults
- there may be harm associated with removing blur completely – increased incidence of strabismus and amblyopia
- measurements are often less valid, unreliable

**Prescribing**

- A rule-of-thumb clinical guide for under-correction is to leave a residual refractive condition that is within normal limits for the infant patient
  - Scopes +8.00 and stable
  - When you feel it is necessary to prescribe, first observe the response to the lens that brings it within the +6.00 upper limit
  - Continue to monitor carefully
- Don’t forget development

**Patient  SR  7 months**

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

**YOU BE THE DOCTOR**
Patient  SR  7 months

• Global stereo on Keystone Basic Binocular
• Refraction  +0.25 with 0.75 cyl
• Visual Acuity  – Richman FD at 24" = 20/100

WHAT IS YOUR PLAN?

This Is The Typical Patient Seen In Your Office

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
• Visual Ability and Refractive Condition
• Binocularity
• Vision Development  – have guidelines handy

Case Presentation

Case Management

• Follow-up for non-well cases
  – What is being followed
  – Why
    • What are the possible outcomes
    • What might be the consequences
  – In the event that treatment is necessary at a later date
    – Room for improvement AND emmetropization
    – Compliance
    – Glasses (polycarbonate)
    – Consultation (OD, other health provider)

Case Management

• Mechanism for follow-up
  – Have list of other doctors available
  – Pre-appoint with postcard reminder
  – Telephone reminder
• Documentation
  – Note Tx and F/U recommendations
  – Note No Show (NS) or Reschedule (RS)
**Education**

- Parents
  - Educate & Explain
  - Each parent has a philosophy of child care
  - 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

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**Thank You!**

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