Introduction and Disclaimer

- 16 years in vision screening field
- Former Director/Lead Trainer – Vision Initiative for Children – West Virginia University Eye Institute
- Member – Advisory Committee to the National Center for Children’s Vision and Eye Health at Prevent Blindness
- Current Education and Outreach Coordinator for the National Center for Children’s Vision and Eye Health at Prevent Blindness
- Current Director – Vision and Eye Health Initiatives at Good-Lite and School Health Corporation
- Not in sales . . . The opinions expressed in this presentation are solely those of the presenter based on research and professional experience.
Introduction and Disclaimer

- 40+ years as a pediatric optometrist, Marcus Professor of Pediatric Studies at the New England College of Optometry
- Devoted to studying visual problems and treatment options for young children
- Published more than 200 papers, posters, chapters, and 2 textbooks related to pediatric optometry
- Member of National Expert Panel to the National Center for Children’s Vision and Eye Health at Prevent Blindness
- A principal investigator in a National Eye Institute-funded multicenter study – the Vision in Preschoolers (VIP) Study

Info You Will Take Home …
4 Learning Objectives

Name the 7 key vision development milestones between birth and the 1st birthday.

Describe 3 reasons why we should care about the vision of children.

Describe 1 method to try if baby does not maintain eye contact with a parent or caregiver.

Describe next steps to take when vision development milestones are delayed.
4 Topics

1. 7 key vision developmental milestones in the first year of life
2. Impact of vision disorders on learning
3. Tools can use in Early Head Start
4. Wrap-up and your burning questions

Why Do We Care About the Vision of Children?

- Vision disorders are the 4th most common disability in the US.
- Vision is the most prevalent handicapping condition in childhood.
- There can be a critical adverse affect on learning.
- Early detection and treatment improves outcomes.
- Most vision problems in children are occult.

http://nationalcenter.preventblindness.org/publications-and-presentations
Epidemiology of Vision Problems in Children

- Amblyopia
- Strabismus
- Significant refractive error
- Eye Disease

Amblyopia

- Incidence
- What is it?
- What is it’s significance?

Classroom as it appears with bilateral amblyopia

Classroom as it should appear to child
Strabismus

- Incidence
- What is it?
- What is it’s significance?

Significant Refractive Error

- Incidence
- What is it?
- Astigmatism
- Anisometropia
- What is meant by significant?
Eye Disease

- Incidence
- What is it?
- What is it’s significance?

2015 Vision in Preschoolers – Hyperopia in Preschoolers Study (VIP-HIP) found:

- Children ages 4 and 5 years with uncorrected hyperopia (farsightedness $\geq 4.0$ D) scored significantly worse on a test of early literacy than children with normal vision.
- $\leq 4.0$ D also had lower scores, but difference not statistically significant

Test = TOPEL (Test of Preschool Early Literacy)

Performance most affected:
- Print knowledge subtest, which assesses the ability to identify letters and written words

Cast of Characters in This Story

NGCVEH:
- National Center for Children’s Vision and Eye Health at Prevent Blindness

AAP:
- American Academy of Pediatrics
- American Association for Pediatric Ophthalmology and Strabismus
- American Academy of Ophthalmology
- American Association of Certified Orthoptists

How Screen Vision in Early Head Start Children?

- Monitoring check-off document
- Instruments

http://nationalcenter.preventblindness.org/publications-and-presentations
Time for reaching milestones can vary up to 6 weeks.

Slides show when baby **should** reach milestones.

Process:
- Milestone and age when milestone should occur
- Why milestone is important
- Example of what to do if milestone not met . . . or next steps
Many vision milestones are related to overall developmental milestones. Want you to think about those milestones from a perspective of vision or how baby’s vision could impact milestone.

### Table: Seven Key Vision Development Milestones to Monitor from Birth to First Birthday

<table>
<thead>
<tr>
<th>AGE (Milestones may vary up to 6 weeks)</th>
<th>MILESTONE</th>
<th>IMPORTANCE OF MILESTONE</th>
<th>QUESTIONS TO ASK OR BEHAVIORS TO MONITOR</th>
<th>NEXT STEPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 weeks to no later than 8 weeks</td>
<td>1st Milestone</td>
<td>Maintains stable eye contact when awake and alert and initiated by parent or caregiver</td>
<td>□ Does baby maintain stable eye contact when awake and alert and initiated by parent and/or caregiver? (If “no”, move to Next Steps.)</td>
<td>□ Refer for eye exam for an assessment to include refraction and accommodation, if possible, to determine if baby can see parent/caregiver’s face.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>□ If vision is found to be normal, refer to primary care provider to further discuss concerns.</td>
<td>□ Refer to Birth to 3 Early Intervention Program for supporting development of total communication through all senses, including hands and motor functions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Stable eye contact with parents or caregivers is essential for developing bonding and communication</td>
<td>□ Lack of stable eye contact can interfere with early emotional and general development</td>
<td>□ In interfere, help parents/caregivers help baby to develop communication through all the senses:</td>
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<td></td>
<td></td>
<td></td>
<td>□ Example: Talk close to baby’s face while helping baby to feel parent’s or caregiver’s face.</td>
<td></td>
</tr>
</tbody>
</table>
Check-off monitoring tool available at:
http://nationalcenter.preventblindness.org/publications-and-presentations

Direct link:
http://nationalcenter.preventblindness.org/sites/default/files/national/documents/Key_vision_questions_to_ask_n_year_1_10.3_16.pdf

What to Do? Next Steps
Talk close to baby’s face while helping baby to feel parent’s or caregiver’s face.

Questions to Ask or Behavior to Monitor
Does baby maintain stable eye contact when awake and alert and initiated by parent or caregiver?

Why important?
Lack of stable eye contact can interfere with early emotional and general development.

Milestone:
Maintains stable eye contact when awake and alert and initiated by parent or caregiver.

1st vision milestone - ages 6 weeks to no later than 8 weeks
2nd vision milestone - during 3rd and 4th months

Milestone: Lively communication with social smile.

Why important? Brain is maturing, baby can vary accommodation, baby sees clearly at several distances.

Questions to Ask or Behavior to Monitor
When parent/caregiver approaches baby, does baby respond with a smile?

What to Do? Next Steps
If Mother seems distressed, brainstorm on ways to support Mother (i.e., family member cares for baby while Mother sleeps).

3rd vision milestone - ages 3rd, 4th, or maybe 5th month

Milestone: Awareness of hands and exploration of hands with mouth.

Why important? Leads to exploring hands with mouth, which leads to exploring baby’s world.

Questions to Ask or Behavior to Monitor
Does baby bring hands to midline and to mouth?

What to Do? Next Steps
Use small objects with variation in size, weight, texture to help baby use hands to explore.
4th vision milestone – by age 5 months

Milestone: Keenly watching hands movements of others; beginning to copy hand movements.

Why important?
Leads to goal-directed reaching and grasping. Begins process of learning from imitation and understanding actions and goals of others.

Questions to Ask or Behavior to Monitor
Is baby keenly watching hands movements of others? Is baby beginning to copy hand movements of others?

What to Do? Next Steps
Immediately refer for eye exam to access visual system AND refer to Birth to 3 Early Intervention to help baby observe and begin to copy hand movements of other children and adults.

5th vision milestone – by age 5 months (no variance on this one)

Milestone: Eyes are straight and do not appear to cross or drift.

Why important?
Eyes must be straight for good binocular vision to develop.

Questions to Ask or Behavior to Monitor
Do baby’s eyes ever appear to cross or drift?

What to Do? Next Steps
Immediately refer for eye exam to help determine cause of eye misalignment.
From Birth to the 1st Birthday: 7 Critical Visual Milestones to Monitor

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4/9/2017

6th vision milestone – *during ages 5 or 6 months*

Milestone:
Goal-directed hand-arm movements.

*Why important?*
If baby is not reaching for objects, maybe baby cannot see the objects.

*Questions to Ask or Behavior to Monitor*
Does baby reach for, grasp object, and look at object when reaching?

*What to Do? Next Steps*
Refer for eye exam and to Birth to 3 Early Intervention for assistance in helping baby develop goal-directed hand-arm movements.

7th vision milestone – *during ages 7, 8, or 9 months*

Milestone:
Recognition of family and/or caregiver faces.

*Why important?*
Baby could be incorrectly diagnosed as being on autism spectrum.

*Questions to Ask or Behavior to Monitor*
Does baby recognize family members outside the home among groups of people?

*What to Do? Next Steps*
Encourage family members/caregivers to wear same colorful blouse/shirt or headband when greeting baby each morning.
Instruments do not measure visual acuity

Instruments analyze images of the eyes to provide information about amblyopia and reduced vision risk factors:

- Estimates of significant refractive error (hyperopia, myopia, astigmatism)
- Estimates of anisometropia
- Estimates of eye misalignment

Instruments “Approved” by NCCVEH

Welch Allyn® Spot™ Vision Screener
plusoptiX Portable S12C Vision Screener
### Instrument-Based Screening

- Use beginning at 12 months; better success at 18 months (AAP)
- Use instruments OR tests of visual acuity for children ages 3, 4, and 5 years (NCCVEH and AAP)

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**Direct link:**

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From Birth to the 1st Birthday: 7 Critical Visual Milestones to Monitor

Vision and Eye Health

Moving Into the Digital Age With Instrument-Based Vision Screening

P. Kay Nottingham Chaplin, EdD
Kire Baldonado, BA
Amy Hutchinson, MD
Bruce Moore, OD

Significant advancements in new screening research are leading to improved design, functionality, and reliability of screening tools. Presently, two instrument-based screening approaches are available to school nurses for children ages 3 years and older: optotype-based screening and instrument-based screening. Optotype-based screening involves the use of visual acuity using optotypes (e.g., pictures, letters, and numbers) which children identify to determine visual acuity. Instrument-based screening involves instrumental devices that measure refraction, visual acuity, and eye alignment differences. Instrument-based screening is recommended to screen for significant visual anomalies in children due to its ability to screen for refractive errors, visual acuity, and eye alignment differences. Optotype-based screening is recommended to screen for visual acuity and eye alignment differences in young children.


Year of Children’s Vision

• http://nationalcenter.preventblindness.org/year-childrens-vision
• Archived vision screening webinars in Resources

National Center for Children’s Vision & Eye Health

• http://nationalcenter.preventblindness.org/
From Birth to the 1st Birthday: 7 Critical Visual Milestones to Monitor

Conclusion of Today’s Presentation

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