The New Program Performance Standards and Your Vision Screening Program

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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

• **Consultant – Vision Screening Committee, American Association for Pediatric Ophthalmology and Strabismus**

• 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 . . . Focus is encourage age-appropriate, evidence-based, and best practice vision screening as part of a strong, 12-component, Vision Health System of Care

Disclaimer: Vision screening tools are examples to support guidelines for this age group.

Vision screening tools are not shown for the purpose of sales or promotion.
Information You Will Take Home

3 Learning Objectives

At the conclusion of this presentation, you will be able to:

1. Describe the impact of vision problems on a child’s school readiness.

2. Identify two evidence-based screening tools that can be used for vision screening children in Early Head Start and Head Start programs.

3. Access free resources to help enhance your vision screening efforts.

Vision - A Top Health Issue for Children

Of 1M Children enrolled in HS/EHS Programs…

- 30,000+ children with a diagnosed vision problem (3% of all children in HS/EHS programs)
Relationship Between Vision Disorders and Learning

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

- Children ages 4 and 5 years with uncorrected hyperopia (farsightedness ≥ 4.0 D) scored significantly worse on a test of early literacy than children with normal vision.
- ≤ 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

Full vision - [http://www.onedollarglasses.org/eye-test/full-vision.html](http://www.onedollarglasses.org/eye-test/full-vision.html)

Vision defect of 1.0 D - [http://www.onedollarglasses.org/eye-test/1-diopters.html](http://www.onedollarglasses.org/eye-test/1-diopters.html)
Vision defect of 4.0 D - [http://www.onedollarglasses.org/eye-test/4-diopters.html](http://www.onedollarglasses.org/eye-test/4-diopters.html)

**Diopter defined**

- “Diopter” refers to the strength of a prescription lens required to give a child the clearest vision possible. Diopters typically range from 0 to 10, but, on occasion, may be higher. The higher the number, the stronger the prescription lens.

- A plus (+) sign in front of a number, i.e., +4.00 D, refers to hyperopia, or farsightedness, meaning an individual has difficulty seeing objects at near. A minus (-) sign refers to myopia, or nearsightedness, meaning an individual has difficulty seeing objects at a distance.

- A child requiring 4 diopters of correction in prescription glasses, or contact lenses, would likely struggle with blurred vision, crossed eyes, or both, and would see much better with prescription glasses.

- Diopters and 20/xx do not correlate well with each other, meaning diopters cannot be converted to 20/xx and 20/xx cannot be converted to diopters. But, the higher the lens strength needed, the more vision is blurred.

- Refractive error, such as hyperopia, and visual acuity measurements, such as 20/40, represent different aspects of vision.
Multiple Inner City Schools Level

- 317 2nd and 3rd grade students in 12 high-poverty schools in Baltimore City School District in phase 1
- Poor baseline visual acuity and hyperopia associated with reduced reading achievement and worse baseline reading scores


Single School District Level

2015 study of low-income children ages 3 through 5 years screened in South Carolina’s Charleston County School District – after diagnosis and treatment with prescription glasses – found:
- Improvement in academic progress.
- Increase in focus during lessons.
- Increase in participation and classroom interaction.
- Improvement in confidence and behavior.

First grade reading ability found to be predictive of 11th grade reading outcomes, including reading comprehension, vocabulary, and general knowledge.

Children who lag in 1st grade but catch up by 3rd or 5th grade have good prognosis for future reading level.


What do previous slides tell you?

Importance of:

- Evidence-based vision screening,
- Follow-up eye exams,
- Receiving vision treatment plan and related devices/materials (i.e., glasses, patching); and
- Following treatment plan for best vision now and in the future.
Head Start Program Performance Standards

Subpart D — Health Program Services

1302.42 Child health status and care.

(b) Ensuring up-to-date child health status.

(2) Within 45 calendar days after the child first attends the program or, for the home-based program option, receives a home visit, a program must either obtain or perform evidence-based vision and hearing screenings.

(3) If a program operates for 90 days or less, it has 30 days from the date the child first attends the program to satisfy paragraphs (b)(1) and (2) of this section.

Current Evidence-Based Vision Screening Tools for Ages Birth to 3 Years

• The Infant Vision Milestones Checklist – a document for monitoring 8 vision developmental milestones during baby’s 1st year

• Instrument-based screening

• Community group using evidence-based tools for ages 1 and 2 years
8 Critical Vision Developmental Milestones to Monitor From Birth to 1st Birthday

- 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.

• When using the tool, start at beginning with 1st milestone and end at child’s age.

| AGE (Though collections may vary up to 6 weeks, refer if eyes not straight by 6th mo.) |
| By 5th month |
| ![Image](http://classmentos.org/wp-content/uploads/2015/03/4620 infants.jpg) |
| **MILESTONE** | **IMPORTANCE OF MILESTONE** | **QUESTIONS TO ASK OR BEHAVIORS TO MONITOR** | **NEXT STEPS** |
| 4th Milestone | Keenly observing hand movements of others and starting to copy those hand movements which begins the process of learning from imitation, and understanding actions and goals of others. | • Is baby keenly watching hand movements of other children and adults? (If “no”, move to Next Steps.) | • Refer for eye exam to assess all parts of the visual system to determine why baby is not keenly watching and beginning to copy hand movements of other children and adults. • Refer to Birth to Three Early Intervention program for assistance in helping baby observe and begin to copy hand movements of other children and adults. |
| 5th Milestone | Eyes must be straight for good binocular vision to develop. | • Are baby’s eyes straight? (If “no”, move to Next Steps.) • Do baby’s eyes ever appear to cross or drift? (If “yes”, move to Next Steps.) | • If baby’s eyes appear to turn in or out after age 4 months, immediately refer baby for eye exam to assess all parts of the visual system to determine the cause of eye misalignment. |

By 6th month

http://objs.twenty.com/media\WILLIAM\NARA001.jpg
What to Do? Next Steps (2 Examples)
Refer to the child’s primary care physician to assess need for eye exam.
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 - Birth to no later than 8 weeks

The Infant Vision Milestones Checklist tool available at:
http://nationalcenter.preventblindness.org/publications-and-presentations
http://nationalcenter.preventblindness.org/sites/default/files/national/documents/8-key-development-milestones.pdf
Instruments “Approved” by NCCVEH

- Welch Allyn® Spot™ Vision Screener
- Plusoptix S12C Vision Screener
- Welch Allyn® SureSight™ Vision Screener

Disclaimer: These tools are examples of vision screening instruments for this age group. These are not shown for the purpose of sales or promotion.

Evidence-Based Vision Screening Tools & Procedures for Children Ages 3 Through 5 Years

- Optotype-Based Screening
- Instrument-Based Screening
Cast of Characters

NCCVEH:
- 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

2 Approaches to Vision Screening

1. **Optotype-based screening**
   - Tests of visual acuity using optotypes to measure visual acuity as interpreted by the brain
     - Quantifiable measure of the clearness of vision when identifying black optotypes on a white background using specific optotype sizes at a prescribed and standardized distance

2. **Instrument-based screening**
   - 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
Threshold & Critical Line Screening

- **Threshold screening**
  - Move down chart until child cannot correctly identify majority of optotypes

- **Critical line screening**
  - Use only line child needs to pass according to child’s age
"Not so great" charts . . .

**NOT** Recommended by NCCVEH and/or AAP

- "Sailboat"
- "House, Apple, Umbrella"
- Lighthouse
- Snellen
- Tumbling E
- Landolt C
- Allen Pictures
• The use of validated and standardized optotypes and acuity charts is important for an accurate assessment of vision.
• Charts not standardized.
• Children may not know their letters.
• Requires discrimination of direction, which is not sufficiently developed in preschool-aged children.
• Not well validated in screening environment.


National and international distance visual acuity eye chart design recommendations

• 1980 - National Academy of Sciences-National Research Council (NAS-NRC)

• 1984 - International Council of Ophthalmology (ICO)
  • www.icoph.org/dynamic/attachments/resources/icovisualacuity1984.pdf

• 2003 - World Health Organization Prevention of Blindness & Deafness (WHO)
  • Prevention of blindness and deafness. Consultation on development of standards for characterization of vision loss and visual functioning. Geneva: WHO;2003 (WHO/PBL/03.91).

• 2010 – American National Standards Institute, Inc.
  • ANSI Z80.21-1992 (R2004) Approved May 27, 2010
Optotypes approximately equal in legibility

Horizontal between-optotype spacing = 1 optotype width

Vertical between-line spacing = height of next line down

Geometric progression of optotype sizes of 0.1 log units (logMAR, ETDRS)

5 optotypes per line

Tips:

- Line outside optotypes
- 20/32 vs. 20/30
- 10 feet vs. 20 feet

Optotypes black on white background with luminance between 80 cd/m² and 160 cd/m²

Similar recommendations across guidelines

Design guidelines = “ETDRS” or “logMAR” chart
Do the following eye charts fit national/international eye chart design guidelines? Yes or No?

Preferred Optotypes for Children Ages 3 to 7 Years

- NCCVEH
- AAP
- Recommend LEA SYMBOLS® and HOTV letters as optotypes


Preferred Optotype Format

NCCVEH national guidelines call for using single, LEA SYMBOLS® or HOTV letter optotypes surrounded with crowding bars for children ages 3, 4, and 5 years at 5 feet.

- Card with 4 optotypes – use as matching game
- Individual cards may be placed on floor in front of child – ask child to step on card matching optotype to identify

Options: Critical Line Screening at 10 feet

Sight Line

Sight Line Kit


Screening Distance

• 5 or 10 feet from chart to child’s eyes
• New, standardized distance charts will be at 10 feet for children and adults
• 10/xx on left side of chart with 20/xx on right side
Occluders – Younger Children <10 Years

Unacceptable Occluders Ages 3, 4, and 5 years

- Hand
- Tissue
- Paper or plastic cup
- Cover paddle

Why unacceptable?

Children can easily peek

To Point or Not to Point . . . ?

- Pointing to each optotype to help children know where they are on the chart is permissible.

  ❑ True or False?

  ✓ ____________

- 1.8 “Line-by-line isolation or pointing may be used, but not letter by letter.”

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No Pointing at Optotypes

- Holding pointer at optotype makes optotype easier to identify.

  Instead . . . briefly point under or over top of optotype and quickly remove pointer.

- If line has a box around optotypes, stay outside the box with pointer.
Option for Near Vision Screening

NCCVEH
- Age 3 years:
  - Majority of optotypes on 20/50 line
- Ages 4 and 5 years:
  - Majority of optotypes on 20/40 line
- Ages 6 years and older:
  - Majority of optotypes on 20/32 line

AAP
- Age 3 years:
  - Majority of optotypes on 20/50 line
- Ages 4 years:
  - Majority of optotypes on 20/40 line
- Ages 5 years and older:
  - Majority of optotypes on 20/32 (or 20/30) line
  - Or 2-line difference even in passing lines (i.e., 20/20 and 20/32)

Referral Criteria


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**Instruments “Approved” by NCCVEH**

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Disclaimer: These tools are examples of vision screening instruments for this age group. These are not shown for the purpose of sales or promotion.
• 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)

Instrument-Based Screening


Instrument-Based Screening

• If use instruments, no need to also do visual acuity screening

• If cannot “capture” a pass or refer result... refer child for eye exam
- Do not attempt to convert estimated refractive error to visual acuity value.
- Child could fail vision screening with instrument, but pass with conversion and miss opportunity for eye exam.

### Conversion Chart: Refractive State to "estimated" Visual Acuity

<table>
<thead>
<tr>
<th>Myopia</th>
<th>Hyperopia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nearsighted</td>
<td>Farsighted</td>
</tr>
<tr>
<td><strong>Minus (+) Sphere</strong></td>
<td><strong>Plus (+) Sphere</strong></td>
</tr>
<tr>
<td>Ages: All</td>
<td>Ages: 5y to 15y</td>
</tr>
<tr>
<td>-0.5</td>
<td>20/30-40</td>
</tr>
<tr>
<td>-3.75</td>
<td>20/50</td>
</tr>
<tr>
<td>-1</td>
<td>20/80</td>
</tr>
<tr>
<td>-1.25</td>
<td>20/70</td>
</tr>
<tr>
<td>-1.5</td>
<td>20/100</td>
</tr>
<tr>
<td>-2.5</td>
<td>20/200</td>
</tr>
</tbody>
</table>

[1] Spherical results are based upon minus (-) cylinder conversion.

Not Recommended for conversion of screening results for children screened for amblyopic risk factors

- “Untestable” is not a failed vision screening.
- Keep track of “untestable” children.
- **Untestable children in VIP study were 2x as likely to have vision problems than those who passed vision screening.**

- If possible, rescreen untestable children same day.
- If you have reason to believe that the child may perform better on another day, consider rescreening the child within 6 months.


## Children At High Risk for Vision Disorders

<table>
<thead>
<tr>
<th>Readably observable ocular abnormalities</th>
<th>Neuro-developmental disorders, such as:</th>
<th>Systemic conditions with ocular abnormalities, such as:</th>
<th>Parents or siblings with history of:</th>
<th>History of prematurity</th>
<th>Parents who believe their child has vision problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strabismus</td>
<td>Hearing impairment</td>
<td>Diabetes</td>
<td>Strabismus</td>
<td>&lt; 32 completed weeks</td>
<td>Message to providers: Don’t wait and see</td>
</tr>
<tr>
<td>Ptosis (droopy eyelid)</td>
<td>Motor, such as CP</td>
<td>Juvenile Arthritis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Down Syndrome</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive impairment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autism Spectrum Disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### References for previous slide


Screening Considerations for Children at Increased Risk of a Vision Problem

- Use same vision screening tools you use with all children.
- If children are untestable, refer to child’s medical provider for referral for eye exam.
- If children pass, explain to parents that the screening does not check for everything.
- Because these children are at a higher risk of having an eye disorder.
  - A comprehensive eye exam remains recommended for these children.

Consensus of the Technical Guidance Subcommittee to the National Center for Children’s Vision and Eye Health – 2.16.17. Subcommittee includes pediatric ophthalmologists and pediatric optometrists.
Head Start Program Performance Standards

Subpart D — Health Program Services 1302.42 Child health status and care.

(d) Extended follow-up care.

(1) A program must facilitate further diagnostic testing, evaluation, treatment, and follow-up plan, as appropriate, by a licensed or certified professional for each child with a health problem or developmental delay, such as elevated lead levels or abnormal hearing or vision results that may affect child’s development, learning, or behavior.

(2) A program must develop a system to track referrals and services provided and monitor the implementation of a follow-up plan to meet any treatment needs associated with a health, oral health, social and emotional, or developmental problem.

(3) A program must assist parents, as needed, in obtaining any prescribed medications, aids or equipment for medical and oral health conditions.

Engage Peer Support Systems

• Parent-to-parent
  o I did this…
  o You can try this…
  o My eye doctor told me this…
  o Personal referrals [of doctors, resources]

• Personal advocates (for appointments)

• Provide translations

• Help parents access or get child to an eye appointment

• Peer support in treatment adherence

• Provide educational sessions to other parents and children

• Set goals for children’s health (incl. eye care) for the HS/EHS program and evaluate success
Resources to Support Families . . .

Establish Community Provider Relationships

- Meet area eye care providers and discuss the needs of EHS/HS families

- Create a resource listing local providers, hours of operation, insurance accepted, location on bus line, and ages seen (*potential project for a parent or college student*)

- Invite providers to visit your program and talk with the families/children about vision and join your Health Services Advisory Committee

http://nationalcenter.preventblindness.org/resources-2
Resources to Ensure Communication Among Vision Health Stakeholders

Tips for Wearing Eye Glasses

Eye Health and Safety Curricula:

Eyes That Thrive:
http://www.preventblindness.org/eyes-thrive

Resources to support better eye health

Website for the National Center for Children’s Vision and Eye Health

Provider education tools

Parent/family resources

Technical assistance

Professional Development

Communication tools

http://nationalcenter.preventblindness.org
The Infant Vision Milestones Checklist tool available at:

http://nationalcenter.preventblindness.org/publications-and-presentations

http://nationalcenter.preventblindness.org/sites/default/files/national/documents/8-key-development-milestones.pdf

Resources to Help Ensure Evidence-Based Vision Screening


Info for Prevent Blindness nationally recognized vision screening certification you can do online at your own pace

http://nationalcenter.preventblindness.org/prevent-blindness-childrens-vision-screening-certification-course

800-331-2020 Nottingham@preventblindness.org

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/
Helpful info and statistics for grant proposal writing . . .