Vision Screening Recommendations

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Introduction and Disclaimer

- 14 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 Director – Vision and Eye Health Initiatives at Good-Lite and Vision Screening and Eye Health Consultant for School Health Corporation
- Not in sales . . . Focus is to use power of podium to encourage appropriate and evidence-based vision screening as part of a strong Vision Health System of Care
How to Build a Strong Vision Health System of Care

CHILDREN'S VISION HEALTH: HOW TO CREATE A STRONG VISION HEALTH SYSTEM OF CARE

Madyson, a Kindergarten student, did not pass vision screening and received glasses after a follow-up eye exam. When she returned to her classroom with her new glasses, Madison walked into the room and looked around. A picture of a grizzly on the wall caught her attention. She walked to the picture, cocked at the grizzly, turned to her teacher, and said, “I didn't draw graffiti had eyes!”

This story reinforces our knowledge that children with vision disorders rarely know that the way they see their world differs from the way children with good vision see the world. Consequently, there are built-in learning opportunities in the world around them because of poor vision. Vision impairments are common conditions among young children, affecting 1 in 20 preschool-aged children and 1 in 4 school-aged children. A recent report concluded that poor visual screening in infancy leads to an estimated 10% of children's diagnosed vision problems, an estimated 1% of missed diagnoses, and an estimated 2% of treatment-related outcomes.

Evaluating Your Vision Health Program

http://nationalcenter.preventblindness.org/resources-2
2 Approaches to Vision Screening

1. **Optotype-based screening**
   - Optotype = name of picture, letter, or number asking children to identify
   - Optotype-based vision screening measures visual acuity
     - Provides info about presence or absence of refractive error and pathology within the visual pathway

2. **Instrument-based screening**
   - Instruments do not measure visual acuity
   - Instruments measure amblyopia risk factors:
     - Significant refractive error
     - Anisometropia
     - Eye misalignment
     - Cataract

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**Threshold vs. Critical Line**

- **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
National and International Distance Visual Acuity Eye Chart Recommendations

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

- **1984 - International Council of Ophthalmology (ICO)**
  

- **2003 - World Health Organization Prevention of Blindness & Deafness (WHO)**
  

- **2010 – American National Standards Institute, Inc.**
  

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**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**

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

**Similar recommendations across guidelines**

**Design guidelines = “ETDRS Design”**
Tips:
- Line outside optotypes
- 20/32 vs. 20/30
- 5 or 10 feet vs. 20 feet

The National Expert Panel to the National Center for Children’s Vision and Eye Health at Prevent Blindness states that the following charts are **UNACCEPTABLE** for screening vision of children ages 36 to <72 months (3 through 5 years):

- Allen figures
- Kindergarten “Sailboat” eye chart
- Landolt C
- Lighthouse
- Tumbling E
- Snellen

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Preferred Optotypes for Preschoolers

• National Expert Panel for the National Center for Children’s Vision and Eye Health at Prevent Blindness

• American Academy of Ophthalmology Pediatric Ophthalmology/Strabismus Panel

• American Association for Pediatric Ophthalmology and Strabismus

• Recommend LEA Symbols and HOTV letters as optotypes


Optotype Format

• Single, LEA SYMBOL® or HOTV letter optotype surrounded with bars for children ages 3 to 6 years at 5 feet

### Option - LEA SYMBOLS® or HOTV letter optotypes surrounded with crowding box for children ages 3 to 6 years at 10 feet


### Preferred Optotypes for School-Aged Children

- **American Association for Pediatric Ophthalmology and Strabismus**
  - Recommends Sloan Letters

- **American Academy of Ophthalmology**
  - Recommends Sloan Letters and LEA Numbers


Options - Kits From AAPOS (American Association for Pediatric Ophthalmology and Strabismus)

AAPOS Vision Screening Kit (Basic)

Occluders: Children 3 through 5 years


**Unacceptable** Occluders Ages 3 Through 5 Years

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

**Why unacceptable?**
- Children can easily peek

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**Occluders – Aged 10 Years and Older**

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Pointing from World Health Organization

• 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.
### Referral Criteria

<table>
<thead>
<tr>
<th>National Center for Children’s Vision and Eye Health at Prevent Blindness</th>
<th>American Association for Pediatric Ophthalmology and Strabismus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ages 3 years:</strong></td>
<td><strong>Ages 3 years:</strong></td>
</tr>
<tr>
<td>• Majority of optotypes on 20/50 line</td>
<td>• Majority of optotypes on 20/50 line</td>
</tr>
<tr>
<td><strong>Ages 4 and 5 years:</strong></td>
<td><strong>Ages 4 years:</strong></td>
</tr>
<tr>
<td>• Majority of optotypes on 20/40 line</td>
<td>• Majority of optotypes on 20/40 line</td>
</tr>
<tr>
<td><strong>Ages 6 years and older:</strong></td>
<td><strong>Ages 5 years and older:</strong></td>
</tr>
<tr>
<td>• Majority of optotypes on 20/32 (or 20/30) line</td>
<td>• Majority of optotypes on 20/32 (or 20/30) line</td>
</tr>
</tbody>
</table>


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- Keep track of “untestable” children.
- If possible, rescreen untestable children same day or within 6 months.

Untestable children in VIP study were 2x as likely to have vision problems than those who passed vision screening.


Stereoacuity

PASS 2

Preschool Assessment of Stereopsis with a Smile 2
Vision Assessment Corporation

- Stereoacuity screening is not a recommendation for ages 3 to 6 years.
- If mandated to do stereoacuity, the National Expert Panel to the National Center for Children’s Vision and Eye Health at Prevent Blindness recommends the PASS 2.


Additional **Unacceptable** Practices: Ages 3 Through 5 Years

- Red reflex testing for media opacity detection,
- Cover testing for eye misalignment,
- Should be conducted only by health care personnel who are professionally trained to perform and interpret the tests.
- 20-foot testing distance – shorter distance helps to maintain child’s attention with fewer distractions.
- Near cards.
- Screening with both eyes open.
- Vision testing machines that optically simulate distance vision, such as those used at motor vehicle testing facilities.

Approved Devices – 3 to 6 Years

- Welch Allyn SureSight® Vision Screener - Version 2.25
- Righton Retinomax
- Welch Allyn Spot™ Vision Screener
- Plusoptix

Note: When the Plusoptix and Spot devices are used outside of an eye care setting, consultation with a pediatric eye care professional regarding the best cut-offs to use for the particular patient population to be screened is advised until evidence-based refractive error criteria are determined.

http://visionsystems.preventblindness.org/screening/instrument-based-vision-screening.html

“Charts” vs. “Devices”

- In cooperative children, direct measurement of visual acuity using optotype-based screening remains the gold standard for vision screening.
- Instruments:
  - Do not replace visual acuity screening with eye charts.
  - Provide an option for children who cannot participate in optotype-based screening, particularly preschool-aged children.

AAPPOS Pediatric Vision Screening Guidelines for Primary Care Providers and School Nurses – PowerPoint presentation
Instrument-Based Screening

• Most vision experts believe an instrument refractive error result cannot be converted to an estimated visual acuity value.

• If use instruments, have test of visual acuity as back-up.
  • Why? If device has 90% “capture rate”, how screen 10%?

USE OF SCREENING INSTRUMENTS IN YOUR PRACTICE?

• Quickly screen patient’s sibling(s) during patient visits
  • CPT 99174
    • Photoscreeners
    • Autorefractors
  • CPT 99173
    • Tests of visual acuity
RESOURCES:

➢ 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/

Resources

**Free** eBook:

*Navigating the Path of Children’s Vision Screening*
- Screening practices
- Recommended tools
- Proper occlusion
- Guidance from national experts

Available at:

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Thank You for Your Time and Attention!

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