A Strong Vision Health System of Care: Does Your Vision Screening Program Meet All 12 Components?

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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

Purpose and 2 Learning Objectives

- Emerging research showing connection between uncorrected refractive errors and academic challenges, which can impact learning in higher grades and life outside school.
- We need to find these children.

1. Describe 2 at-risk populations for vision problems that can impact academic achievement.
2. Describe 12 components of a strong vision health system of care to help detect vision disorders that can impact academic achievement.
The foundation for children’s vision health goes beyond completion of a vision screening!

Vision screening is part of a process . . . not a single event.

1: Our program ensures all parents/caregivers receive educational material, which respects cultural and literacy needs.

- We have vision health information in all native languages of the families that we serve.
- We discuss the importance of healthy vision as a part of proper child development in the general health information provided by our program.
- We provide parents with easy-to-understand* information on the visual milestones for children at all stages of life.
- We provide health information to parents of children with special healthcare needs that describe their increased risk for vision problems.
2: We ensure that parent/caregiver’s written approval for vision screening includes permission to . . .

- Share screening results with the child’s eye care provider and primary care provider.

- Receive eye exam results for our program’s records.

- Talk with the child’s eye care provider for clarification of eye exam results and prescribed treatments.

- Share eye exam results with the child’s primary care provider.

Be aware of state specific laws around health information.

http://nationalcenter.preventblindness.org/resources-2
3: We use age-appropriate and evidence-based tools and procedures, including optotypes and/or instruments.

- If we use devices for instrument-based screening, the devices include software upgrades recommended by the National Center for Children’s Vision and Eye Health at Prevent Blindness.

- If we use devices, the referral criteria is set according to recommendations from the National Center for Children’s Vision and Eye Health at Prevent Blindness or our local eye care providers.

- If we use an “eye chart” as a test of visual acuity for optotype-based screening, the eye chart meets national/international design guidelines for standardized eye charts.

- We use appropriate occluders when screening the vision of our children with tests of visual acuity.
# 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 measurement of the sharpness or cleanness 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 (some, not all)
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 . . .
The use of validated and standardized optotypes and acuity charts is important for an accurate assessment of vision.

- Children may not know their letters.
- Requires discrimination of direction, which is not sufficiently developed in preschool-aged children.
- Charts not standardized.
- 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)**

- **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” or “logMAR” chart
Tips:

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

Do the following eye charts fit national/international eye chart design guidelines?

Yes or No?

Yes or No?
Preferred optotypes for ages 3 to 7 Years

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


Preferred optotypes for ages 7 Years & Older

- AAP
  - Recommends Sloan Letters
- American Academy of Ophthalmology
  - Recommends Sloan Letters and LEA NUMBERS®


NCCVEH - LEA SYMBOLS® 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

NCCVEH Option - LEA SYMBOLS® for children ages 3, 4, and 5 years at 10 feet

Sight Line Kit
Also acceptable . . .

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

- AAPOS Vision Screening Kit
- AAPOS Vision Screening Kit: Supplemental Screening Package
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 – report 20/xx

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

Occluders – Aged 10 years and older

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?**

- **True**

- 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.
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)

Instruments at any age for 6 years and older if child or young adult cannot do test of visual acuity (AAP)


Instrument-Based Screening
Instruments “Approved” by NCCVEH

- 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></td>
<td>Nearsighted</td>
</tr>
<tr>
<td>Minus (-) Sphere</td>
<td>Plus (+) Sphere</td>
</tr>
<tr>
<td>Ages: All</td>
<td>Ages: 3y to 15y</td>
</tr>
<tr>
<td>-0.5</td>
<td>+2.00</td>
</tr>
<tr>
<td>-0.75</td>
<td>+3.00</td>
</tr>
<tr>
<td>+1</td>
<td>+3.25</td>
</tr>
<tr>
<td>-1.25</td>
<td>+3.75</td>
</tr>
<tr>
<td>-1.5</td>
<td>+4.25</td>
</tr>
<tr>
<td>-2.5</td>
<td>+4.75</td>
</tr>
</tbody>
</table>

- Technical results are based upon minus (-) cylinder conversion.

*Not Recommended for conversion of screening results for children screened for amblyopic risk factors.*
• If use instruments, no need to also do visual acuity screening.

• If cannot “capture” a pass or refer result... refer child for eye exam.

• If an outside person or agency screens the vision of our children, we have a process to review tools used.

  • We follow national guidelines for when to rescreen children.

  • We follow national guidelines for when to refer children.

  • We follow the National Center for Children’s Vision and Eye Health at Prevent Blindness’ vision screening training program, we receive face-to-face training from our local Prevent Blindness affiliate program, or we participate in a state-approved training program.
• “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.


Referral Criteria

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)

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

- We ensure new staff members are formally trained within 3 months of employment, through the National Center for Children’s Vision and Eye Health at Prevent Blindness, our local Prevent Blindness affiliate program, or a state-approved training program.

- We “refresh” training every 3 to 5 years through the National Center for Children’s Vision and Eye Health at Prevent Blindness, our local Prevent Blindness affiliate program, a state-approved training program, or according to our state guidelines.

- We ensure that contracted screening organizations use evidence-based tools and procedures, utilize national referral and rescreening guidelines, and clearly state that a screening does not replace an eye exam nor provide a diagnosis.
4: We have policies for screening or direct referral to an eye care provider for children with special needs.

- We use guidelines from the National Center for Children’s Vision and Eye Health at Prevent Blindness for when to bypass vision screening and move directly to eye exam.

- We have a process to indicate in a child's files that the child met national guidelines to bypass vision screening and move directly to eye exam.

- We have a professional relationship with a Teacher of the Visually Impaired (TVI) from the local school system to answer questions about how to support the visual health of our children with special healthcare needs.

Children who should bypass vision screening and go directly to eye exam - NCCVEH

<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 primary care providers:</td>
</tr>
<tr>
<td></td>
<td>Motor, such as CP</td>
<td>Strabismus</td>
<td></td>
<td></td>
<td>Don’t wait and see</td>
</tr>
<tr>
<td></td>
<td>Down Syndrome</td>
<td>Juvenile Arthritis</td>
<td>Amblyopia</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive impairment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ptosis</td>
<td>Autism Spectrum Disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If **required** to screen all children . . .

- Use same vision screening tools you use with all children.
- If children are untestable, refer to child’s medical provider for possible referral for eye exam.
- If children pass, explain to parents that the screening result 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.

References for previous slide:


5: We have standards for rescreening or referring difficult-to-screen (untestable) children.

• If a child will not participate in screening, we make another attempt as soon as possible, but within 6 months.

• If we are unsuccessful with the first attempt at screening, we rescreen the child immediately using a different vision screening tool (test of visual acuity or an instrument) within 6 months.

• If a child is untestable on the 2nd attempt, we refer the child for an eye exam performed by an optometrist or an ophthalmologist skilled in treating young children.

6: We provide parents/caregivers with vision screening results in easy-to-understand language.

• Vision screening results are provided in both a written and verbal format to parents/caregivers.

• We provide vision screening referral information and follow up to care information in the family’s native language.

• Our vision screening referral information is written at a 4th to 6th grade reading level.

• The follow-up actions for families are clearly described and parents are advised to act within a specified timeframe.
7: We have created a system for following-up with parents/caregivers to help ensure that the eye exam occurs.

- We conduct follow-up calls to families within a set time* after a vision screening referral.
- We provide electronic reminders (text or email).
- We require a copy of a report from a primary care or eye care provider.
- We provide vision accommodations for children with a diagnosed vision problem.
- We provide a parent peer-to-peer health support program to families.
- We have treatment plans for vision in place for children who have been prescribed care by an eye care provider.

8: We link parents/caregivers to an eye examination.

- We have an updated list of area eye care providers who serve children.
- We provide access to programs for free or low cost vision services.
- We create opportunities for local eye care providers to speak with all families we serve.
- We facilitate families’ access to health insurance coverage for which their child may qualify.
- We have an eye care professional with vision screening experience on our Health Advisory Committee.
9: We obtain eye exam results for our files.

- We use a reminder system to monitor child files to determine whether we received eye exam results from the eye care provider.
  - We use the reminder system to contact the eye care provider if eye exam results are not received within 1 month of the eye exam.
  - If eye exam results are not received within 1 month of the eye exam, we have a process to systematically request eye exam results.
  - If eye exam results are not received after 3 systematic contacts, we stop the process and indicate in child files that eye exam results could not be obtained.
We obtain eye exam results for our files

- If we see a pattern of challenges receiving eye exam results from specific eye care providers, we contact the eye care provider to brainstorm ways to make it easier to receive eye exam results.

- We can report outcome data on completed referrals.

10: We send a copy of eye exam results to the child’s primary care provider.

- We have a system in place to send (mail, fax, e-mail) a copy of eye exam results to children’s primary care providers.

- We indicate in child files the date eye exam results went to children’s primary care providers.

- We indicate in child’s file if we cannot obtain a copy of eye exam results to send to child's primary care provider.
11: We ensure the eye doctor’s treatment plan is followed.

- We contact a child’s eye care provider if we do not understand the eye exam results or treatment plan.

- We review vision treatment plans quarterly to help ensure parents schedule and attend upcoming eye care provider follow-up visits.

- We have a process for contacting the parent if a child does not wear prescribed glasses or a patch.

- We have a process for alerting a child’s eye care provider if the child does not wear prescribed glasses or a patch.

We ensure the eye doctor’s treatment plan is followed.

- We have resources to share with parents if their children refuse to wear prescribed glasses.

- We conduct a sensitive child- and family-centered assessment to identify barriers to following the prescribed vision treatment plan.
Resources to ensure communication among stakeholders

Tips for Wearing Eye Glasses
VS Referral Documents
The Eye Patch Club

http://nationalcenter.preventblindness.org/resources-2

12: We evaluate the effectiveness of our vision health program annually.

- We compare screening results to eye exam outcomes.
- We ensure that the certifications for all trained vision screeners are current.
- We review all vision screening tools annually to ensure they are in good working order and updated.
- We review our vision health program results annually with our parent and health advisory committees.
- We report our end-of-year data to health, education, and community stakeholders.
To provide the best vision health program possible, remember that screening vision is only 1 piece.

Select 3 priorities to work on over next year.


- Develop an Action Plan.

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Evaluating Your Vision Health Program


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/

Prevent Blindness Position Statement on School-Aged Vision Screening and Eye Health Programs

Prevent Blindness recommends a continuum of eye care for children to include both vision screening and comprehensive eye examinations. All children, even those with no signs of trouble, should have their eyes checked at regular intervals. Any child who experiences vision problems or shows symptoms of eye trouble should receive a comprehensive eye examination by an optometrist or an ophthalmologist.

Prevent Blindness, other organizations, and school health personnel often perform vision screenings for children at schools and other settings. While vision screenings and eye examinations are complementary approaches to assessing the eye problems of a child, a screening is used to identify a child at risk for vision problems and does not replace a comprehensive examination performed by an eye doctor. Additionally, vision screenings provide a critical bridge from detection to eye care for families that may not regularly access health or eye care services, may need financial assistance to afford care, or those that may not fully understand the impact an undiagnosed and untreated vision problem might have on the rest of their child’s life. Prevent Blindness advocates for good vision for all throughout the life spectrum, and that all children are visually ready as they begin school and beyond.

This document is a position statement, not formal recommendations or protocols, and is meant to guide those charged with developing, implementing, and evaluating vision screening programs for school-aged students. The guidance provided in this

Helpful info and statistics for grant proposal writing . . .


NASN Vision and Eye Health Resource
(National Center for Children’s Vision and Eye Health at Prevent Blindness and NASN partnership)

https://www.nasn.org/nasn-resources/practice-topics/vision-health

Vision and Eye Health

The National Center for Children’s Vision and Eye Health at Prevent Blindness has partnered with the AHA to provide national guidance for school nurses and others involved in front-line vision screening. The goal is to standardize approaches to vision health, fortifying school nurses’ capacity to lead comprehensive vision screening programs and make a difference in students’ lives. Vision screening, provided timely and accurately, can improve students’ educational outcomes and quality of life. It is especially important for students living in environments where health care access is limited.

Background

Vision impairments and conditions (e.g., myopia, strabismus, and amblyopia) are common and affect 1 in 3 preschool-aged children and 1 in 4 school-aged children (U.S. Preventive Task Force, 2006). A recent report concluded that there is adequate evidence that early treatment of amblyopia results in improved visual outcomes (Plichnowski, et al., 2015). In addition, optical correction of significant refractive error may be related to better development (discourse, 2011) and improve school readiness (Rock & coworkers, 2009, 2010, 2020).

With the goal of ensuring that the Institute of Medicine (2008) report, The Future of Nursing: Leading Change, Advancing Health Report (Institute of Medicine, 2010), directs nurses toward providing care within the full scope of their licenses, a comprehensive vision health program is a school nurse intervention that makes a significant measurable difference in a child’s overall health and learning.

12 Components of a Strong Vision Health System of Care
THANK YOU FOR YOUR TIME AND ATTENTION . . .

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