Head Start/Early Head Start Program Performance Standards and Your Vision Screening Program: Evidence-Based?

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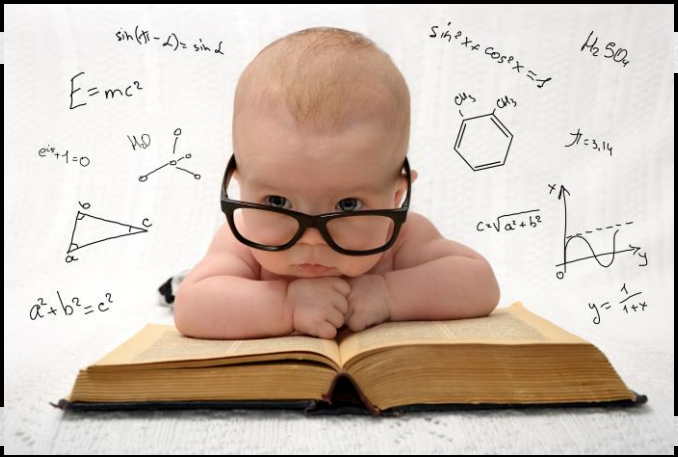
Introduction and Disclaimer

- Certified Pediatric Nurse Practitioner with 35+ years of public health experience in the fields of pediatric and maternal child health.
- Head Start liaison to the National Institutes of Health's National Eye Institute preschool vision project since 1995
- 10 years onsite at the Office of Head Start (OHS) in Washington D.C., providing intensive support and expertise to Program Specialists responsible for AIAN Head Start and EHS grantees in 26 states.
- Conducted many trainings for HS/EHS staff and parents on behavioral, physical and oral health issues.
- No affiliation with any pharmaceutical or instrument sales

Info You Will Take Home …
4 Learning Objectives

Define “evidence-based” according to the National Center for Children’s Vision and Eye Health.

List 2 evidence-based approaches to vision screening and describe what each measures.

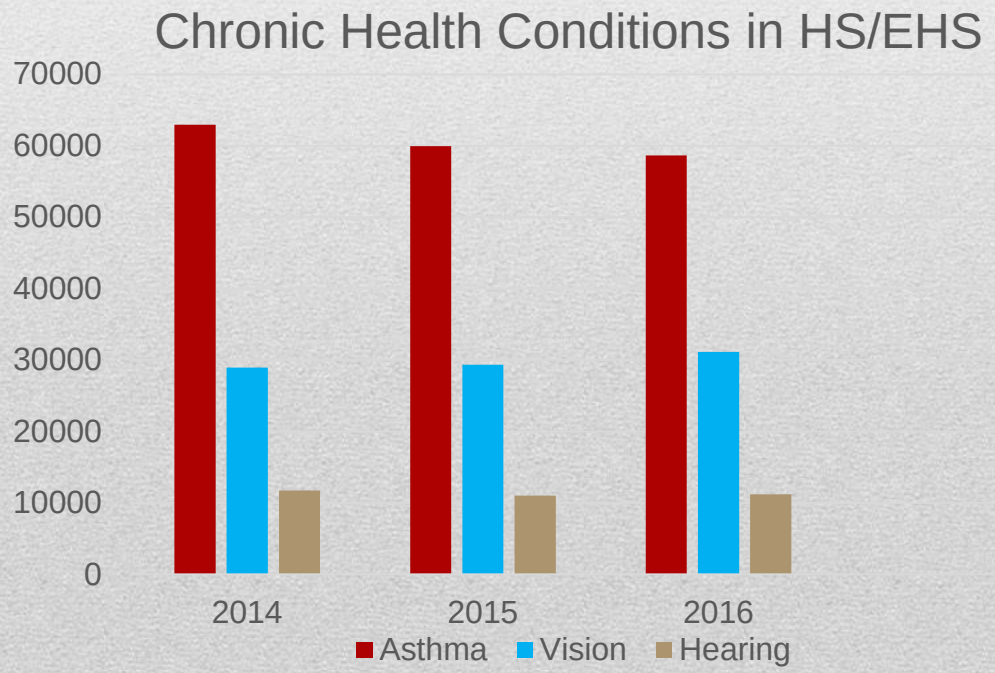


List 8 key vision development milestones between birth and the 1st birthday.

Describe appropriate and evidence-based tools for screening vision from the 1st to 3rd birthday.

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)
  - 2ND MOST COMMON CHRONIC HEALTH ISSUE FOR HEAD START/EARLY HEAD START (after asthma)



1302.42 Child health status and care.

- (a) *Source of health care*. (1) A program, within 30 calendar days after the child first attends the program or, for the home-based program option, receives a home visit, must consult with parents to determine whether each child has ongoing sources of continuous, accessible health care – provided by a health care professional that maintains the child's ongoing health record and is not primarily a source of emergency or urgent care – and health insurance coverage.

1302.42 Child health status and care

- (2) If the child does not have such a source of ongoing care and health insurance coverage or access to care through the Indian Health Service, the program must assist families in accessing a source of care and health insurance that will meet these criteria, as quickly as possible.

- (ii) Assist parents with making arrangements to bring the child up-to-date as quickly as possible; and, if necessary, directly facilitate provision of health services to bring the child up-to-date with parent consent as described in §1302.41(b)(1).

1302.42 Child health status and care

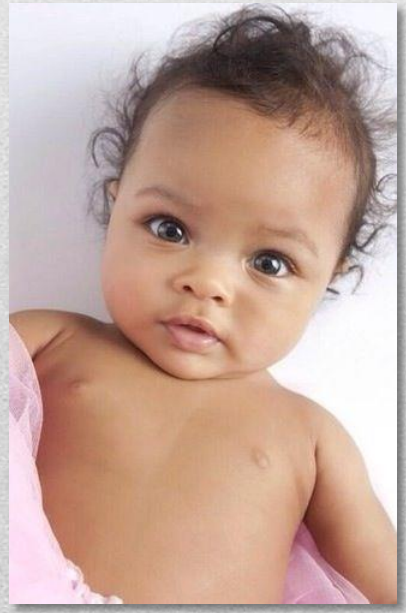
- (2) Within 45 calendar days after the child first attends the program or, for the home-based program option, receives a home visit, a program must either obtain or perform evidence-based vision and hearing screenings.

- (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.

"Evidence-Based" Definition from the National Center for Children's Vision and Eye Health (NCCVEH)

- Definition of "evidence-based" from the NCCVEH- Vision screening tools should be evidence-based, meaning . . .
- Information about the study and effectiveness of the tools were peer-reviewed and published in a scientific journal.
- The screening tools are able to identify targeted vision problems based on data from large-scale screenings performed by comparable screening personnel in typical screening settings, in which all children who pass and fail the screenings also received comprehensive eye examinations conducted by eye care professionals (ophthalmologists, optometrists, pediatric ophthalmologists, or pediatric optometrists).
- Outcomes from the eye examinations were used to validate the performance of the screening tools.
- Simply stating a tool was used to screen 10,000 children does not make the tool evidence-based.
- Stating the tool was used to screen 10,000 children, screening results were compared with eye examination results, and the tool found 90% of children with vision disorders is an example of an evidence-based tool.

Key Year 1 Vision Development Milestones



EIGHT KEY VISION DEVELOPMENT MILESTONES TO MONITOR FROM BIRTH TO FIRST BIRTHDAY

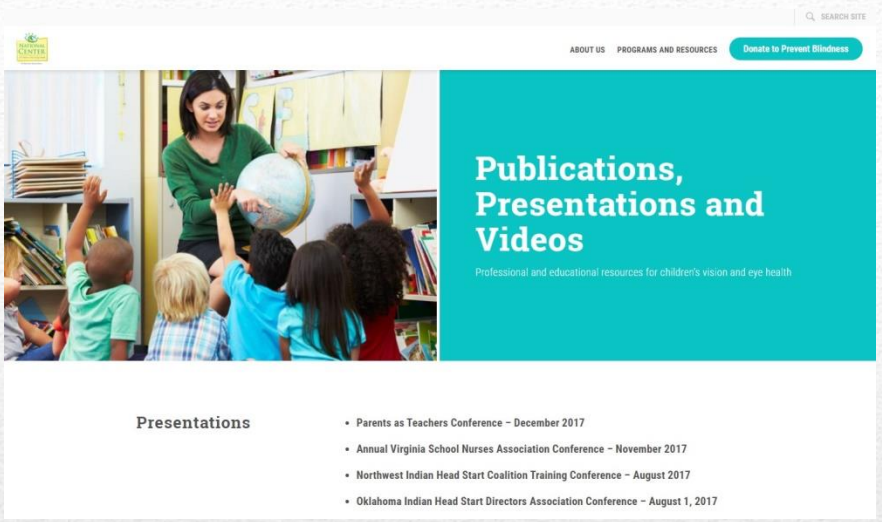
- **Begin with 1st milestone, regardless of child's age.**
- **Check box if baby meets milestone – Check 2nd box if baby does not meet milestone and move to Next Steps. Begin with 1st Milestone regardless of age and stop when milestone exceeds baby's age.**

AGE *(Milestones may vary up to 6 weeks.)*	MILESTONE	IMPORTANCE OF MILESTONE	QUESTIONS TO ASK OR BEHAVIORS TO MONITOR	NEXT STEPS

Birth to no later than 8 weeks
 	
Images from Lea Hyvärinen, MD, PhD
	1st Milestone
	• Maintains stable eye contact when awake and alert and initiated by parent or caregiver
	  ○ "Stable" is defined as holding eye contact.
		• Babies have innate attraction to faces, especially smiling faces. Creates pleasant feelings in baby and parent.
		• Stable eye contact with parents or caregivers is important to developing bonding and communication.
		• Lack of stable eye contact can interfere with early emotional and general development.
			❑ Does baby maintain **stable** eye contact when awake and alert and initiated by parent and/or caregiver?
			  ❑ If "no", move to Next Steps.
				❑ Refer to primary care physician to coordinate eye exam referral for an assessment to include refraction and accommodation, if possible, to determine how well baby can see.
				❑ If vision is found to be normal, refer to primary care provider to further discuss concerns.
				❑ Refer to Birth to 3 Early Intervention program for supporting development of total communication through all senses, including hands and motor functions.
				❑ In interim, help parents/caregivers help baby to develop communication through all the senses.
				  • Example: Talk close to baby's face while helping baby to feel parent's or caregiver's face.

Check-off year 1 vision screening tool available at:

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



Reports and Information from Prevent Blindness

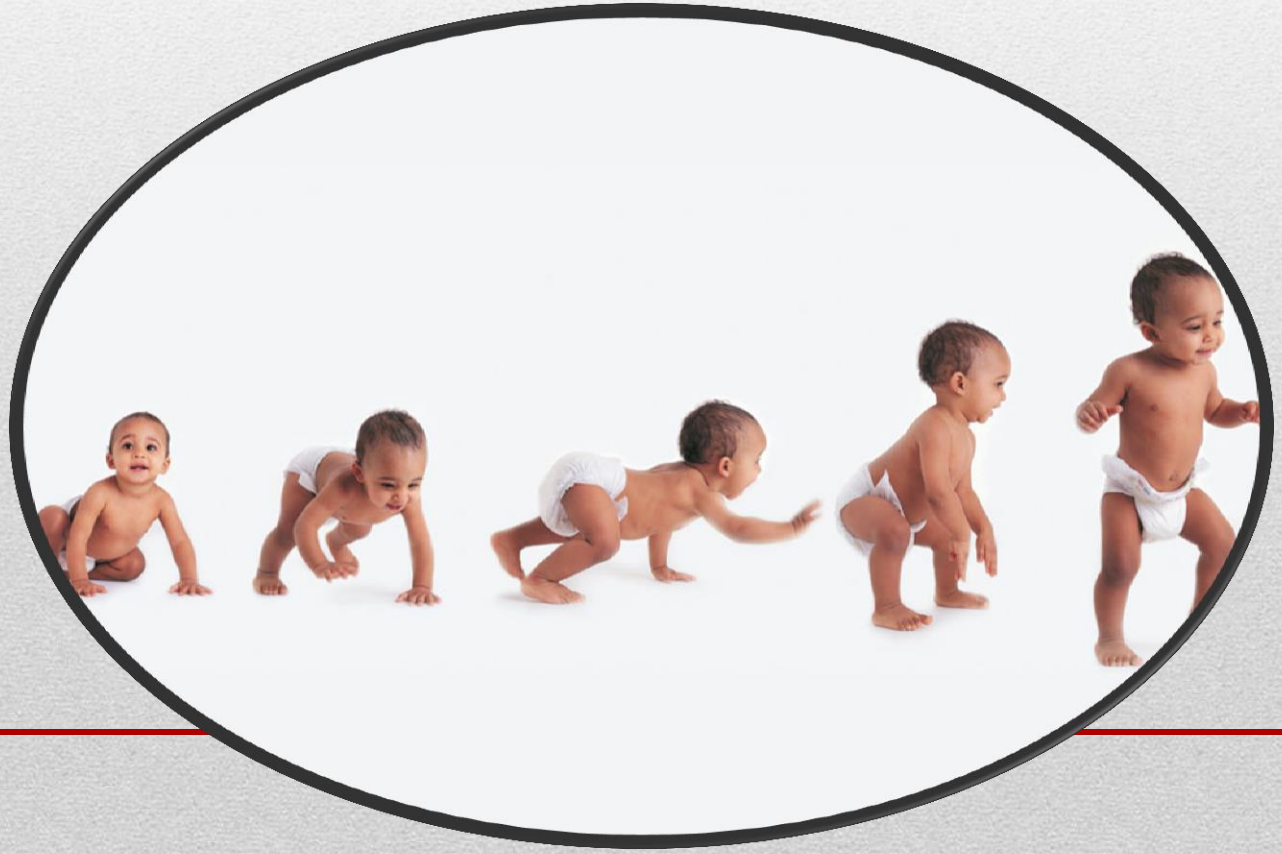
- A complete list of public health reports available from Prevent Blindness
- Children's Vision and Eye Health: A Snapshot of Current National Issues
- Eye health and safety information
- Our Vision for Children's Vision, A National Call to Action for the Advancement of Children's Vision and Eye Health
- Prevent Blindness Statement on School-Aged Vision Screening and Eye Health Programs
- Eight Key Vision Development Milestones to Monitor from Birth to First Birthday
- Vision Preservation and the National Prevention Strategy: A call to Action
- Vision screenings and eye exams- complimentary public health approaches for vision

- Time for reaching milestones can vary up to 6 weeks . . . **except milestone related to straight eyes.**

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

- Process:
  - Milestone and age when milestone should occur
  - Why milestone is important
  - 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.



To calculate “corrected age”, subtract the number of weeks born before 40 weeks of gestation from the chronological age.

For example, chronological age = 6 months (24 weeks).

Child born at 28 weeks gestation.

40 weeks minus 28 weeks = 12 weeks.

Chronological age of 24 weeks minus 12 weeks equal 12 weeks (3 months).

Corrected age is 3 months.

You may find this age calculator helpful: https://mymonthlycycles.com/premature_baby_age_calculator.jsp

1st vision milestone - **ages 6 weeks to no later than 8 weeks**

Milestone:

Maintains **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.

Questions to Ask or Behavior to Monitor

Does baby maintain **<u>stable</u>** eye contact when awake and alert and initiated by parent or caregiver?

What to Do? Next Steps

Talk close to baby's face while helping baby to feel parent's or caregiver's face.

Example of Baby Not Maintaining Stable Eye Contact

Videos from Lea Hyvärinen, MD, PhD

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

Refer to pediatric primary health care provider to coordinate an eye examination.

3rd vision milestone – **during 3rd or 4th months**

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

Gently use baby's elbows to bring hands to midline. Make it a game.

4th vision milestone – **by 5th month**

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

Refer to pediatric primary health care provider to coordinate an eye examination 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 (<u>no variance on this one</u>)**

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.

6th vision milestone – **during ages 6 or 7 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 to pediatric primary health care provider to coordinate eye examination AND 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.

8th vision milestone – **during ages 9 to 12 months**

IF *baby has been exposed to books*

Milestone:

Points to individual pictures in a book and vocalizes while pointing.

Why important?

If baby shows no interest in books or does not point to pictures, perhaps baby cannot see the pictures.

Questions to Ask or Behavior to Monitor

When given a book with pictures, does baby point to individual pictures and vocalize?

What to Do? Next Steps

If baby does not respond to the book, try a different book. Perhaps baby is not interested in the first book.

8th vision milestone – **during ages 9 to 12 months**

***IF** baby has **NOT** been exposed to books*

Milestone:

Uses thumb and first finger to pick up objects, such as crumbs on floor.

Why important?

Helps baby to better explore baby's world in more detail and to improve fine motor skills of hands.

Questions to Ask or Behavior to Monitor

Does baby use thumb and first finger to pick up objects?

What to Do? Next Steps

Parents and caregivers can encourage baby to eat food with fingers.

Let’s Try Using the Vision Development Milestones Tool

Using the Milestones Tool – Case Profile #1

- Child's age: 5 months
  - Developmental skills exhibited:
    - Maintaining stable eye contact initiated by an adult
    - Social smile
    - Exploring hands and putting them in their mouth
    - Watching hand movements of others
    - Eyes drift and cross when tired

- Pass or Refer?
- Refer

Using the Milestones Tool – Case Profile #2

- Child's age: 9 months
  - Developmental skills exhibited:
    - Maintains stable eye contact initiated by an adult
    - Social smile
    - Exploring hands and putting them in their mouth
    - Watching hand movements of others
    - One eye turns in
    - Goal-directed arm movements
    - Recognizes parents, caregivers, and Grandpa

- Pass or Refer?
- Refer

Using the Milestones Tool – Case Profile #3

- Child's age: 9 months
  - Developmental skills exhibited:
    - Maintains stable eye contact initiated by an adult
    - Social smile
    - Exploring hands and putting them in their mouth
    - Watching hand movements of others
    - Eyes are straight
    - Goal-directed arm movements
    - Recognizes parents, caregivers, and Grandpa

- Pass or Refer?
- Pass

Vision Screening Years 1 and 2

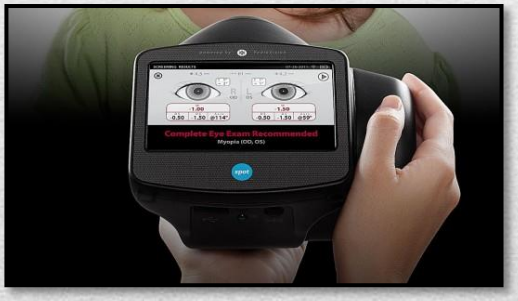
Years 1 and 2 - Vision Screening Tools

Instrument-based screening

- Instruments do not measure visual acuity
- *Instruments analyze digital images of the eyes to provide information about amblyopia risk factors:*
  - Estimates of significant refractive error (hyperopia, myopia, astigmatism)
  - *Estimates of anisometropia*
  - Estimates of eye misalignment

Instrument-Based Screening

- Use beginning at 12 months; better success at 18 months (AAP)



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Instruments “Approved” by NCCVEH

Welch Allyn®
Spot™ Vision Screener

Plusoptix
S12C Vision Screener

Welch Allyn®
SureSight™
Vision Screener

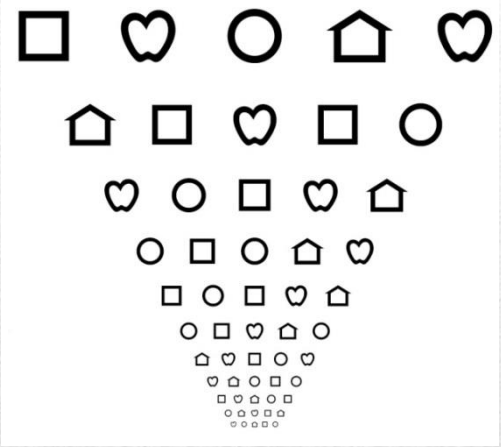
Disclaimer: These tools are examples of vision screening instruments for this age group. These are not shown for the purpose of sales or promotion.

Evidence-Based Vision Screening Tools & Procedures for Children Ages 3, 4, and 5 Years

- Optotype-Based Screening
- Instrument-Based Screening

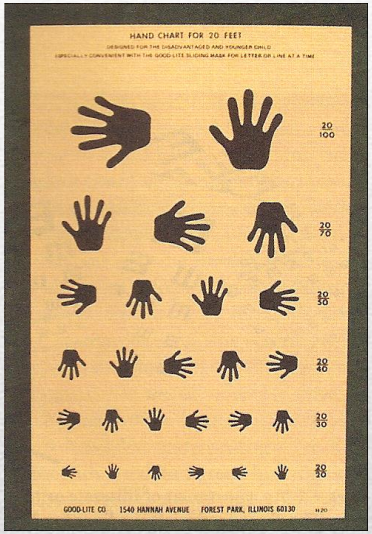
Threshold & Critical Line Screening

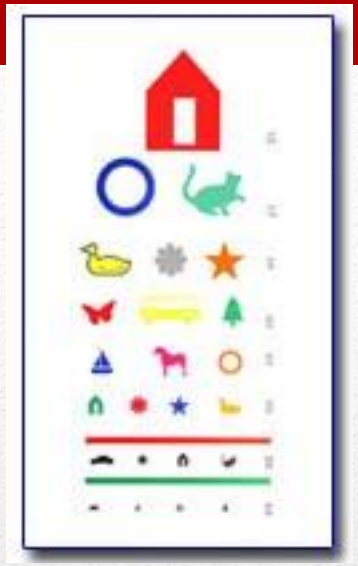
- Threshold screening
  - *Move down chart until child cannot correctly identify majority of optotypes*

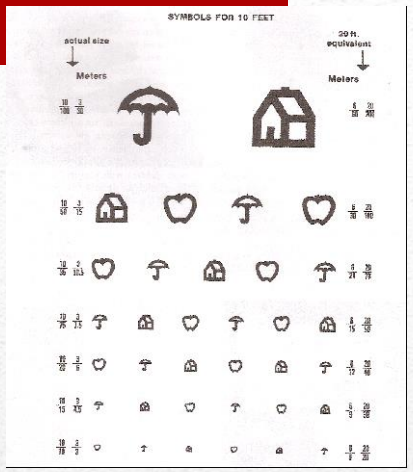


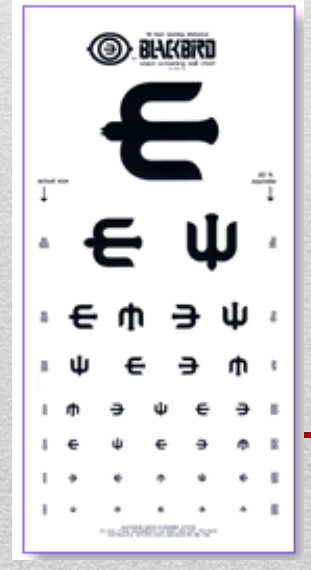
- Critical line screening
  - *Use only line child needs to pass according to child's age*

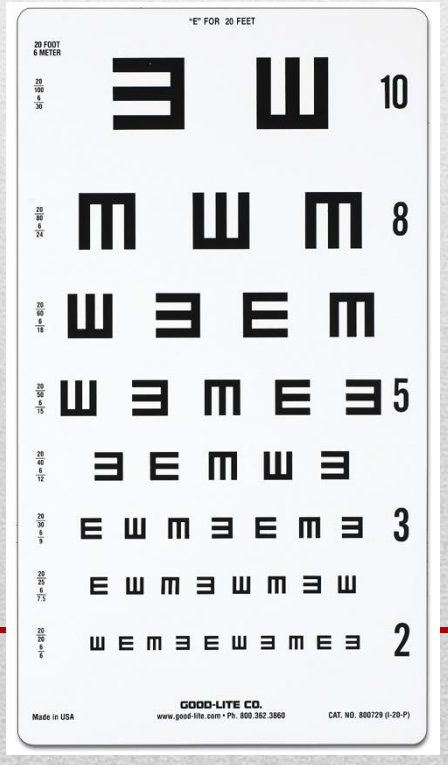
“Not so great” charts . . .

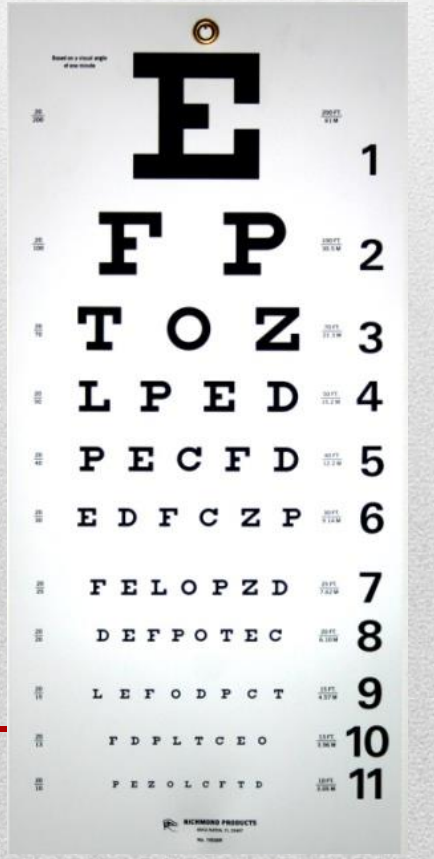






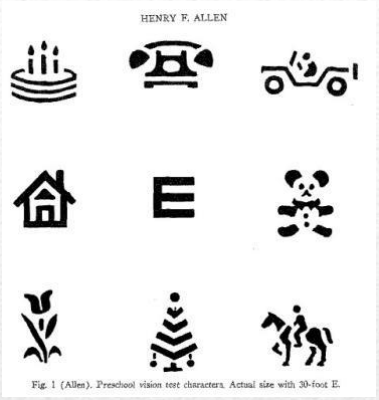




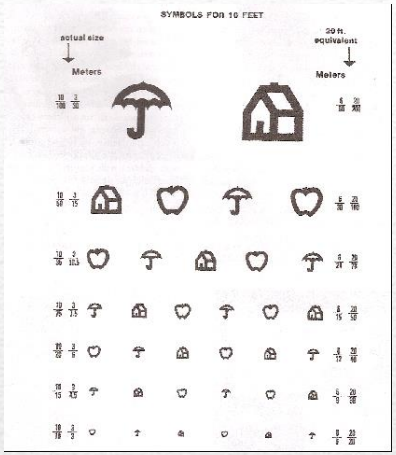


NOT Recommended by NCCVEH and/or AAP

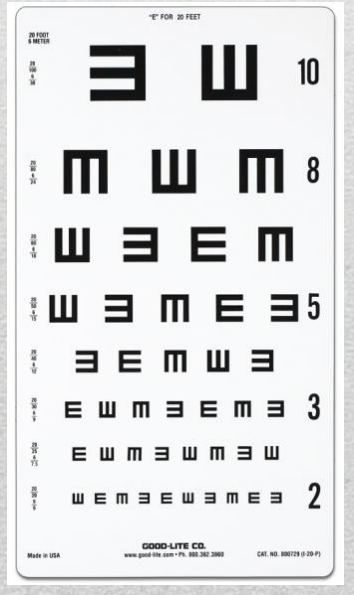
"Sailboat"



Allen Pictures

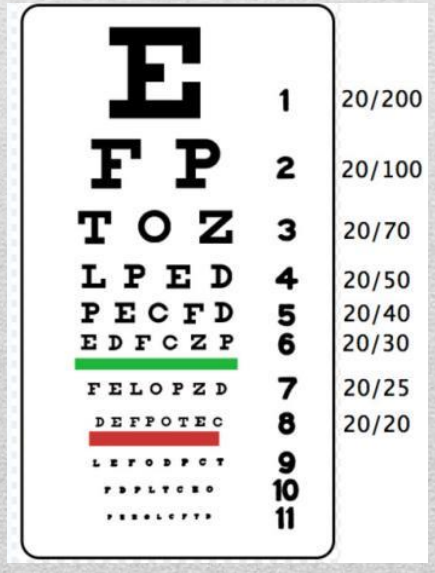


Lighthouse or "House, Apple, Umbrella"



Tumbling E

Snellen



Why NOT Recommended?

- 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.

Cotter, S. A., Cyert, L. A., Miller, J. M., & Quinn, G. E. for the National Expert Panel to the National Center for Children's Vision and Eye Health. (2015). Vision screening for children 36 to <72 months: Recommended practices. *Optometry and Vision Science, 92*(1), 6-16. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4274336/pdf/opx-92-06.pdf

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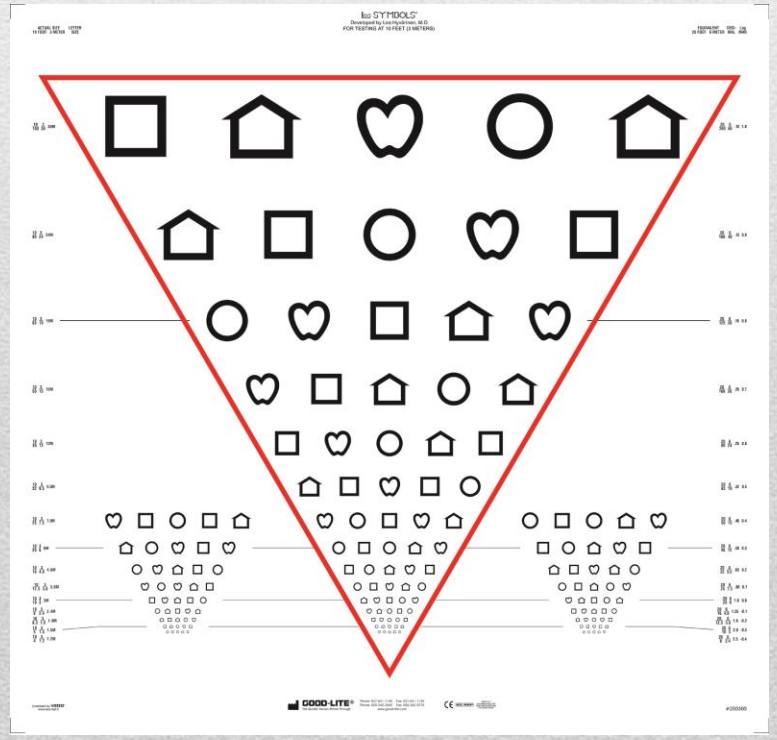
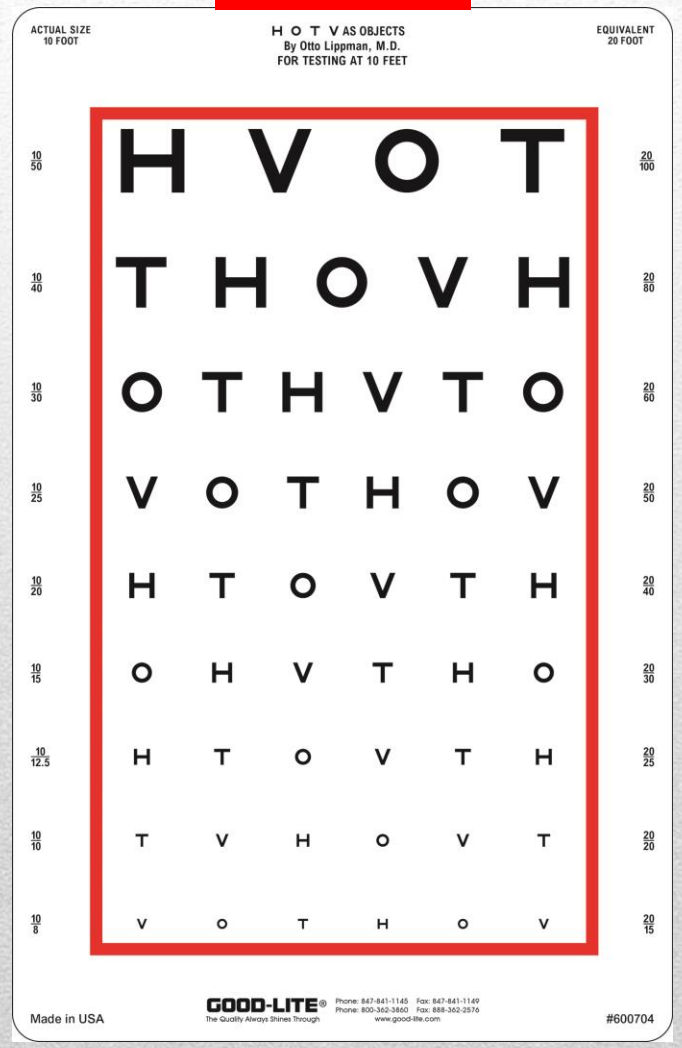
Tips:

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

YES

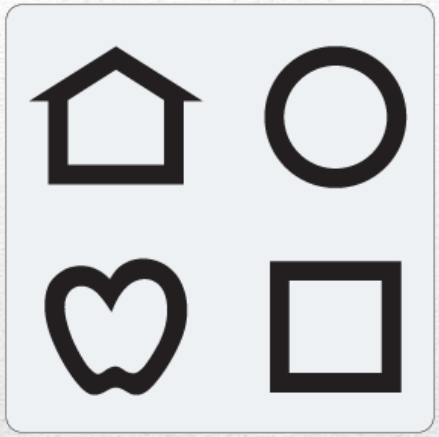


NO



Preferred Optotypes for Ages 3 to 7 Years

- NCCVEH
- AAP



- Recommend LEA SYMBOLS® and HOTV letters as optotypes

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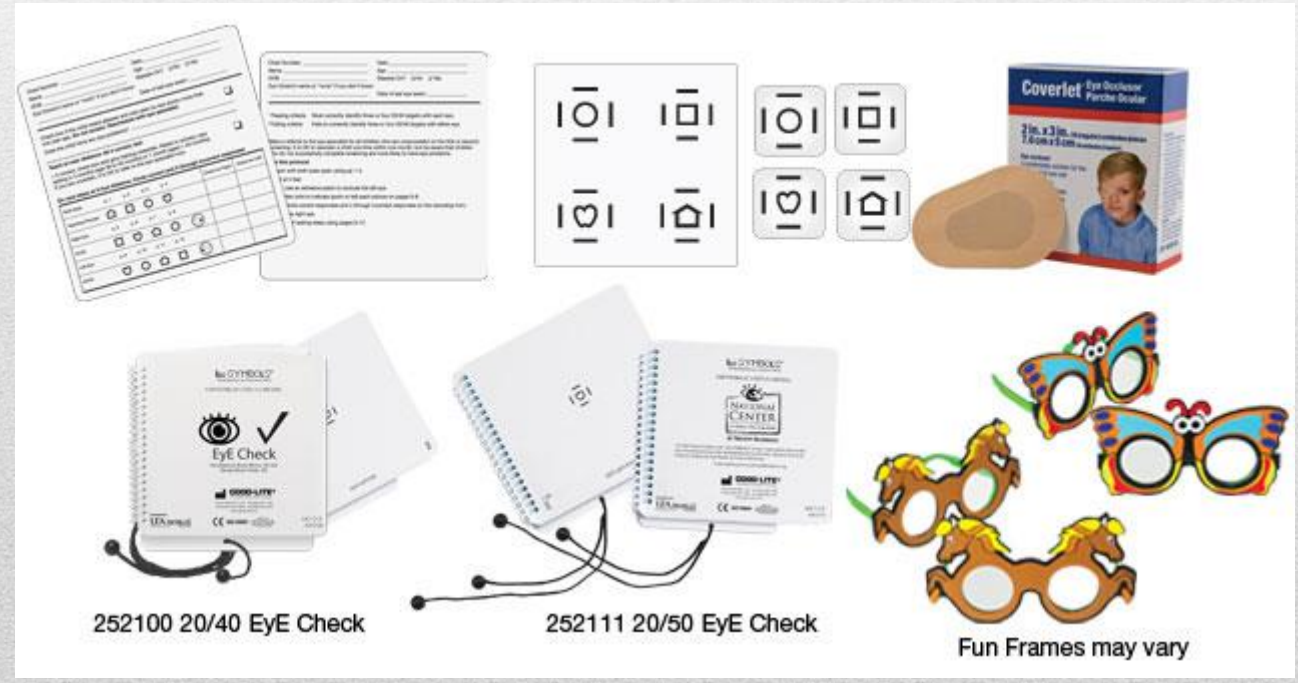
Preferred Optotype Format

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 <u>at 5 feet</u>



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Options: Critical Line Screening at 10 feet

Sight Line Kit

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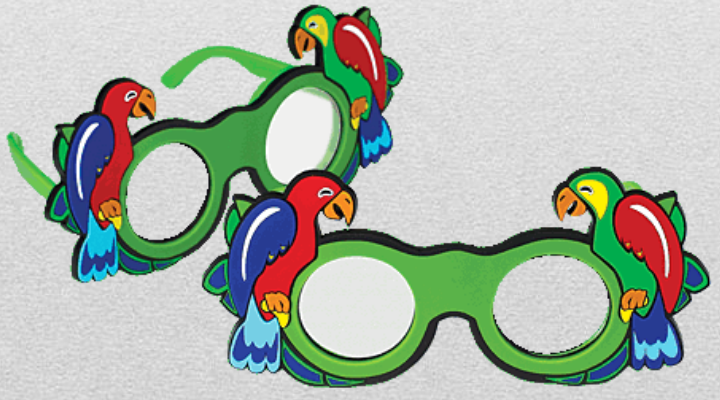
Also acceptable . . .

Screening Distance

- 5 or 10 feet from chart to child's eyes
- *Arch of foot on line (NOT heels or toes to the line) or back of chair (with child's back to back of chair)*

Occluders – Younger Children <10 Years



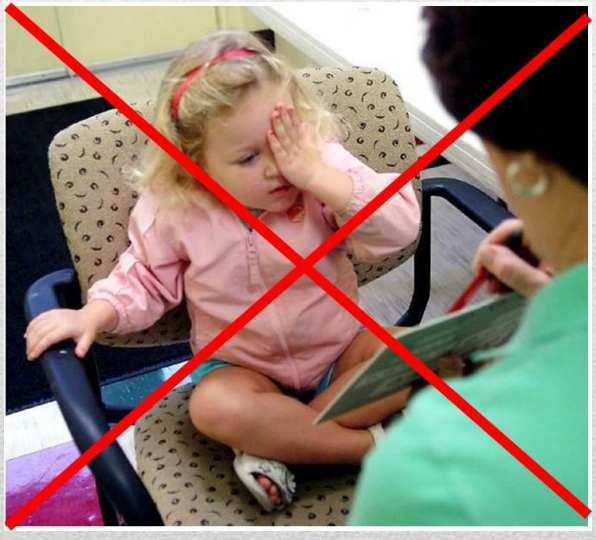
Unacceptable

Occluders Ages 3, 4, and 5 years

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

Why unacceptable?

Children can easily peek



Cotter, S. A., Cyert, L. A., Miller, J. M., & Quinn, G. E. for the National Expert Panel to the National Center for Children's Vision and Eye Health. (2015). Vision screening for children 36 to <72 months: Recommended practices. *Optometry and Vision Science, 92*(1), 6-16. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4274336/pdf/opx-92-06.pdf

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?
  - ✓ False
- 1.8 “Line-by-line isolation or pointing may be used, ***but not letter by letter***

World Health Organization (2003). *Consultation on development of standards for characterization of vision loss and visual functioning*. Geneva: Switzerland. Retrieved from http://apps.who.int/iris/bitstream/10665/68601/1/WHO_PBL_03.91.pdf

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.

- "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 no later than 6 months.

Vision in Preschoolers Study Group. (2007). Children unable to perform screening tests in Vision in Preschoolers Study: Proportion with ocular conditions and impact on measure of test accuracy. *Investigative Ophthalmology & Visual Science, 48*(1), 83-87.

American Academy of Ophthalmology Pediatric Ophthalmology/Strabismus Panel. (2012). Preferred Practice Pattern® Guidelines. Amblyopia. San Francisco, CA: American Academy of Ophthalmology. Retrieved from https://www.aao.org/preferred-practice-pattern/amblyopia-ppp--september-2012

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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*

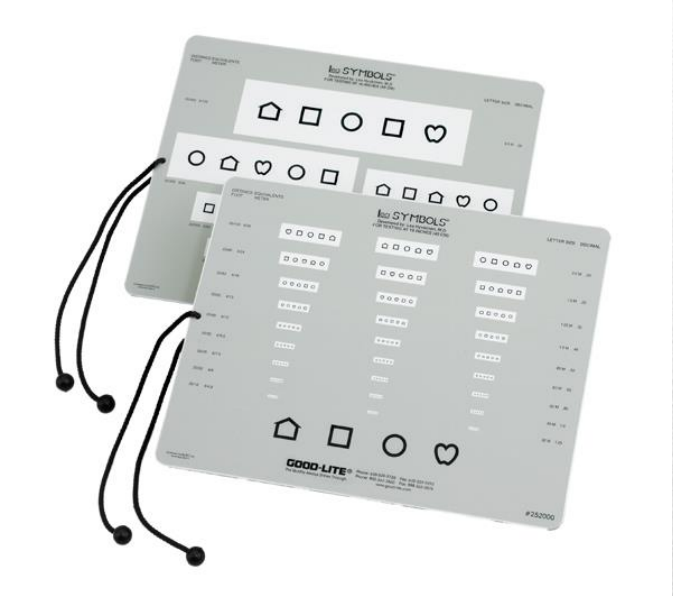
AAP

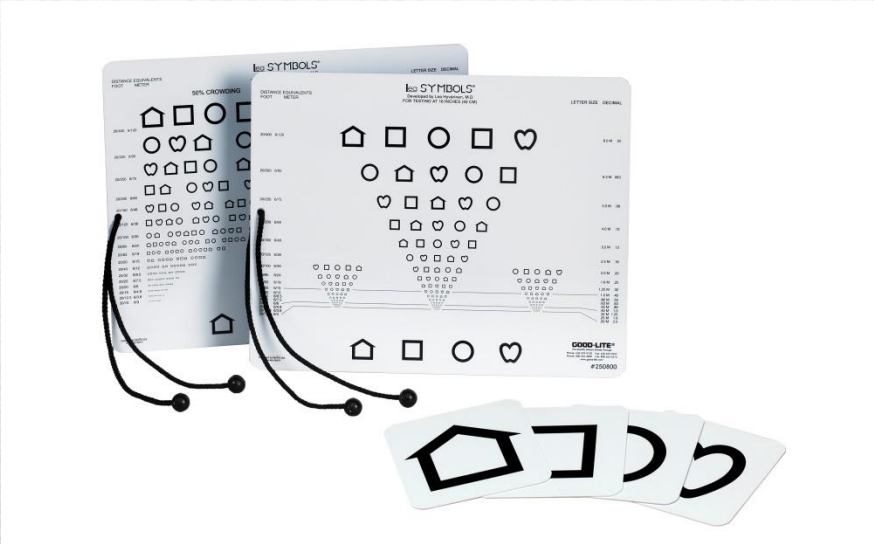
- Age 3 years:
  - *Majority of optotypes on 20/50 line*
- Ages 4 years:
  - *Majority of optotypes on 20/40 line*
- Ages 5 years and older:
  - *Majority of optotypes on 20/32 (or 20/30) line*
  - *Or 2-line difference even in passing lines (i.e., 20/20 and 20/32)*

Cotter, S. A., Cyert, L. A., Miller, J. M., & Quinn, G. E. for the National Expert Panel to the National Center for Children's Vision and Eye Health. (2015). Vision screening for children 36 to <72 months: Recommended practices. *Optometry and Vision Science, 92*(1), 6-16. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4274336/pdf/opx-92-06.pdf

Donahue, S. P., Baker, C. N., AAP Committee on Practice and Ambulatory Medicine, AAP Section on Ophthalmology, American Association of Certified Orthoptists, American Association for Pediatric Ophthalmology and Strabismus, American Academy of Ophthalmology (2016). Procedures for the evaluation of the visual system by pediatricians. *Pediatrics, 137*(1), e20153597. Retrieved from http://pediatrics.aappublications.org/content/pediatrics/early/2015/12/07/peds.2015-3597.full.pdf

Choices for Near Vision Screening



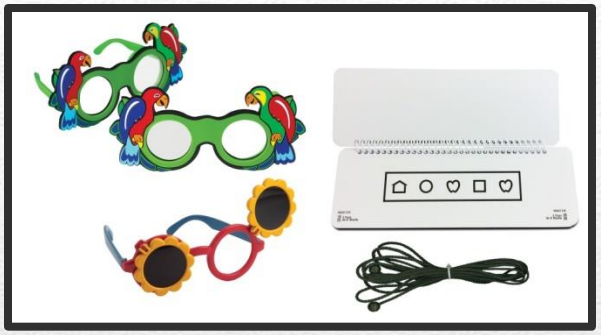


Can do critical line only with both eyes open or one eye at a time.

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 clearness of vision when identifying black optotypes on a white background using specific optotype sizes at a prescribed and standardized distance*

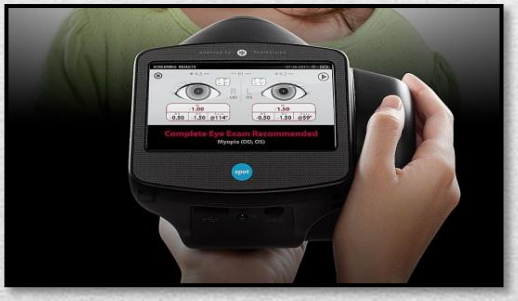


2. Instrument-based screening

- Instruments do not measure visual acuity
- *Instruments analyze digital images of the eyes to provide information about amblyopia risk factors:*
  - Estimates of significant refractive error (hyperopia, myopia, astigmatism)
  - *Estimates of anisometropia*
  - Estimates of eye misalignment

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



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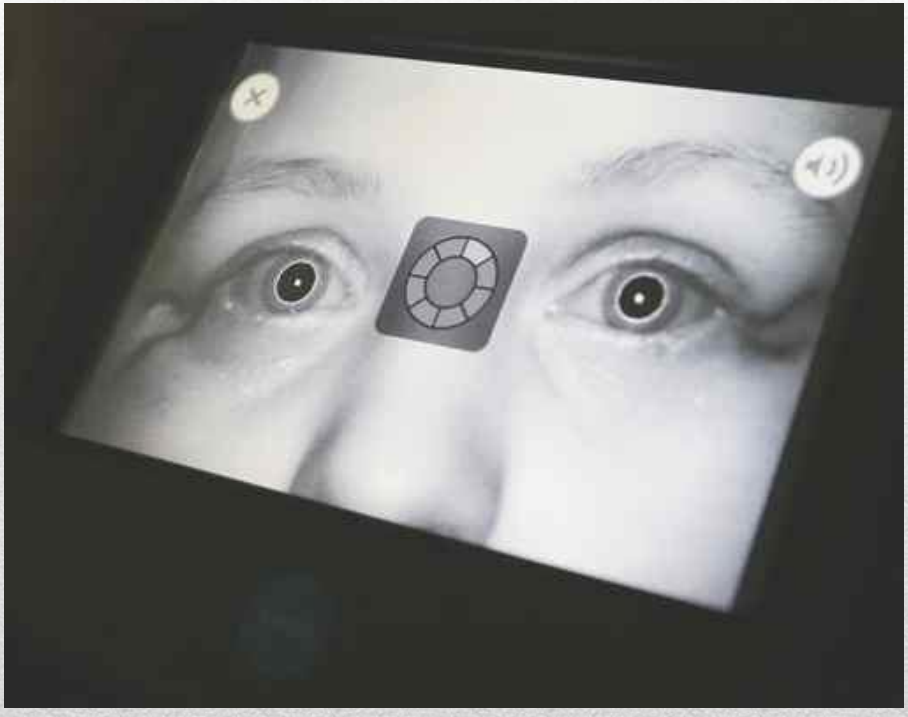
Instrument-Based Screening

- If use instruments, no need to also do visual acuity screening unless you want to check both VA and refractive error.
- If cannot “capture” a pass or refer result... refer child for comprehensive eye exam.



Instruments “Approved” by NCCVEH

Welch Allyn®
Spot™ Vision Screener

Plusoptix
S12C Vision Screener

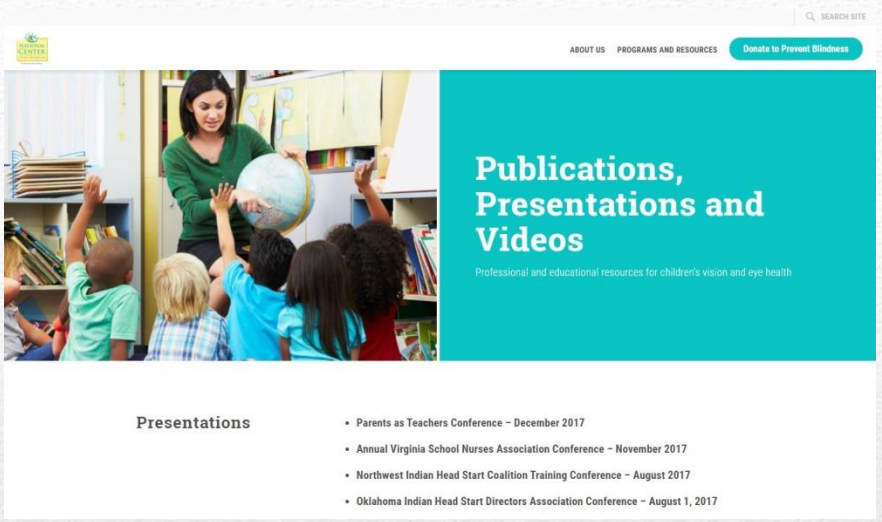
Welch Allyn®
SureSight™
Vision Screener

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

Resources . . .

Check-off year 1 vision screening tool available at:

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



Reports and Information from Prevent Blindness

- A complete list of public health reports available from Prevent Blindness
- Children's Vision and Eye Health: A Snapshot of Current National Issues
- Eye health and safety information
- Our Vision for Children's Vision, A National Call to Action for the Advancement of Children's Vision and Eye Health
- Prevent Blindness Statement on School-Aged Vision Screening and Eye Health Programs
- Eight Key Vision Development Milestones to Monitor from Birth to First Birthday
- Vision Preservation and the National Prevention Strategy: A call to Action
- Vision screenings and eye exams- complimentary public health approaches for vision

Provider education tools

Parent/ family resources

Technical assistance

Professional Development

Communication tools

http://nationalcenter.preventblindness.org

NATIONAL CENTER for Children's Vision & Eye Health AT PREVENT BLINDNESS

www.ChildCareExchange.com

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or call (800) 221-2864.

Madison, a child enrolled in Head Start, did not pass a 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 giraffe on the wall caught her attention. She walked to the picture, looked at the giraffe, turned to her teacher, and said, "I didn't know giraffes had eyes!"

Children's Vision Health

How to Create a Strong Vision Health System of Care

by P. Kay Nottingham Chaplin, Jean E. Ramsey, and Kira Baldonado

The authors thank the members of the Advisory Committee for the National Center for Children's Vision and Eye Health at Prevent Blindness for their support in the development of this article.

Research suggests that up to 1 in 20 preschool-aged children may have a vision problem that can lead to permanent vision loss if not detected and treated early — preferably before age 5 years (Calonge, 2004). Head Start, Early Head Start, and early childhood program vision screeners are in a perfect position to help find these children, who can then be referred to an eye care provider for diagnosis and treatment.

To assist front-line screeners, the

the brain receives clear, focused images from each eye. Any conditions that interfere with this development can cause vision loss known as amblyopia or "lazy eye." Four common conditions that can lead to amblyopia include:

1. *Misaligned eyes* (i.e., strabismus): Eyes crossing consistently after age 4 to 6 months (American Academy of Ophthalmology, 2012).

https://georgia.preventblindness.org/sites/default/files/georgia/documents/Exchange%20Magazine%20article.pdf

A Historical Review of Distance Vision Screening Eye Charts

What to Toss, What to Keep, and What to Replace

P. Kay Nottingham Chaplin, EdD, West Virginia

Geoffrey E. Bradford, MD, West Virginia

Vision screening protocol and equipment guidelines differ among schools across the United States. Budget cuts are forcing many school nurses to reevaluate their vision screening programs, as well as items in their vision screening toolboxes. School nurses tasked with inventorying those toolboxes to determine which items to toss, keep, or replace are oftentimes perplexed by the copious choices featured in vendor catalogs and websites. For school nurses who want their vision screening toolboxes to include eye charts, national and international eye chart design guidelines are available to help ensure selected eye charts are standardized. A national consensus policy exists that recommends specific eye charts. And, a large body of vision screening literature is available to help school nurses make informed decisions. Current documents suggest that LEA Symbols are appropriate for young children and Sloan Letters are a better choice than "Snellen" charts for older children.

Keywords: preschool vision screening; school-aged vision screening; LEA Symbols; HOTV; Sloan Letters; eye charts; eye chart design recommendations

The first state-supported vision screening program in a school setting started in Connecticut in 1899 with a distance visual acuity Snellen chart as the testing tool (Appelboom, 1985). Though some school nurses across the United States have added vision testing devices to their toolboxes during the last 112 years, the time-honored eye chart continues to hold a primary and prominent space in those toolboxes.

Technology-based vision screening tools include computerized vision screening software, instruments with slides, autorefractors, and photoscreeners. The choice of vision screening tools oftentimes depends on a budget line item and a school nurse's comfort with using instrument-based technology.

Budget cuts are forcing many school nurses to reevaluate the vision screening tools they use or replace. Effective distance wall charts may be a better fit for a tight budget.

Distance Visual Acuity Optotype Charts as Gold Standard

Optotype (letters, numbers, and pictures) charts continue to serve as the most common test for assessing visual acuity in clinical practice (Ehrmann, Fedtke, & Radić, 2009). In schools, distance visual acuity eye charts have been the gold standard for decades (Proctor, 2005). Eye charts "are time-honored, considerably less expensive than vision testing machines and other similar equipment, and effective for screening, if appropriately selected and used" (Proctor, 2005, p. 33).

Challenges in Choosing Optotype Distance Visual Acuity Charts

Countless eye charts have emerged since Herman Snellen introduced his optotypes in 1862 (Bennett, 1965). The "Snellen" chart concept has withstood the test of time, although this chart, as well as others, has design challenges that may reduce the accuracy of screening vision in children. Selecting appropriate eye charts is challenging because no one particular national standard exists to provide guidance on selecting distance visual acuity eye charts to use in the school setting.

Eye chart recommendations differ among the 38 states, and the District of Columbia, with school vision screening requirements (The Vision Council, 2009). Vendor catalogs and websites offer

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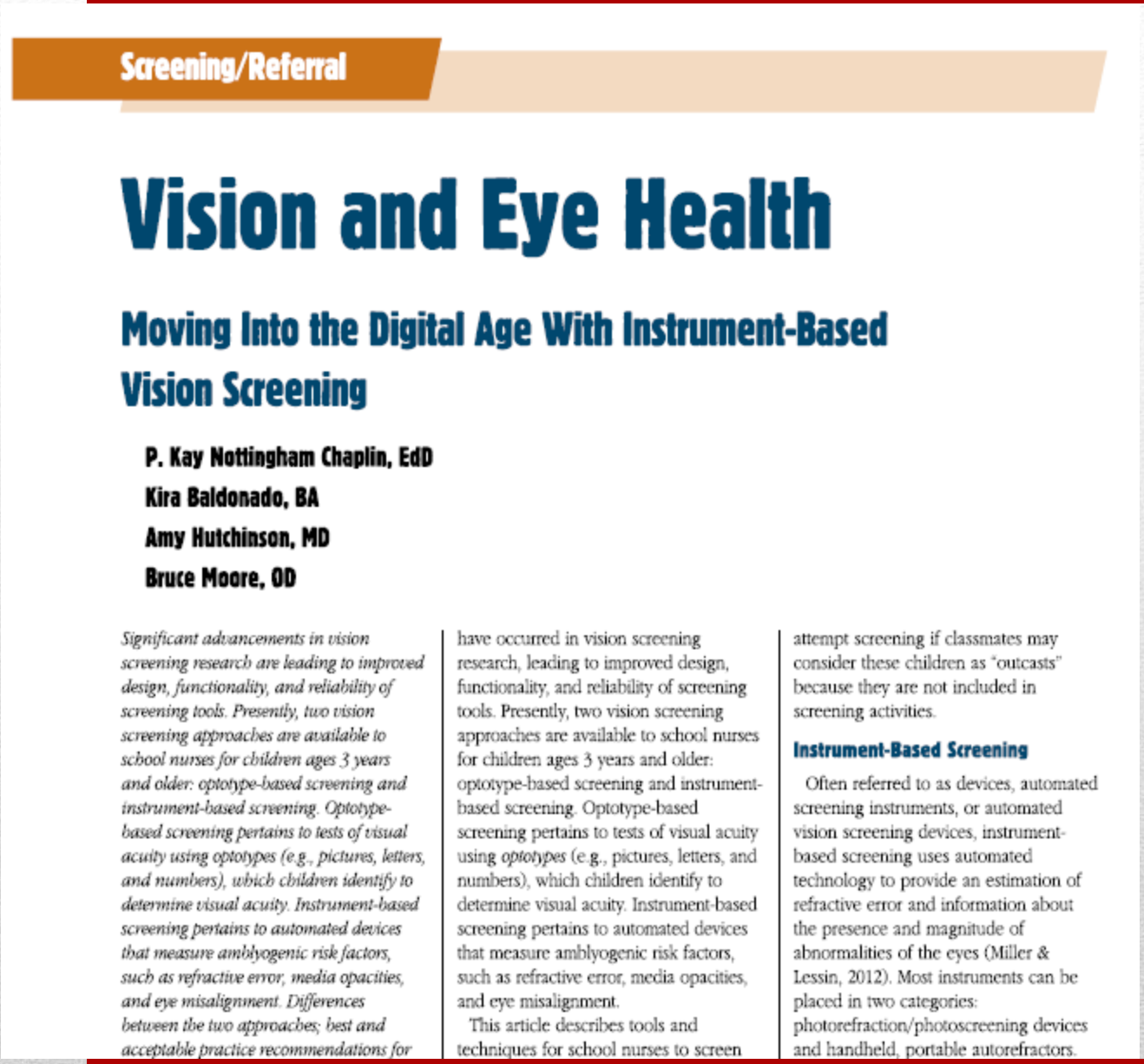
Nottingham Chaplin, P. K., & Bradford, G. E. (2011). A historical review of distance vision screening eye charts: What to toss, what to keep, and what to replace. *NASN School Nurse, 26*(4), 221-228.



Screening/Referral

Vision and Eye Health

Moving Into the Digital Age With Instrument-Based Vision Screening

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

Significant advancements in vision screening research are leading to improved design, functionality, and reliability of screening tools. Presently, two vision screening approaches are available to school nurses for children ages 3 years and older: optotype-based screening and instrument-based screening. Optotype-based screening pertains to tests of visual acuity using optotypes (e.g., pictures, letters, and numbers), which children identify to determine visual acuity. Instrument-based screening pertains to automated devices that measure amblyogenic risk factors, such as refractive error, media opacities, and eye misalignment. Differences between the two approaches; best and acceptable practice recommendations for

have occurred in vision screening research, leading to improved design, functionality, and reliability of screening tools. Presently, two vision screening approaches are available to school nurses for children ages 3 years and older: optotype-based screening and instrument-based screening. Optotype-based screening pertains to tests of visual acuity using *optotypes* (e.g., pictures, letters, and numbers), which children identify to determine visual acuity. Instrument-based screening pertains to automated devices that measure amblyogenic risk factors, such as refractive error, media opacities, and eye misalignment.

This article describes tools and techniques for school nurses to screen

attempt screening if classmates may consider these children as "outcasts" because they are not included in screening activities.

Instrument-Based Screening

Often referred to as devices, automated screening instruments, or automated vision screening devices, instrument-based screening uses automated technology to provide an estimation of refractive error and information about the presence and magnitude of abnormalities of the eyes (Miller & Lessin, 2012). Most instruments can be placed in two categories: photorefraction/photoscreening devices and handheld, portable autorefractors.

Nottingham Chaplin, P. K., Baldonado, K., Hutchinson, A., & Moore, B. (2015). Vision and eye health: Moving into the digital age with instrument-based vision screening. *NASN School Nurse, 30*(3), 154-60.

Year of Children's Vision

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

Resources to Support Families . . .

Financial Assistance Information

Prevent Blindness
Our Vision Is Vision®

211 West Wacker Drive
Suite 1700
Chicago, Illinois 6064
800.331.2020
PreventBlindness.org

Association of Schools and Colleges of Optometry
6110 Executive Boulevard, Suite 510
Rockville, Maryland 20852
Phone: (301) 231-5944
Fax: (301) 770-1828
www.opted.org

Many optometry schools offer low-cost care to people willing to be treated by supervised students. They may also provide free care to people who join research studies.

Chronic Disease Fund
6900 N. Dallas Parkway, Suite 200
Plano, TX 75024
Toll-free Patient Info: (877) 968-7233
Main: (972) 608-7141
www.cdfund.org

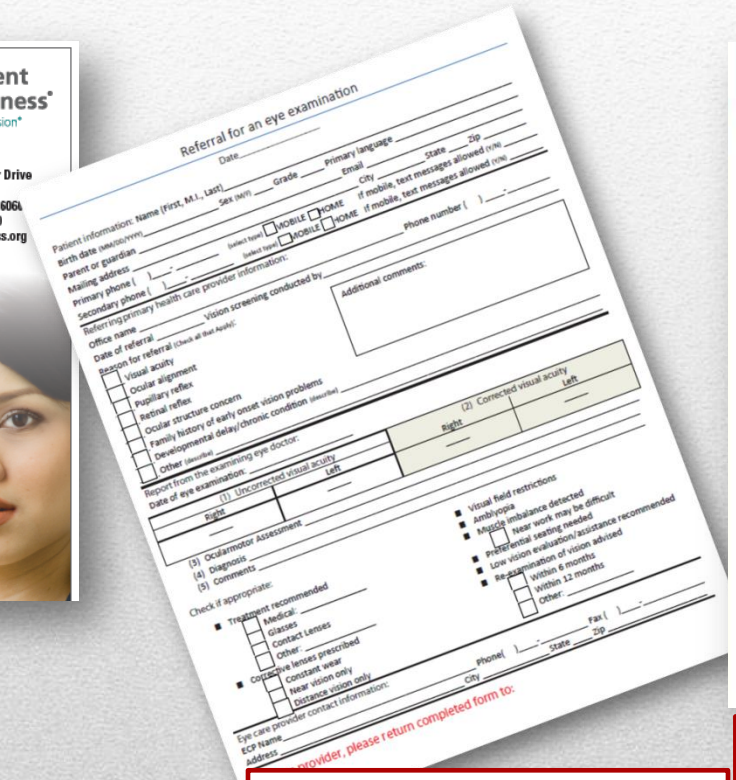
Chronic Disease Fund® is an independent 501(c)(3) non-profit charitable organization helping patients with chronic disease, cancers or life-altering conditions obtain the expensive medications they need.

Fax: (415) 561-8567
www.eyecareamerica.org

EyeCare America provides eye care to US citizens and legal residents through volunteer ophthalmologists (Eye M.D.s) at no cost to those who qualify. Go to the website or call to find out if you qualify for eye care. EyeCare America facilitates eye care for U.S. citizens or legal residents who are without an Eye M.D. and who do not belong to an HMO or do not have eye care coverage through the Veterans Administration.

- ***Those who are age 65 or older and who have not seen an EyeMD in three or more years may be eligible to receive a comprehensive, medical eye exam and up to one year of care at no out-of-pocket cost for any disease diagnosed during the initial exam.*** *Volunteer ophthalmologists will waive co-payments, accepting Medicare and/or other insurance reimbursement as payment in full; patients without insurance receive this care at no charge.*

Financial Assistance Programs



Referral for an eye examination

Patient information: Name (First, M.I., Last) _____ Date _____
Birth date (MM/DD/YYYY) _____ Sex (M/F) _____ Grade _____ Primary language _____
Parent or guardian _____ Email _____
Mailing address _____ City _____ State _____ Zip _____
Primary phone ( ) ___-___-____ (select one) ☐MOBILE ☐HOME if mobile, text messages allowed (Y/N) _____
Secondary phone ( ) ___-___-____ (select one) ☐MOBILE ☐HOME if mobile, text messages allowed (Y/N) _____
Referring primary health care provider information: _____ Phone number ( ) ___-___-____
Office name _____ Vision screening conducted by _____ Additional comments:
Date of referral _____
Reason for referral (Check all that Apply):
☐ Visual acuity
☐ Ocular alignment
☐ Pupillary reflex
☐ Retinal reflex
☐ Ocular structure concern
☐ Family history of early onset vision problems
☐ Developmental delay/chronic condition (describe) _____
☐ Other (describe) _____

Report from the examining eye doctor:
Date of eye examination _____

	(1) Uncorrected visual acuity	(2) Corrected visual acuity
Right		
Left		

(3) Ocular/motor Assessment _____
(4) Diagnosis _____
(5) Comments _____

Check if appropriate:
- Treatment recommended
  - ☐ Medical _____
  - ☐ Glasses
  - ☐ Contact Lenses
  - ☐ Other _____
- Corrective lenses prescribed
  - ☐ Constant wear
  - ☐ Near vision only
  - ☐ Distance vision only
- Visual field restrictions
- Amblyopia
- Muscle imbalance detected
  - ☐ Near work may be difficult
  - ☐ Preferential seating needed
- Low vision evaluation/assistance recommended
- Re-examination of vision advised
  - ☐ Within 6 months
  - ☐ Within 12 months
  - ☐ Other: _____

Eye care provider contact information:
ECP Name _____ Phone( ) ___-___-____ Fax ( ) ___-___-____
Address _____ City _____ State ___ Zip _____

provider, please return completed form to:

VS Referral Documents

你知道嗎 ...

兒童通常不會抱怨眼睛有問題。眼科疾病如果不及時治療，就可能會導致永久失明。

你能做什麼：

1. 在孩子玩、讀書、看電物或其他人的時候觀察孩子，如果有什麼異常情況，要及時與孩子的兒科醫生討論。
2. 與醫生討論你家庭成員的眼科病史（例如弱視、斜視，使用眼鏡來更正視力，或需要戴度數很高的眼鏡）。
3. 每次體檢時要詢問是否為孩子進行了眼科檢查。
4. 詢問每次眼科檢查的結果，並要明白是什麼意思。
5. 你孩子的醫生可能在眼科檢查後建議你去看眼科專科醫生。來評估在檢查中發現的問題。如果是這樣，一定要去進一步檢查。
6. 在專科檢查後，一定要將結果報告送回給孩子的醫生，你自己也要保存一份這個報告。

眼科疾病的症狀

許多兒童的眼科疾病不能夠被發現。但是有些時候會有如下一些症狀出現。如果你注意到有這些症狀，就要聯絡你的醫生：

斜視

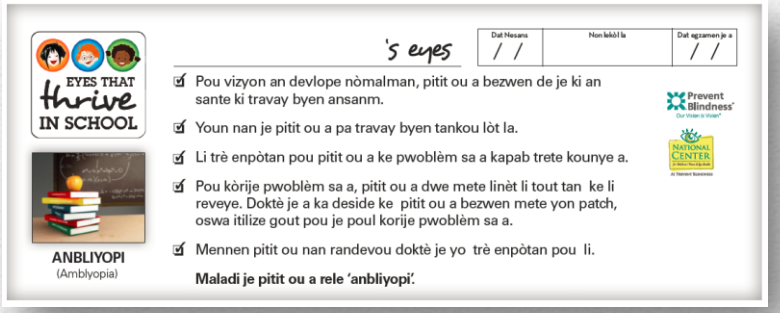
白瞳症，當有光線反射到眼睛上時，瞳孔呈白色。

上瞼下垂，眼皮下墜，擋住了部分視線。

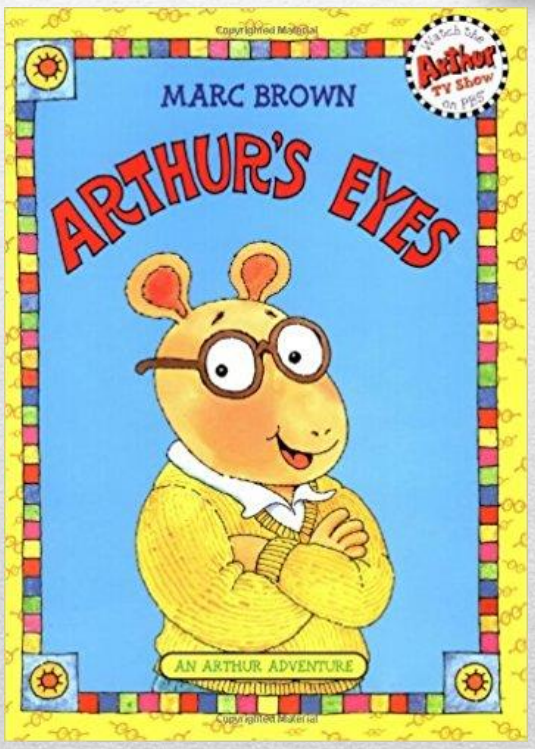
Parent Education

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

Tips for Wearing Eye Glasses - https://www.preventblindness.org/your-childs-glasses



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



Book

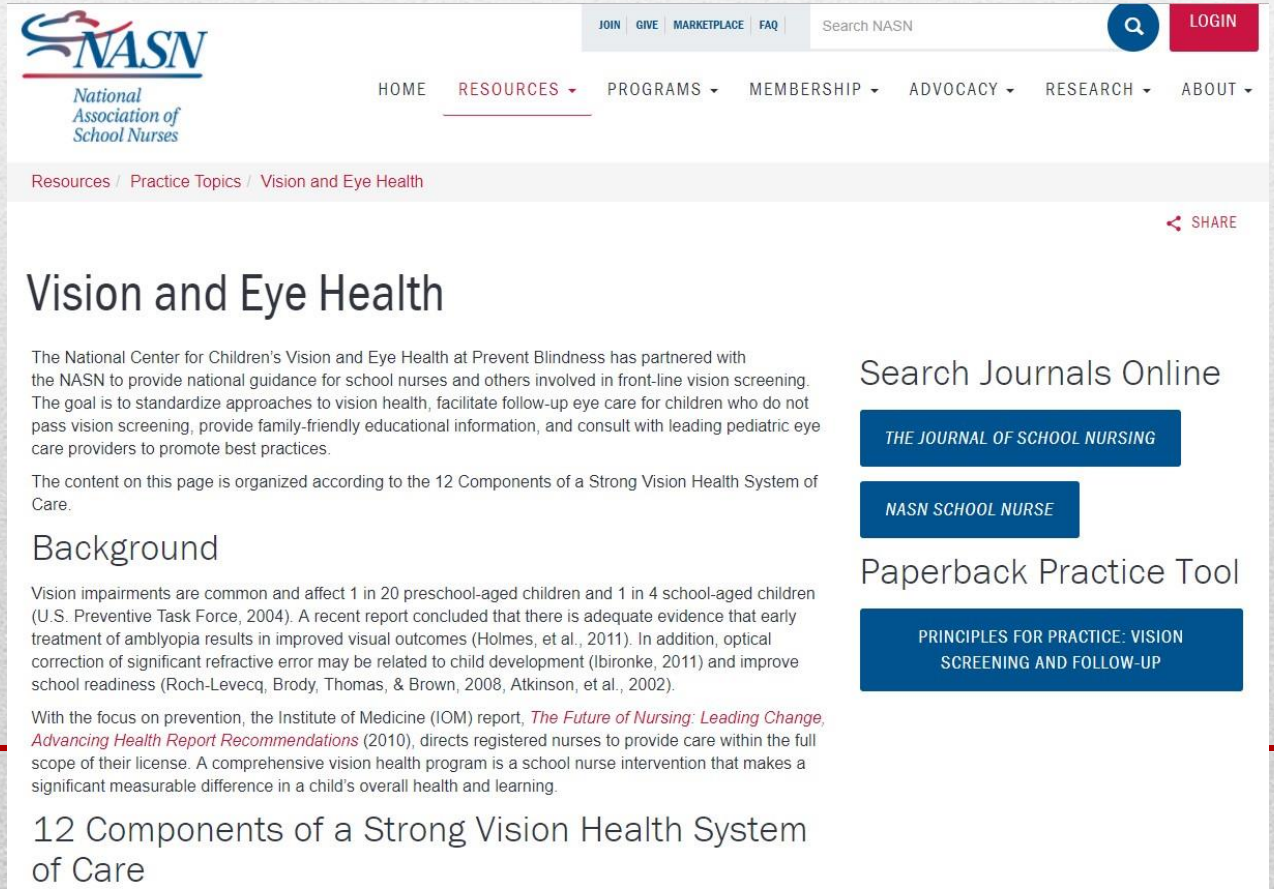
Helpful info and statistics for grant proposal writing . . .

http://www.preventblindness.org/sites/default/files/national/documents/Children%27s_Vision_Chartbook.pdf

NASN Vision and Eye Health Resource

(National Center for Children's Vision and Eye Health and NASN partnership)

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



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

Questions?

Raise your hand if:

- You learned something new today.
- You found this presentation helpful.

Alison Winterroth Photography
https://www.clickinmoms.com/cmprodaily/163828-2/

Conclusion of Today's Presentation . . .

Thank You!!!

Janet Schultz, PNP-BC Janet.Schultz@dlhcorp.com 301-910-1402

Dr. P. Kay Nottingham Chaplin kay@good-lite.com 304-906-2204