

CHDP PEDIATRIC VISION SCREENING



Child Health and Disability Prevention (CHDP) Program
Systems of Care Division (SCD)
California Department of Health Care Services

Learning Objectives

- Understand the importance of vision screening during childhood.
- Become aware of eye problems that affect vision.
- Describe and implement the CHDP program guidelines for referral and follow-up.
- Identify the steps of vision screening and document results.

Why Perform Vision Screening?

- Recommended as part of the American Academy of Pediatrics [Bright Futures Periodicity Schedule](#)
- For ages where risk assessment is required, see Bright Futures Pre-visit Questionnaire
 - Available in all ages

A screenshot of the Bright Futures Periodicity Schedule chart, which is a grid showing recommended preventive health care services for children. The chart is organized by age groups (0-2, 3-5, 6-11, 12-17) and includes columns for various services such as immunizations, vision screening, and dental care. The chart is color-coded by age group: 0-2 (green), 3-5 (yellow), 6-11 (pink), and 12-17 (blue). The chart is titled "Recommendations for Preventive Pediatric Health Care" and includes the American Academy of Pediatrics logo.

Bright Futures Pre-visit Questionnaire for 7-year-old

Questions About Your Child				
Have any of your child's relatives developed new medical problems since your last visit? If yes, please describe:		<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unsure
Vision	Do you have concerns about how your child sees?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unsure
	Has your child ever failed a school vision screening test?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unsure
	Does your child tend to squint?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unsure

Why Perform Vision Screening?

Primary Care Physicians and Nurses:

- The first line of defense to detect preventable vision loss in children

Early detection of amblyopia - “lazy eye”

- Leading cause of vision loss among children

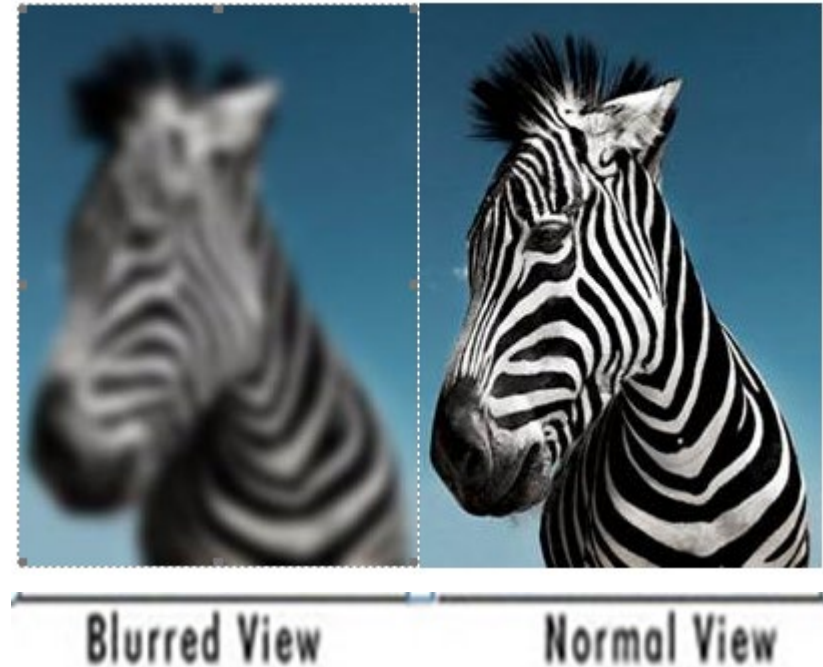
Amblyopia

- Amblyopia is the leading cause of vision loss among children.
- Eyes and brain are not working together.
- One eye sees a blurred view and the other a normal view. The brain only processes the normal view.

Amblyopia

Amblyopia can only develop during childhood.

- If not treated in childhood, amblyopia may result in permanent vision loss.
- The most common cause of vision loss in adults 20-70 years of age is untreated childhood amblyopia.



Amblyopia

Common causes are:

- untreated or unequal refractive errors (nearsighted, farsighted, astigmatism)
- strabismus “crossed eyes”
- obstruction (e.g. ptosis, cataract)

Common Causes of Amblyopia

1. Types of refractive errors

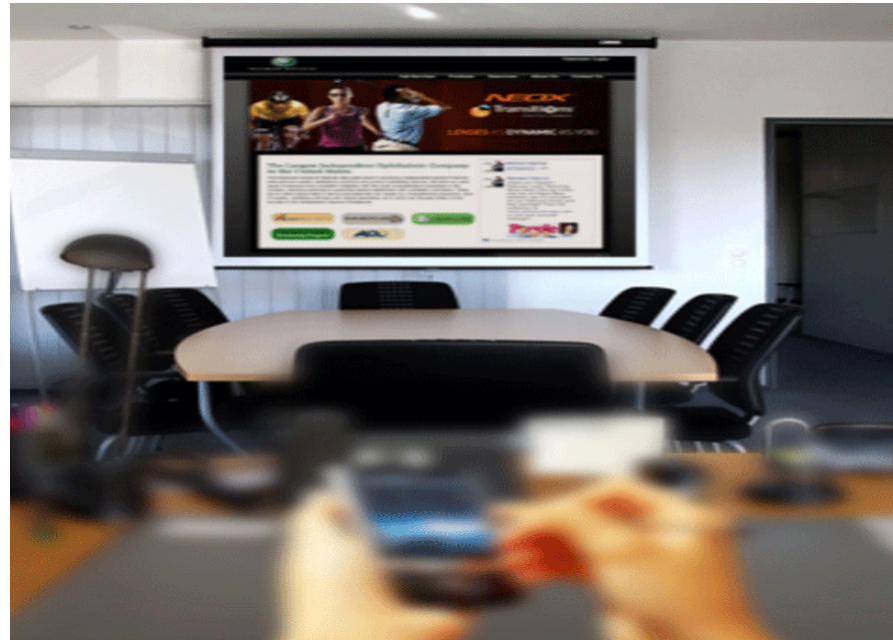
- a. Myopia “nearsighted”: does not see objects well at far distances



Common Causes of Amblyopia

1. Types of refractive errors

- b. Hyperopia “farsighted”: does not see objects well at close distances



Common Causes of Amblyopia

1. Types of refractive errors

c. Astigmatism: an irregular curve in the eye causing blurry vision at all distances

Astigmatism causes blur along one direction

ABCD

Vertical lines may be more blurred

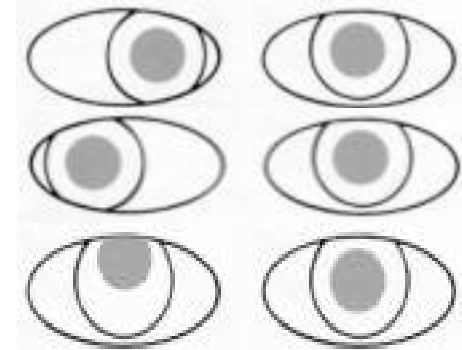
ABCD

Horizontal lines can be more blurred

Common Causes of Amblyopia

2. Strabismus “crossed eyes”: misalignment of the eyes

- May have double vision
- One or both eyes turning inward
- One or both eyes turning outward
- One eye turning up or down



Common Causes of Amblyopia (Strabismus)



Common Causes of Amblyopia

3. Obstruction

- a. Ptosis: drooping of an eyelid due to a weak lid muscle.
 - May obstruct vision
 - Look for chin elevation in these children.



Common Causes of Amblyopia

3. Obstruction

b. Cataract: condition in which the lens of the eye becomes progressively cloudy, resulting in blurred vision.



Screening Early is Best

- School-aged vision screening may be too late.
- Amblyopia is harder to treat after 5 years of age.
- By 7 years of age, some vision loss from amblyopia may become permanent.

Vision Screening in the United States

National Eye Institute (NEI)

- Amblyopia affects 2-3% of children in the United States.
 - About 4.5 million children with preventable vision loss.

Barriers to Screening

- Poor cooperation of young children
- Takes time to perform
- Staff not adequately trained
- Poor reimbursement for physicians

Visual Acuity Screening Guidelines



American Academy of Pediatrics Policy Statement

[Pediatrics January 2016](#)

- Screening with a tool such as a photoscreener is recommended for children 12 months of age and older unless they can reliably perform visual acuity screening with eye charts.
- Visual acuity screening using eye charts remains the gold standard. It can begin as early as 3 years of age.

Newborn to 35 Months (0-3 years)

Procedures for the Evaluation of the Visual System

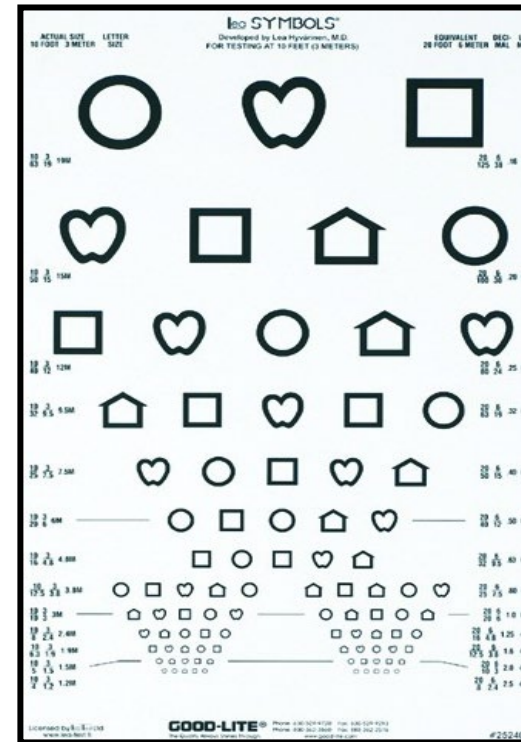
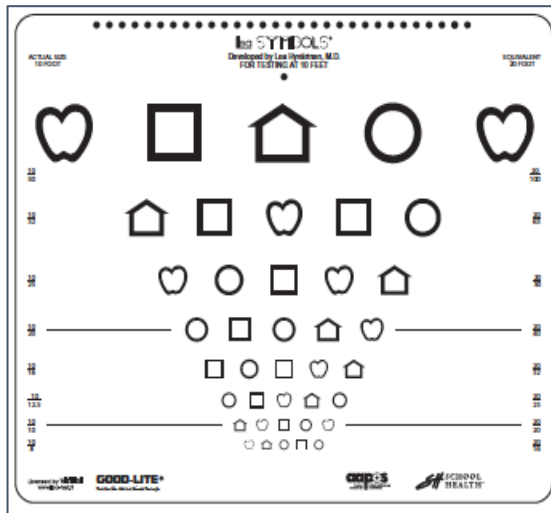
Pediatrics January 2016

- Take a health history: Are there eye problems in close relatives?
- Check vision (tracking), eye movement (motility) and alignment (strabismus)
- Check pupils and red reflexes (round, equal, bright)

NOTE: This assessment can also be done on older children of any age with developmental delays.

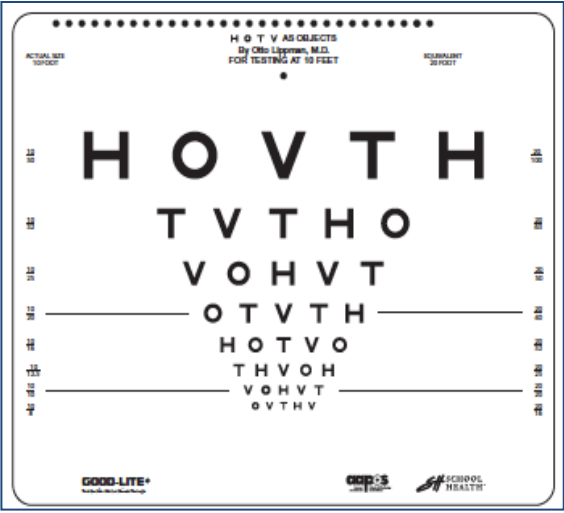
Ages 3 through 5 years Recommended Chart Types

LEA Symbols



Ages 3 through 5 years Recommended Chart Types

HOTV Letters



Age-Dependent Pass/Fail Guidelines

- **New AAP guidelines**

- **3 years old:** the critical line to pass screening is the **20/50** line.
- **4 years old:** the critical line to pass screening is the **20/40** line.
- **5 years and older:** the critical line to pass screening is the **20/32** line for Sloan and LEA/HOTV (or **20/30** in Snellen chart).

36 to 47 Months (3 years)

- Must be able to identify the majority of the 20/50 line with each eye.
- Screening is typically done at 10 feet.
- Opposite eye must be fully covered.

48 to 59 Months (4 years)

- Must be able to identify the majority of the 20/40 line with each eye.
- Screening is typically done at 10 feet.
- Opposite eye must be fully covered.

60 Months and Older (5+ years)

- Must be able to identify the majority of the 20/32 line (or 20/30 in Snellen chart) with each eye.
- Use LEA symbols, HOTV letters for children who do not know their letters.
- Use Sloan letters for children who know their letters.
 - Preferred over Snellen letters chart
 - Snellen letters chart have a 20/30 line

60 Months and Older (5+ years)

- Recommended screening distance is 10-feet using a 10-foot chart.
- Fully cover opposite eye.
- Repeat screening every 1-2 years.
- Risk assessment should be done when screening is not required.



FOR SCREENING AT 10 FEET

60 Months and Older (5+ years)

- Sloan Letters Chart
 - Preferred over Snellen Letters.



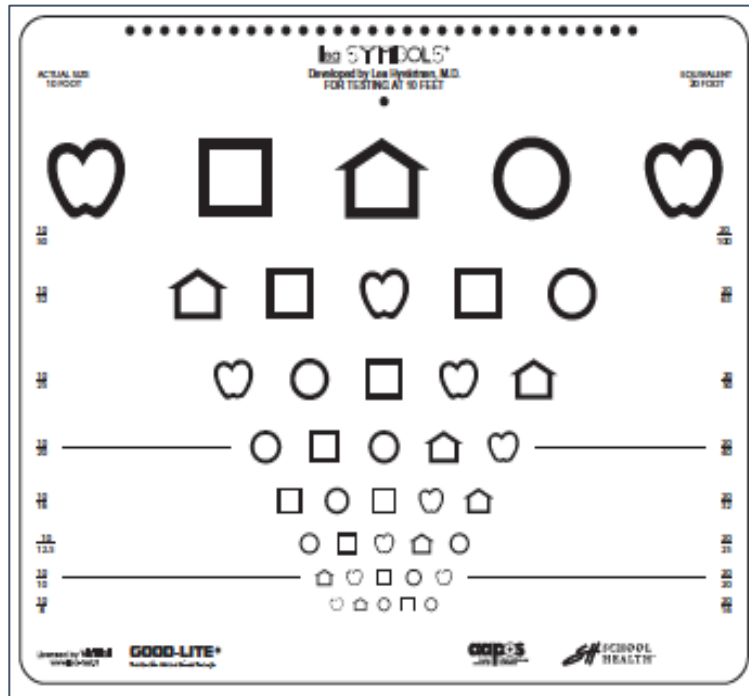
American Association for Pediatric Ophthalmology and Strabismus (AAPOS) Vision Screening Kit



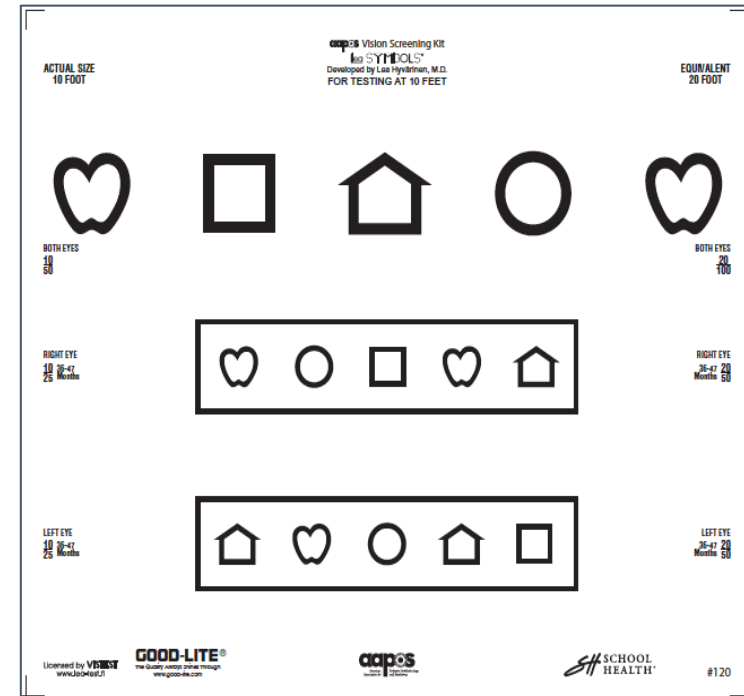
- Acuity charts for threshold or critical line screening:
 - Sloan letters
 - LEA symbols or HOTV letters
- Occluder patches/glasses/paddle
- 10 foot measuring cord
- Matching response card
- Informational DVDs

Threshold and Critical Line Options

Threshold

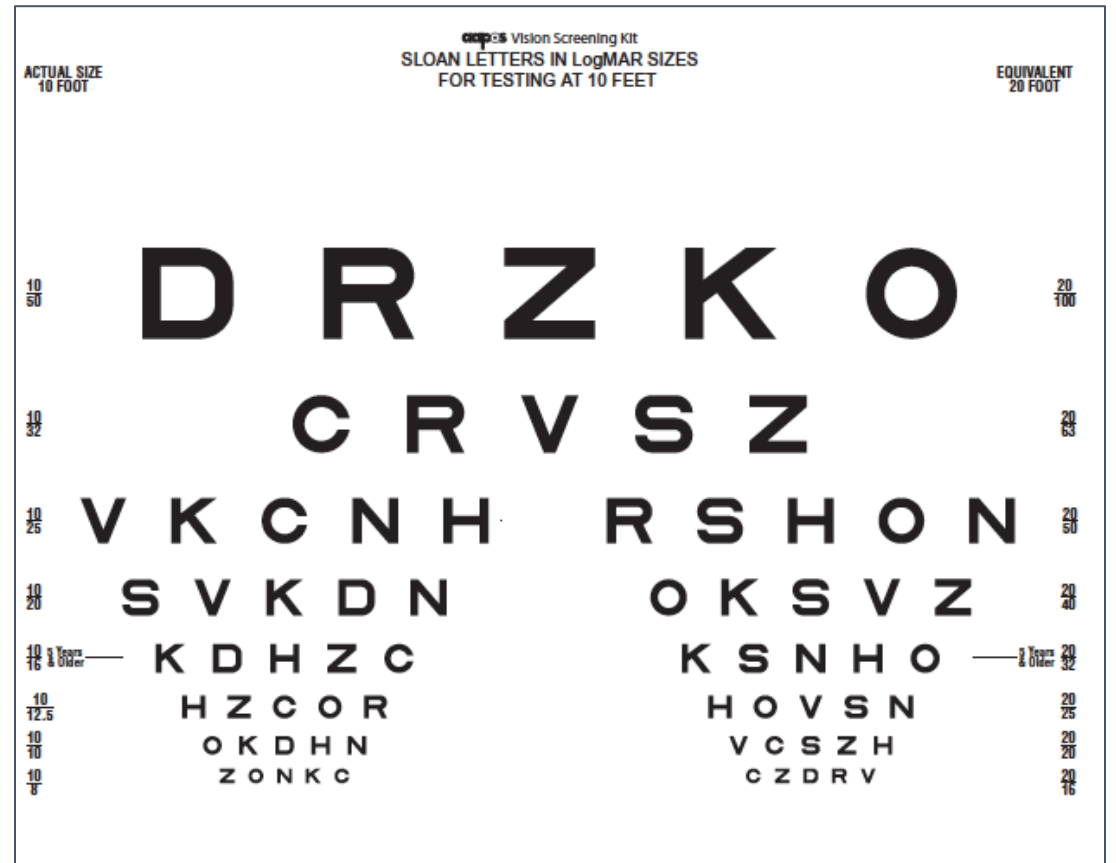


Critical Line



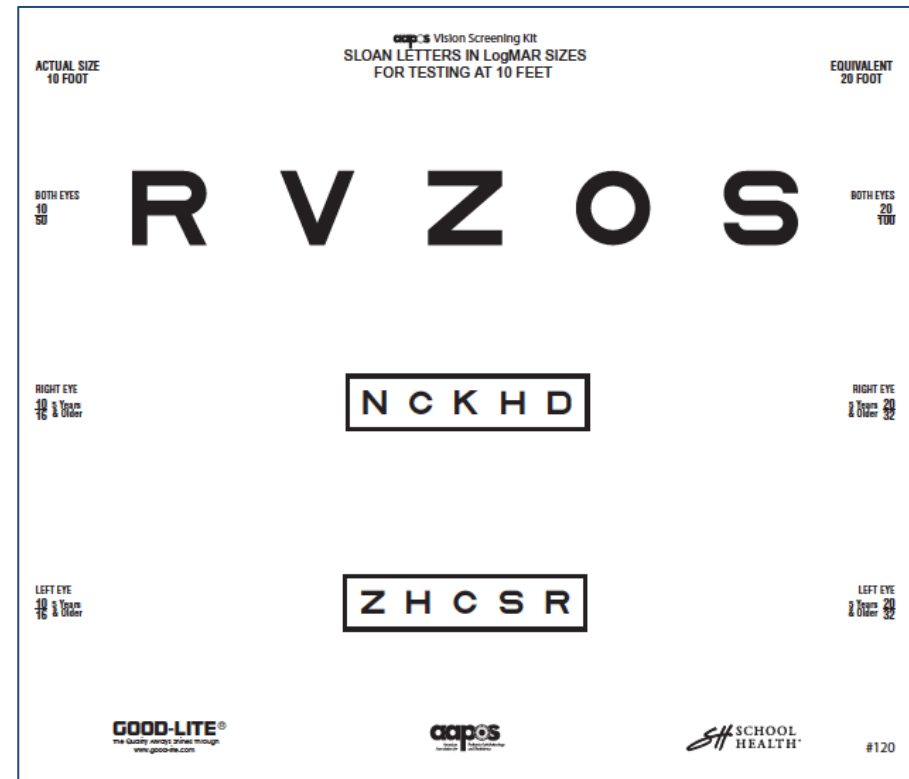
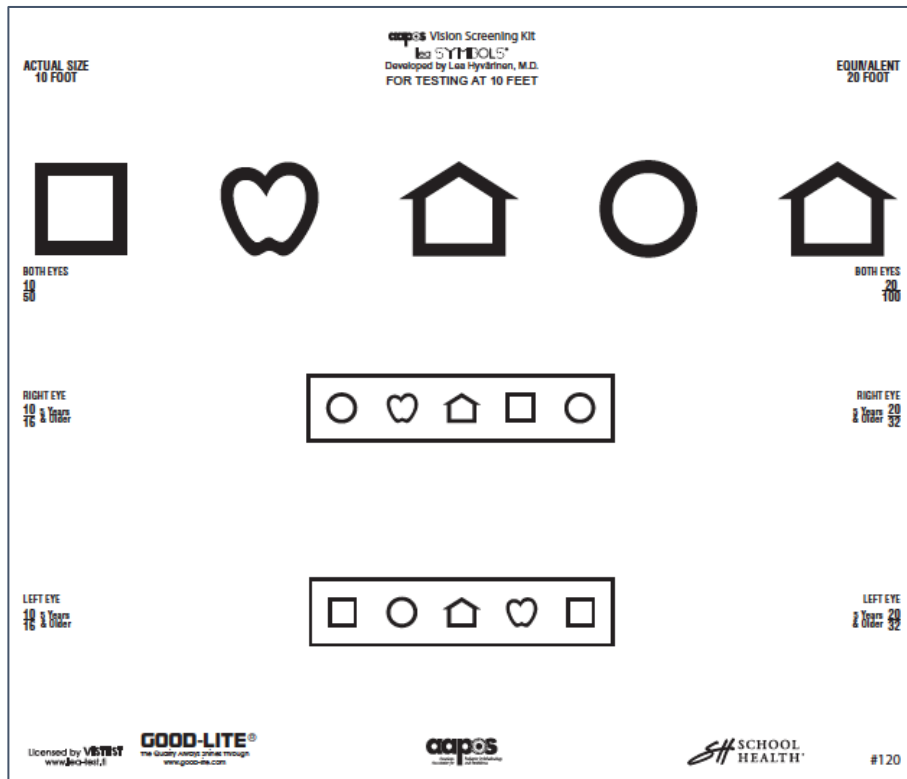
Threshold Screening

- Reading down the eye chart as far as possible.
- Threshold line is the smallest line child can pass.
- Can identify 2-line difference between the eyes.

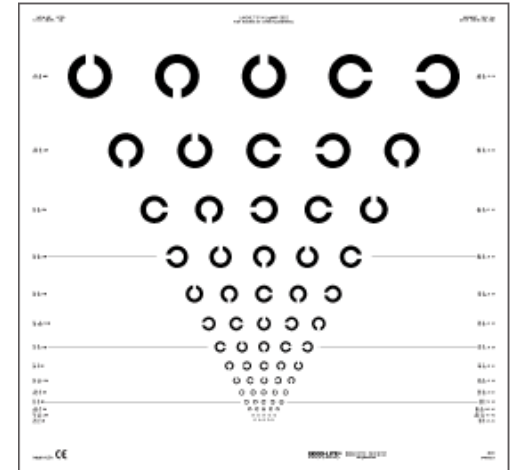
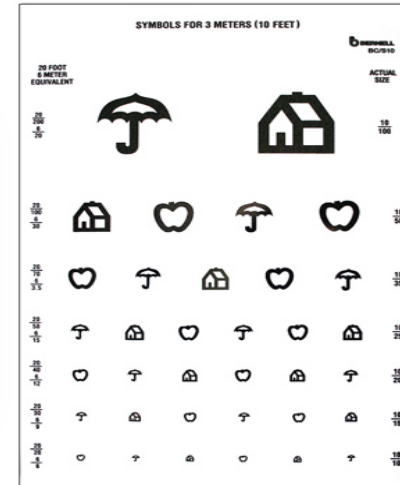
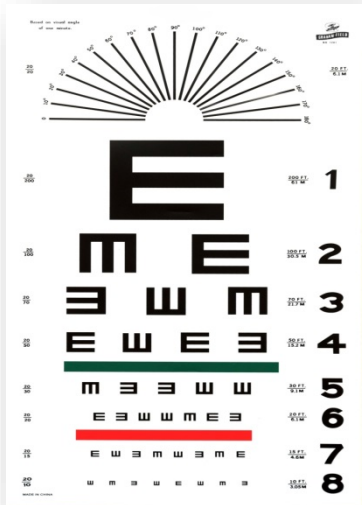


Critical Line Screening: **FASTER**

- Only read a single “critical” line with each eye.
- Each chart has two boxed “critical lines” - one for each eye. The top line of large optotypes (symbols/letters) is for practice before starting screening.



Vision Screening Charts Not Recommended



Occlusion of Non-tested Eye

- Adhesive patches are best.
- For all screening methods, completely cover the eye not being screened to prevent peeking.



Occluders

Acceptable



Only for age 10
years and older

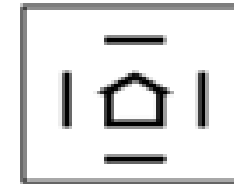
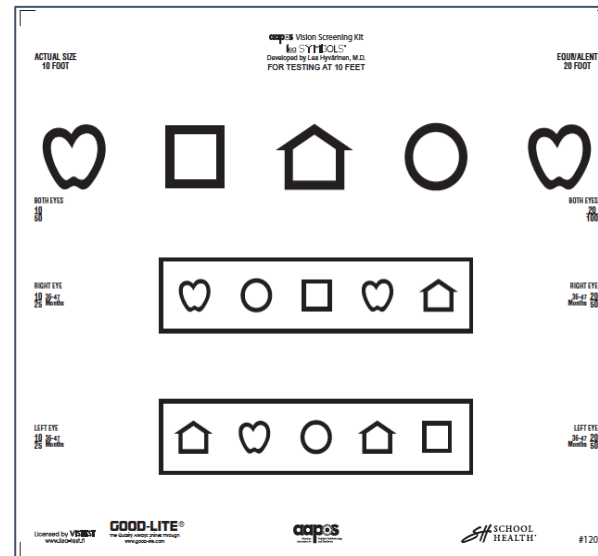


Not Recommended



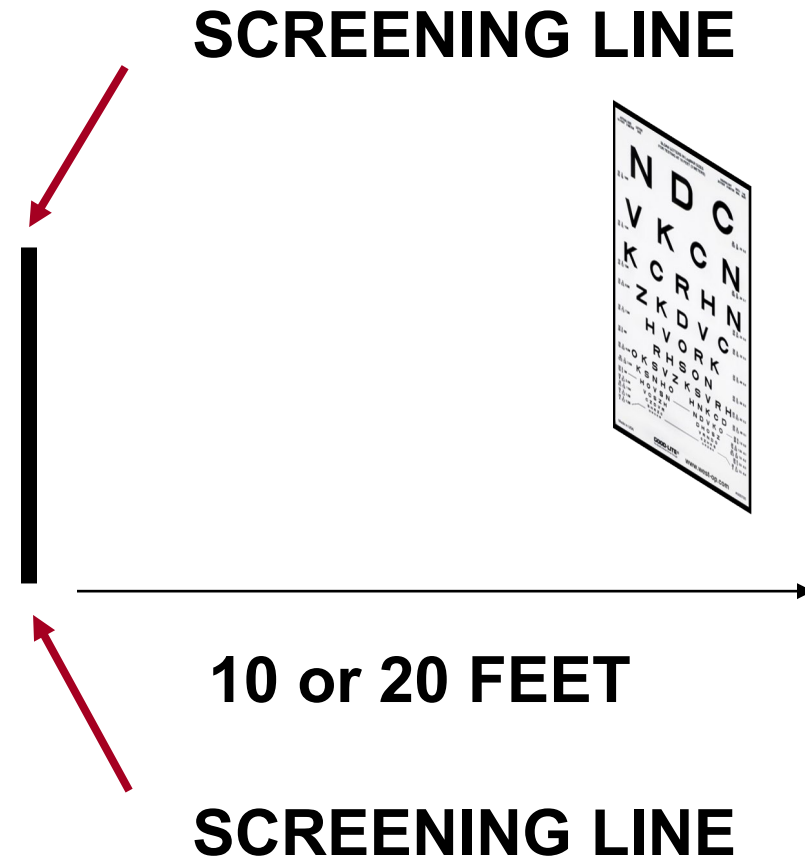
Key Points

- Use eye charts with lines of optotypes or matching cards with lines (crowding bars) around each optotype to obtain the most accurate visual acuity assessment.
- Crowding bars around the optotype make individual symbols/letters more difficult to identify when amblyopia is present.



Key Points

- Screening line marked at 10 (or 20)-feet on the floor.
- Screening line is directly in front of eye chart.
- Vision screening area
 - Out of traffic area
 - Have adequate lighting



Key Points

- Eye chart should be at child's eye level.
- Each eye should be screened separately (monocularly).
- Either critical line or threshold screening may be used.

Automatic Referral for Eye Exam

Children with the following disorders should bypass screening and should be referred directly to an eye specialist:

1. Recognized eye disorders (e.g. strabismus, ptosis)
2. Known neurodevelopmental disorders:
 - Hearing impairment
 - Motor abnormalities (e.g. cerebral palsy)
 - Down Syndrome
 - Cognitive impairment
 - Autism spectrum disorder
 - Speech delay

Automatic Referral for Eye Exam

3. Systemic diseases present (e.g. diabetes, sickle cell disease, hypertension)
4. Taking medications known to cause eye disorders (e.g. some anti-depressants and steroids)
5. First-degree relative with strabismus or amblyopia
6. Prematurity: less than 32 weeks of gestation
7. Parent believes child has vision problem

Age-Dependent Referral Criteria

New AAP Guidelines:

- 3 years old: Missing 3 or more symbols on the 20/50 line, or any line above the 20/50 line, with either eye
- 4 years old: Missing 3 or more symbols on the 20/40 line, or any line above the 20/40 line, with either eye
- 5 years and older: Missing 3 or more symbols on the 20/32 (20/30) line, or any line above the 20/32 (20/30) line, with either eye
- Two line difference between the eyes, even within the passing range (e.g. 20/20 and 20/32)

Follow-Up

- Maintain referral log to track status of referral.
- Follow-up with parent/guardian as needed.

	REFERRAL DATE	PATIENT'S NAME	D.O.B.	PROVIDER REFERRED TO	SPECIALITY	DATE OF APPT	DATE CONSULT REC'D	7 DAY FOLLOW-UP	30 DAY FOLLOW-UP
01	07-20-07	Doe, Janet	3-6-00	MLK	OPTOMETRY	9-3-07	9-27-07	9-10-07 Exam Done	10-3-07 Glasses Rec'd
02									
03									
04									
05									
06									
07									
08									
09									
10									
11									
12									

SPECIALTY:	P Pediatrics	OR Ortho	G Gyn	N Neurology	C Cardiology	S Surgery	D Dermatology	E ENT
	T Family Plan.	OT Optometry	B GYN/BTL	R Radiology	V Vascular Surg	AU Audiology	PT Physical Therapy	U Ultrasound
	H Hemo-Oncology	OB Obstetrics	OP Ophal.	GU Urology				

Untestable Children

- If child is unable to cooperate during the screening, make a second attempt the same day (i.e. later during the same visit). If same day rescreening is not possible, reschedule as soon as possible, but no later than 6 months.
- Schedule follow up appointment prior to the patient leaving provider office.
- If you cannot screen a child, then refer to an ophthalmologist or optometrist experienced in the care of children for an eye examination.

CHDP Vision Screening Certification Requirements

- Screeners must attend Vision Screening Training led by CHDP staff (or another agency approved by local CHDP).
- Renew certification every four years.

Instrument-Based Vision Screening

- Instrument-based screening is the process of using an instrument such as a photoscreener, autorefractor or other device, to screen for risk factors for vision problems.
- Does not replace visual acuity screening with eye charts.
- Endorsed by American Academy of Pediatrics (AAP).

Instrument Screening is Useful For:

- All children ages 1-3 years
 - Usually unable to perform visual acuity screening
- Some children ages 3-5 years
 - Acuity chart screening is preferred, but...
 - Instrument-based screening is an acceptable alternative.
- Older children who are non-verbal, developmentally delayed or otherwise unable to perform screening with acuity charts.

What is the Difference Between Vision Screening with Eye Charts and Vision Screening with Devices?

- Vision screening with eye charts measure the actual visual acuity (e.g. 20/20).
- Vision screening devices DO NOT measure visual acuity directly.
 - Screening instruments test for eye conditions or risk factors that are known to cause decreased vision or amblyopia.

Common Vision Screening Instruments



Welch Allyn SureSight



Righton Retinomax



iScreen



PlusOptix S12R



Welch Allyn
"Spot"

Acknowledgments

- These guidelines are based on recommendations from the American Academy of Pediatrics (AAP) and the National Expert Panel of the National Center for Children's Vision and Eye Health (NCCVEH) at Prevent Blindness.
- These slides have been adapted from the American Association for Pediatric Ophthalmology and Strabismus (AAPOS) with their permission.

References and Links

- [Visual System Assessment in Infants, Children and Young Adults by Pediatricians](#)
 - American Academy of Pediatrics Policy Statement
 - Pediatrics. January 2016. Volume 137. Issue 1
- [Procedures for the Evaluation of the Visual System by Pediatricians](#)
 - American Academy of Pediatrics Clinical Report
 - Pediatrics. January 2016. Volume 137. Issue 1

References and Links

- [Bright Future and Preventative Medicine Coding Fact Sheet](#)
 - American Academy of Pediatrics
 - AAP.org → Professional Resources → Practice Transformation → Coding at the AAP
 - Updated January 2016
- [Vision Screening for Children 36 to < 72 Months: Recommended Practices](#)
 - National Expert Panel to the National Center for Children's Vision and Eye Health
 - Optometry and Vision Science. January 2015. Volume 92. No. 1
- CHDP 2016 Vision Health Assessment Guidelines