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

• For ages where risk assessment is required, see Bright Futures Pre-visit Questionnaire

  • Available in all ages

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.
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
HOW DOES HEALTH EQUITY COME INTO PLAY?

- Children experience different access to healthcare based on socioeconomic status and other social factors
- This means that some groups are disproportionately lacking healthcare (preventative or not)
- This perpetuates health disparities that we see in our communities

“Health equity is achieved when every person has the opportunity to “attain his or her full health potential” and no one is “disadvantaged from achieving this potential because of social position or other socially determined circumstances.” Health inequities are reflected in differences in length of life; quality of life; rates of disease, disability, and death; severity of disease; and access to treatment.”

- CDC

Structural Racism
A history and current reality of institutional racism across all institutions, combining to create a system that negatively impacts communities of color.

Institutional Racism
Policies, practices, and procedures that work better for white people than for people of color, often unintentionally.

https://www.racialequityalliance.org/
AMBLYOPIA

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.

Common causes: Untreated or unequal refractive errors (near/farsighted, astigmatism)

- Strabismus “crossed eyes,” Obstruction (e.g. ptosis, cataract)

Screen Early! 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.
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.
COMMON CAUSES OF AMBYOPIA
1. TYPES OF REFRACTIVE ERRORS

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

b. Hyperopia “farsighted”: does not see objects well at close distances
COMMON CAUSES OF AMBLYOPIA

Types of refractive errors continued

c. Astigmatism: an irregular curve in the eye causing blurry vision at all distances
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
3. Obstruction
   a. Ptosis: drooping of an eyelid due to a weak lid muscle.
      • May obstruct vision
      • Look for chin elevation in these children.
   b. Cataract: condition in which the lens of the eye becomes progressively cloudy resulting in blurred vision.
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
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.
Procedures for the Evaluation of the Visual System

- 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.
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.
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).
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)
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.
AGES 3 THROUGH 5 YEARS RECOMMENDED CHART TYPES

LEA Symbols

HOTV Letters
60 MONTHS AND OLDER (5+ YEARS)

• Sloan Letters Chart
  • Preferred over Snellen Letters.

SLOAN

SNELLEN
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

CHDP Vision Screening Training
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
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.

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

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

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

• You have completed Step One!
• Next Steps
  1. Practicum
  2. After practicum, you will receive a certificate of completion from the CHDP office

Certificates are good for four years!
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

• Visual System Assessment in Infants, Children and Young Adults by Pediatricians
  • American Academy of Pediatrics Policy Statement

• Procedures for the Evaluation of the Visual System by Pediatricians
  • American Academy of Pediatrics Clinical Report
REFERENCES

- **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

- CHDP 2016 Vision Health Assessment Guidelines
- [https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/astigmatism?ss0=y](https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/astigmatism?ss0=y)