Vision Screening Protocol
Prevent Blindness North Carolina Guidelines

Regulations – North Carolina Statutes
Vision screening is required as part of the Health Appraisal Transmittal Form for every student entering Kindergarten and all students in grades 1-12, if attending public school in North Carolina for the first time. This screening is to be completed by a licensed physician, optometrist, physician assistant, nurse practitioner, registered nurse, orthoptist, or a vision screener certified by Prevent Blindness North Carolina, or a comprehensive eye examination performed by an ophthalmologist or optometrist. North Carolina also requires a vision screening for all preschool age children. § 130A-440.1 Early Childhood Vision Care and § 130A-440 Health Assessments for Children in the Public Schools

Overview
Young children and their parents are often unaware of reduced visual functioning. Childhood and adolescent vision problems vary in nature and severity, ranging from mild refractive errors to permanent vision impairment and blindness. Vision problems have a direct relationship to learning; untreated, severe adverse effects on educational achievement can occur. Poor vision can also affect the entire adjustment to school and compromise a child’s development. Early detection and treatment are vital in children with eye problems.

Common Eye Problems
- Refractive Errors - the most common vision problems that impair visual acuity:
  - Myopia/ nearsightedness – visual acuity impaired at far distance; or,
  - Hyperopia/ farsightedness) – visual acuity impaired at a near distance.
- Other vision problems include:
  - Astigmatism (irregular curvature of the cornea causing distorted images);
  - Strabismus (muscle imbalance, crossed or misaligned eyes);
  - Amblyopia (lazy eye);
  - Problems with binocular coordination of eye movements;
  - Problems with the integration of visual sensory perception and the brain.
- Both amblyopia and strabismus can cause a child to visually ignore one eye and rely on the other.

Signs of Possible Vision Problems (ABC’s)
Children observed to have any of the following signs, by the teacher or parent, should be referred to the school nurse for a vision screening regardless of age or grade placement:
- Appearance Signs
  - Cloudiness/haze.
  - Crossed eyes.
  - Unequal pupil size.
  - Presence of white pupil.
  - Possible eye injury - reddened, bloodshot, blackened, bruised or swollen, or show evidence of lacerations or abrasions.
- Behavior Signs
  - Body rigid when looking at distant objects.
  - Thrusting head forward or backward while looking at distant objects.
  - Tilting head to one side.
  - Squinting or frowning.
  - Excessive blinking or rubbing eyes.
  - Closing or covering one eye.
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- Clumsiness or decreased coordination.
- Short attention span when reading, copying, or board-work.
- Overactive or lethargic in class.

- Compliant Signs
  - Headaches, nausea, or dizziness.
  - Blurred or double vision.
  - Sees blur when looking up after close work.
  - Unusual sensitivity to light.

- Other signs
  - Loses place when reading; repeats or skips lines, or stops reading after a brief period.
  - Writes with irregular size and spacing.
  - Holds materials too closely, too far from face, or frequently changes the holding distance of book when reading.
  - Tends to reverse or confuse words, letters, or syllables.
  - Experience learning problems or scholastic failure.

Vision Screening
- Is effective with the population of children who have a minor vision problem, who are verbal and responsive, and who know their letters or symbols.
- Is not diagnostic.
- Will not identify every child who needs eye care nor will every child who is referred require treatment.
- Screening for distance visual acuity is considered by authorities to be the most important single test of visual ability. This test will identify most of the vision problems listed above, and other conditions such as cataracts.
- The preferred method of screening is linear and is recommended for children of all ages.
- Children who fail the screening test must be referred to an eye specialist for a diagnostic examination.
- Follow-up is the most important aspect of the screening program.
  - Any possible problem identified by vision screening must be followed up with a comprehensive eye examination.
  - If the children referred do not receive professional attention, the vision-screening program has failed to achieve its goal.

- Required Components
  - Assessment by the screener of signs and symptoms of eye disease.
    - Eye redness without pain (with or without discharge) may be referred to the primary care physician or to an eye care professional (ophthalmologist or optometrist).
    - The following signs or symptoms require referral to an eye care professional unless the child is already under the care of an eye care professional for the condition:
      - Eye pain, with or without redness.
      - Proptosis (protrusion of an eye).
      - Marked swelling of eyelid(s).
      - Constant head tilt or face turn.
      - Obvious strabismus (eye misalignment).
      - Nystagmus (jiggling eyes).
      - Light sensitivity.
      - Drooping eyelid(s).
      - Non-round pupil(s).
  - Distance visual acuity.
  - Stereopsis - Kindergarten.

Mass Screening and Individual Referrals for Vision Testing
- Students in K, 1, 3, and 5 – mass vision screening.
- Students referred for signs/symptoms of possible vision problems.
- Students referred for EC programs.
School Nurse Vision Screening Guidelines
Source: Guiding Practices for Early Childhood Vision Screening in NC

<table>
<thead>
<tr>
<th>Mass Screening</th>
<th>Individual Screening</th>
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<tbody>
<tr>
<td><strong>Purpose:</strong> Early detection of a health problem that may impact the educational process.</td>
<td><strong>Purpose for students referred by teachers based on their observations:</strong> To determine if observations are related to a health problem that may impact the educational process.</td>
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<td><strong>Purpose for students referred as part of an eligibility process:</strong> To verify that student educational issues are not related to an unidentified health problem.</td>
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<tr>
<td>Set calendar dates.</td>
<td>Completed year-round upon referral.</td>
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<tr>
<td>Reserve appropriate space.</td>
<td>Pre-standardized location, usually health room.</td>
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<tr>
<td>Completed by school nurse/school nurse teams.</td>
<td>Completed by school nurse.</td>
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<tr>
<td>Assure sufficient equipment for event.</td>
<td>Equipment that has been assigned to school nurse is used.</td>
</tr>
<tr>
<td>Notify parents as per district policy (List in local handbook the grades for mass screenings); and, school policy (Connect Ed. calls, letters, notes in student agendas, etc.).</td>
<td>Individual screenings that are not part of a mass event require parental consent. May be part of a larger consent, such as for Exceptional Children eligibility evaluation.</td>
</tr>
<tr>
<td>Plan logistics and flow for dates.</td>
<td>NA</td>
</tr>
<tr>
<td>Conduct screening event.</td>
<td>Obtain student from class when referral is made.</td>
</tr>
<tr>
<td>Plan make-up day for absent students.</td>
<td>NA</td>
</tr>
<tr>
<td>Refer failures to school nurse for re-screen.</td>
<td>Refer failures to school nurse for re-screen.</td>
</tr>
<tr>
<td>Record results in PowerSchool (required); Orange Permanent Health Record (optional).</td>
<td>Record results in PowerSchool (required); EC/other Referral Form; and, Orange Permanent Health Record (optional).</td>
</tr>
<tr>
<td>School nurse makes referrals for re-screen failures.</td>
<td>School nurse makes referrals for re-screen failure.</td>
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<tr>
<td>School nurse follows up for secured care.</td>
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</table>

**Distance Visual Acuity Screening**

- The screening environment:
  - If a patterned or cluttered wall is used to hang the chart, use a 3’ x 3’ piece of plain paper as background for the chart.
  - Select a wall for the chart that ensures an unobstructed view for the student.
  - Place the chart on a wall away from windows that may cause glare or shadows. If necessary, place plain paper over windows to reduce glare.
  - Make certain there is no glare or shadow on the chart.
  - Ensure that the chart is adequately illuminated. Normal room lighting is usually sufficient.
- Select chart, following guidelines below.
  - The 10’ charts presented in a crowded format and includes a 20/25 acuity line are strongly recommended/preferred for childhood distance vision screenings.
  - The most challenging chart a child is able to accomplish should be used.
  - Determine the chart (based on educational level or ability):
    - Lea Symbols → Very young, EC, or non-English speaking; K, and 1st grade.
    - Sloan Letter Chart → 2nd grade & up.
- From the chart, measure and draw the designated line or place masking tape on the floor.
- Prepare student for the screening.
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- Pretest the child by walking him up to the eye chart to make sure he knows the symbols, or by having him identify the figures on a handheld sheet on which the wall chart figures are reproduced (so large that they can be seen even by children whose vision is poor).
- Explain the characters to be used and make sure the child understands how to respond.
- A child who is unable to name the symbols/cannot or will not talk can still be screened successfully by having him/her match the figures he/she sees on the chart with the figures on a handheld sheet/card.
- The entire line must be displayed at once, as opposed to masking all but one letter at a time.
  - However, the performance of a shy or fidgety child can often be improved considerably if the screener points to one letter or figure at a time on the line being tested.
  - If a child has difficulty with the linear chart method, then the isolated method of presenting letters or symbols singly may be used.
- Have student **place heels on the line**. If a student is in a wheelchair or other chair due to physical limitation, place seat with the back of the chair on the line.
- Children who **wear glasses or contact lenses:**
  - Wear the glasses or contacts for vision screening.
  - Noted on the vision record (e.g., 20/40 with glasses).
  - If known, also record for these children: date of the last professional eye examination, date of the last correction, and date for the next examination.
- A red-tipped pointer (e.g., red marker or small wood dowel with painted tip) may be used to indicate, by pointing from below, which letter or symbol the child is to read.
- Use an acceptable occluder (e.g., adhesive patch, occlude glasses with opaque or frosted lenses. Paddle occluders and hand-held “Mardi Gras mask” are acceptable for ages 10 and older. Although not the most ideal, a paper cup may be used.
- Respond to the child in a positive manner using such words as “good”, “fine”, “okay”, “next”, etc.
- **Recording Vision Screening Results**
  - Visual acuity is recorded as a fraction. The numerator represents the distance, and the denominator represents the line read. Examples for screening at a distance of 20 feet:
    - If the child was able to read the 20-foot line, the visual acuity is 20/20.
    - If the child could only read the 40-foot line at this same distance, the visual acuity is 20/40.

**Vision Screening Steps**

- Begin screening on the top line of the chart.
- Occlude the left eye and have the child read the first character on each line until a character is missed.
- Return to the line above the missed character and ask the child to identify each character on that line.
- Continue asking the child to identify each character on each lower line until the child misses 3 on one line.
- If the child is able to continue moving down the chart, screening should end after reading the 20/20 line.
- If the child is unable to correctly identify at least 3 of the 5 characters on a line, move up the chart until you find the lowest line at which a child is able to identify 3 out of 5.
- Visual acuity is recorded as the smallest line on which the child can correctly identify at least 3 of the 5 characters.
- Occlude the right eye; repeat the process to screen the left eye.
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Note: the bottom portion of the Sloan chart divides into 2 charts; one for screening the right eye and one for screening the left eye.

Initial & Re-Screening Outcomes

- After completing the screening, the child either passes or returns for re-screening.
- Re-screening within 2 weeks is suggested, or as soon as possible.
- After completing the re-screening, the child either passes or is referred to an eye care professional or primary care provider.

Passing and Referral Criteria (based on age):

<table>
<thead>
<tr>
<th>Age</th>
<th>Passing Acuity</th>
<th>Referral Acuity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 3, 4, &amp; 5</td>
<td>20/40</td>
<td>20/50 or more for either eye</td>
</tr>
<tr>
<td>Age 5</td>
<td>Refer if fail stereopsis screening.</td>
<td></td>
</tr>
<tr>
<td>Age 6 &amp; older</td>
<td>20/30 (LEA) or 20/32 (Sloan/chart without a 20/30 line)</td>
<td>Refer if 20/40 or more for either eye</td>
</tr>
</tbody>
</table>

Check for a 2-line difference.

- Refer children with a visual acuity difference of 2 or more lines between the eyes.
- The 2-line difference between the eyes is an indication of possible amblyopia.
- The stronger eye may be controlling the child’s binocular vision and the weaker eye may continue to deteriorate with recognition by the student parent, or teacher.

LEA Symbols

- Refer if 20/20 in one eye or if 20/30 or worse in the other eye.
- Refer if 20/25 in one eye or if 20/40 or worse in the other eye.

Sloan Letter Chart

- Refer if 20/20 in one eye or if 20/32 or worse in the other eye.

Referral Criteria – Refer a child for any one of the following criteria:

- The child demonstrates one of the observable signs (ABC’s).
- The child has a failing acuity score in either eye.
- The child has a two-line difference in visual acuity between the two eyes.

Referral considerations for children wearing glasses or contact lenses

The need for referral of children who fail the visual acuity test (with their present correction) should be based on the date of the last examination; observation by parent, teacher, and screener; and the schedule of re-examinations recommended by the eye care specialist.

Direct Referral to an Eye Care Professional – Children at high risk of vision disorders should bypass screening and be referred directly to an eye care professional, including:

- Children with a neurodevelopmental disorder.
- Children with systemic diseases associated with vision problems.
- Children with noticeable abnormalities such as crossed eyes (strabismus) or droopy eyelids (ptosis).

Stereopsis

- The simultaneous visual perception of 3-dimensional space resulting from the blending of the images from each eye.
Starting the school year 2008-2009, stereopsis vision screening has been required by the NC Early Childhood Vision Care Program for students entering Kindergarten for the first time.

- Conducted to determine if the eyes are working together.
- When the eyes are not working together, the brain is unable to blend the separate images from each eye.
- **The child who fails the stereopsis screening is at great risk for amblyopia or loss of vision in one eye.**

- The Lang-Stereotest II shall be used as the testing device, as recommended by PBNC.
  - There are 4 figures on the Lang-Stereotest II card.
  - The star is visible to all children even if they do not have binocular vision.
  - The other figures (moon, elephant, and jeep/truck) require binocular vision to see.

- **Testing procedure:**
  - Ask child to name or point to figures on card.
  - If the child is able to see the figures or tries to point to or grasp the figures, this is evidence of stereo vision.
  - Touching the card does not alter its effectiveness.
  - Screen children with glasses, if applicable.
  - Test binocularly (both eyes open).
  - Screener should hold card.
  - Card should be displayed 16” from the child’s eyes and at a right angle.
  - To prevent monocular clues, avoid moving the card in flip-flop movements.
- Initial Lang-Stereotest II outcomes:
  - **Pass** – child identifies the star and at least one other figure.
  - **Fail** – child identifies only the star and no other figure.

**Near Vision Acuity Screening**

- Conducted on a referral basis. PBNC does not recommend to include in mass screening.
- Select chart, following guidelines below.
  - The LEA Symbols chart is appropriate for young, EC, or non-English speaking children.
  - The LEA numbers chart is appropriate for children who know their numbers.
  - If the child does not want to or cannot talk, choose pointing at the large numbers on the card or the symbols at the lower edge of the card as a matching game.
  - Either side of the chart may be used.
- Set up screening area.
  - Select area with good lighting and free of distractions.
  - Use a 16” cord to measure between chart and temple close to child’s eyes.
  - Children should be screened with their glasses on if they wear them.
  - Have eye occluders available.
- **Referral criteria:**
  - Passing lines are determined by age.

<table>
<thead>
<tr>
<th>Age of Child</th>
<th>Passing Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-5 years</td>
<td>20/40</td>
</tr>
<tr>
<td>6 and older</td>
<td>20/33</td>
</tr>
</tbody>
</table>

  - To pass a line, the child must correctly identify 3 of 5 characters.
  - The last, (or smallest line) a child can pass is the visual acuity for that eye.
  - Refer if either eye is not within the passing range based on the child’s age.
  - OR if there is a 2-line difference between the eye acuities.
- **Screening Process:**
  - Occlude the left eye.
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- Stating at the top line, ask child to identify the first character on each line until a character is missed.
- Return to the line above the missed character and ask child to identify each character on that line.
- If the child is able to continue moving down the chart, screening should end after reading the 20/20 line.
- If the child in unable to correctly identify at least 3 of the 5 characters on a line, move up the chart until you find the lowest line at which a child is able to identify 3 out of 5.
- Visual acuity is the value of the smallest line on which the child correctly reads at least 3 out of 5 of the characters.
- Occlude the right eye and repeat the process.

Referral, Documentation, and Follow-up

- Referral criteria summary:
  - Children unable to complete or pass the screening on the first attempt should be scheduled for re-screening at a later date (2-week period recommended).
  - If the child is unable to complete or pass the screening on the 2nd attempt, referring the child to an eye care professional is the best course of action.
  - Complete the vision referral form letter and send to parent/guardian.

- Documenting screening results [PowerSchool, required; Permanent Health Record, optional]
  - School nurse’s signature/title.
  - Date of screening.
  - Observation – pass or refer.
  - Remarks – Any observed signs of possible vision problems, child screened with glasses, etc.
  - Distance visual acuity – acuity results (i.e., 20/40, 20/30 for initial screening or each eye); note if rescreening is needed.
  - Near visual acuity result, if applicable.
  - Stereopsis screening results (pass or fail), if applicable
  - Rescreening distance/near vision acuity results, if applicable.
  - Note if the child will be referred to an eye care professional.

- Screening follow-up
  - Utilize the most effective method to make contact with the parent.
  - Offer support and resources to the parent to secure care as necessary.
  - At least one follow-up attempt will be made if the nurse does not receive confirmation of care being secured.
  - Additional support may be needed from school support staff in challenging circumstances.

Other Resources from Prevent Blindness North Carolina

- Eye Emergencies – First Aid
- Eye Problems [Provides further details]
- Financial Resources
- Handling Difficult Behavior in Children
- Understanding and Managing Behavior in Young Children
- Vision Resource Guide for F/U Treatment