

VISION SCREENING

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Definition: Vision is the ability of the eye to receive visual stimuli and transmit the image to the brain for interpretation. The eye is connected to the brain by the optic nerve. Early detection of visual defects will minimize the effects of vision problems.

Vision screening at school provides an effective means of assessing students' visual acuity and identifying those who have a vision problem. Early interventions can resolve and/or minimize vision problems so that students can participate fully in the learning process.

There are several types of vision problems:

- Myopia (near-sightedness) – A refractive error in which the image converges before reaching the retina.
- Hyperopia (far-sightedness) – A refractive error in which the image does not converge when reaching the retina.
- Strabismus (Heterotropia) – a deviation of an eye from its axis so the eyes are not focused together on the same object.

Responsibility of the School Nurse: As the health professional, the school nurse is responsible, under the direction of the school administrator, for all phases of the vision screening program.

Planning:

- Organize school screening, preferably in the fall, to identify students with vision problems, as early as possible.
- Inform parents of the school's screening program, through avenues such as the school handbook, newsletter, and sending notes home, to allow parents an opportunity to exempt their children on religious grounds.
- Obtain equipment needed for screening. (Recommendations for screening tools can be found in the DOE Rule Chapter 45.)
- Secure a space for screening with adequate privacy and space.
- Review the screening procedure and how to use screening tools.
- If screening is conducted by someone other than the school nurse, that individual must be trained. Train screening assistants as needed.
- Schedule the screening date with teachers and assistants.
- Present to younger grade classrooms, the process of screening so that they understand what to expect and how to respond to the screening.
- Arrange how the students will be brought to the screening site.
- Get a classroom list of names.

Procedure for Vision Screening:

Students to be screened: Refer to the DOE Chapter 45 Rule for Vision and Hearing Screening in Schools for required grade levels to be screened and referral criteria.

Screening should also be considered for the following students:

- Those failing previous screening,
- Students experiencing academic failure,
- Newly enrolled in the school system without a current health record,
- Students with classroom behavior problems,
- Students referred by teacher (See Teacher Observation Checklist),
- Those referred for special education services.

Screening types: There are several possible types of vision screening as part of a school screening program. Schools are required by Chapter 45 to screen for the following:

- Distance vision
- Near vision
- Binocular vision

Distance Visual Acuity Screening Procedure

Purpose: To test vision for ability to see distant objects.

Grades Screened: K, 1, 3, 5, 7 and 9.

Equipment: The equipment used is dependent on the age and reading ability of the student (HOTV/Tumbling E/Lea Symbols vs. Sloan or Snellen Charts) and available space (10 vs. 20 foot chart). For most students, the 20 foot chart is preferable, although kindergarten students may find the 20 foot chart too far away. A lighted chart is preferable. A hand held occluder is needed. The use of a white occluder is preferable over darker colors.

It is recommended that the acuity chart have multiple optotypes on each line. Each line should have the same number of optotypes. It is important not to single out or point to a specific optotype when screening but to allow the student to read the line on his/her own.

- Make sure the chart or screening equipment is set up correctly with adequate lighting and no distractions, e.g. noisy environment. Make sure there is no glare on the screening chart card.
- Place 'cut out' feet placed at the point where the student should stand, with the student's heels placed on the heels of the cut out, to facilitate positioning the student.
- Each student should be screened alone without the presence of another child.
- Screen one eye, then the other, then both eyes. Be consistent in the order of the eyes screened.
- Use an occluder placing it over the eye not screened. Always screen with glasses on, unless the student indicates they see better without them. If that is the case, screen them first without and then with the glasses to verify this.
- Instruct the student to keep both eyes open, even the one covered by the occluder.
- Start with a medium sized line of print (20/50 at least) and point to the row while asking the child to read the line of letters. Watch the student to be sure they are

not trying to peek and watch for behaviors which show the student is struggling (e.g. squinting, tipping head up, down, or to the side).

- Move down the chart, line to line, until the student gets more than half the letters wrong on a row. The recorded visual acuity is the line in which the student reads greater than 50% of the optotypes correctly, (i.e. if there are six letters on the line and the child gets four wrong you would record the vision as the line previous where 4 or more of the optotypes are correctly read). The most accurate way to record the vision is the line read with more than half the letters correct, followed by the number missed (i.e. 20/25-2). Sometimes the child may get all of the letters correct on one line and only several of the next line. As an example, the student might be able to read all the letters on the 20/25 line but only 2 of the 20/20 line. This could be recorded as 20/25+2. Recording plus and minus optotypes is optional.
- If the student does not know their letters well, HOTV chart, a number chart, tumbling E or picture chart may be used.

Referral Criteria Distance Vision

- Students in grades 1 and above must see at least 20/30 in each eye. Preschool and kindergarten must see at least 20/40 in each eye.
- Students must be referred for a two-line difference between eyes (e.g. right eye sees 20/25, left eye sees 20/40).

Near Vision Acuity Procedure

Purpose: To test vision at reading level.

Grades Screened: 1 and 3.

Equipment: Near Vision Acuity Card (e.g. Sloan Letters for 16 inches) and occluder. Use number chart, picture chart, or tumbling E for students who do not know their letters.

- Attach a cord 16 inches (or whatever is required by the tool) to the card to determine appropriate distance from the student's face.
- Mount the card or chart on a flat vertical surface or wall.
- Review the screening procedure with the student.
- Place the card 16 inches (or as manufacturer defines) from the student's eyes. Be aware of position of the student to avoid forward movement.
- Place an occluder over the eye not screened, encouraging the student not to place pressure on the eye.
- Both of the eyes should be open while screening.
- Screen with reading glasses on.
- Screen one eye, the other eye, and then both eyes. Be consistent in sequence of screening.
- Start with a medium sized line of print (at least 20/50).
- Watch to be sure the student is not trying to peak or struggling to see, and be

sure the appropriate distance is kept.

- Have the student read lines down the chart until she/he gets more than half the letters wrong in the row. Record the acuity in the row just before this (same as distance acuity).

Referral Criteria for Near Vision:

- To pass, the student must see at 20/30 for students in 1st grade and above and 20/40 for preschool and kindergarten students. .
- Refer students with a two-line difference between eyes (e.g. screens at 20/20 in one eye and 20/30 in the other).

Muscle Balance Screening Procedure

Purpose: Screening for ocular muscle imbalance.

Grades screened - 1 and 3.

Equipment: Random Dot E or Muscle Balance Card, Red Maddox Rod and penlight.
Other screening tool may be used as appropriate.

For Random Dot E: Use manufacturer's direction for use.

For Muscle Balance Card:

- Place the penlight in the center behind the card and insert it in the plastic penlight holder.
- Hold the muscle imbalance measuring card 16 inches from eyes. Eliminate glare on card.
- Have the student hold the Maddox rod in front of the right eye, with the non-ridged side toward the eye and the ridges, on the outside, running horizontally. This will check the horizontal muscle balance.
- Ask the student to look at the light while you depress the clip on the penlight to activate the light. Ask the student to place a stirring straw on the red line.
- Once the horizontal balance has been established have the student turn the Maddox rod so that the ridges run vertical and repeat the test for vertical muscle balance.
- If the student is able to place the stirring straw on the line within the normal ranges, they have passed and screening the left eye is not needed.
- If the student does not see the red line, have them try the test holding the Maddox rod over the left eye instead. If they can see it with the Maddox rod over the left eye, go back and try the right eye again. Failure to see the red line is cause for referral.
- Make sure the child is looking at the center penlight; the accuracy is reduced if the student is looking all over the card. It is not unusual for the red line to move around some, but if the line is moving back and forth constantly, and it is difficult for the student to tell you where the line is, it is a cause for referral, even if the line is within the numbers indicated on the referral criteria.

Referral Criteria for Muscle Balance:

For Random Dot E: Unable to see raised E.

For Muscle Balance Card:

- Horizontal readings equal or greater than 10 exophoria and 5 esophoria.
- Vertical readings equal to or greater than 2 hypophoria or hyperphoria.
- Inability to see the red line.
- Excessive movement of the line.

Teacher Observational Checklist

Purpose: Assist teachers to identify students with symptoms of vision problems.

Equipment: Teacher Checklist

Provide the teacher checklist to teachers at the start of the school year with instructions to refer students to the school nurse when symptoms of vision problems are exhibited.

REFERRAL AND FOLLOW-UP PROCESS

Vision screening, or the identification of suspected problems, is of little value without a concerted referral and follow-up effort. The referral component includes the referral of a student who is suspected of having vision difficulties to the primary care provider or an eye specialist. When there is evidence of current eye disease or injury, the school nurse should contact the student's parent or guardian and treatment should be advised.

All screening findings must be recorded in the student's Individual Student Health Record.

Routine Referral Procedures

1) If not referred on first screening, a certified school nurse should re-screen children who fail the initial vision screening within two to four weeks. A temporary illness, lack of understanding, fatigue, apprehension, etc., may cause an initial failure. When the initial screening is conducted by a trained, unlicensed person, the school nurse must rescreen students who failed the initial screening before a referral is made.

2) For students who failed the screening, a referral letter should be sent to the parent or guardian, stating that the student had difficulty with the school vision screening and should be seen by their health care provider or an eye care specialist. (Preferably this referral letter should be mailed; in addition, telephone contact by the school nurse to the family is recommended.)

3) Even if a student passes the vision screening, a referral may be made when the school nurse notes any suspicious eye or vision abnormality, or the student's history indicates a

likely vision problem.

4) A referral should also be made when a teacher, parent, or guardian reports symptoms observed in the Teacher Observation Checklist.

5) Parent/guardians should be informed that a school screening is not the equivalent to an examination by an eye specialist.

Follow-up Procedures

1. If, after approximately four weeks, the results of the vision examination have not been received, contact the parent or guardian.

2. When the vision examination results have been obtained from the student's health provider or eye specialist, note the following points:

- Treatment or correction prescribed.
- Referred for further medical, surgical, or neurological evaluations.
- Needed educational assistance.

3. The school nurse is responsible for communicating findings and recommendations on a "need to know" basis to the faculty and staff members responsible for the student.

4. For those in need of financial assistance, the nurse must be aware of state and local community resources.

5. Record all findings and recommendations in the student's health record.

Emergencies: The school nurse or the teacher, who should be trained in first aid, should give first aid (immediate care only) for foreign bodies in the eye or for other injuries. Refer to "Emergency Guidelines for Maine Schools"
www.state.me.us/doe/ems/docs/index.html.

CHILDREN WITH SPECIAL NEEDS

During vision screening, the school nurse will encounter students who are unable, or unwilling, to perform the required task easily or in the usual manner. It is important for the school nurse to be familiar with ways of modifying the screening procedures in order to obtain reliable and valid results. Often, the proper approach or management techniques needed for an individual student is the only modification necessary. The school nurse may consult with the student's teacher or special education staff members for assistance. The student's health record should be reviewed for previous vision screening results. Usually these students will require more time and may need to be screened more than once.

Some students are easily disturbed by any new or unfamiliar situation, and may become shy or frightened. It is best to allow such students to observe a number of others during the screening process. If you are unable to gain cooperation during this initial screening, plan the screening at another time.

Other students who are "difficult to test" may be unable to understand or follow directions. They may forget the response they were taught during the demonstration period, or they may respond inappropriately. It is preferable to work with these students on an individual basis. Remember, children respond well to positive reinforcement; a simple "Good job!" can do wonders. For those students whose mental or physical handicaps prevent them from performing standard or routine screening tests, alternate screening tests should be used. If the student is unable to be screened with either tool, refer to an eye care specialist for evaluation.

Non-English-speaking students may have difficulty in following verbal instruction given at the time of screening. Usually this problem can be overcome with the use of gestures, a little imagination, and the assistance of an interpreter. Letting these children observe others being screened may be all that is necessary to obtain results.

Some special education students may need to be sent to their primary care provider or eye specialist for vision screening.

FORMS:

[Teacher Observation Checklist](#)

[Worksheet for Vision Screening](#)

Resources:

Bureau of Rehabilitation Services - <http://www.maine.gov/rehab/>

American Academy of Othomology -
<http://www.aao.org/aao/member/policy/children.cfm>

Common Eye Disorders, Optometrists Association of Australia -
<http://www.optometrists.asn.au/eyevision/disorders>

Bright Futures –
www.brightfutures.org

Sight for Students - <http://www.sightforstudents.org/>

Center for Health and Health Care in Schools, Vision Fact Sheet -
<http://www.healthinschools.org/sh/vision.pdf>

Proctor, Susan “To See or Not To See: Screening the Vision of Children In School”. National Association of School Nurses, 2005. (This reference was used in developing these guidelines.)

Lions Club in local community – contact Chamber of Commerce or Town Office for information.