

HEARING SCREENING

(May 2006)

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Definition: Hearing is the perception of sound. The normal ear can hear frequencies ranging from about 20 Hz to 20,000 Hz. The range for speech is about 1500 – 3000 Hz.

Periodic hearing screening at school provides an effective means of assessing students' hearing acuity and identifying those who may have hearing problems. Early interventions can resolve and/or minimize hearing losses so that students can participate fully in the learning process.

There are several types of hearing loss:

- **Conductive:** Sound cannot reach the inner ear. Colds and allergies may cause temporary losses.
- **Sensori-Neural:** Caused from damage to the auditory nerve or brain.
- **Mixed:** A combination of conductive and sensory factors.

Conditions and illnesses affecting hearing:

- Congenital deafness, sensori-neural, can be caused by illness in the first trimester of pregnancy (e.g. German measles).
- Hereditary deafness.
- Acquired deafness or hearing impairment may be caused by:
 1. Toxic agents, such as nicotine, aspirin, streptomycin, neomycin;
 2. Enlarged tonsils and adenoids, sinusitis, allergic rhinitis;
 3. Mechanical injury, including skull fracture, sustained environmental noise above 85 dB, or loud impulse noise (e.g. rivet gun, air wrench, shotgun, rifle);
 4. Otosclerosis;
 5. Psychogenic (e.g. hysterical, conversion reaction); or
 6. Central deafness, normal sense organ, and auditory nerve with impairment in the brain, (e.g., tumors, cerebral hemorrhage).

(Texas School Health Manual)

Responsibility of the School Nurse: As the health professional, the school nurse is responsible, under the direction of school administrators, for all phases of the hearing screening programs.

Planning:

- Organize school screening, preferably in the fall, to identify students with potential hearing problems as early as possible. (Avoid screening during the height of cold and flu season.)
- Students with URI may be postponed for screening.
- Inform parents of the school's screening program, through avenues such as the school handbook, newsletter, and sending a note home, to allow parents an opportunity to exempt their child on religious grounds.
- Calibrate the audiometer yearly.
- Secure a space for hearing screening with an ambient noise of less than 40 dB with adequate privacy. If needed, work with building maintenance staff to identify an appropriate space.
- Review the screening procedure and how to operate equipment.
- If screening is conducted by someone other than the school nurse, the individual must be trained. Train screening assistants as needed.
- Schedule with teachers and assistants to minimize academic disruptions.
- Present the process of screening to younger grades in the classroom, so they will know what to expect and how to respond to the screening.
- Arrange how students will be brought to the screening room.
- Get list of students' names from the main office or through school computer.

Procedure for Hearing Screening:

Students to screen: Refer to DOE Chapter 45 Rule for Vision and Hearing Screening for screening requirements, including grades to screen and referral criteria. Hearing screening should also be considered for the following students:

1. Students failing previous screenings,
2. Students newly enrolled in the school administration,
3. Teacher referrals,
4. Students experiencing academic failure,
5. Students with classroom behavior problems,
6. Students with speech patterns suggesting a hearing loss,
7. Students with frequent, recurrent upper respiratory or middle ear infections,
8. Students with a history of high-risk factors for hearing loss,
9. Students with a high index of suspicion for hearing loss,
10. Those referred for special education services.

Screening types: There are three possible types of hearing screening as part of a school screening programs. Schools are required by Chapter 45 to screen using a puretone audiometer for pure tone screening. Other screening tests are optional. The school nurse, after an appropriate training program, is qualified to do these hearing tests. The three tests are:

- Pure tone screening (sweep test) - A quick test using a pure-tone audiometer to determine whether a person can hear the following frequencies: 1000 Hz, 2000 Hz, and 4000 Hz at 25 decibels.
- Pure tone threshold test - The student listens to a series of pure tones and the softest dB level that the child responds to at each frequency is recorded.

- Impedance test - also called tympanometry - helps determine how the middle ear is functioning. It does not tell if the child is hearing or not, but helps to detect any changes in pressure in the middle ear.

Hearing Screening Procedure:

- Set up audiometer on a sturdy table. Set decibel level at 25.
- Pre-test audiometer on yourself. Be certain that all the frequencies to be tested are audible. If area is too noisy, relocate testing site.
- Arrange two chairs either at right angles to each other or with student facing the school nurse. Be aware not to 'give' or create a cue that alerts the student to the school nurse's actions.
- Introduce yourself to student and say that you will be testing hearing. Review the procedure.
- Have students remove earrings before screening.
- Place earphones on the student's head, adjusting as necessary so they fit snugly. Be sure to line up the microphone with the ear canal.
- To orient the student, present tone at 1000Hz at 35 db so student is aware of the sound.
- Begin at 1000 Hz at 25 dB in the right ear. Present tone for two to four seconds. If student does not respond, repeat the tone once and then move to next frequency.
- With or without a response, proceed with the sweep-check test to 2000 and 4000 Hz. You may also screen at 6000 or 8000 Hz. Record results.
- Move indicator or switch to the left ear and repeat the screen. Record results. If retesting is necessary, make note of that.
- Thank student as you remove headset.

Record Results:

- Develop a plan for keeping all test records in a systematic manner.
- Record results in student's individual health record.
- Keep class lists accessible with names of any student who needs to be rescreened.
- Call parents of any student with draining ears or who complained of pain.

- It is preferable to wait 2 weeks to rescreen.

Referral criteria:

Refer to Chapter 45 Rule for criteria for referral.

Rescreening:

If the initial screening was conducted by a trained unlicensed person, the school nurse must rescreen those students who failed the hearing screening before referral. Schedule students for rescreening between two or three weeks after initial screening. Rescreen students one at a time. The school nurse may do an otoscopic examination.

Referral:

All students who fail a hearing screening at school should be referred to their parents, requesting they bring their child for an evaluation to the student's health provider. The referral should indicate that the findings of the evaluation are requested by the school. The referral form should be mailed to the parents.

If a report from the parent or provider is not returned after four weeks, it is recommended that the parent be contacted for follow-up.

Student with a hearing loss

It is the school nurse's responsibility to assist students with identified hearing problems in obtaining further medical evaluation or treatment and, when indicated, educational accommodation. The classroom teacher(s) of a student with hearing loss should be informed in order to address learning needs.

In cases where medical intervention has failed to restore hearing completely, the members of the school's multidisciplinary team should direct their attention to the individual student's learning needs and plan for the educational placement of the student following state and federal guidelines. It is appropriate for the school nurse to be a member of, or to make recommendations to, the team and to the teacher(s) for classroom modifications to meet the student's learning needs.

Those students who have mild hearing impairments may need only minor classroom adjustments to enable them to function in a regular classroom. Regardless of the diagnosis, treatment, or classroom placement of students with hearing losses, it is the responsibility of the school nurse to become an advocate for the student with hearing impairment.

Resources:

Bright Futures – www.brightfutures.org

Wilner Green – calibration of audiometer. 1-800-634-4327

Baxter School for the Deaf – www.gbsd.org/index_text.html

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