

# Guidelines:

## A School Hearing Screening Program



Screening, Special Services and SoonerStart  
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*These materials have been prepared to serve as a guide for individuals performing hearing screening in schools. Audiologists, speech-language pathologists, public health nurses, pediatric nurse consultants, physicians and public school personnel have assisted in preparing this document. Screening pass/not pass criteria are based on the American Speech-Language-Hearing Association guidelines for screening hearing and on the Oklahoma State Department of Health hearing screening protocols. The Oklahoma State Department of Health assumes no responsibility for the use of these guidelines and screening criteria.*

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# **SCHOOL HEARING SCREENING PROGRAM**

## **OVERVIEW**

Hearing loss is often an "invisible" condition, the consequence of which can be devastating. In a child with hearing loss, speech and language development may be delayed, since good hearing is crucial to speech/language development. Educationally, this child may be considered to be a slow learner, inattentive and/or disruptive. Adults with hearing loss may experience social isolation, vocational dilemmas and difficulty communicating.

The need for early identification of hearing loss along with appropriate follow-up treatment and/or habilitation is of utmost importance. To identify children with hearing loss that may hinder their ability to communicate, a systematic program for screening all children at certain ages and grades and for screening at-risk children must be implemented. A hearing screening program to accomplish this task is found on the following pages. It identifies the personnel needed to operate the program, lists a recommended screening schedule and describes the screening equipment, screening environment and screening techniques. The program discusses hearing screening results and lists referral criteria. Lastly, screening record keeping is discussed. Examples of suggested letters and forms are found in the appendix.

It is important to remember that hearing screening is a screening only and not a complete assessment of hearing sensitivity. Not passing a screening does not necessarily indicate a hearing loss but rather is an indication of the need for an in-depth audiologic evaluation. Further, because of the limited scope of a screening, certain audiologic or otologic problems cannot be ruled out even if the screening is passed.

## **PERSONNEL**

Hearing screening programs should be conducted or supervised by a certified audiologist. Audiologists, speech-language pathologists and nurses by training are qualified to provide hearing screening. After appropriate instruction, other professional staff and non-professional support personnel may provide hearing screening. These individuals must be supervised with their supervision preferably provided by an audiologist.

## RECOMMENDED HEARING SCREENING SCHEDULE

1. Children should be screened at any time concern is expressed regarding ability to hear.
2. Children three years of age through grade three should be screened annually.
3. Children in grade four and above should be screened minimally at three year intervals (Grades six, nine and 12).
4. Children who are "at risk" (see below) in grade four and above should be screened annually.

Risk conditions include:

- a. recurrent otitis media (2 episodes within 6 months or 1 episode of serous otitis lasting longer than 4 weeks)
  - b. history of frequent colds, adenoiditis, tonsillitis, or allergies
  - c. cleft lip and/or palate
  - d. Down Syndrome
  - e. suspected hearing loss
  - f. speech/language problems or obvious communication difficulties
  - g. difficulty following oral directions
  - h. inconsistent inattentive auditory behavior
  - i. ear pain, ear fullness, dizziness and/or ringing (tinnitus)
  - j. repeating a grade
  - k. special education students
  - l. failing hearing screening during the previous year
  - m. participation in activities associated with noise exposure (i.e. woodworking, auto mechanics, agriculture, band, etc.)
  - n. Native Americans
5. Students with previously documented hearing loss **are not screened** since they cannot pass a hearing screening. **These individuals should be referred to an audiologist for assessment** preferably annually but at least once every three years.

### Caregiver Notification of Screening

A caregiver must receive written notification that hearing screening will be provided for his child. An example of a suggested letter is found in the appendix. If the caregiver does not want his child to be screened, he must so inform the school.

## SCREENING EQUIPMENT

Hearing may be screened with a number of different devices including calibrated noise-makers, tuning forks and various types of audiometers. The recommended equipment used to screen children age three and above is the **pure tone audiometer**. A pure tone audiometer is an electronic device capable of generating discrete tones of varying frequency (pitch) and intensity (loudness). Many makes and models of audiometers are available, and all have certain features and controls in common. Some of these are described below.

1. Earphones: The earphones included with the audiometer are color-coded with the red one for the right ear and the blue one for the left ear. Earphones are rather fragile equipment and care must be taken that they are not dropped or otherwise damaged. **Earphones are matched and calibrated to a particular audiometer and therefore cannot be switched to another instrument.**
2. Power On-Off: This switch controls the electrical power to the audiometer and should be left "on" for the entire day's testing.
3. Frequency Selector: This control selects the test frequency in Hz. It may have a range from 125 Hz to 8000 Hz in discrete steps, or it may have a more limited range (e.g. 250 Hz - 6000 Hz).
4. Attenuator: This control is calibrated in decibels (dB) and is used to vary the intensity of the test tone. Its settings may range from 0 dB HL to 110 dB HL. Attenuators usually are calibrated in 5 dB steps or in smaller increments.
5. Output Selector: This switch allows the tone to be presented individually to either the right or left earphone. Some audiometers may have settings for "bone" or "group." These selections are not used for individual pure tone screening.
6. Tone Presentation Switch: This control presents the test signal when it is pressed. It may be a button, a bar or a lever and, typically, little pressure is needed to activate it.
7. Tone Mode Switch: This switch controls the method of tone presentation. Usual position choices are NORM OFF, NORM ON or PULSED. Hearing screening is performed with this switch in the NORM OFF or PULSED position.
8. Signal Selector: Some audiometers may provide a switch allowing for tone and speech testing. This control is typically labeled "tone", "mic" and "tape". The switch must be placed in the "tone" position for hearing screening.
9. Masking Control: This control may be found on some audiometers used for screening. It should be left OFF during hearing screening.

An audiometer is an expensive and complex instrument. It may be damaged by excessive temperatures, by rough handling or by being dropped. **Each audiometer must be serviced and calibrated yearly.** Calibration dates can be found on the instrument or its case. **DO NOT SCREEN HEARING USING AN AUDIOMETER WITH AN EXPIRED CALIBRATION DATE.**

## **SCREENING ENVIRONMENT**

For pure tone audiometry, the choice of the screening environment is very important. The area **must** be reasonably quiet. The screening site should be selected during school hours so that noise problems can be identified. The site should be away from stairs, windows, street noise, hall traffic, cafeterias, gyms, heating/cooling vents and equipment, bathrooms, play areas and machine rooms, etc. Sound treated areas sometimes are available in school libraries and in band or music rooms. These areas should be utilized when available. The screening room should accommodate a 3' x 4' table, have at least two chairs and have an electrical outlet. The screening environment also should present few visual distractions (i.e. windows, bulletin boards, etc.).

Screening also can be conducted in the child's home. Again, care must be taken that noise levels from TVs, stereos, family members, dishwashers, traffic, etc. do not influence screening results.

Noise levels in the test environment **must** be checked prior to any hearing screening procedure. The person performing the check should have normal hearing sensitivity. The noise level check is accomplished easily with the audiometer. Wearing the audiometer earphones, the screening frequency pure tones (1000 Hz, 2000 Hz and 4000 Hz) should be heard at a level of 10 dB (screening level for children is 20 dB and for adults is 25 dB). If the tones cannot be heard at 10 dB at each screening frequency, do not screen in that environment.

**If an appropriately quiet test environment cannot be found, the screening procedure should not be implemented. If noise levels become too high during screening, testing should be discontinued. Do not increase tone levels to compensate for background noise.**

## **SCREENING PROCEDURES**

### **Listening Check**

Prior to providing hearing screenings, a listening check of the audiometer should be performed by the examiner. The recommended procedure is as follows:

1. Plug in the audiometer. Turn the power "on" and leave the unit "on" for the day.
2. Examine the earphones. Check the cushions for cracks or splits. Wipe the headband pads and earphone cushions with an approved antiseptic solution (if possible, avoid using alcohol on the rubber cushions). Do not allow solution to enter the opening in the center of the earphone. The cleaning procedure should be repeated after each child.
3. Examine the earphone cords for breaks. Gently untwist the cords if they are tangled.
4. Examine the audiometer controls and be certain that all of them operate smoothly. Check that the tone presentation control works properly.
5. Perform a listening check while wearing the earphones:
  - a. Set attenuator at 50 dB, frequency selector to 1000 Hz, output selector to right ear and press tone presentation switch. Tone should be clear. Check other screening frequencies in a similar manner. Repeat for left ear.
  - b. Set attenuator at 50 dB and output selector to right ear. Without pressing the tone presentation control, listen for "hum". None should be present. Check for "hum" at 30 dB and at 0 dB. Repeat for left ear.
  - c. Set frequency selector to 1000 Hz and output selector to right ear. While pressing the tone presentation control, slowly rotate the attenuator from 0 dB to 50 dB. Listen for abrupt increases in loudness or "dead spots". If either of these conditions is present, the instrument must be serviced before further use.
  - d. Set attenuator at 0 dB and output selector to right ear. Press and release tone presentation control. No audible click should be heard upon depressing and/or releasing this switch.

**DO NOT USE AN AUDIOMETER THAT IS NOT WORKING PROPERLY.**

## Preparing the Child for Screening

Preparation of the child for his hearing screening is **EXTREMELY IMPORTANT**. A demonstration of and instruction for hearing screening may be given to children individually or in groups. Individual instruction should be given to the child face-to-face and prior to placing the earphones on him. Stress the importance of responding quickly to the tone even if it is very faint. The child should be asked to respond to the tone by raising his hand or by saying "yes". Instructions for screening should be simple. For older children or adolescents, standard instructions can be as follows:

"You are going to hear some tones (beeps, whistles, bells, etc.)."

"Every time you hear one, raise your hand."

"Raise your hand as soon as you hear the tone, even if it is very soft."

"Do you understand?"

Demonstration of the procedure can be presented to a group of children who have been brought to the screening area. Using the audiometer, set the frequency selector to 2000 Hz, the attenuator to 90 dB and the output selector to the right earphone. Having gained the group's attention, turn the right earphone toward the children and present the tone. Tell them:

"This is what you are to listen for."

"Each time you hear the whistle, raise your hand."

"Put your hand down when it stops!"

"Later when you wear the earphone, the whistles will be tiny little ones."

"Let's practice."

Present the tone several more times until the group responds as requested. The tone's intensity may be reduced or the frequency changed if more demonstration appears to be needed.

Instructions often must be modified for younger children and individuals with developmental delay. Pantomime, where the examiner illustrates listening, then hearing the tone and finally responding as directed may help train the individual to the task. Sometimes these children are reluctant to wear the earphones. Also, hand raising or verbal response cannot always be elicited from this population. When this happens, a "play" technique is implemented. First, to encourage the child to wear the earphones, call the headset a hat or an airplane pilot's hat. Try comparing the headset to the earphones that come with a Walkman. Next, a supply of 1" X 1" blocks and a container or pegs and a peg-board is needed. Small toy dinosaurs or farm animals and a bucket also will work.

Instructions could be:

"I want you to wear my hat. You will look just like an airplane pilot!"

"You will hear a tiny little 'beep' ('birdie, whistle')."

Place a block in the child's hand.

"When you hear the beep, drop the block into the basket!"

"Ready? Let's try it!"

This conditioning is accomplished by example and practice with the child. Pantomime again may assist in helping him understand the required task. Place a block in the child's hand, present a signal at sufficient loudness (50 dB HL) for the child to easily hear it and then assist him in dropping the block into the container. Repeat several times. Then allow the child to drop the block on his own volition when he hears the tone. Proceed with the hearing screening sequence as described below. If after two attempts **a child cannot be conditioned to respond, refer him to an audiologist for evaluation.**

### **Screening Protocol**

The recommended hearing screening procedure that follows is based on the American-Speech-Language-Hearing Association guidelines for identification audiometry. Pure tone screening utilizes three frequencies: 1000 Hz, 2000 Hz and 4000 Hz. The intensity level used for screening is 20 dB (25 dB for age 18 and above). Each tone should be presented for a duration of 1 to 3 seconds. It is recommended that three presentations of each frequency be given per ear (i.e. 3 at 1000 Hz, 3 at 2000 Hz and 3 at 4000 Hz for each ear). The child is given credit for a frequency if he responds to 2 out of 3 presentations. Results are recorded on a hearing screening form (see appendix). The screening form is marked appropriately using "+" for a response and "-" for no response. Not responding at the recommended screening level at any frequency in either ear shall constitute a "does not pass."

### **Cautions**

Several cautions are in order when performing hearing screening:

1. Make certain that the child does not have draining ears. If this is observed, do not screen the child. A medical referral is indicated if the child is not already receiving treatment.
2. Avoid exaggerated, noisy depression of the tone presentation switch; the child may see or hear this and respond to the movement or sound rather than the tone. A minimum of pressure and movement is required to operate the switch.

3. Avoid establishing a rhythm of tone presentation. Vary the length of the tones and the interval between tones.
4. Avoid looking down at the audiometer and then up at the child every time a tone is presented.
5. Do not ask the child during the screening, "Did you hear it?"
6. Expect the child to respond to the tone with the specified response (i.e. raise hand, drop block). Be very cautious about accepting changes in facial expression or "smiles" as responses to the tones. Re-instruct the child as to the required response. If the lack of reliable responses persists, discontinue screening. If this is the child's first screening, schedule him for a rescreening. If this is the child's second screening, refer him to an audiologist for assessment.
7. Do not allow the child to chew gum during the screening.

### Screening Sequence

Seat the child being screened so that his face is visible to the person performing the screening, but so that he faces away from the tester and the audiometer. Seeing the child's eyes and facial expressions is helpful in determining the accuracy of responses. It is important that the child not see the tester's hands nor the screening record form. After giving instructions, the earphones should be placed on the child by the individual who is performing the screening. The red earphone covers the right ear and the blue earphone covers the left ear. The earphones should be placed over bare ears (remove glasses, earrings, move hair out of way). The earphone headband should be adjusted so that each earphone fits snugly against the ear.

1. Start screening with the right ear (if the child reports greater hearing problems in right ear, begin with left ear).
2. Present 1000 Hz at 40 dB.
  - a. If there is no response, re-instruct.
  - b. If the child continues not responding, rescreen at a later time. If again he does not respond, he is considered to have not passed the screening. Mark the screening form appropriately.
  - c. If there is a response, proceed as described below.
3. Move attenuator to 20 dB (25 dB for age 18 and above).
  - a. Present tone three times at this level noting child's response or lack of such. Two responses out of three is considered a pass.
  - b. Mark the screening form appropriately for the right (left) ear at 1000 Hz.  **"+" for pass or "-" for does not pass.**

4. Change frequency selector to 2000 Hz and present tone at 20 dB (25 dB). Follow procedure used for 1000 Hz and record results.
5. Change frequency selector to 4000 Hz and again present tone at 20 dB (25 dB) as described above. Record results.
6. Switch audiometer's output to left (right) ear and then repeat steps 3 through 5. Be certain to record results using "+" for pass and "-" for does not pass.

## SCREENING RESULTS AND REFERRALS

Following completion of the screening, results must be evaluated on a "pass" or "does not pass" basis. This decision must be based on systematic standardized criterion. As stated previously: **Not responding at the recommended screening level at any frequency in either ear shall constitute a "does not pass."** Record the hearing screening results in the appropriate area on the screening form.

If the child does not pass the screening, he should be rescreened prior to referral. Ideally, rescreening should be performed within the same screening session, but at least within a two week period. Removing and repositioning the earphones along with careful re-instruction usually reduces the does not pass rate. If a second screening is not passed, the child should be referred to the appropriate health professional (see below) for further evaluation. **Follow-up and referral are essential to the effectiveness of the hearing screening program.**

### Referral Criteria

1. Children who **do not pass** the hearing screening should be referred to an **audiologist**.
2. Children displaying obvious symptoms of ear pathology such as ear pain or ear discharge should be referred to a **nurse or physician**.
3. Children displaying disequilibrium or vertigo should be referred to a **physician**.
4. Children passing the hearing screening but observed to have delayed speech/language development should be referred to a **speech-language pathologist**.
5. Caregiver/teacher concern about a child's speech/language and/or hearing ability should result in the child being referred to a **speech-language pathologist or an audiologist**.

### Caregiver Notification of Results

Caregivers of children who **do not pass** the hearing screening **must** be informed of the results. Notification should be in writing (see example of letter in appendix). Telephone notification may be

appropriate provided that written confirmation follows. If it is so desired, a letter stating that the child passed the screening (see appendix) may be sent to the caregiver.

In reporting results and keeping records, children are often described as either having passed or failed the screening. **This terminology should be avoided** when discussing the results with the caregiver and/or the teacher. **Because a hearing screening is not a diagnostic test, no statement regarding "hearing loss" should be made.** When a child does not pass a screening, it should be stated that the results indicate "possible hearing problems" and that further testing is necessary.

Additionally, due to the limited scope of the above screening procedure, certain audiologic or otologic problems may not be ruled out even if the screening is passed. If, after passing a screening, those associated with the child still feel there is a hearing problem, refer him to an audiologist for in-depth assessment.

When a child is referred for audiologic assessment, the evaluation usually includes determining thresholds for an expanded range of tones and, when the individual is old enough, analyzing speech discrimination (understanding) ability. Middle-ear assessment including reflex studies also is performed. For very young children who are too young or are unable to be evaluated using behavioral methods, auditory brainstem response (ABR) testing or otoacoustic emissions (OAE) assessment may be performed by the audiologist. Both of these measures give definitive information about the child's auditory system.

## **RECORD KEEPING**

An individual screening form (see appendix) should be prepared for each child screened. Minimally it should include enough information to positively identify the child, the screening results, the date of the screening and the name and title of the person who provides the screening. Information from this form then is transferred to the child's permanent record, classroom roster, caregiver notification letter and/or other documents.

A roster of each classroom screened (see appendix) is recommended. A roster identifies the teacher and the children to the screener; it also provides a record of screening results for the teacher. The roster should include the school name, the teacher's name, the grade and the room number. In addition, it should list each child in the class, provide a place to record screening results, indicate whether the student is absent and indicate if and to whom the child is being referred.

# Appendix

# HEARING SCREENING FORM

Student's Name \_\_\_\_\_ Age \_\_\_\_\_ D.O.B. \_\_\_\_\_ Sex \_\_\_\_\_

School \_\_\_\_\_ Grade Teacher \_\_\_\_\_

Date \_\_\_\_\_ Examiner \_\_\_\_\_ Title \_\_\_\_\_

**SCREENING INSTRUCTIONS:** Record a "+" in the appropriate box for each ear at each frequency when the student responds to the tone. Use a "-" when the student does not respond. Not responding to a tone at the recommended level at any frequency in either ear constitutes a "does not pass." Students not passing the initial screening must be rescreened within two weeks. A "does not pass" after the second screening results in a referral for further assessment. Use the "Comments" section to record other pertinent information (ie: draining ear, could not be conditioned, etc.).

		1000 Hz	2000 Hz	4000 Hz
<u>Initial Screen</u>	RIGHT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	LEFT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>Rescreen</u> (Only if necessary)	RIGHT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	LEFT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments \_\_\_\_\_

\_\_\_\_\_

**NOTE TO PARENT OR GUARDIAN:** A "-" in any of the boxes above indicates that your student may have a hearing problem. Further testing is necessary. Please see the accompanying letter for specific recommendations. If you have questions regarding this information, please call the school.

**HEARING SCREENING PROGRAM  
CLASSROOM ROSTER FORM**

Teacher \_\_\_\_\_ Grade \_\_\_\_\_ Room \_\_\_\_\_

Date \_\_\_\_\_ School \_\_\_\_\_

**NOTE TO CLASSROOM TEACHER:** This form serves as a master list of your students for the hearing screening program. Please list the name and birth date of each student in the space provided below. If you have specific concern regarding hearing or the ears of a particular student, please list his or her name and your concern on a separate sheet of paper and attach it to this one.

	<b>NAME OF STUDENT</b> (List Alphabetically)	<b>DOB</b>	<b>ABSENT</b> (✓)	<b>RESULTS</b> P = Pass N = Not Pass O = Other	<b>DATE</b>	<b>REFERRAL</b> (Audiologist, Physician or Nurse, Speech-Language Pathologist, Other)
1.						
2.						
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**LETTER: CAREGIVER NOTIFICATION OF HEARING SCREENING**

**THOMAS JEFFERSON ELEMENTARY SCHOOL**  
1212 EAST CHOCTAW DRIVE  
BETHANY, OKLAHOMA 73008

August 28

Dear Parent or Guardian,

Hearing is very important to your child's ability to listen, learn and make good progress in our school. For these reasons, we take a special interest in how well all of our students hear and we periodically screen their hearing.

This year, we will be checking hearing of each student in your child's classroom. The hearing screening has been scheduled for Tuesday, September 9. Results will be available to you a few days after the screening date. If for some reason you do not want us to screen your child's hearing, please contact the school immediately.

If you have concern about your child's hearing or questions about the screening program, please contact us. Our telephone number is 555-1313.

Sincerely,

Robert M. Lewis  
Principal

**LETTER: PASSED HEARING SCREENING**

***Arcadia Intermediate School***  
*12 N. Mott Street*  
*Arcadia, Oklahoma 73007*

Dear Parent / Guardian:

Recently, students in your child's class were seen for a routine hearing screening. We are pleased to inform you that your child passed the hearing screening. Good hearing is important for your child to progress satisfactorily in school. If at any time you notice that your child is experiencing difficulty with hearing, please let us know.

We appreciate your continued interest in our school. If you have questions regarding the hearing screening program, please call us at 555-1234.

Sincerely yours,

Cynthia White, CCC-SLP  
Speech-Language Pathologist

**LETTER: REFERRAL FOR FURTHER HEARING TESTING**

**KAISER MIDDLE SCHOOL**  
2151 FIRST AVENUE, NW  
TULSA, OK 74104

October 1

Mr. and Mrs. James R. Pacheco  
2500 Attwood Terrace  
Tulsa, Oklahoma 74104

Dear Mr. and Mrs. Pacheco,

Last Thursday, your foster son Brandon Ilg experienced difficulty with the school hearing screening. Results suggest that he may have a possible hearing problem. A copy of the screening form is enclosed. Further hearing testing is necessary and we recommend that Brandon be evaluated by an audiologist of your choice within the next 30 days. An audiologist is a certified and licensed health professional who specializes in the prevention, identification, assessment, and management of hearing loss. A list of audiologists in the area is enclosed. Please ask the audiologist to send evaluation results to me at the above address.

I appreciate your willingness to have Brandon evaluated. If you have questions about the screening results or if you need further information about the recommended referral, please call me at 555-4321.

Sincerely,

Sharon K. Smedley, RN  
Coordinator, Hearing Screening Program

Enclosures