

SCHOOL HEARING SCREENING GUIDELINES



The University of the State of New York
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Student Support Services Team
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ROBERT M. BENNETT, <i>Chancellor</i> , B.A., M.S.	Tonawanda
MERRYL H. TISCH, <i>Vice Chancellor</i> , B.A., M.A., Ed.D.	New York
SAUL B. COHEN, B.A., M.A., Ph.D.	New Rochelle
JAMES C. DAWSON, A.A., B.A., M.S., Ph.D.	Peru
ANTHONY S. BOTTAR, B.A., J.D.	Syracuse
GERALDINE D. CHAPEY, B.A., M.A., Ed.D.	Belle Harbor
ARNOLD B. GARDNER, B.A., LL.B.	Buffalo
HARRY PHILLIPS, 3rd, B.A., M.S.F.S.	Hartsdale
JOSEPH E. BOWMAN, JR., B.A., M.L.S., M.A., M.Ed., Ed.D.	Albany
JAMES R. TALLON, JR., B.A., M.A.	Binghamton
MILTON L. COFIELD, B.S., M.B.A., Ph.D.	Rochester
ROGER B. TILLES, B.A., J.D.	Great Neck
KAREN BROOKS HOPKINS, B.A., M.F.A.	Brooklyn
CHARLES R. BENDIT, B.A.	Manhattan
BETTY A. ROSA, B.A., M.S. in Ed., M.S. in Ed., M.Ed., Ed.D.	Bronx
LESTER W. YOUNG, JR., B.S., M.S., Ed. D.	Oakland Gardens

President of The University and Commissioner of Education

RICHARD P. MILLS

Senior Deputy Commissioner of Education – P - 16

JOHANNA DUNCAN-POITIER

Associate Commissioner, Office of Instructional Support and Development

JEAN C. STEVENS

Associate Commissioner for the Professions

FRANK MUÑOZ

Executive Director, School Improvement and Community Services (Regional)

JAMES C. VIOLA

Bureau Chief, Student Support Services

ROBERT A. JAFFARIAN

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FOREWORD

School Hearing Screening Guidelines provide local educational agencies with a framework for establishing the hearing screening program required under New York State Education Law section 905 (amended in 2004) and the regulations promulgated there under, specifically 8 NYCRR Part 136 (amended in 2005). It explains the purpose of hearing screening in schools and provides guidelines for developing effective hearing screening including planning, implementation, and follow-up procedures. This document is intended for use by administrators and school health personnel. Every attempt has been made to ensure that the information and resources contained in this document reflect best practice in the field of school nursing. Local educational agencies should review these guidelines with their counsel, as necessary to incorporate the guidance with district policy. This document is not intended as a mandate and is to be used for guidance purposes only.

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These guidelines were revised with the assistance of an advisory group consisting of the following individuals:

PARTICIPANTS:

Susan Brannen, MS
Chairperson, Audiology Department
Monroe 2 Orleans BOCES

Lawrence P. De Mers
Executive Director
Board for Speech-Language Pathology and Audiology
Office of Professions
NY State Education Department

Linda Haubner, RN, BSN, CFNP
Plattsburgh City School District

Charlotte Kramer, RN, BSN, MSED
Binghamton CSD

Flora McEntee, RN, MS
School Health Coordinator
Monroe 1 BOCES

Sally Schoessler, RN, SNT, MSED
Executive Director
Statewide School Health Services Center

Gail Wold, RN, BSN
Coordinator
Statewide School Health Services Center

Mary Capparelli, RN, CSNP
School Health Consultant
Project Coordinator

Cindy Devore, MD
NY State Medical Society
Committee on School Health and Sports Medicine

Debra Karpowich, AAS
Health Services Support Specialist
NY Statewide School Health Services Center

Christopher A. Kus, MD, MPH
Pediatric Director
Division of Family Health
NYS Department of Health

Walter Ramos, RN, Esq.
Acting Secretary
Board for Medicine
Office of Professions
NY State Education Department

Linda Seaman, MSED
Associate
Student Support Services
NY State Education Department

Barbara Zittel, RN, Ph.D.
Executive Secretary
Board for Nursing
Office of Professions
NY State Education Department

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I. PURPOSE OF SCHOOL HEARING SCREENING PROGRAM

The purpose of hearing screening is to identify students with possible hearing losses which may affect their intellectual, emotional, social, speech, and/or language development. The key to successful remediation is early identification and intervention, which may prevent educational problems and permanent hearing losses. Even mild hearing losses may be educationally and medically significant.

Hearing screening programs should be an integral part of the total school health program. The major objectives of a school hearing-screening program are to:

- Promote an optimal level of hearing for all students.
- Prevent the development of hearing problems that may affect the student's health and potential for learning.
- Identify students with potential hearing problems.
- Notify parent or guardian of a child's hearing screening failure and the need for further examination by a physician or audiologist.
- Establish follow-up procedures to ensure that each identified student will receive appropriate care.
- Inform teachers of students with hearing problems and provide recommendations from hearing specialists regarding the classroom environment.
- Provide appropriate educational accommodations for students with hearing impairment.

II. LEGISLATIVE BACKGROUND

Chapter 53 of the Laws of 1980 requires school districts to establish a mandatory screening program for the presence of conditions which are likely to impede a child's learning. The regulations promulgated under New York State Education Law section 905 require that hearing screening be provided to all students within six months of admission to the school and in grades kindergarten, 1, 3, 5, 7 and 10 and at any other time deemed necessary. The purpose of the requirement is to detect the presence of hearing problems likely to impede a student's learning. Students thought to be disabled due to a hearing impairment may be referred for an initial evaluation to determine if the student is a student with a disability, as that term is defined in New York State Education Law (Article 89, Sections 4401, 4401-A and 4402).

III. ESTABLISHING PRIORITIES

Hearing screening must be administered to all students within six months of admission to the school and in Kindergarten, grades 1, 3, 5, 7 and 10.

A. Hearing Screening Needs

Hearing screening may be done at any time deemed necessary by professional registered nurse (school nurse). Such occasions might involve:

1. Students suspected by teachers, parents, physicians, etc., of having hearing loss (which may include students in special education programs).
2. Students at risk for hearing loss, such as:
 - a. Students with medical conditions, which may affect hearing, including abnormalities of the ears, nose, or throat; malformed or low-set pinnae, cleft lip or palate (including submucous cleft), recurrent otitis media, or recurrent serious otitis media.
 - b. Students taking medications known to be oto-toxic.
 - c. Students having a known familial history of hearing loss.
 - d. Students with genetic abnormalities known to affect hearing.
 - e. Students attending public school career and technical education programs where they might be subjected to damaging noise levels, such as in engine repair shop, printing, carpentry, etc.
 - f. Students exposed on a regular basis to excessive noise levels such as power equipment, motorcycles, snowmobiles, guns, band participation, and other noise pollutants.
 - g. Students who regularly participate in swimming and/or diving teams, or who use aqua-lung or scuba gear.
 - h. Students who experience unconsciousness or head trauma (this could be during a sporting event or any other cause).

B. Hearing Screening – Need to be determined

Some students may not need screening as they are already under care for regular, periodic evaluation for their hearing impairment. Students falling into this category would include:

1. Students with known hearing loss, including sensorineural hearing loss and progressive hearing loss.
2. Any student coded Deaf or Hard of Hearing by the Committee on Special Education.
3. Any student enrolled in regular or special education who is unable to respond, for any reason, to screening procedures. The school nursing personnel should follow these students to ensure that they are receiving periodic evaluations and/or care as determined by their hearing care specialist. Documentation of these evaluations should become part of the cumulative health record (CHR).

IV. INDICATORS OF SUSPICION

Signs and Symptoms

Knowing the signs and symptoms of hearing loss is important when identifying students with a suspected hearing problem.

In accordance with the Commissioner's Regulation (8 NYCRR §136.3 [a] [4]), it is a general duty of the trustees and boards of education to maintain a program of education relating to the health of students. This program of education may include information regarding the signs and symptoms of hearing loss. Indicators include:

- Recurring otitis media or upper respiratory infections
- Mouth breathing
- Draining ears
- Earache complaints
- Sudden school failure following a severe illness
- Frequent requests to repeat what has just been said
- Irrelevant or inappropriate answers to questions
- Turning one ear toward speaker
- Talking either too loudly or too softly
- Indistinct speech (slurring or omission of sounds)
- Watching the lips of the speaker
- Inattention to classroom discussion
- Making mistakes in following directions and taking dictation
- Tending to isolate self, being passive, or tiring easily
- Head trauma

V. DEGREE OF HEARING LOSS

The following classifications are based on hearing levels through the frequency range most crucial for the understanding of speech. Suggestions to address various levels of hearing loss are provided below. In addition, consideration should always be given as to whether a referral should be made for an initial evaluation to determine if the student is a student with a disability.

A. Mild hearing loss (21-40 db)

Student has difficulty hearing faint or distant speech.

1. Needs favorable seating.
2. May benefit from lip reading instruction.
3. May benefit from hearing aid or educational amplification, e.g., FM Assistive Listening Device.

B. Moderate hearing loss (41-59db)

Conversational speech is just audible at a distance of three to five feet.

1. Use of hearing aid , auditory training, lip reading, favorable seating educational amplification, e.g., FM auditory training.
2. Language therapy to aid the student in communication skills.

C. Severe hearing loss (60 to 85 db)

Student may hear voice from one foot from ear.

Use of hearing aid, cochlear implant and/ or educational amplification in conjunction with language therapy to aid the student with communication skills.

D. Profound hearing loss (85db or more)

Student may hear only very loud sounds (jet plane overhead, subway, etc.).

The student does not rely on hearing as the primary channel for communications, therefore use of amplification hearing aids, cochlear implant, educational amplifications, sign language interpreter, translator and/or note taker may be appropriate and necessary.

VI. SCREENING PROCEDURE

A. Overview

The primary goal of air conduction threshold audiometry is to identify students who might present with hearing loss which could potentially interfere with communication and learning and assist in making the appropriate referral. As a minimum, schools should perform air conduction threshold screening for those students failing the 20dB pure tone screen. The goal of the program using acoustic immittance measurements is to identify children who have middle ear disorders. The school screening program which incorporates air conduction screening protocols as well as acoustic immittance screening protocols will be effective in identifying students at risk for hearing loss and or hearing health problems and may need both audiological and otological/medical services. It is highly recommended that acoustic immittance measurements be taken for students at the elementary level whenever possible.

B. Basic Infection Control Procedures To Be Followed

- Use a disinfectant wipe on head phones and band prior to use (disposable covers are available).
- Disinfect any reusable immittance probe tips or otoscopic speculums or use disposable ones.
- Wash hands thoroughly if ear drainage is visible or suspected.

C. Pure Tone Air Conduction Screening

1. Acoustic environment

The acoustic environment of the area where the screening occurs is an important variable. Typically school environments are too noisy for screening frequencies below 1000 Hz but are sufficiently quiet to screen frequencies at and above 1000 Hz. Careful snug placement of the earphone increases attenuation of ambient noise and allows for the most accurate screening protocol. Use of the large circumaural earphones (e.g., Aural domes and Otopups) is not recommended. (These devices do not serve to attenuate noise below 1000 Hz and the recommended earphones can attenuate the weaker ambient noise above 1000 Hz.) The larger headphones are awkward for smaller children, are more difficult to get a snug and accurate placement and increase the test- retest variability in the screening frequencies. Headphones do not eliminate the need for a quiet screening environment or a sound isolated audiometric test booth. In extremely noisy environments, the audiometric test booth is often the only means of providing an environment quiet enough for audiometric screening.

2. Screening procedures

- a. Individual as opposed to group screening is recommended.
- b. Manual as opposed to automatic procedures is recommended.
- c. Only pure tone signals should be used.
- d. Standard TDH 39/41 headphones are recommended.
- e. Test frequencies should be 1000, 2000, 4000Hz.
- f. Screening levels should be 20 dB (re: ANSI 1969/ANSI 1971) at all frequencies tested.
- g. At the beginning of each day that screening audiometry is performed, the audiometer should be turned on prior to the screening session. At 20 dB listen through both the right and left earphone to be sure that both are working. Leave the audiometer on throughout the day.
- h. Seat the student so that they cannot see you operate the audiometer. (Especially for younger children or children with disabilities, it is best if you can see the child.)
- i. Give clear concise instructions. For example: "I will place these headphones over your ears. You will hear beeps, which will be very soft. Listen carefully. Raise your hand each time you hear the beep (noise)." (Do not instruct which hand to raise.)
- j. Ask the student to remove eyeglasses, large earrings or other accessories that might interfere with the headphone placement. Push hair away from ears.
Red Earphone- over student's right ear
Blue Earphone- over student's left ear
Be sure that the speaker portion of the earphone is lined up opposite the opening of the ear canal.
- k. To be sure that the student understands the instructions, start the screening protocol at 40 dB at 1000 Hz. (If the student indicates that they hear better in one ear over the other, start with the indicated ear. Otherwise, start with the right ear.) Once it is established that the student knows to raise their hand when a tone is presented, start the screening protocol.
- l. Set audiometer to 20 dB. Test at 1000, 2000 and 4000 Hz. Elicit 2 positive responses at each frequency. Change to the other ear and repeat.

3. Failure Criteria

- a. Failure to respond to any recommended frequency in either ear at 30 dB shall constitute failure of the air conduction screening. The student should be rescreened during the

- same session or within one week. Failure criteria remain the same. If the student fails a second screen, then air conduction threshold screening should be completed.
- b. Inability to comply with screening protocol
Students with disabilities are sometimes unable to follow the recommended screening protocol or are reluctant to have the headphones placed. These children should follow an alternate protocol conducted in an audiometric booth by an audiologist.
4. Recording Screening Results
Record screening results and date of screening on Cumulative Health Record (CHR).

(See Appendix A for sample procedure - Pure Tone Air Conduction Screening [Sweep Test])

D. Pure Tone Threshold Screening

1. Acoustic environment (same as 20 dB sweep screen- quiet).
2. Screening Procedures
Students who have failed the 20 dB pure tone screen should have the air conduction threshold screen on the same day or within one week of the failed 20 dB screen.
 - a. Prepare students, review directions. Test frequencies shall be 500, 1000, 2000, 4000, 6000 Hz.
 - b. Begin testing at 1000 Hz, 40 dB. Maintain each tone presented for no longer than 1 or 2 seconds. Manual method is recommended.
 - c. If there is a response at 40 dB, drop back in 10 dB increments until there is no longer a response, then increase in 5 dB increments until a response is elicited. Drop back again in 10 dB increments and increase in 5 dB increments to confirm the threshold.
(Example: 40dB response, 30 dB response, 20 dB no response, 25 dB response, 15 dB no response, 20 dB no response, 25 dB response- record as threshold.)
 - d. If there is no initial response at 40 dB, increase in 10 dB increments until a response is elicited. Then drop again in 10dB increments until a no response is given, increase in 5 dB increments until a response is elicited, drop 10 dB until a no response and increase 5 dB, until thresholds is again crossed. (Example 40 dB no response, 50 dB, no response, 60 dB response, drop to 50 dB response, drop to 40 dB no response, increase to 45 dB no response, increase to 50 dB response, this is the threshold having received a response 2 times.) There is no need to establish a threshold above 60 dB.
 - e. Test remaining frequencies (500, 2000, 4000, 6000 Hz) in same manner.
 - f. Record the softest dB level heard for each frequency on a graph form or some type of data sheet. Retain a copy for CHR.
 - g. If consistent responses cannot be obtained for a given frequency, obtain thresholds and complete the audiogram for the other frequencies, then return to the frequency presenting difficulty. If thresholds are reduced for the first ear (and not for the second ear) return to this first ear and repeat procedure. When administering this test avoid presenting the tones in rhythmic sequences and take into consideration the reaction time of the child being tested.
3. Failure Criteria
 - a. Threshold level of 30 dB or more for two or more tones in one ear; or

- b. Threshold level of 35 dB or more for one tone in either ear.
Note: If available, perform acoustic immittance screen for students. Otological assessment may be of value.

4. Rescreening

Failure of the pure tone threshold screen and/or acoustic screen necessitates rescreening, preferably in the same session in which the failure occurred. Removing and repositioning the headphones and or probe tip, accompanied by careful reinstruction markedly reduces the number of false failures. The rescreening, using the same procedure and failure criteria is an essential process for improving the efficiency of the screening program. The maximum time delay for rescreening should be no greater than one week. Failure on rescreening of pure tone threshold screen and or acoustic immittance screen according to criteria outlined constitutes failure of the school screening procedure.

5. Recording Screening Results

Record screening results and date of screening on CHR.

(See Appendix B for sample procedure - Pure Tone Threshold Screening)

E. Acoustic Immittance Screening (if available)

1. Acoustic environment

A controlled acoustic environment is not necessary for the screening of middle ear function.

2. Acoustic Immittance screening procedures

- a. The recommended air-pressure range used should cover a minimum of +100 to –300 mm H₂O. The greater range in the negative direction is recommended because abnormalities in children are usually revealed in this dimension.
- b. An automatic constant-rate pump system with a recording system is recommended. The instrumentation may include an automatic recording system in order to reduce screening time, decrease the possibility of recording time, and decrease the possibility of recording error by non-professionals, and produce a permanent record of test results.
- c. Follow manufacturer's instruction for operating machine.
- d. Assure equipment is working. Do the following each day of use:
 - 1. Calibrate using cavity provided by manufacturer
 - 2. Check it on yourself
- e. Take health history relating to ear.
- f. Do visual check to determine the size, shape and direction of ear canal. If possible, conduct otoscopic assessment of ear.
- g. Give clear concise directions:
"Please sit quietly. You will feel a soft tip in the outside of your ear. You will hear a beep/noise and feel some pressure. Some of the beeps are loud. Remain seated quietly. Please do not raise your hand or talk."
Do not continue with screen if:
 - 1. Pressure equalization tube is visible.
 - 2. Ear is draining.
 - 3. Ear is totally occluded with wax.
- h. Select appropriate probe tip size. Place probe tip to ear canal. Test each ear.

3. Failure criteria
 - a. A tympanogram (type B) that indicates no pressure peak or movement of the drum. (A flat line or slightly domed shape will be drawn on the graph.)
 - b. Inability to comply with test procedure.
 - c. Inability to perform immittance screen because of draining ear(s), ear(s) occluded with wax, presence of pressure equalization tube(s).

4. Rescreening
 - a. Failure of the acoustic immittance screen necessitates rescreening, preferably in the same session in which the failure occurred. Removing and repositioning the probe tip, accompanied by careful reinstruction, markedly reduces the number of false failures. Rescreening using the same procedure and failure criteria is an essential process for improving the efficiency of a screening program. The maximum time delay for rescreening should be no greater than one week.
 - b. If upon rescreening, the student passes both threshold screen and acoustic immittance screen, the student passes the screen.
 - c. Failure on the rescreening of air conduction thresholds and/or acoustic screen according to the criteria outline constitutes failure of the school screening procedure. Failures on the rescreening should be referred for further medical evaluation. Some students, especially young children, will fail both the screening and rescreening procedures and then yield normal thresholds on an audiological evaluation. Therefore a hearing loss or impairment should not be considered identified until verified by further evaluation.

5. Recording screening results
Record screening results and date of screening on CHR.

VII. FOLLOW-THROUGH

A. Parent /Guardian Notification

When a student has failed hearing screening, necessitating a medical referral, the parent/guardian should be notified by conference or telephone communication and/or written form, i.e, *Notice Regarding Hearing Screening (Appendix C)* (and to the extent practicable in a language that the parent/guardian can understand).

The parent/guardian should be advised:

- Of the results of the screening.
- That the child should be seen by their primary care provider and may need to be seen by a licensed audiologist and/or otolaryngologist. If this latter evaluation is necessary, it may be done at no charge to the family through the regional State Health Department approved hearing and speech centers. (Many school districts or Boards of Cooperative Educational Services provide audiological, medical/otological evaluations at no cost to the parent/guardian.)

B. Teachers/Staff Notification

Results of the hearing screening should be filed in the student's cumulative health record. Necessary instructional staff should be notified that the student has failed hearing screening and therefore may be experiencing difficulty hearing and responding to oral instruction. Until the student's hearing status is clearly defined by medical and/or audiological evaluation, the following measures should occur:

1. The student should be given preferential seating so that he/she is in direct line of the teacher's/speaker's voice. Optimum distance is four to six feet from the teacher. If a better ear has been identified the student's better ear should be toward the teacher.
2. Teachers should use appropriate clarification strategies to assure that the student understands oral information (repeat, rephrase, have student repeat, etc.).
3. Whenever possible, teachers should avoid:
 - a. Standing in front of a bright window while speaking.
 - b. Speaking while writing on the chalkboard.
 - c. Positioning themselves so that their faces are not visible to students.
4. Noisy learning environments should be avoided or minimized.

C. Continuing Evaluation in the School Setting

Until medical diagnosis and evaluation has been completed, the student failing hearing screening should be rescreened monthly. This screening will provide for documentation of a fluctuating and/or permanent condition. Appropriate follow-up with parent/guardian and providers should occur to obtain needed diagnostic and treatment information. Supplemental records, i.e., audiologist's report and otological/medical reports, should be retained in the student's cumulative health record.

VIII. RELIGIOUS EXEMPTIONS

Hearing screening will not be required where a student, the parent, or person in parental relation to the student, objects to the screening on the grounds that the screening conflicts with their genuine and sincere religious beliefs. A written and signed statement from the student, parent or person in parental relation to the student that they hold such beliefs must be submitted to the principal or the principal's designee in which case the principal or principal's designee may require supporting documents.

IX. LINKS/RESOURCES/REFERENCES

Resources

New York State Education Department, Amendment to NY State Education Law, Article 19, Medical and Health Services. Section 905. (Effective September 1, 2005). Retrieved August 25, 2007.

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PURE TONE AIR CONDUCTION SCREENING (SWEEP TEST)

1. Test frequencies shall be 1000, 2000, and 4000 Hz.
2. Screening levels shall be 20dB at all frequencies tested.
3. Turn on audiometer at beginning of day, and test on self.
4. Position student so he/she cannot see you operate audiometer.
5. Give clear instructions. Have them remove large earrings, glasses.
Red earphone on right; blue earphone on left.
6. Present a 40dB tone at 1000 Hz in right ear.
7. Reduce intensity to 20dB. Test 1000, 2000 and 4000 Hz at 20dB.
8. Repeat in left ear.

FAILURE CRITERIA:

1. Failure to respond to any recommended frequency in either ear at 30dB.
2. Inability to comply.

FOLLOW-UP:

1. Rescreen all students who fail during same session or within one week.
2. Perform threshold screening for students who fail twice.

PURE TONE THRESHOLD SCREENING

1. Prepare as in pure tone screening (sweep screening).
2. Test frequencies shall be 500, 1000, 2000, 4000 and 6000 Hz.
3. Present a 40dB tone at 1000 Hz in right ear for 1-2 seconds.
4. If there is a response at 40dB, drop back in 10dB increments until there is no response. Then increase by 5dB increments until response is elicited.
5. If NO response at 40dB, increase in 10dB increments until sound is heard. (Not necessary to go above 60dB.) Drop back by 5dB until sound is no longer heard.
6. Repeat two times to determine accuracy of threshold.
7. Test remaining frequencies (2000, 4000, 6000 and 500 Hz) in same manner. Repeat in left ear.
8. Record lowest dB heard for each frequency on graph or other data sheet.

FAILURE CRITERIA:

1. Threshold level of 30dB or more for two or more tones in one ear; or
2. Threshold level of 35dB or more for one tone in either ear.

FOLLOW-UP:

1. Rescreen at same session or within one week.
2. Record and refer.

APPENDIX C

SAMPLE FORM

NOTICE REGARDING SCHOOL HEARING SCREENING

Student's Name: _____ DOB: _____ Male Female

Address: _____ Grade: _____

To Parent or Guardian: The result of the school hearing screening suggests that your child may have some hearing difficulty. We recommend that your child have a complete ear examination to determine if a problem exists and, if needed, appropriate care. This form should be completed by your health care provider and returned to the school health office.

To Examiner: Your diagnosis and recommendations will be appreciated and will assist in planning the child's school program. A form - *Audiometric and Medical Findings* - is included for your use.

The following screening results were obtained:

School Observation:

Pure Tone Audiometric Screening: Loss R _____ Loss L _____

Acoustic Immittance Screening: Fail R _____ Fail L _____

Other Comments: _____

Threshold Screening

O = right ear

X = left ear

Frequency in Hertz

	250	500	1000	2000	3000	4000	6000
10 dB							
15 dB							
20 dB							
25 dB							
30 dB							
35 dB							
40 dB							
45 dB							
50 dB							
55 dB							
60 dB							
65 dB							

School Health Professional Signature _____ Date: _____