AUDIOMETRIC PRACTICUM

The collection and analysis of hearing thresholds in a hearing conservation program (HCP) is the primary method to determine many things. For example:

- The stability of an individual’s hearing
- The construction of medical-legal documents on which potential monetary claims or other actions may follow
- Documentation for regulatory audits
- The basis for determining overall program effectiveness

During the certification class, collecting valid responses to tones from an audiometer is critically important but only one of several steps that you will be graded upon for the audiometric practicum. The requirements are based upon the American National Standard Institute Methods for Manual Pure-Tone Threshold Audiometry (ANSI S3 53.21).

Each course director (CD) will have their own teaching methods and sequence of presentation and may introduce additional concepts or exercises. To successfully complete this section you will need to execute the steps to their satisfaction.

CAOHC REQUIREMENTS: The candidate will demonstrate the ability to conduct all aspects of pure-tone audiometric, air conduction threshold testing.

- One audiometer for every two students
- One testing practicum assistant for each 8 students
  - Note: Any testing practicum assistant(s) must be CAOHC-certified
- Coverage of the essential components associated with ANSI S3 53.21

- Allotted practice and practicum-time for examination is 180 min. for those seeking initial certification and 90 min. for renewing students
The components of the audiometric practicum will include:

**SEATING/ENVIRONMENT**
- Evaluation of ear canal (optional within practicum)

**INSTRUCTIONS TO PERSON BEING TESTED**

**EARPHONE PLACEMENT**

**DETERMINATION OF THRESHOLD**

**INTERPRETATION OF RESPONSES**

**RECORDING RESULTS**
- Age corrections (optional within practicum)

**SEATING/ENVIRONMENT**

**EVALUATED TASK:** Was the person, being tested, positioned correctly?

In a classroom setting, because of the background noise, it is not possible to duplicate an environment acceptable for true hearing testing. The requirement to avoid visual cues however, applies to the practicum setting as it does to the real world. A person being tested must always be oriented to assure they are not able to see either the dials of the audiometer or any clues from the person administering the hearing test.

**INSTRUCTIONS TO PERSON BEING TESTED**

**EVALUATED TASKS:** Were the instructions presented appropriately and did they include all the necessary information? (Were the instructions presented before placing earphones on the person being tested?)

- Introduce themselves?
- Explain the purpose of the test?
- Eliminate any interference with testing, e.g., gum chewing, hearing aids, cell phones, etc.
- Explain and describe to what to listen for?
- Explain and demonstrate proper response?
- Indicate that each ear will be tested separately?
- Ask if hearing is better in one ear or the other?
- Ask if the person being tested had any questions?

Suggested script:
*Good morning/afternoon! My name is …… Today we are going to be checking your hearing. Have you had your hearing checked before?*

If they answer, “yes” – *Let me remind you of what you’ll be doing.*

If they answer, “no” – *Let me tell you what you’ll be doing.*

*Please make sure you don’t have or do anything that might interfere with you hearing the very faint sounds you’ll be listening for. For example: no hearing aids, no chewing gum; cell phone turned off, etc.*
You’re going to be listening for a series of very faint tones. Whenever you think you hear a tone please (depending on the required response: raise your finger, raise your arm, press this button, etc. Also, demonstrate the required response). I’ll be checking each ear separately. Do you hear better in one ear or the other?

If they answer, “yes” – You will start testing in the ear they identify as the better ear.

If they answer “no” – You will start testing in the left ear.

Do you have any questions?

EARPHONE PLACEMENT

EVALUATED TASKS: Did the student correctly orient the earphones?

Prior to placing the earphones on the person being tested it advised that the external ear canals be checked to determine if anything (foreign object, wax, etc.) may be blocking the canal or to recognize if the canals my collapse with or without earphones.

Cords oriented down the back?
Red phone on right, blue on left ear?
Earphones centered over the ear? (ANSI standard notes: “position should be adjusted by test subject for most comfortable listening (or loudest signal) at 250 Hz.
Space under the earphone clear of long hair, glasses, hearing aids, other obstacles?

DETERMINATION OF THRESHOLD

EVALUATED TASKS: Did the student follow the correct procedures in obtaining threshold information?

Familiarization procedure at each frequency?
One of two methods is acceptable:
1. Tone on continuously, gradually increase intensity until response. Tone off at least 2 seconds, present again at same level. If second response, proceed to threshold measurement. No response, repeat familiarization procedure.
2. Present tone at 30 dB HL. If response, start threshold measurement. If no response, present at 50 dB HL and at successive additional increments of 10 dB until a response is obtained.

Threshold Determination correctly executed?
Tone duration
1-2 seconds duration (3 beeps)
Intervals between tones?
Varied, but not shorter than the test tone?
Correct bracketing procedure?
Down ten, up five
Responses taken only on ascending responses
Correct inclusion and sequence of frequencies?
First ear, (better hearing) ear: 1000 Hz, 500 Hz, (verification, +/- 5 dB, at 1000 Hz), 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz, 8000 Hz (recommended)
Second ear: 1000 Hz, 500 Hz, 2000 Hz, 3000 Hz, 4000 Hz, 6000 Hz, 8000 Hz (recommended)

Correct recognition of threshold of hearing:
Definition: “The lowest hearing level at which responses occur in at least one-half of a series of ascending trials, with a minimum of two responses out of three required at a single level.”

INTERPRETATION OF RESPONSES

EVALUATED TASKS: Did the student correctly recognize the responses provided by the person being tested?

“On” and/or “off” response pattern?
Person being tested responds to a tone coming on or a tone going off. Either response is valid but must be consistent.

Response latency?
Response to a faint tone may be hesitant but a response to a louder tone should be without hesitation.

Recognize false responses?
Responding when no tone is present (false positive)
Failure to respond when tone is presented (false negative)

RECORDING RESULTS

EVALUATED TASKS: Did the student accurately record threshold levels at all frequencies tested?

Tabular (serialized) audiogram thresholds are recorded as numbers, e.g., 5, 10, 15, etc.
Graphic audiogram thresholds are recorded as: “O” for the right ear; “X” for the left
For occupational hearing conservation purposes, thresholds are in 5 dB increments.

DETERMINATION OF STANDARD THRESHOLD SHIFT (STS)

EVALUATED TASK: Was the student able to accurately calculate a standard threshold shift (STS)?

For instruction purposes, the CD will create a situation where students will evaluate two separate hearing tests with different threshold values. The student will calculate differences in hearing threshold from an “annual” audiogram, relative to a “baseline” audiogram. STS is based upon the average change of 10 dB or more at 2000, 3000, and 4000 Hz in either ear.

The CD may also require student to compute Age Correction and/or Recordable hearing loss.