PhenX Toolkit

Data Collection Worksheet

Please Note: The Data Collection Worksheet (DCW) is a tool to aid integration of a PhenX protocol into a study. The PhenX DCW is not designed to be a data collection instrument. Investigators will need to decide the best way to collect data for the PhenX protocol in their study. Variables captured in the DCW, along with variable names and unique PhenX variable identifiers, are included in the PhenX Data Dictionary (DD) files.

A downloadable PDF of the full 2015-2016 National Health and Nutrition Examination Survey (NHANES) Audiometry Procedures Manual is available here: https://wwwn.cdc.gov/nchs/data/nhanes/2015-2016/manuals/2016_Audiometry_Procedures_Manual.pdf.

The following is a summary version of the full National Health and Nutrition Examination Survey (NHANES) audiometry protocol. This is not intended to replace the actual protocol.

Eligibility Criteria

There are no conditions that would prevent an eligible, consenting examinee from completing the protocol.

Preliminary Activities

Examinees are asked to remove glasses, gum, earrings, or anything else that may interfere with the headphones. Examinees are asked to remove hearing aids. If hearing aids cannot be removed, the examinee skips the audiogram.

Pre-Exam Questionnaire

Examinees are asked about conditions that affect how the test is conducted or how results are interpreted. These questions include whether the examinee:

- has tubes in either ear,
- has a cold or earache,
- has been exposed to loud noise in the last 24 hours, and
- hears better in one ear or the other.

Otoscopy

The technician performs a visual inspection of the outer ear and records any abnormalities of the ear, the presence of excessive ear wax, foreign bodies, PE (pressure equalization) tubes, perforation or inflammation of the ear drum, and

whether the ear canal is collapsed.

Acoustic Immittance

For each ear, the technician uses the size and direction of the ear canal to properly select the cuff to seal the ear canal. The technician then places the tympanometry probe in the examinee's ear, ensures an airtight seal, and performs the test.

The result of the acoustic immittance test is a graph (tympanogram) which is evaluated based on smoothness and symmetry. The test should be repeated once if the tympanogram is flat or if the results are not clear.

Audiometry

The technician ensures that the respondent has removed hearing aids and anything that might interfere with the proper placement of the headphones. The technician fits the standard headphones (or inserts headphones if there are collapsed ear canals) over the examinee's ears and makes sure that the examinee is seated so that he/she can be seen by the examiner during the test.

Automated Protocol

The pure tone audiometry test is controlled by a computer program.

Manual Protocol

The technician will control the frequency, stimulus level, and test signals and make a threshold determination under the following circumstances:

- examinee cannot operate the response switch,
- examinee cannot "keep up with" the automated test,
- examinee records three false positives,
- examinee threshold exceeds 100 decibels (dB).

The technician can begin manual testing after the automated protocol has begun but must complete the test using the manual protocol.

Record the Audiometry Results

The technician records which headphones were used, which ear was tested first, whether the test was performed manually, and the threshold (in decibels) for each ear at the following frequencies:

- 250 hertz,
- 500 hertz,
- 1,000 hertz,

- 2,000 hertz,
- 3,000 hertz*,
- 4,000 hertz,
- 6,000 hertz*,
- 8,000 hertz.

*Test only at 3,000 and 6,000 hertz if there is > 15 dB difference in threshold from octave to octave.

Scoring Instructions:

0–25 dB Normal hearing

26–40 dB Mild hearing loss

41–55 dB Moderate hearing loss

56–70 dB Moderately severe hearing loss

71–90 dB Severe hearing loss

91+ dB Profound hearing loss

Please consult the American Speech-Language-Hearing Association and National Institute for Occupational Safety and Health for the most current classification schemes.

Protocol source: https://www.phenxtoolkit.org/protocols/view/200102