



Introduction to Audiology

Audiolab Assignment: Hearing Screenings

Student Assignment: Hearing Screenings

Background

Screening programs are commonly used to identify and target those who may have a particular disorder or group of disorders from a broader population of people who may appear healthy or asymptomatic. Screening programs are typically considered necessary for disorders that can have significant adverse effects on the people with the disorder if intervention doesn't occur. Also, the disorder must affect enough people within the population for screening to be deemed warranted.

Experiencing hearing difficulties can have significant negative effects without appropriate intervention. For example, adults with untreated hearing loss can experience consequences such as reduced employment opportunities (Jung & Bhattacharyya, 2012), decreased social engagement, and depression (Shukla, 2021). More recent data suggests intervention may also reduce the risk for dementia and other types of cognitive decline (Lin et al., 2013; Sarant et al., 2020). For children, the effects can be even greater, including lifelong deficits in speech and language development (Niparko et al., 2010; Stiles et al., 2012), social and emotional challenges (Wong et al., 2017), and suboptimal academic performance (Harlow & Bower, 2009). In addition, the prevalence of hearing loss in the US is high. Approximately one in eight people aged 12 and older have a hearing impairment in both ears, and the incidence increases to about two-thirds of all adults aged 70 and older (Lin et al, 2011).

Pure-tone hearing screenings have long been used as behavioral screenings in school systems as a form of early identification and in other healthcare settings for hearing health promotion. Screenings are a critical tool for identifying people who may be having difficulty hearing. While it may appear the only two possible test results of hearing screenings are "pass" or "fail," four possible outcomes exist:

1. People who **do not** have the disorder and **pass** the screening.
2. People who **do** have the disorder and **fail** the screening.

3. People who **do not** have the disorder and **fail** the screening.
4. People who **do** have the disorder and **pass** the screening.

The percentage of people tested who do have the disorder and fail the screening is known as the **hit rate**. The hit rate tells us about the **sensitivity** of the screening tool, or the proportion of people who have the disorder and fail the screening. It is also important to know the **specificity** of the test. Specificity tells us about the proportion of people who do not have the disorder and pass the screening test. The other two outcomes are a **false-negative** (also known as a **miss**, which is when a person with the disorder passes the screening test) and a **false-positive** (when a person without the disorder fails the screening). The goals of screenings are to be simple, quick, accurate (i.e., high sensitivity and specificity), and cost-efficient. Based on the goal of your screening, you may choose to incorporate different frequencies from those suggested in the ASHA or AAA hearing screening guidelines. For example, if your goal is to identify adults with mild hearing loss, you may choose to include 6000 Hz or 8000 Hz in your adult screening protocol. If you want to identify children with middle-ear dysfunction and don't have access to tympanometry, you may include a frequency below 1000 Hz.

Assignment: Hearing Screenings

For this assignment, answer the following **knowledge check** questions related to hearing screenings. Once completed, practice performing hearing screenings using Audiolab.

This assignment should help you:

- Review ASHA guidelines for hearing screenings.
- Practice the techniques used to conduct a hearing screening.
- Determine whether the patient has passed or failed the hearing screening.
- Practice counseling your patient on their screening results.

Instructions: Click in the field to manually enter information. To preserve your input, save the document locally.

Part One: Knowledge Check

- Why are hearing screening programs important?

- **Review the ASHA guidelines on pediatric and adult hearing screenings.**
 1. Which frequencies should be presented to each population during a hearing screening?

 2. How many times should you present each frequency?

 3. Is there a maximum number of presentations recommended for pediatric patients?

 4. Are the recommended presentation levels different for adults and pediatrics? Why might this be?

- **More advanced students only:** Is it possible to diagnose an ear disorder/hearing impairment from a hearing screening alone? Why or why not?

Part Two: Active Learning - Hearing Screenings

Log into Audiolab. Navigate to Hearing Screenings. Choose among Fairview Elementary School, New Hope Middle School, or Pleasant Valley High School. Your instructor may tell you which setting to choose. Read the background about the setting for your hearing screening.

Based on your population's age, decide which frequencies to include in your screening and what level to use during testing, using suggested guidelines or additional information from your instructor. Screen all 15 people. For each person you test, you are encouraged to practice providing instructions (note the person's age and adjust your instruction style appropriately; you will often speak differently to a 5-year-old than a 15-year-old). For children, you will not counsel them on the result without a parent or guardian present. You can practice counseling the parent/guardian after each screening. Remember, your goal is to ensure optimal hearing health for everyone.

Record Hearing Screening Results

1. **Hearing Screening Summary:** Summarize the results for the people screened at your location. How many people passed the hearing screening? How many people failed the hearing screening?

Advanced Students (Optional):

1. Write a report outlining the results of the screenings. Summarize the results of the screening and indicate how many people passed/failed it. Identify who you would refer for additional testing, citing your rationale for referral and indicating additional assessments warranted.

Submitting Your Work

After completion, submit this assignment and a copy of your Audiolab transcript(s) to your instructor. If you completed the optional advanced assignments, also submit your report.



Citation

Calandrucchio, L., & Ligon, E. (2024). Audiolab lesson plan: Hearing screenings (Student). [PDF]. Simucase LLC.

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