

# Teach Me Checklist for Pure Tone Screening: An Instructional Outline for Pediatric Audiologists to Prepare Lay Screeners to Conduct Hearing Screening with Children 3 – 5 Years of Age



This *Teach Me Checklist* serves as an instructional outline for pediatric audiologists to use in preparing lay individuals to establish Pure Tone hearing screening programs for young children in early care and education settings. Individuals who will be learning to screen should be instructed to view the complete set of Pure Tone Video Tutorial Modules at [www.kidshearing.org](http://www.kidshearing.org). This checklist can then be used to prompt an audiologist or skilled screener to provide additional information and hands-on instruction to learners.

## Teach Me--

### 1. How to choose an appropriate screening method for children being screened:

Choose pure tone audiometric screening if child is:

- Able to understand and follow instructions.
- Physically capable of providing an appropriate behavioral response (typically raising a hand or placing a toy in a bucket, a ring on a peg, etc.)
- Able to attend to the task for the time it takes to complete screening (sufficient attention span).

Choose OAE screening if child:

- Does not meet the above criteria. Refer to planning and implementation resources for developing OAE screening practices available at [kidshearing.org](http://kidshearing.org). Although these resources were designed primarily for screening children 0 - 3 years of age, all information is applicable for screening children 3 – 5 years of age.

### 2. How to choose appropriate Pure Tone hearing screening equipment including:

- Audiometer meets American National Standards Institute (ANSI) S3.6 - 2010 specifications
- Frequency-specific tone stimulus (warble or pulse recommended for this age group). The frequency range must include 1,000, 2,000 and 4,000 Hertz.
- Intensity range must include 20 dB (and go up to 60 dB for conditioning).
- Manual stimulus tone presentation.
- Circum-aural air conduction earphones (bone conduction capability NOT necessary).
- Power source either common 110/120 volt or battery operated.
- Lightweight, portable, durable.
- Calibration (equipment should be calibrated annually by the manufacturer or distributor to ensure that it is operating properly)

### 3. How the equipment works:

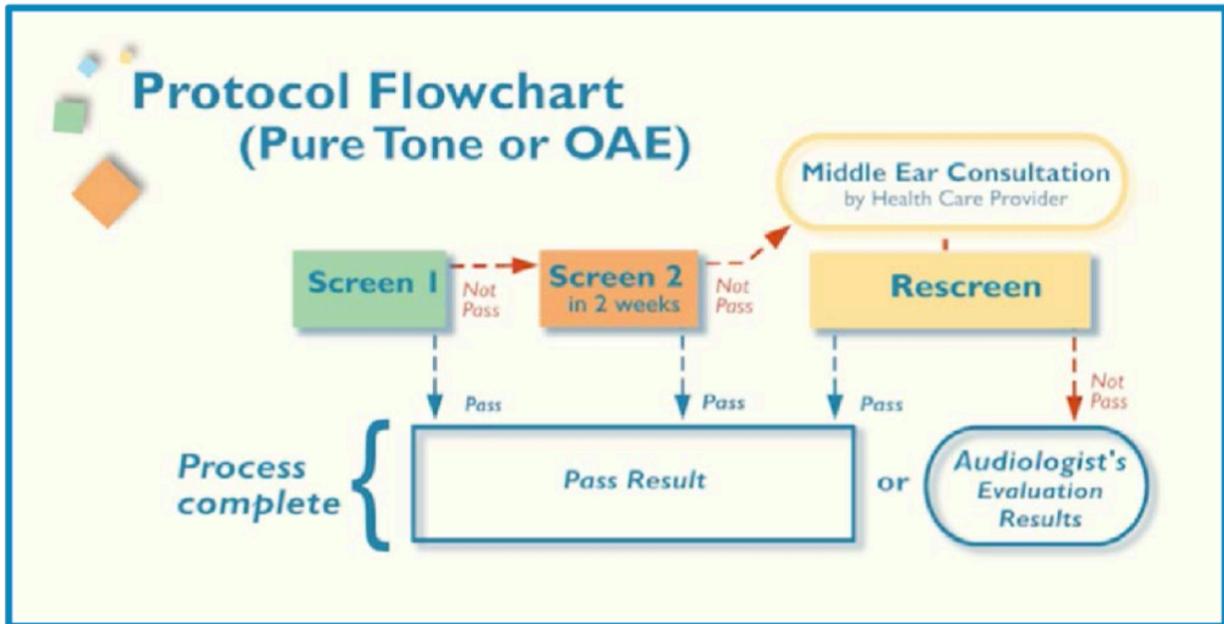
- Power source and audiometer/headphone jacks (connections).
- Controls – for selecting ear (right/left), tone type (continuous/warble/pulse), frequency (pitch), and decibel (intensity) level.
- Tone presentation button.

4. How to do a Self-Listening Check to ensure equipment is working properly on each day before screening children:
  - Review condition of cords, jacks, and headband.
  - Place headphones over own ears, turn equipment on, and set
    - tone location for right ear,
    - tone type to pulse, warble or frequency modulate,
    - intensity level to 10 or 20 dB (the quietest level your own ear can hear),
    - frequency to 2000 Hz.
  - Push the tone presentation button, listening for any crackling sounds or the absence or distortion of the expected tone that would indicate an equipment problem.
  - Repeat at 4000 Hz and 1000 Hz.
  - Change tone location to left ear and repeat at 2000, 4000, and 1000 Hz.
  - Change tone type to a continuous/steady state presentation and hold down the tone presentation button with one hand while moving the cords with the other, listening for any crackle, sound break or distortions.
  
5. How to choose/create an appropriate screening environment:
  - Find a quiet location free from visual distractions.
  - Listen carefully for background noise and for changes in noise levels (mechanical equipment running or noisy break times, etc.) and minimize occurrence as much as possible. You may need to adjust screening times to when areas of a building are quieter. (NEVER increase the sound screening level to compensate for noise.)
  - Check sound levels with an inexpensive sound level meter or a smart phone app to ensure that all background noise stays below 50 dB.
  
6. How to prepare the screening environment, equipment, and others assisting with the screening:
  - Set up environment to make it easy for the child to attend only to the screening task.
  - Place the audiometer so that the child will not be able to view the screener's hands, either directly or via reflective surfaces.
  - Create a seating arrangement so that you can face the child during the conditioning process, then easily reposition the child for the actual screening so that no visual cues are available.
  - Have on hand several sets of simple toys appropriate for screening (such as rings that can be placed on a peg, blocks that can be placed in a bucket, etc.)
  - Have on hand and use products to comply with universal precautions / appropriate methods for cleaning headphones before each screening.
  - Instruct any other individual in the room about the importance of maintaining a quiet environment. If an assistant is available to help, instruct the assistant on how to help maintain the child's gaze and focus on the screening task, while not providing any visual cues or distractions.
  
7. How to practice and become proficient conducting the screening process on adults before attempting to screen children and manage their behavior, including:
  - Visual inspection (see Checklist item 8 for details).
  - Preparing (conditioning) the individual for screening (see Checklist item 9 for details).
  - Completing the screening, including documenting results (see Checklist item 10 for details).

8. How to conduct a visual inspection of each ear by pulling gently back on the ear to look into the ear canal and determine whether to proceed with the screening:
  - Do not proceed with the screening if the child has a cochlear implant or hearing aid, a significant ear malformation, drainage or a blocked ear canal.
  - Proceed with the screening if the ear appears normal or if there is only a minor malformation (skin tag or pit) or some wax present. If you know that a child has Pressure Equalization (PE) tubes (these are not visible during a simple inspection) you can and should proceed with the screening.
  
9. How to prepare (condition) the child to listen and make the desired response (such as a hand raise, or, for younger children, putting a ring on a peg, or block in a bucket):
  - Place headphones (red/right, blue/left), set the intensity level to 60 dB and set the frequency to 2000 Hz for the right ear.
  - Face the child, present the tone and manipulate the child's hand to make the desired response. Repeat the process until the child understands. (Initial demonstrations can be done without headphones, then repeated after headphone placement.)
  - Present the tone and encourage the child to make the response without assistance. Repeat, providing praise and varying the time intervals between presentations, until the child can confidently and reliably make the response.
  - Present the tone at 40 dB and confirm that child makes the desired response.
  - If the child is able to respond consistently and independently, begin the screening.
  
10. How to perform Pure Tone screening on each ear at 2000, 4000 and 1000 Hz:
  - Position the child so that he/she cannot see your hand movements on the equipment or your facial expressions.
  - With the audiometer set to the right ear, the frequency at 2000 Hz and the dB level at 60 dB, provide a reference tone to check that the child remains engaged and responsive (this reference tone does not count as part of the screening).
  - Change the intensity to 20 dB and begin the screening, being sure to vary the time between tone presentations. For each tone presentation, document the response or non-response. As soon as the child makes two correct responses (out of a maximum of four attempts) move to the next frequency. If the child makes less than 2 correct responses, move to the next frequency.
  - Set the frequency to 4000 Hz, repeat tone presentations and document responses.
  - Set the frequency to 1000 Hz, repeat tone presentations and document responses.
  - Repeat the sequence for the left ear.
  - Review the documented responses. If the child made two correct responses at each frequency level (2000, 4000, and 1000 Hz), on each ear, the child passed the screening. If the child made less than two correct responses on any frequency, on either ear, the child did not pass the screening.

◆ <b>Conduct Visual Inspection</b> (consult HCP/obtain medical clearance when necessary) ◆ <b>Condition</b> child to respond to tones at 60 and 40 dB levels ◆ <b>Screen</b> (Right Ear first, then Left Ear)		For each tone presented, document: ✓ <b>Response</b> or - <b>Non-response</b>  Maximum of 4 presentations per Hz level; 2 responses = Hz pass
<b>Child's Left Ear</b> Conditioned response check 2000 Hz (60 dB) _____ (20 dB) Screening 2000 Hz _____ 4000 Hz _____ 1000 Hz _____ Overall Ear Result: <input type="checkbox"/> Pass <input type="checkbox"/> Not Pass	<b>Child's Right Ear</b> Conditioned response check 2000 Hz (60 dB) _____ (20 dB) Screening 2000 Hz _____ 4000 Hz _____ 1000 Hz _____ Overall Ear Result: <input type="checkbox"/> Pass <input type="checkbox"/> Not Pass	
		2 responses at each Hz level required for Overall Ear Pass

11. What “next steps” to take if:
- A child cannot be conditioned to engage reliably in the Pure Tone screening—either conduct an OAE screening or refer the child to a pediatric audiologist who can complete the screening.
  - A child did not pass the Pure Tone screening—wait two weeks, screen again, and follow additional steps as outlined in the *Pure Tone Screening Protocol*.



12. How to appropriately document screening and follow-up outcomes and track children through completion of the screening process:
- Use a documentation strategy /forms that reflect the recommended protocol.
  - Convey results and referrals appropriately to parents.
  - Use a tracking and follow-up tool.
13. How to use additional resources at [www.kidshearing.org](http://www.kidshearing.org) for planning, implementing and maintaining quality hearing screening practices.