

PROCEDURE	
Audiometry	
Scope (Staff):	Community Health Staff
Scope (Area):	CACH, WACHS

This document should be read in conjunction with this [DISCLAIMER](#)

**Aim**

To assess whether a child passes or fails a hearing screening, from the age of 3 years.

**Risk**

Unrecognised or unmanaged hearing impairment can have a significant effect on a child’s social, psychological and educational progress, including speech and language development, and long term social and vocational outcomes.<sup>1, 2</sup>

**Background**

Comprehensive baseline ear health screening includes otoscopy and audiometry. Tympanometry may be conducted in some settings by service providers working with targeted populations. Audiometry measures how well a person hears the range of speech frequencies.<sup>2</sup> Frequencies are measured in hertz (Hz) and intensity (loudness) is measured in decibels (decibels Hearing Level or dB HL).

In School entry Assessments, audiometry will be performed on *all* children unless there is evidence of involvement from a hearing specialist.

**Key points**

- Children with hearing aids do not require audiometry screening.
- Otoscopy should be performed before audiometry. If there is any evidence of discharge from the ear, audiometry should not be performed and the child should be referred to a medical practitioner for further assessment and treatment.<sup>3</sup>
- Hearing is assessed at 50, 35, 25 x2 dB HL at 1000 Hz ,4000 Hz. Starting with a mid-frequency sound,1000 Hz will give more information regarding the child’s overall hearing, as there is more chance that a child with sensory- neural hearing loss at 4000Hz will not respond.
- Audiometry should only be performed by Community Health Staff who have undertaken appropriate training.
- Each audiometer model has specific cleaning requirements. In general, detergent wipes are appropriate, but staff should refer to manufacturers and local area infection control guidelines for specific cleaning requirements. It is recommended that earphones be cleaned between each child.

- Community Health staff are to follow the organisation's overarching infection control and management policies and perform hand hygiene in accordance with WA Health guidelines at all appropriate stages of the procedure.

## Equipment

- Calibrated audiometer (calibration date should be indicated on the machine).
- Blocks in a container or pegs in a board.

## Process

Steps	Additional information
<p>1.Preparation:</p> <ul style="list-style-type: none"> <li>• Check the audiometer before use. Each frequency (both right and left) should be tested at 50/35/25dB.</li> <li>• Prior to performing an audiometry test, obtain a history from the parent/caregiver.</li> <li>• Explain the procedure to the child and parent/caregiver if present. Allow sufficient time for discussion of concerns.</li> <li>• Ensure either written or verbal parental consent has been obtained prior to proceeding with testing.</li> </ul>	<p>Check the operation of the audiometer. (Some models have a different layout of the controls, but each machine offers the same functions).</p> <p>History to include: Recent illness, pain or discharge, change in the child's ability to hear, family history of childhood hearing loss.<sup>1,2</sup> The child or teacher may also provide information regarding the child's ability to hear.</p> <p>The child needs to understand and be able to undertake the audiometry procedure</p>
<p>2. Environment/Seating:</p> <ul style="list-style-type: none"> <li>• Screening audiometry should be undertaken in a room with minimal external noise.</li> <li>• Child should be seated facing and within one arm length of the examiner but in a position where the child cannot see the examiner's use of the audiometer controls.</li> </ul>	<p>The examiner should be seated at the same level as the child enabling observation of the child's facial expressions.</p>

<p>3. Tasks:</p> <ul style="list-style-type: none"> <li>• Age appropriate tasks should be used in order to accurately identify the child's ability to hear the test sounds.</li> <li>• Keep child engaged to remain on task throughout the procedure.</li> </ul>	<p>Instructions for specific ages may include:</p> <p>Prior to school age – 'When you hear the sound (whistle or noise), give me the block'. Blocks need to be passed easily between the child and tester.</p> <p>Kindergarten and Pre-primary children – 'When you hear the sound (whistle or noise), put the block in the bucket/on the table.</p> <p>Older children – 'When you hear the sound, wave or raise your hand.'</p>
<p>4. Screening procedure: <b>Right ear</b></p> <ul style="list-style-type: none"> <li>• Seat the child and give instructions.</li> <li>• Demonstrate sound prior to placing headphones on child.</li> <li>• Practice response prior to commencing screening.</li> <li>• Ensure earphones fit comfortably, remove glasses, and place hair behind ears.</li> <li>• Repeat instructions.</li> <li>• Set intensity at 50 dB HL at 1000 Hz in the right ear.</li> <li>• Present the tone for 2-3 seconds. If the child responds, lower to 35 dB HL and then to 25 dB HL.</li> <li>• <b>A pass is recorded if the child responds twice at 25 dB HL.</b></li> <li>• Repeat procedure at 4000 Hz, record result.</li> </ul>	<p>Ensure <b>red</b> earphone is on the <b>right</b> ear.</p> <p>Ensure child is aware of what sound to expect.</p> <p>Ensure the child understands the task.</p> <p>Always start at the loudest noise level 50 dB HL in order to obtain a positive response from the child.</p> <p>Vary the rhythm in the tone presentation to ensure you can tell that the child is responding to the signal rather than guessing the timing.</p> <p>If there is no response at 50 dB HL the result should be documented as 'no response'.</p> <p>Occasionally praise the child's responses throughout the procedure.</p>
<p>5. Screening procedure: <b>Left ear</b></p> <ul style="list-style-type: none"> <li>• Set intensity at 50dB HL at 1000 Hz.</li> <li>• Repeat above procedure and record result.</li> <li>• Repeat procedure at 4000 Hz in the left ear and record result</li> </ul>	
<p><b>The child is required to respond twice at 25 dB HL at both 1000 and 4000 Hz in each ear to pass the audiometry screening.</b></p>	

<p>6. Reduced response:</p> <ul style="list-style-type: none"> <li>• If a correct response is not obtained at 25 dB HL, record the last level at which the child did respond.</li> <li>• If the child does not respond at 50 dB HL, recheck equipment, re-instruct and try again. If there is still no response enter <b>No Response</b> on the record.</li> <li>• If a child has any result greater than 25 dB HL inform the parent/caregiver (and teacher if in school setting) of the need for a re-test in 4-6 weeks.</li> </ul>	<p>There is no requirement to assess at 30 and 40 dB if there is no response at 25/35/ dB HL.</p> <p>Recheck audiometer as battery may have gone flat.</p> <p>The 4-6 weeks' time interval prior to recheck allows for normal hearing to return following a temporary conductive loss which may occur with upper respiratory tract infection.</p> <p>A parent follow up letter (CHS 425) is available if required.</p>
<p><b>Re-test in 4-6 weeks for any result greater than 25 dB HL.</b></p>	
<p>7. Recheck Procedure:</p> <p>Repeat steps 4 and 5.</p> <ul style="list-style-type: none"> <li>• Recheck hearing at 1000 Hz and 4000 Hz, starting at 50 dB then 35 dB, then 25 dB twice.</li> <li>• A pass is recorded if the child responds twice at 25dBHL. If a child does not achieve 25/25 dB HL (twice) in either ear, complete expanded screening and refer for further audiological assessment.</li> </ul>	<p>No action required if results are 25 dB HL (x2) in both ears at 1000//4000Hz.</p>
<p>8. Expanded screening:</p> <ul style="list-style-type: none"> <li>• Expanded screening involves the addition of two extra frequencies - 500 Hz and 2000 Hz. Starting at 50 dB, then 35dB then offer 25 dB twice. The child needs to hear the sounds at 25 dB twice to pass.</li> </ul>	<p>Expanded screening gives more information about the child's hearing and can begin to suggest a pattern of hearing loss to the person receiving the referral.</p>

<p>9. Referral:</p> <ul style="list-style-type: none"> <li>• Explain results to parent/caregiver or inform them by phone or letter (if unable to contact them by phone).</li> <li>• Obtain consent to refer to medical practitioner and for further audiological assessment.</li> <li>• An expanded screening including 500 and 2000Hz should be included with the referral.</li> <li>• Otoscopy results should be included in referral. Tympanometry results should also be included where available.</li> </ul>	<p>Refer to medical practitioner to assess if hearing loss is due to a medical problem. Audiological assessment is also required.</p>
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## Documentation


Community health staff will document relevant findings according to local processes.

References
<ol style="list-style-type: none"> <li>1. American Speech-Language-Hearing Association. Effects of hearing loss on development: ASHA; 2014. Available from: <a href="http://www.asha.org/public/hearing/Effects-of-Hearing-Loss-on-Development/">http://www.asha.org/public/hearing/Effects-of-Hearing-Loss-on-Development/</a>.</li> <li>2. Coates H, Vijayasekaran S, Mackendrick A, Kong K, Lannighan F, Bumbak. Aboriginal Ear Health Manual. Perth, WA; 2012.</li> <li>3. Commonwealth Department of Health and Ageing. Recommendations for clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander population. Menzies School of Health Research, Commonwealth Department of Health and Ageing: Canberra. 2011.</li> </ol>

Related internal policies, procedures and guidelines
<p>The following documents can be accessed in the Community Health Manual: <a href="#">HealthPoint link</a> or <a href="#">Internet link</a></p>
<ul style="list-style-type: none"> <li>• Hearing guideline</li> </ul>
<ul style="list-style-type: none"> <li>• Otoscopy procedure</li> </ul>
<ul style="list-style-type: none"> <li>• Tympanometry procedure</li> </ul>
<ul style="list-style-type: none"> <li>• Universal contact schedule 4-5 years (school entry health assessments) guideline</li> </ul>

Useful Resources	
World Health Organization. Primary ear and hearing care training resource- Trainer's Manual, Intermediate level (2006)	
CARPA Standard Treatment Manual. 5th ed. Alice Springs, NT, Australia: Centre for Remote Health (2010)	
Aboriginal Ear Health Manual. <a href="#">Ear Health Manual</a> , Perth (2012)	

This document can be made available in alternative formats on request for a person with a disability.

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