

9.3

Assess ear problems and hearing capacity



An important step before any diagnostic tests for hearing capacity is to identify and treat wax using otoscopy.

9.3.1

Otoscopy

Otoscopy is the procedure that allows identification of conditions that cause hearing loss, such as earwax or perforations of the tympanic membrane. There are many kinds of otoscope. Some can connect to a computer or mobile phone and record pictures or videos of what is being viewed. An otoscope needs a speculum, an attachment (usually plastic) for looking into the ear canal.

9.3.2

In-depth hearing assessment

An in-depth hearing assessment can involve three tests with equipment – a diagnostic audiometer for pure tone; speech audiometry; and a tympanometer for middle ear assessment. These tests can help to identify the need for hearing devices and support. Doing these tests needs specialized training.

- **Pure tone audiometry (PTA):** This tests a person's ability to hear sounds of different pure tone frequencies (pitches). It consists of playing pre-recorded sounds louder and louder until the person can hear them to identify the hearing threshold. It tests air conduction and bone conduction of sounds to assess hearing thresholds at frequencies from 125 Hz (very low) to 8000 Hz (very high). This test helps to determine the severity and type of hearing loss.

- **Speech audiometry:** Older people benefit from this additional test. In a speech audiometry test a series of pre-recorded simple words are played at increasing volumes, and the person is asked to repeat the words when they hear them. This test cross-checks the results of the PTA. It helps to determine whether speech recognition is consistent with the PTA results, if there is an asymmetry of speech perception that is not predicted by the PTA, and identifies which ear to fit with a hearing aid if only one hearing aid is being fitted.
- **Tympanometry:** This tests the compliance (or mobility) of the eardrum – how effective the eardrum is at transmitting sound to the middle ear cavity and therefore the inner ear. This test can support the pure tone and speech audiometry results to determine the type of hearing problem.

The care pathway shows the management of hearing loss by three categories (normal, moderate to severe and deafness). Where the capacity of the health system permits, and it is considered more suitable, mild hearing loss (20 to < 35 dB) can also be identified ([Table 9.1](#), p. 101). Those assessed to have normal hearing capacity should still be assessed for red flags and social and physical environments.

In addition to hearing tests, results of basic assessment for other linked domains of intrinsic capacity, such as cognitive decline and depressive symptoms, should also be verified and an in-depth assessment conducted as necessary. → 5 10

Make sure to always examine both ears, even if the person's complaint is in one ear only.

Table 9.1
Hearing loss classified according to severity

Grade	Hearing threshold in better hearing ear (dB)	Hearing experience in a quiet environment
Normal hearing	< 20 dB	No problem hearing sounds
Mild hearing loss	20 to < 35 dB	Does not have problems hearing conversational speech in a quiet environment
Moderate to severe hearing loss	35 to < 80 dB	Difficulty hearing conversational speech in a quiet environment; if severe hearing loss, even with raised voices
Deafness	≥ 80 dB	Extreme difficulty hearing raised voices

9.4

Manage hearing loss



People with hearing loss may report feelings of embarrassment, anxiety and loss of self-esteem, leading to less participation in social activities, social isolation and loneliness, all of which contribute to depression. → 10

Interventions to manage hearing loss should always be provided as part of a comprehensive personalized care plan responding to underlying factors, along with interventions that address other domains of intrinsic capacity. In addition to supporting communication strategies, there are multiple other ways to manage hearing loss, including provision of hearing devices and referral to rehabilitation services. → 4.2.1

Basic education and counselling on hearing loss should be provided to encourage and support psychological acceptance and adjustment. This includes communication strategies, adaptations in environments, how to use hearing aids and peer mentoring. Older people and their family members and carers may benefit from counselling to help them accept and adjust to their hearing loss, including learning to overcome the stigmatizing attitudes of others.

9.4.1

Moderate to severe hearing loss

It is important that older people with moderate to severe hearing loss are provided with information and support to help them to adjust and live with their hearing loss. The benefits of hearing devices such as hearing aids should be explained both to the person with hearing loss and their carers along with information on where to get them and how to use them. Once a person has a hearing aid, a health worker can support and encourage its use.

9.4.2

Deafness

An older person with severe hearing loss or deafness or who does not benefit from the above interventions will need another approach, such as provision of a cochlear implant, if available. This can only be decided in consultation with a hearing care specialist.

9.4.3

Hearing devices

Most hearing devices should be provided by a trained health worker who is authorized, in line with local rules and regulations. If hearing devices are not available, community health workers and other community stakeholders can provide information on communication strategies.

Hearing aids: A hearing aid is an electronic device that is worn on or inside the ear. It helps to amplify sounds to allow a person with hearing loss to better hear speech and other sounds. It is usually the most useful and convenient technology for older people with hearing loss. Audiometry alone should not determine whether a person needs a hearing aid. A person must be assessed for their overall need before a hearing aid is suggested. It is important to explain to people that hearing aids do not cure or treat hearing loss. Advice should be provided regarding their use and maintenance, including regular replacement of the battery and earpiece.

Advice and information for the use of hearing aids include:

- How hearing aids work and the importance of using them regularly during waking hours.
- Caring for a hearing aid, including:
 - keeping it in a safe, cool place when not in use, and away from water and heat at all times;
 - removing it while bathing or showering;
 - opening the battery drawer at night;
 - making sure it is switched off when not being used;
 - cleaning the earpiece with a dry cloth every day.

Some countries have regulations that provide access to hearing aids over-the-counter without prescription, such as pre-programmed hearing aids and self-fitting hearing aids. These hearing aids are commonly suitable for those with mild or moderate hearing loss, without any red flags. Pre-programmed hearing aids are already programmed according to the most common types of hearing loss in older people. A trained health worker can decide which pre-programmed hearing aid is suitable and fit it.

- Changing or recharging the batteries and where to access affordable batteries.
- Common problems when using hearing aids and how to address them.
- The likelihood of hearing aids being effective – to manage expectations.

Cochlear implants: A Cochlear implant is an electronic medical device for people with severe hearing loss who are unable to benefit from hearing aids. It has two parts, an external processor that picks up the sounds and delivers them to the implantable part that is surgically placed in the ear. It turns sounds into electrical impulses and sends them to the nerves of the ear. A person must be evaluated carefully to see if a cochlear implant will help. If cochlear implantation is not available or feasible, an older person and their family should be informed about different communication strategies.

MORE INFORMATION

 **Training on hearing assistive products.** TAP; 2024 (<https://www.gate-tap.org/>).

 **Hearing aid service delivery approaches for low- and middle-income settings.** WHO; 2023 (<https://iris.who.int/handle/10665/376092>).

 **Primary ear and hearing care: training manual.** WHO; 2023 (<https://iris.who.int/handle/10665/366334>).

9.5

Assess and manage red flags



There are a number of “red flags” in relation to hearing loss, including potential causes and issues that should be considered as requiring referral to a health professional with specialized knowledge (e.g. ear nose throat specialist).

9.5.1

Inappropriate medication(s)

Certain medications can cause damage to the inner ear, resulting in hearing loss and/or loss of balance (54), for example:

- antibiotics such as streptomycin and gentamicin;
- antimalarials such as quinine and chloroquine;
- injection treatment of multidrug-resistant tuberculosis;
- diuretics such as furosemide; and
- nonsteroidal anti-inflammatory drugs such as aspirin.

A full medication review and adjustment of medications may require specialized knowledge. Where such ototoxic treatment is essential, it is important that hearing is checked regularly to detect hearing loss at the earliest stage and take appropriate action.

9.5.2

Noise exposure

Noise-induced hearing loss can be caused by a variety of environments and behaviours at work, home or from recreational activities. The volume of sounds, the duration of listening and frequency of exposure to loud sounds all have an impact on hearing. In the case of hearing loss caused by the unsafe use of personal audio devices, there are simple, effective practices such as keeping the volume within safe listening levels and limiting the time spent engaged in noisy activities.

9.5.3

Other red flags

Conditions that may underlie hearing loss and need specialized diagnosis and management include:

- history of sudden or rapidly progressive hearing loss;
- unilateral or asymmetric hearing loss;
- complaint of pain in the ear, ear discharge or dizziness with moderate to severe hearing loss; and
- history of ear diseases, such as recurrent or chronic otitis media (middle ear infection).