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# ELDER CARE

## A Resource for Interprofessional Providers

### What You Need to Know About Hearing Aids

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Most older adults who struggle with hearing loss have either partial or total damage of the cochlea and/or auditory nerve, resulting in a sensorineural hearing loss. This type of hearing loss leads to significant communication problems for people with hearing loss (PHL) (Table 1).

An audiologist can assist PHL in finding the most appropriate hearing aid (HA) given their hearing loss and listening needs. Other health professionals who provide care for older adults should be familiar with the benefits and limitations of HA use as well as the basic concepts involved in HA selection, care, and troubleshooting.

#### Table 1. Common Problems Faced by PHL

- Inability to hear soft sounds
- Loss of clarity of audible sounds, resulting in distortion
- Reduced ability to separate speech from background noise
- Reduced ability to process or understand speech quickly
- Tinnitus or “ringing in the ears”

#### What Hearing Aids Can and Cannot Do

Advances in HA technology have resulted in overall increased benefit and satisfaction with HA use. However, as advanced as HAs have become, they can still have limitations depending on the specifics of the hearing loss and listening needs of the user. Indeed, even the most sophisticated HAs cannot help PHL hear perfectly in all situations. Rather, HAs are tools that assist individuals to communicate effectively in more situations than they could without a HA. HAs cannot restore hearing any more than a walker or a cane will allow its user to sprint in the Olympics. Rather, HAs are designed to assist the user to improve overall quality of life. Table 2 lists what HAs can and cannot do.

#### Considerations in Hearing Aid Selection

There are several factors to consider when selecting a hearing aid including, but not limited to, directional and

#### Table 2. What Hearing Aids Can and Cannot Do

##### Hearing Aids CAN...

- make most sounds audible.
- make speech somewhat clearer, by amplifying only the specific speech sounds that are misheard.
- sometimes make tinnitus less noticeable.

##### Hearing Aids CANNOT...

- make audible sounds completely clear. Sounds that are heard are still processed by a damaged hearing mechanism. Similar to a broken amplifier, increased volume make sounds louder, not clearer.
- separate what individuals want to hear from what they don't want to hear.
- compensate for the loss of processing speed that accompanies age-related hearing impairment.

remote microphones, volume controls, program options, telecoils, as well as the shape and size of the device. HAs can cost from \$500-\$2500 each and are not covered by Medicare.

**Directional Microphones:** In a crowded restaurant, PHL have difficulty separating the speech they want to hear from surrounding noise and conversations. Directional microphones can help by giving some preference to sounds coming from the front versus sounds coming from other directions. Simple directional microphones are a standard feature in all HAs big enough to accommodate them. More sophisticated directional processing is available in more expensive devices and can provide an additional advantage. However, some PHL's ability to understand speech in a noisy environment is so poor that no matter how expensive and sophisticated the HAs are, HAs alone will not provide benefit in noisy situations.

**Remote Microphones.** Many HAs have microphone accessories that allow PHL to place a microphone near the person or sound source they would like to hear. This allows them to hear the person more clearly no matter how noisy

#### TIPS FOR ADVISING PATIENTS ABOUT HEARING AIDS

- Be sure patients know that while hearing aids usually improve the ability to hear speech and music, they do not help an individual to hear perfectly in all situations.
- Advise patients that while they may desire a cosmetically small, in-the-ear hearing aid, the very smallest hearing aids may not be able to provide all the needed technology, like directional microphones or manual controls.
- Encourage daily cleaning of hearing aids, and opening the battery compartment to the air when not in use.
- Remind patients to store batteries out of the reach of children and pets.

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the environment. The microphone picks up the sound source and transmits the sound directly to the PHL's HA, bypassing surrounding noise. These systems are less effective when communicating with more than one person at a time.

**Programs.** Many HAs can be programmed to alter the way they function in different listening environments based on listener preferences or needs. For example, programs can be created that make it easier to appreciate all the sounds in music or to access "looped rooms" using a telecoil. Telecoils are copper coils included in most, but not all, HAs and allow the user to access a loop system installed in various places like auditoriums or churches, without purchasing an additional accessory. These programs are often accessed by pressing a button on the device or with a remote control. Sophisticated HAs can make some of these program changes automatically, but the more automatic the changes, typically the more expensive the HA.

**Size and Shape.** HAs come in all shapes and sizes (see figure). There are advantages and limitations to each type. Some are less visible than others, and lack of visibility appeals to many PHLs. But over and above visibility, the most important considerations about size and shape are whether (a) the HA can accommodate the features desired by the PHL (e.g., directional microphone, buttons) and (b) the user can easily manipulate and care for the device. In these regards, bigger is typically better.

## Care of Hearing Aids

Hearing aids are electronic devices and must be maintained regularly to assure optimal performance. HAs and batteries should be stored in a safe place, out of the reach of pets and children, as they are toxic if ingested. The battery

compartment should be opened when the device is not in use. This avoids inadvertent battery drain and allows air circulation to prevent accumulation of moisture. HAs should be cleaned daily using the cleaning tools supplied at the time of purchase. This will help prevent ear wax from accumulating and blocking sound from reaching the ear.

## Troubleshooting

Batteries in the smallest HAs may last only 2-3 days, but can last up to 2-3 weeks in larger devices. Most HAs give an audible warning when the battery is about to deplete, and then they die immediately rather than fade out.

If a HA is not working, simple tests can be performed to determine why. If only one HA is not working but the other is fine, the first step is to check the battery. First, put the battery from the non-working HA into HA that is working. If it turns on, then the battery is not the problem. If it doesn't turn on, the battery was dead. You can also insert a new battery in the HA and cup the HA in your hand, listening for feedback (squealing noise). If present, the battery is good and the HA is operating. However, such feedback should not occur when HAs are properly inserted in the ear. When in doubt, the hearing aid should be taken to the audiologist or hearing instrument specialist to be checked.

## When Hearing Aids Aren't Enough

PHLs with more severe hearing loss may obtain only limited benefit from HAs. Cochlear implants (CIs) may be the best option for them. CIs include a surgically implanted device that stimulates the auditory nerve, bypassing the near-dead sensory part of the ear. A small computer device that can look like a HA is then worn near the ear. It translates sounds into electrical impulses that are sent to the implant.

## Types of Hearing Aids



Images from National Institute on Deafness and other Communication Disorders

## References and Resources

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Gnewikow D, Ricketts T, Bratt G, Mutchler L. Real-world benefit from directional microphone hearing aids. *Journal of Rehabilitation Research & Development*. 2009; 46:603-618.

Hearing Loss Association of America. Organization by and for persons with hearing loss. <http://www.hearingloss.org/>

CDC: Links to Other Resources on Hearing Loss. <https://www.cdc.gov/ncbddd/hearingloss/links.html>

University of Arizona, Department of Speech, Language, and Hearing Sciences, Programs and Services for Adults with Hearing Loss.

Useful links and information. <http://lwhl.arizona.edu/>.

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