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Hearing loss: Help for the young and old

Two simple questions (one for parents of newborns, one for older patients) can improve hearing loss identification. Hearing aid troubleshooting tips can help you overcome 6 common patient objections.

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PRACTICE RECOMMENDATIONS

› *Ensure that all the infants you care for underwent hearing screening shortly after birth and that those who tested positive are retested in ≤3 months.* (B)

› *Evaluate elderly patients for hearing loss during their initial visit and annually thereafter.* (A)

› *Speak clearly, maintain eye contact, and use nonverbal gestures when communicating with patients with hearing loss.* (C)

Strength of recommendation (SOR)

(A) Good-quality patient-oriented evidence
(B) Inconsistent or limited-quality patient-oriented evidence
(C) Consensus, usual practice, opinion, disease-oriented evidence, case series

Hearing impairment is a widespread problem, affecting approximately 36 million US adults[1] and an increasing number of children.[2] Yet it often goes undetected. The consequences of untreated or undertreated hearing loss can be severe.

Adverse effects are often age-dependent: In children, hearing loss is associated with a broad range of complications, including delays in language development, decreased reading comprehension, and poor academic performance, as well as social and emotional problems.[2,3] In adults—particularly the elderly—hearing impairment can lead to social isolation, depression, and a diminished quality of life.[4,5]

Early detection and treatment can do much to alleviate these adverse effects. But many physicians received little training in the identification and treatment of hearing loss in medical school. What's more, people with significant hearing loss tend to have fewer interactions with health care providers than their counterparts with no hearing impairment[6]—a finding that some attribute to fear, mistrust, and frustration.[7]

Physician awareness of the problems facing people with hearing loss, the importance of screening, and the need to improve communication with hearing-impaired patients (**TABLE 1**)[8] can help change that. The strategies presented here were developed with this in mind.

The scope of hearing loss across the lifespan

Hearing loss affects 1 to 3 in every 1000 newborns.[9] The prevalence increases to 2% among 5-year-olds, and to 10% to 20% by age 18.[10,11] The risk accelerates in "early older life" (defined as ages 50-69 years), with men affected more often than women.[12] Hearing loss is the fourth most common

TABLE 1

How to better communicate with patients who have hearing loss[8]

Maintain eye contact and avoid covering your lips while speaking; avoid shouting
Use gestures and other nonverbal cues
Draw diagrams or use pictures to make a point
Reduce background noise (eg, by closing a door or finding a quiet corner)
Use the "teach-back" method to ensure understanding
Use sign language or provide a sign language interpreter or an oral transliterator*

*Ask whether the patient is comfortable with sign language or oral transliteration, which is sometimes used to facilitate oral communication with people who have hearing loss.

chronic condition among older adults, and it is estimated that ≥70% of nursing home residents have some degree of impairment.[13]

Hearing loss can be categorized as mild (a loss of 20-40 decibels [dB]), moderate (41-55 dB loss), moderate to severe (56-70 dB loss), severe (71-90 dB loss), or profound (>91 dB loss), but any degree of hearing loss should be considered noteworthy.

In children, the impact of mild impairment is often minimized by both professionals and parents, especially among those whose speech developed normally. Unfortunately, the failure to respond appropriately in such cases often increases the adverse effects of the hearing loss.[14]

In adults, even mild to moderate impairment can lead to significant functional impairment and, therefore, a decreased quality of life.[5] And in elderly patients, any undetected hearing loss can adversely affect their performance on cognitive tests, leading to an incorrect diagnosis of cognitive impairment. Elderly patients often minimize hearing deficits, and many believe—incorrectly—that hearing loss due to aging is not amenable to treatment.[15]

Hearing loss in children may be congenital or acquired

In children, hearing loss can be divided into 2 main categories: congenital and acquired. Congenital etiologies include genetic diseases such as Down syndrome, Usher syndrome, and Alport syndrome—thought to account for 50% of pediatric hearing loss—and intrauterine infections. Causes of acquired hearing loss include recurrent otitis media—most common among infants and young children—and environmental noise (**TABLE 2**).[16-18]

Adolescents and young adults often expose themselves to loud noises from personal electronic devices, and the use of hearing protection in this population is low.[19] The results of one small study suggest that almost a third of adolescents regularly use the highest volume on their iPods or MP3 players, which can cause hearing damage over time.[20] Noise levels at which hearing loss occurs can be found at http://www.cdc.gov/niosh/topics/noise/noisemeter.html.[21] It is important for adolescents as well as adults to be aware of the risk of hearing loss from repeated exposure to loud noise, but evidence suggests that education about this danger is more likely to lead to behavior change in working-age adults than in teens.[22]

Screening parameters for infants and children

The US Preventive Services Task Force (USPSTF) recommends universal newborn hearing screening,[23] but this does not always happen. That's why it's important to ask all new parents whether their baby underwent hearing screening shortly after birth. If the answer is No (or they're not sure), you may want to order it at this time.

Infants at increased risk for hearing loss—those who spent >2 days on a neonatal intensive care unit; have a congenital syndrome, family history of hereditary childhood sensorineural hearing loss, or craniofacial abnormalities; or were exposed to certain intrauterine infections—should be screened again at 24 to 30 months of age.[23] Those with

TABLE 2

Common causes of hearing loss[16-18]

Newborns, children, and adolescents
Childhood infection (eg, measles, mumps, meningitis)
Genetic syndrome (eg, Down syndrome, Usher syndrome, Alport syndrome)
Head trauma
In utero infection (eg, toxoplasmosis, rubella, HSV, CMV, syphilis)
Noise exposure
Otitis media (recurrent)
Ototoxic medication*
Premature delivery
Adults and the elderly
Acoustic neuroma
Head trauma
Impacted cerumen
Noise exposure
Otitis media (recurrent)
Otosclerosis
Ototoxic medication*
Presbycusis

*Includes aminoglycosides, cisplatin, and loop diuretics, among others.

CMV, cytomegalovirus; HSV, herpes simplex virus.

Newborns at increased risk for hearing loss because of family history, exposure to intrauterine infection, or >2 days on a NICU should be screened at birth and at 24 to 30 months of age.

positive results on a newborn hearing screen require repeat screening within 3 months.[24,25] If the repeat screen is also positive, a full audiologic evaluation is necessary.

Testing newborns. The most common methods of screening newborns for hearing loss are otoacoustic emissions (OAE) and automated auditory brainstem response (AABR). The average age of detection of congenital hearing loss prior to the availability of these tests was 2 to 3 years. Earlier detection is associated with better developmental outcomes.[26]

OAE assesses cochlear integrity and measures outer hair cell function. AABR assesses auditory function from the eighth nerve through the auditory brainstem.

Testing toddlers and older children. Any child exhibiting signs of possible hearing loss, such as learning disabilities or speech delay, should be referred for audiometric testing, as should those who have had recurrent otitis media. Tympanograms can be used to diagnose conductive hearing loss, which often results from middle ear effusion. A parent's expression of concern about a child's hearing also warrants a referral, as parents can be 12 months ahead of physicians in identifying hearing loss.[27]

"Play audiometry," a behavioral test of auditory thresholds in response to speech and frequency-specific stimuli, is commonly used for children between the ages of 2 and 4 years. In this test, the child is instructed to place a block into a box whenever he or she hears a sound.

Children >4 years are typically tested with conventional audiometry, and instructed to raise their hand in response to speech and frequency-specific stimuli. This technique may also be used in adolescents.

Consults, resources required after diagnosis

All children diagnosed with hearing loss after an audiologic evaluation require consultation with specialists in otolaryngology, ophthalmology, and genetics. They should also

CONTINUED ON PAGE 274

CONTINUED FROM PAGE 270

TABLE 3

Hearing loss resources for parents and patients

Resource	What it offers
American Speech-Language-Hearing Association (ASHA) (www.asha.org)	Information about hearing loss in people of all ages
Beginnings for Parents of Children Who Are Deaf or Hard of Hearing (www.ncbegin.org)	Communication options for children with hearing loss
Better Hearing Institute (www.betterhearing.org)	Resources related to hearing loss for health care providers and patients
My Baby's Hearing (www.babyhearing.org)	Information about newborn screening
National Institute on Deafness and Other Communication Disorders (www.nidcd.nih.gov)	Information about hearing loss for the general public and health care providers

Audiometric testing is indicated for any child with recurrent otitis media, delayed speech, or learning disabilities.

be offered special educational services, beginning with early intervention and continuing with appropriate monitoring and support throughout the school years. In addition, their parents should be given contact information for hearing loss resources (**TABLE 3**). Adolescents and young adults with any degree of hearing loss should also receive counseling about noise exposure.[28,29] We'll review treatment options for hearing-impaired patients of all ages in a bit.

In adults, most hearing loss is age-related

Advancing age is the single most important (and nonmodifiable) risk factor for hearing loss among older adults. Physiologic changes, including cerumen buildup, tympanic membrane thickening, degeneration of middle ear auditory structures, and decreased central auditory processing all may contribute to presbycusis—age-related sensorineural hearing impairment.[30] High-frequency hearing loss is characteristic of presbycusis, and since consonants are high-frequency sounds, patients with this type of hearing loss often complain that they're unable to understand speech.

Conductive hearing loss may be caused by cerumen buildup, foreign bodies, otosclerosis, cholesteatoma, or tympanic membrane perforation—all of which may be treatable. Potentially modifiable risk factors for hearing loss include smoking, diabetes, exposure to ototoxic medications, and occupational noise, as well as cerumen buildup.[17]

Maintain an index of suspicion

The most important factor in diagnosing hearing loss in older adults is simply remembering to screen. Elderly patients should be evaluated for hearing loss during their initial visit, and once a year thereafter.[31] But all too often, that doesn't happen. One study found that only 18% of patients between the ages of 65 and 74 years and 22% of patients ages 75 and older had undergone screening for hearing loss during their most recent physical examination.[4]

But what impact does screening actually have on patients' quality of life? The evidence is mixed. One study in which asymptomatic individuals >50 years (mean age=61 years) underwent hearing screening found that, although screening increased hearing aid use at one year, it did not lead to an improvement in quality of life.[32,33] Another study with a significantly older population (mean age=72 years) found that screening did positively affect quality of life.[13]

Screening tools—and a question

Several testing techniques have about the same accuracy rates in diagnosing hearing loss in adult patients. These include:

- the whisper test (which should be ad-

Hearing aids don't work if patients don't wear them—tips for overcoming 6 objections

According to the National Institute on Deafness and Other Communication Disorders, only one out of 5 people who could benefit from hearing aids actually wears them. The use of hearing aids is relatively low even among those who own them: It is estimated that 25% to 40% of older people who have hearing aids wear them only occasionally—or not at all—or wear hearing aids that are of limited benefit (eg, because they're not adjusted properly, fit poorly, or do not provide adequate amplification).

Here's some help in overcoming 6 common objections to their use:

1. **"They hurt my ears."** Explain that discomfort is not unusual at first but often resolves in time. Advise the patient to wear the hearing aids for short periods initially, and then use them for longer periods of time once he or she gets used to them.
2. **"My voice sounds too loud."** This is known as an "occlusion effect." It occurs because of the trapping of bone-conducted sound vibrations between a hearing aid and tympanic membrane, and is usually self-limiting. If the problem persists, tell the patient to ask the audiologist to adjust the hearing aids.
3. **"The hearing aids whistle."** Feedback, such as a whistling noise, is an indication of a poorly fitting hearing aid, cerumen impaction, or fluid in the ear. If you inspect the patient's ears and find no problem (and the whistling continues), recommend that the patient ask the audiologist for a hearing aid adjustment.
4. **"I'm bothered by background noise."** Explain that hearing aids may not be able to totally block background sounds, but that they can be adjusted to minimize this effect. Recommend a visit to the audiologist if the problem persists.
5. **"They don't work with my cell phone."** Suggest that the patient bring the phone on the next visit to the audiologist and ask that the hearing aids be adjusted, as needed, to minimize interference.
6. **"I'm embarrassed to wear them."** Tell patients who are embarrassed by the need for hearing aids or don't want to be seen wearing them that many hearing aids can be concealed, and advise them to discuss this with the audiologist. You might also point out that many people find it more embarrassing not to wear hearing aids, because they have to keep asking friends and family to repeat themselves. You might also refer them to "Guess who wears a hearing aid"—a blog with a lengthy list of actors, politicians, athletes, and even a former Miss America, who have worn hearing aids (http://newgenerationhearing.wordpress.com/2010/03/01/guess-who-uses-hearing-aids/).

Adapted from: National Institute on Deafness and Other Communication Disorders. Hearing aids.[38]

ministered from a distance of 2 feet)

- handheld audiometry testing (with frequencies of 500-4000 Hertz [Hz] at 40 dB, these devices are 94% sensitive and 72% specific for detecting hearing loss)[15]
- the 10-question Hearing Handicap Inventory for the Elderly-Screening version (HHIE-S), available at http://www.asha.org/docs/html/GL1997-00199-T19.html.

The HHIE-S takes <5 minutes to administer and can be used in conjunction with audiometry testing for increased accuracy in diagnosing hearing loss. An alternative is to ask just one question:

"Do you have a hearing problem now?" This question alone appears to be as effective as the HHIE-S in identifying older patients with hearing loss,[34] and is likely to be the most efficient screening method for busy primary care physicians.

Asking "Do you have a hearing problem now?" appears to be as effective as a formal hearing screen in identifying hearing loss in older adults.

Consultation is needed when hearing loss is suspected

An audiology consultation should be consid-

ered when a patient's caregiver or family member—or the patient himself—expresses concern about hearing loss. A positive result on a hearing screen, as well as clinical expression of hearing loss, also indicates a need for referral.

An otolaryngology consult is required for complicated presentations, including persistent cerumen impaction, foreign bodies, otosclerosis, cholesteatoma, tympanic membrane perforation, and asymmetrical hearing loss, which could be caused by a tumor.

Asymmetrical hearing loss could be caused by a tumor.

Treating hearing loss in patients of all ages

Cerumen can contribute to hearing loss in children and adults alike, and can often be treated in an outpatient setting. A recent Cochrane review of various means of cerumen removal found the strongest evidence for irrigation, followed by cerumenolytic treatment and manual removal.[35] The use of cerumenolytic agents appears to be more effective than no treatment, but there is no evidence favoring one product over another. (To learn more about self-removal, see "Wax removal: Help patients help themselves" (*J Fam Pract*. 2011;60:671-673).

Hearing aids are first-line treatment

Hearing aids should be considered as first-line treatment for children and adults with hearing loss in which easily treatable etiologies such as cerumen impaction have been excluded. They have been shown to improve the ability to understand speech and environmental sounds, as well as the quality of life, for patients of all ages.[36] Even infants can be fitted with hearing aids, which are appropriate for mild, moderate, and severe hearing loss.[37] But only about 20% of older patients who could benefit from hearing aids ever buy them—and an estimated 25% to 40% of those who have hearing aids use them only occasionally, stop using them completely, or continue to wear them despite receiving limited benefit.[4]

Cost is one potential barrier to greater use. Hearing aids range in price from about $1000 to $4000 or more for a pair. And, while insurance coverage varies from one health plan to another, hearing aids are not covered by Medicare.

What's more, elderly patients sometimes have difficulty adjusting to hearing aids (see "Hearing aids don't work if patients don't wear them" on page 275).[38] Cognitive deficits, difficulty manipulating hearing aids, and embarrassment often contribute to suboptimal use of hearing aids.

Is a cochlear implant a viable alternative?

For older adults for whom the cost of hearing aids is prohibitive, a less expensive pocket amplifier with headphones may be a good choice. Middle ear implants, which mechanically vibrate the middle ear structures to produce amplification, are another option for patients with presbycusis.

National Institute for Health and Clinical Excellence (NICE) guidelines recommend consideration of cochlear implantation for children and adults after multidisciplinary team assessment.[37] Cochlear implants are indicated for severe to profound hearing loss, and have been shown to improve speech recognition abilities equally in adolescents and older adults.[39] And, unlike hearing aids, cochlear implants are covered by most health insurance plans. JFP

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