

Hearing Loss and Deafness/Hard of Hearing

What are hearing loss and deafness/hard of hearing?

- The terms *hearing loss* and *deafness/hard of hearing* describe a wide range of conditions that partially or totally prevent individuals from receiving sound in all or most of its forms.
- Children with hearing loss may hear sounds very differently. Some children respond well to hearing amplification, such as hearing aids, and can hear speech enough to support language development. Other children may minimally respond to sounds in their environments.
- New technology such as cochlear implants might provide better access to sound for some children than traditional hearing aids.
- The Individuals with Disabilities Education Act (IDEA) includes “hearing impairment” and “deafness” as 2 separate categories under which children may be eligible for special education and related services programming.
 - *Hearing loss* is defined by IDEA as “an impairment in hearing, whether permanent or fluctuating, that adversely affects a child’s educational performance.”
 - *Deafness/hard of hearing* is defined as “a hearing loss that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification.”

How common are they?

- Hearing loss affects individuals of all ages and may occur anytime from infancy through adulthood. Current US Department of Education statistics mention that 1.3% of all students with disabilities receive special education services under the category of “hearing impairment.”
- Information from the universal newborn hearing screening literature suggests that 1 to 3 children per 1,000 are identified with hearing loss now that nearly all newborns are screened. Other statistics indicate that by school age, 6 per 1,000 children have hearing loss.
- Mild hearing loss is often diagnosed after it is suspected, as the screening equipment does not screen for mild hearing loss.



Child with cochlear implant

- Red flags for hearing loss in the educational setting might include
 - Difficulties with following directions
 - Distractibility
 - Watching others to understand what to do
 - Difficulty keeping up with group conversations

Other conditions might mimic these symptoms, though, so a thorough evaluation should be conducted.

What are some common characteristics of children who have hearing loss or deafness/hard of hearing or of these conditions as children present with them?

- Children with hearing loss may have difficulty with sensing the loudness or intensity of sound (measured in units called decibels, or dB) or the frequency or pitch of sound (measured in units called hertz, or Hz).
- Hearing loss is generally described as *slight*, *mild*, *moderate*, *severe*, or *profound*. The severity of hearing loss depends on how well a person can hear the intensities or frequencies most greatly associated with speech. These terms do not necessarily indicate the clarity with which a child can hear and process spoken language.
- Children whose hearing loss is greater than 90 dB are considered to have deafness/hard of hearing, for the purposes of educational placement (under IDEA).

Hearing Loss and Deafness/Hard of Hearing *(continued)*

- There is clear evidence that children with mild or unilateral hearing loss can have difficulties in certain settings, especially in noisy environments or with multiple speakers.
- There are 4 types of hearing loss.
 - *Conductive* hearing loss occurs when diseases of the outer or middle ear cause an obstruction of the pathway of sound to reach the inner ear. Middle ear fluid from chronic ear infections can cause this type of hearing loss. Sometimes, conductive hearing loss can be helped by hearing aids or surgery.
 - *Sensorineural* hearing loss results from damage to the delicate sensory hair cells of the inner ear or surrounding nerves. Children with this type of hearing loss may hear certain frequencies better than others. Children with sensorineural hearing loss may perceive distorted sounds with hearing aids, making this condition more difficult to address.
 - *Mixed* hearing loss refers to a combination of conductive and sensorineural hearing losses. These children may have problems with the outer or middle ear and the inner ear. They may do well with hearing aids but may experience difficulty during a cold or an ear infection.
 - *Central* hearing loss results from damage to the nerves of the central nervous system, in the pathways to the brain or in the brain itself.

Who might be on the treatment team?

- The treatment team for a child with hearing loss includes the pediatrician/primary care provider (PCP), pediatric otolaryngologists, audiologists, speech-language therapists, and education specialists.
- Pediatricians/PCPs are important in the management of ear infections, which, if unaddressed, can lead to more functional impairment for these children. Vision can also be monitored in the medical home.
- A young child with hearing loss is at high risk of having receptive and expressive language difficulties, so *early intervention* is necessary. Early intervention is a system of services to support infants and toddlers with disabilities and their families. These therapists can work with teachers and caregivers to incorporate exercises and equipment into the day-to-day lives of the children. See Chapter 2 for more details.
- For children 3 years (ie, 36 months) and older, *special education and related services* are available through the public school to provide therapies necessary for school achievement. See Chapter 2 for more details.

What are some elements of a Care Plan for children with hearing loss or deafness/hard of hearing?

The Care Plan for children with hearing loss may include

- Regular speech, language, and auditory training (if chosen by a family)
- Good acoustic access within the classroom, which may include the guidance of an educational audiologist as well as amplification systems such as hearing aids, FM systems, and cochlear implants
- Interpreter services for children who use sign language
- Preferential seating in class to facilitate lipreading
- Captioned films, videos, and DVDs
- Assistance of a notetaker for students with hearing loss, so they may fully attend to instruction
- Alternative communication methods and devices
- Specialized educational instruction (eg, deaf educator; intervention specialists for specific academic areas, such as reading and math)
- Counseling services

What adaptations may be needed?

Medications

- No particular medications are needed for children who have deafness/hard of hearing.
- Children with cochlear implants may be at increased risk of acquiring bacterial meningitis, and these children should refer to their health professionals' respective specific immunization recommendations that are related to pneumococcal, meningococcal, and *Haemophilus influenzae* type b vaccines. Children with hearing aids should be helped to observe good ear hygiene, and they should be monitored for ear discharge and other signs of possible otitis externa.

Physical Environment and Other Considerations

- Most children with hearing loss are born to hearing parents who had to learn communication strategies with their child. Partner with parents/guardians to learn how to best communicate with a child who has hearing loss. They may also advise on how to recognize auditory fatigue and when breaks might be needed for the child.
- Vocabulary, grammar, word order, and figures of speech may be much more difficult for children with hearing loss. Early and consistent use of visible communication modes (eg, sign language, lipreading, captioning) is important.

Hearing Loss and Deafness/Hard of Hearing *(continued)*



Child with hearing aid

- All children who are deaf/hard of hearing have more difficulties hearing during a cold or an ear infection.
- Children with hearing loss use oral communication (eg, speech, lipreading, residual hearing), manual communication (eg, signs, finger spelling), or a combination of both (known as total communication) to learn.
- Good lighting and monitoring of vision is important so children can use visual cues to help their communication. Having a less distracting environment may also be helpful.
- Text telephones (known as TTs, TTYs, and TDDs) enable students who have deafness/hard of hearing to type phone messages over a telephone network known as the Telecommunications Relay Services. Technological advances such as video relay, text pagers, and visual fire alarms are available. These advances can be accessed all over the United States by dialing 711, and the relay service is free.

What should be considered an emergency?

Hearing loss does not lead to any specific emergency, although some children with hearing loss may have another condition (eg, seizure disorder) for which an emergency medical services (EMS) (911) plan is necessary. In this situation, the EMS (911) plan should include measures to enhance communication with the child during an emergency. Children with hearing loss may need special attention in a programmatic (facility) emergency such as a fire.

What types of training or policies are advised?

- Sign language. Learning some key signs can help with communicating with the child. Other situations call for having a sign language interpreter available.
- In-service training from speech-language therapists, audiologists, deaf educators, or other professionals.

What are some resources?

- Alexander Graham Bell Association for the Deaf and Hard of Hearing: www.agbell.org, 202/337-5220, 202/337-5221 (TTY)
- American Society for Deaf Children: <http://deafchildren.org>, 1-800-942-2732
- American Speech-Language-Hearing Association: www.asha.org, 1-800-638-8255, 301/296-5650 (TTY)—Thibodeau LM, DeConde Johnson C. Serving children with hearing loss in public school settings. *ASHA Leader*. 2005(10):6–38
- Boys Town National Research Hospital BabyHearing.org: www.babyhearing.org, 402/498-6540
- Hands and Voices: www.handsandvoices.org, 303/492-6283