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Hearing Loss

What is hearing loss?

When a child has trouble with hearing it is called a hearing loss. There are many types and degrees of hearing loss. Types of hearing loss are classified by where in the ear the problem occurs.

Types of hearing loss include:

- **Conductive hearing loss:** This type of hearing loss occurs when something interferes with sound waves traveling through the outer and middle parts of the ear. Possible causes include:
    - complete blockage in the outer ear by wax
    - ear infection or a collection of fluid in the middle ear
    - damage to the tiny bones in the middle ear.

  Conductive hearing losses may or may not be permanent depending on the cause.

- **Sensorineural hearing loss:** This type of hearing loss is caused by a problem in the innermost part of the ear or in the auditory nerve (the term auditory refers to hearing). Possible causes include:
    - abnormal development of the inner part of the ear
    - injury to the ear from diseases, such as meningitis and rubella
    - tumors
    - a physical injury to the inner ear.

  Sensorineural hearing losses are permanent. Sometimes the problem with the inner ear also causes problems with balance. Children with both hearing and balance problems may have mild delays in the development of their motor skills.

A child may have both a sensorineural hearing loss and a conductive hearing loss. This type of hearing loss is called a mixed loss.

What are the levels of severity?

Hearing losses are also classified by their severity: mild, moderate, severe, and profound. The level of severity is determined by the loudness of sound that a child can hear. The loudness of sound is measured in decibels (dB).

Mild: Children with mild hearing losses can hear sounds of 30 to 40 dB or louder. They may have trouble hearing faint or distant speech. The most common cause of a mild hearing loss is fluid collection in the middle ear.

Moderate: Children who have moderate losses of hearing can hear sounds louder than 45 to 60 dB. They need speech to be loud. It is hard for these children to understand speech in group situations.

Severe: Children with severe losses can hear sounds of 65 to 85 dB or louder. They can hear only loud voices one foot or less away or loud sounds in the environment.

Profound: Children with profound hearing losses may hear loud sounds of 90 dB or more, but they may be more aware of vibrations than sound. The term deaf usually applies to children with profound hearing losses or to children with no hearing at all.

What are the symptoms?

Your child may have a hearing problem if:

- Loud noises do not startle your child by 3 or 4 months of age or if your child does not turn towards the source of a sound.
- Your child notices you only when he or she sees you.
- Your child does not experiment with sounds other than gargles and other vibrating noises that he or she can feel.
- By 15 months of age, speech is delayed or hard to understand. Single words such as "dada" or "mama" are not spoken.
- Your child does not always respond when called.
- Your child hears some sounds but not others.
- Your child hears poorly and has trouble holding his head steady. Your child is slow to develop unsupported sitting or walking.
- Your child has a cleft lip or palate, kidney disease, short stature, or other birth defects.

How is it diagnosed?

A child is never too young to have a hearing test. Early testing is important. Every child who may have a hearing loss needs thorough testing of his hearing and middle ear function. An audiologist performs hearing tests. He or she is specially trained to recognize and evaluate hearing.

After a hearing loss is diagnosed, your health care provider will try to find out the cause of the hearing loss. Additional tests may include blood tests, an EKG, and a CAT scan (a special x-ray) of the middle and inner ear. It is important to try to find out if the cause, especially if it is a genetic cause. Then you will know if your next child has a chance of having the same problem.

Results from these tests help determine the best treatment and educational strategy for your child.

What is the treatment?

A child's early years are very important for learning and the development of language. Treating hearing impairment early makes a big difference in how well a child functions later in life. The audiologist tries to provide the best use of a child's remaining hearing. She or he designs a treatment plan for your child. This plan consists not only of making sound louder with hearing aids, but also hearing and language training, and parent support and training.

- **Hearing aids** Hearing aids do not restore hearing. They are loudspeakers that help get the best sound possible to your child's ear. The aid makes sounds louder, not clearer. It may distort some sounds. Children of all ages can use hearing aids. The aids even help young infants. Make sure

that you talk to the ear doctor about what sounds your child can hear with and without a hearing aid, the effects of noise on your child's hearing, and how to keep the hearing aids in the best working order. Your child will also need to learn how to hear better; for example, by ignoring noises in the environment and paying attention to voices.

- **Cochlear implants** The cochlea is the part of the ear that turns the vibrations we call sound into electrical signals. The brain then interprets the signals into meaningful sounds such as speech. Some children with hearing loss may benefit from an electronic device called a cochlear implant (CI). A CI has of three parts: a microphone, a microcomputer, and a cochlear electrode. The microphone, worn behind the ear, sends the sound to a microcomputer. The microcomputer is connected to the microphone by a wire and is worn in a pouch attached to the belt. It turns the sound into an electrical code which is sent by radio wave to the cochlear electrode. The wire electrode is surgically implanted through the skull behind the ear into the cochlea. The cochlear implant does not give the child normal hearing. However, the child may be able to interpret the signals produced by the implant after he or she gets used to the signals and what they mean. Your team of doctors and hearing specialists will help you decide if an implant is right for your child. The results of an implant may vary from child to child. Most all children who get an implant have improved hearing and oral language abilities. Therapy given after surgery may also play an important role in how well your child's hearing improves.
- **Ear tubes** A buildup of fluid in the middle ear could worsen your child's hearing loss. Your child may need to have ventilating tubes (ear tubes) to help drain fluid in the middle ear. Any additional hearing loss may make a big difference in what a child can hear. A child with ear tubes can continue to use hearing aids.
- **Therapies** Language training programs for hearing-impaired children are offered as early as infancy. Parent-infant programs help parents provide an environment rich in language for their child. Hearing-impaired children use a variety of ways to communicate. You and your health care provider will need to decide which way works best with your child. If your child has some hearing left, it may be best to train your child to make the most of his or her speech and hearing abilities. For a more severe hearing loss, a child may need to be trained to use speech, hearing, vision, speech-reading, finger spelling, reading, writing, or signing (American Sign Language) to communicate. Think about and discuss the following questions to help determine the best method of communication for your child:
    - How much hearing does your child have left?
    - How does your family communicate with your child?
    - Are you willing to attend sign language classes?
    - What resources are available to you and your child?
- **Education** Contact your local school district before your child starts school. Children with hearing loss usually require some special classroom changes. A team of professionals will help evaluate your child and put together an Individual Education Plan (IEP). Parents have a right to help put together this plan. You may also ask your health care provider to review the plan. In some schools there are programs available for children with hearing loss. Ask and find out all the services that may be available for your child.
- **Follow-up** Hearing-impaired children need regular hearing, ear, and eye exams. Younger children need to be tested more frequently than older children because their ear canals are growing and changing shape. Because your child's primary way of learning and communicating is through sight, regular eye exams are important to make sure there are no problems.

How can I help my child learn to communicate?

- Talk directly to your child. Always face your child and bend down to his or her level before you begin to speak. Use short, simple phrases and sentences. Don't use baby talk. Speak clearly and not too fast.
- Use many facial and body expressions.
- Talk about things that are important to your child. Provide materials, toys, and games that are interesting to your child to stimulate conversation.

- Repeat words and phrases often. As part of your child's daily routines--for example, getting dressed--emphasize words like shirt, socks, and shoes. Add words to your child's one- and two-word phrases. For example, when your child says "blue train," say back to the child, "The blue train is going fast."
- Encourage your child to join in your conversation. Praise your child's efforts at making sounds. Respond to the meaning your child is trying to communicate. Encourage taking turns in conversation.
- Avoid having conversations in places where there is a lot of noise, including sound from television, radio, electrical appliances, and competing conversations.

When should I call my child's health care provider?

Call during office hours if:

- there is any sudden change in your child's response to sound, especially from a cold
- you are concerned about your child's hearing.

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