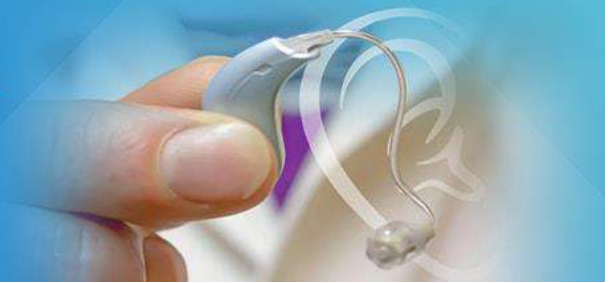


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Causes, prevention and effects of deafness

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Abstract

"Deaf" usually refers to a hearing loss so severe that there is very little or no functional hearing. "Hard of hearing" refers to a hearing loss where there may be enough residual hearing that an auditory device, such as a hearing aid or FM system, provides adequate assistance to process speech. The term "hearing impaired" is often used to describe people with any degree of hearing loss, from mild to profound, including those who are deaf and those who are hard of hearing. Many individuals who are deaf or hard of hearing prefer the terms "deaf" and "hard of hearing," because they consider them to be more positive than the term "hearing impaired," which implies a deficit or that something is wrong that makes a person less than whole. "Deafened" usually refers to a person who becomes deaf as an adult and, therefore, faces different challenges than those of a person who became deaf at birth or as a child. Deaf, deafened, and hard of hearing individuals may choose to use hearing aids, cochlear implants, and/or other assistive listening devices to boost available hearing. Alternatively, or in addition, they may read lips, use sign language, sign language interpreters, and/or captioning. People who are deaf or hard of hearing may have speech that is difficult to understand due to the inability to hear their own voice.

Keywords: deaf, hard of hearing, hearing impaired

Introduction

Signs of Hearing Loss

Some people have a hearing problem and don't realize it. You should see your doctor if you:

- Have trouble hearing over the telephone
- Find it hard to follow conversations when two or more people are talking
- Often ask people to repeat what they are saying
- Need to turn up the TV volume so loud that others complain
- Have a problem hearing because of background noise
- Think that others seem to mumble
- Can't understand when women and children speak to you

Types of Hearing Loss

Hearing loss comes in many forms. It can range from a mild loss, in which a person misses certain high-pitched sounds, such as the voices of women and children, to a total loss of hearing.

There are two general categories of hearing loss:

- **Sensorineural hearing loss** occurs when there is damage to the inner ear or the auditory nerve. This type of hearing loss is usually permanent.
- **Conductive hearing loss** occurs when sound waves cannot reach the inner ear. The cause may be earwax buildup, fluid, or a punctured eardrum. Medical treatment or surgery can usually restore conductive hearing loss.

Sudden Hearing Loss

Sudden sensorineural hearing loss, or sudden deafness, is a rapid loss of hearing. It can happen to a person all at once or over a period of up to 3 days. It should be considered a medical emergency. If you or someone you know experiences sudden sensorineural hearing loss, visit a doctor immediately.

Age-Related Hearing Loss (Presbycusis)

Presbycusis, or age-related hearing loss, comes on gradually as a person gets older.

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It seems to run in families and may occur because of changes in the inner ear and auditory nerve. Presbycusis may make it hard for a person to tolerate loud sounds or to hear what others are saying.

Age-related hearing loss usually occurs in both ears, affecting them equally. The loss is gradual, so someone with presbycusis may not realize that he or she has lost some of his or her ability to hear.

Ringling in the Ears (Tinnitus)

Tinnitus is also common in older people. It is typically described as ringing in the ears, but it also can sound like roaring, clicking, hissing, or buzzing. It can come and go. It might be heard in one or both ears, and it may be loud or soft. Tinnitus is sometimes the first sign of hearing loss in older adults. Tinnitus can accompany any type of hearing loss and can be a sign of other health problems, such as high blood pressure, allergies, or as a side effect of medications.

Tinnitus is a symptom, not a disease. Something as simple as a piece of earwax blocking the ear canal can cause tinnitus, but it can also be the result of a number of health conditions.

Causes of Hearing Loss

Loud noise is one of the most common causes of hearing loss. Noise from lawn mowers, snow blowers, or loud music can damage the inner ear, resulting in permanent hearing loss. Loud noise also contributes to tinnitus. You can prevent most noise-related hearing loss. Protect yourself by turning down the sound on your stereo, television, or headphones; moving away from loud noise; or using earplugs or other ear protection.

Earwax or fluid buildup can block sounds that are carried from the eardrum to the inner ear. If wax blockage is a problem, talk with your doctor. He or she may suggest mild treatments to soften earwax.

A punctured ear drum can also cause hearing loss. The eardrum can be damaged by infection, pressure, or putting objects in the ear, including cotton-tipped swabs. See your doctor if you have pain or fluid draining from the ear.

Health conditions common in older people, such as diabetes or high blood pressure, can contribute to hearing loss. Viruses and bacteria (including the ear infection otitis media), a heart condition, stroke, brain injury, or a tumor may also affect your hearing.

Hearing loss can also result from taking certain medications. "Otototoxic" medications damage the inner ear, sometimes permanently. Some ototoxic drugs include medicines used to treat serious infections, cancer, and heart disease. Some antibiotics are ototoxic. Even aspirin at some dosages can cause problems. Check with your doctor if you notice a problem while taking a medication.

Heredity can cause hearing loss, as well. But not all inherited forms of hearing loss take place at birth. Some forms can show up later in life. For example, in otosclerosis, which is thought to be a hereditary disease, an abnormal growth of bone prevents structures within the ear from working properly.

How to Cope with Hearing Loss

If you notice signs of hearing loss, talk to your doctor. If you have trouble hearing, you should:

- Let people know you have a hearing problem.
- Ask people to face you and to speak more slowly and

clearly. Also, ask them to speak louder without shouting.

- Pay attention to what is being said and to facial expressions or gestures.
- Let the person talking know if you do not understand what he or she said.
- Ask the person speaking to reword a sentence and try again.
- Find a good location to listen. Place yourself between the speaker and sources of noise and look for quieter places to talk.

The most important thing you can do if you think you have a hearing problem is to seek professional advice. Your family doctor may be able to diagnose and treat your hearing problem. Or, your doctor may refer you to other experts, like an otolaryngologist (ear, nose, and throat doctor) or an audiologist (health professional who can identify and measure hearing loss).

How to Talk with Someone with Hearing Loss

Here are some tips you can use when talking with someone who has a hearing problem:

- In a group, include people with hearing loss in the conversation.
- Find a quiet place to talk to help reduce background noise, especially in restaurants and at social gatherings.
- Stand in good lighting and use facial expressions or gestures to give clues.
- Face the person and speak clearly. Maintain eye contact.
- Speak a little more loudly than normal, but don't shout. Try to speak slowly, but naturally.
- Speak at a reasonable speed.
- Do not hide your mouth, eat, or chew gum while speaking.
- Repeat yourself if necessary, using different words.
- Try to make sure only one person talks at a time.
- Be patient. Stay positive and relaxed.
- Ask how you can help.

Devices to Help with Hearing Loss

Your doctor or specialist may suggest you get a hearing aid. Hearing aids are electronic, battery-run devices that make sounds louder. There are many types of hearing aids. Before buying a hearing aid, find out if your health insurance will cover the cost. Also, ask if you can have a trial period so you can make sure the device is right for you. An audiologist or hearing aid specialist will show you how to use your hearing aid.

Assistive-listening devices, mobile apps, alerting devices, and cochlear implants can help some people with hearing loss. Cochlear implants are electronic devices for people with severe hearing loss. They don't work for all types of hearing loss. Alert systems can work with doorbells, smoke detectors, and alarm clocks to send you visual signals or vibrations. For example, a flashing light can let you know someone is at the door or the phone is ringing. Some people rely on the vibration setting on their cell phones to alert them to calls.

Over-the-counter (OTC) hearing aids are a new category of regulated hearing devices that adults with mild-to-moderate hearing loss will be able to buy without a prescription. OTC hearing aids will make certain sounds

louder to help people with hearing loss listen, communicate, and take part more fully in daily activities. OTC hearing aids are expected to become available in stores and online in the next few years.

Preventing Hearing Loss

In the United States, hearing loss is the third most common chronic physical condition after high blood pressure and arthritis. Not surprisingly, hearing loss is among the most common work-related illnesses. Workers are faced with occupational noise hazards every day. This page provides guidelines and recommendations for employers and workers to help reduce risks from noise exposure in the workplace.

Prevention is important

- Almost all work-related hearing loss is permanent, and it can have a profound impact on quality of life.
- As hearing loss worsens, hearing and understanding others becomes increasingly difficult, which can lead to isolation.
- Hearing loss is associated with cognitive (mental) decline and heart problems, such as high blood pressure and heart disease.
- Hearing loss is also strongly associated with depression.
- Hearing loss can lead to loss of enjoyment, when all the sounds we want to hear (e.g., music, voice of loved one) become muted and lack quality.
- Ringing in the ears (tinnitus), which often occurs along with hearing loss, can disrupt sleep and concentration and is associated with both depression and anxiety.
- Hearing loss can impact safety at home and on the job.
- Income is typically lower among workers with hearing loss, than among workers with normal hearing.

Fortunately, with today's hearing loss prevention strategies and technologies, work-related hearing loss can be nearly always prevented.

Types of Hearing Loss

Hearing loss affects people of all ages and can be caused by many different factors. The three basic categories of hearing loss are sensorineural hearing loss, conductive hearing loss and mixed hearing loss. Here is what patients should know about each type.

Sensorineural Hearing Loss

This type of hearing loss occurs when the inner ear or the actual hearing nerve itself becomes damaged. This loss generally occurs when some of the hair cells within the cochlea are damaged.

Sensorineural loss is the most common type of hearing loss. It can be a result of aging, exposure to loud noise, injury, disease, certain drugs or an inherited condition. This type of hearing loss is typically not medically or surgically treatable; however, many people with this type of loss find that hearing aids can be beneficial.

Sudden Sensorineural Hearing Loss

Sudden sensorineural hearing loss may occur very suddenly or over the course of a few days. It is imperative to see an otologist (a doctor specializing in diseases of the ear) immediately. A delay in treating this condition (two or more weeks after the symptoms first begin) will decrease the chance that medications might help improve the problem.

Conductive Hearing Loss

This type of hearing loss occurs in the outer or middle ear where sound waves are not able to carry all the way through to the inner ear. Sound may be blocked by earwax or a foreign object located in the ear canal; the middle ear space may be impacted with fluid, infection or a bone abnormality; or the eardrum may have been injured.

In some people, conductive hearing loss may be reversed through medical or surgical intervention. Conductive hearing loss is most common in children who may have recurrent ear infections or who insert foreign objects into their ear canal.

Mixed Hearing Loss

Sometimes people can have a combination of both sensorineural and conductive hearing loss. They may have a sensorineural hearing loss and then develop a conductive component in addition.

Hearing testing is critical for discovering exactly what type of hearing loss you have, and will help determine the hearing care solution that is right for you. Hearing aids are available in many sizes, styles and technologies; there are also many alternatives to hearing aids.

Hearing Loss in Adults

People over age 50 may experience gradual hearing loss over the years due to age-related changes in the ear or auditory nerve. The medical term for age-related hearing loss is presbycusis. Having presbycusis may make it hard for a person to tolerate loud sounds or to hear what others are saying.

Other causes of hearing loss in adults include:

- Loud noises
- Heredity
- Head injury
- Infection
- Illness
- Certain prescription drugs
- Circulatory problems such as high blood pressure

Symptoms of Hearing Loss

Hearing loss typically occurs over time. At first, you may not notice any changes in your hearing. However, if you experience any of the following symptoms, you should contact your doctor:

- Hearing loss that interferes with your daily activities
- Hearing loss that becomes worse or that doesn't go away
- Hearing loss that's worse in one ear
- Sudden hearing loss
- Ringing in the ear
- Severe hearing loss
- Having ear pain along with hearing problems
- Headaches
- Numbness
- Weakness

You should seek emergency medical treatment if you experience headaches, numbness, or weakness along with any of the following:

- Chills
- Quick breathing
- Neck stiffness

- Vomiting
- Sensitivity to light
- Mental agitation

These symptoms may occur with life-threatening conditions that warrant immediate medical attention, such as meningitis.

Treatment Options for Hearing Loss

If you develop hearing loss due to a buildup of wax in the ear canal, you can remove the wax at home. Over-the-counter solutions, including wax softeners, can remove wax from the ear. Syringes can also push warm water through the ear canal to remove the wax. Consult your doctor before attempting to remove any object stuck in your ear to avoid unintentionally damaging your ear. For other causes of hearing loss, you'll need to see your doctor. If your hearing loss is the result of an infection, your doctor may need to prescribe antibiotics. If your hearing loss is due to other conductive hearing problems, your doctor may refer you to a specialist to receive a hearing aid or a cochlear implant.

Prevent Hearing Loss

Not all cases of hearing loss are preventable. However, there are several steps that you can take to protect your hearing:

- Use safety equipment if you work in areas with loud noises, and wear earplugs when you swim and go to concerts. The National Institute on Deafness and Other Communication Disorders Trusted Source reports that 15 percent of people ages 20 to 69 experienced hearing loss due to loud noise.
- Have regular hearing tests if you work around loud noises, swim often, or go to concerts on a regular basis.
- Avoid prolonged exposure to loud noises and music.
- Seek help for ear infections. They may cause permanent damage to the ear if they're left untreated.

Conclusion

The interaction between a person and his or her surrounding environment is mediated through sensory experiences. The sense of hearing, in particular, fundamentally facilitates communication and fosters social interaction. Hearing is the key to learning spoken language and is important for the cognitive development of children. Without suitable interventions, hearing loss is a barrier to both education and social integration. Some 360 million people (approximately 5% of the world's population) live with disabling hearing loss¹ and nearly 32 million of them are children. It is estimated that over 60% of such hearing loss could be avoided through preventive measures. In addition, children who have hearing loss can benefit greatly from early identification and appropriate interventions. Action is required to ensure that the preventable causes of hearing loss are avoided and that everyone with unavoidable hearing loss can reach their full potential through rehabilitation, education and empowerment. Strategic planning around the above actions can help reduce hearing loss and its adverse impact on those who live with it. In line with the principles of the United Nations Convention on the Rights of Persons with Disabilities, improved hearing and access to communication facilitates education and employment, and fosters social inclusion and psychological well-being among people with hearing loss. Many countries have already started implementing such strategies and have established models for prevention, identification and intervention.

Today, the causes of hearing loss are known and preventive strategies have been identified; technology is available to detect hearing loss at the earliest stage of development, and intervention techniques are well established. Thousands of children with hearing loss are acquiring communication skills, and will have the same opportunities in life as their hearing peers. On the other hand, millions are still facing the adverse consequences of hearing loss throughout their life.

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