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Understanding Hearing Loss

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Hearing loss may be partial or total depending on the percentage of loss



Ears anatomy and function

Ears are the friends we have that enable us to collect and process sounds and transmit them to our brain. They also help us keep our balance and give us an idea of what position our head is in in relation to the ground. This is done by the help of the three parts: the outer ear the middle ear and the inner ear.

The outer ear or pinna is the part we can see. It acts as a funnel to collect sound and focus them into the narrow hole in the center called the ear canal. The ear canal is where wax collects so it must be kept clean and free for us to hear.

The middle ear is the part behind the ear drum which is the thin membrane across the ear canal that separates the outer and middle ear. The middle ear has the function of focusing and amplifying sound to be then transmitted to the inner ear through a smaller membrane. When the ear drum vibrates, three small bones in the middle ear (malleus, incus, stapes), vibrate to amplify and transmit sound to the inner ear.

The inner ear is the part that acts like a microphone in your computer, converting vibrations into electrical current which is transmitted to the brain (like the CPU) where it is understood as sound.

The inner ear has three tubes at right angles to each other which are filled with liquid and have tiny hairs inside which create current when they bend. This happens when we change the position of the head or turn or stop or start moving. The brain understands these signals and combines them to understand what the position of the head is with relation to gravity and acceleration. Thus the inner ear helps us keep balance. Sometimes if we are moving too fast and stop, the fluid keeps moving so confuses the brain for a few seconds. This is why we feel dizzy after roller coaster rides.

Hearing loss may be partial or total depending on the percentage of loss. Partial hearing loss may be temporary caused by dirt in the ear canal or by liquid in the middle ear caused by a common cold, or by a hole in the ear drum. Permanent partial loss occurs when the inner ear is damaged also called nerve loss. When the outer and middle ear are the cause, it is called conductive deafness and when the inner ear and nerves are damaged it is called sensorineural hearing loss.

Hearing loss may be congenital (ie from birth), where there is abnormal formation of the outer middle or inner ear or in the hearing center in the brain.

Giddiness and vertigo. Damage to the three tubes responsible for balance causes vertigo. This may be curable as in the case of menieres disease or incurable by medications where it is called intractable vertigo. In this case chemical or surgical destruction of the balance tubes is the only answer but hearing loss in that side always occurs.

Tinnitus or ringing in the ears occurs when the inner ear is making electrical signals even when there is no sound. It may sound like clicking hissing roaring or high- pitched whine or buzz. This may indicate exposure to loud noise, diseases of the heart or blood vessels, ear infections, menieres disease, brain tumors, emotional stress, reaction to some medications, head injury or wax in the ear.

Effect of altitude on Ears: Sudden hearing loss and ringing in the ears both occur at high altitudes and are suspected to be linked to low oxygen levels, returning to a lower altitude or high-pressure oxygen therapy both have been shown to reverse the problem. In general, the thinner air at high altitudes carried less sound and therefore even people who are otherwise unaffected by the lower oxygen levels in the air can have difficulty hearing or understanding speech.

If other symptoms like bad headaches , nausea, dizziness, exhaustion occur it is a sign of altitude sickness which can further progress with fluid in the lungs (high altitude pulmonary oedema), or brain (high altitude cerebral oedema). Usually heights above 8000 feet are responsible for altitude sickness.

Hearing loss and prevention

Earwax – Commercially available drops to soften earwax and a visit to the ENT doctor for ear syringing.

Hole in the eardrum can result in hearing loss and fluid discharge….. visit your ENT doctor for various methods of treating and fixing the hole in the drum

Ear infections or otitis media is most common in children, but adults can get it too. You can help prevent upper respiratory infections -- and a resulting ear infection -- by washing your hands frequently. With flu-related ear infections see a doctor immediately before it becomes more serious.

Medications, ask your doctor if your medication is ototoxic, or potentially damaging to the ear. Ask if other medications can be used instead. If not, ask if the dosage can be safely reduced. Sometimes it cannot. However, your doctor should help you get the medication you need while trying to reduce unwanted side effects.

Diet: Avoiding excess alcohol, caffeine and tobacco products. Avoiding foods known to cause allergies or colds

Environment: Avoiding inhaled vapors known to cause allergies or colds.

Exercise: 15 minutes brisk walking in the morning and evening with controlled breathing in and out while walking helps clear the airways and reduce infections of the upper respiratory tract

Lifestyle changes:

- Avoiding putting anything in the ear
- Avoiding excessive drinking and smoking
- Avoiding exposure to very loud sounds or explosions
- Use of ear muffs or protectors in very noisy environments
- Having regular cleaning of the ears every six months or as indicated by a medical practitioner
- Keeping other medical conditions like diabetes, blood pressure and upper respiratory tract infections (nose, throat) under control.
- Regular eating and sleeping habits and daily exercise for 15 minutes improve immunity and general heath and thereby reduces ear nose and throat infections.

Avoiding Noise-Induced Hearing Loss

Noise-induced hearing loss is 100 percent preventable, and you can take precautions to help avoid this type of hearing loss.

Potential damage from noise is caused by the loudness of the sound and the amount of time you are exposed to it. The intensity, or loudness, of a sound is measured in units called decibels, abbreviated dB. An ordinary conversation is approximately 60 dB; city traffic noise can reach 85 dB; and a firecracker can reach an ear-piercing 150 dB.

Long or repeated exposure to sounds at or above 85 decibels can damage your inner ear and cause hearing loss. Sounds from gas lawnmowers, snow blowers, motorcycles, firecrackers, and loud music often are above 85 decibels. Protect your hearing by avoiding noises at or above 85 decibels.

When you are involved in a loud activity, wear earplugs or other hearing protective devices. Lower the volume on personal stereo systems and televisions. Be sure to protect children's ears too.

Although awareness of noise levels is important, you should also be aware of how far away you are from loud noise and how long you are exposed to it. Avoid noises that are too loud, that are too close, and that last too long. If you experience tinnitus or have trouble hearing after noise exposure, then you have been exposed to too much noise.

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