

# What Causes Hearing Loss?

## February HCE “On Your Own” Study Lesson

If you have hearing loss, you're not alone. Hearing loss affects about 36 million people in the United States and becomes more common with age. About 1 in 3 Americans between ages 65 and 74 has hearing loss. This number jumps to 1 in 2 in adults over age 75.

Problems with your ears, whether they're related to hearing, balance or both, can chip away at your self-confidence, affect how well you communicate, and make life less enjoyable overall. If you're having trouble hearing, you may feel uncomfortable in social situations. You may feel frustrated as you try to go about your day. You may find it easier to withdraw from others. People may see you as timid or disconnected and give up trying to communicate with you.

### Are you experiencing hearing loss?

The following questions are based on guidance from the National Institute on Deafness and Other Communication Disorders. These questions can help you decide if you need to make an appointment with your doctor or a hearing specialist.

- Do you have trouble hearing on the telephone?
- Do you have to strain to understand conversations?
- Do you have trouble following a conversation when two or more people are talking at the same time?
- Do you have trouble hearing in a situation with a noisy background?
- Do people say that you turn the TV volume up too high?
- Do you find yourself asking people to repeat themselves?
- Do many people you talk to seem to mumble or not speak clearly?
- Do people get annoyed because you misunderstand what they say?
- Do you respond inappropriately to what people say?
- Do you have trouble understanding people who have high-pitched voices or are soft-spoken — often women and children?

If you answered yes to three or more of these questions, ask someone who knows you well to consider these questions with you in mind. He or she might notice signs of hearing loss in you long before you do and prompt you to get help. Consider asking your doctor about having a hearing evaluation.

### Hearing loss

Hearing loss that comes on little by little as you age is common. More than half the people in the United States older than age 75 have some age-related hearing loss.

You usually can't get hearing back. But there are ways to improve what you hear.

## When to see a doctor

If you have a sudden loss of hearing, particularly in one ear, seek medical attention right away.

Talk to your health care provider if loss of hearing is causing you trouble. Age-related hearing loss happens little by little. So you may not notice it at first.

## Causes

To understand how hearing loss happens, it can be helpful to understand how hearing works.

## How you hear

The ear has three main parts: the outer ear, middle ear and inner ear. Sound waves pass through the outer ear and cause the eardrum to vibrate. The eardrum and three small bones of the middle ear make the vibrations bigger as they travel to the inner ear. There, the vibrations pass through fluid in a snail-shaped part of the inner ear, known as the cochlea.

Attached to nerve cells in the cochlea are thousands of tiny hairs that help turn sound vibrations into electrical signals. The electrical signals are transmitted to the brain. The brain turns these signals into sound.



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## How hearing loss can occur

Causes of hearing loss include:

- **Damage to the inner ear with Aging and Loud Noise.** Aging and loud noise can cause wear and tear on the hairs or nerve cells in the cochlea that send sound signals to the brain. Damaged or missing hairs or nerve cells don't send electrical signals well. This causes hearing loss.

Higher pitched tones may seem muffled. It may be hard to pick out words against background noise.

- **Buildup of earwax.** Over time, earwax can block the ear canal and keep sound waves from passing through. Earwax removal can help restore hearing.
- **Ear infection or unusual bone growths or tumors.** In the outer or middle ear, any of these can cause hearing loss.
- **Ruptured eardrum.** Loud blasts of noise, sudden changes in pressure, poking an eardrum with an object and infection can cause the eardrum to burst.

## Risk factors

Other factors that damage or lead to loss of the hairs and nerve cells in the inner ear include:

- **Heredity.** Your genes may make you more likely to have ear damage from sound or from aging.
- **Noises on the job.** Jobs where loud noise is constant, such as farming, construction or factory work, can lead to damage inside the ear.
- **Noises at play.** Exposure to explosive noises, such as from firearms and jet engines, can cause immediate, permanent hearing loss. Other activities with dangerously high noise levels include snowmobiling, motorcycling, carpentry or listening to loud music.
- **Some medicines.** 200! Including the antibiotic gentamicin, sildenafil (Viagra) and certain medicines used to treat cancer, which can damage the inner ear. Very high doses of aspirin, other pain relievers, antimalarial drugs or diuretics can cause short-term effects on hearing. These include ringing in the ears, also known as tinnitus, or hearing loss.
- **Some illnesses.** Illnesses such as meningitis that cause high fever can harm the cochlea. Hypertension, blood circulation problems including MS, Diabetes.

## Comparing loudness of common sounds

The chart below lists common sounds and their decibel levels. A decibel is a unit used to measure how loud sound is. The Centers for Disease Control and Prevention says noise above 70 decibels over time can start to damage hearing. The louder the noise, the less time it takes to cause lasting hearing damage.

### Sound Levels of Common Noises

Decibels		Noise Source
30	Safe	Whisper
40	Safe	Refrigerator
60	Safe	Normal Conversation
75	Safe	Dishwasher
85	Some Risk	Heavy Traffic, School Cafeteria

95	Some Risk	Motorcycle
100	Some Risk	Snowmobile
110	Some Risk	Jackhammer, Rock Concert, Symphony, Chain Saw
115	Some Risk	Sandblasting
120	Some Risk	Ambulance siren, Thunder
140-165	Some Risk	Firecracker, Firearms

### **Longest amount of time to be around loud sounds**

Below are the loudest noise levels people can be around on a job without hearing protection and for how long. OSHA, 2018

<b>Sound Level, Decibels</b>	<b>Duration, daily</b>
90	8 hour
92	6 hours
95	4 hours
97	3 hours
100	2 hours
102	1.5 hours
105	1 hour
110	30 minutes
115	15 minutes or less

### **Prevention**

The following steps can help prevent hearing loss from loud noises and keep hearing loss from aging from getting worse:

- **Protect your ears.** Staying away from loud noise is the best protection. In the workplace, plastic earplugs or glycerin-filled earmuffs can help protect hearing.
- **Have your hearing tested.** If you work around a lot of noise, think about regular hearing tests. If you've lost some hearing, you can take steps to prevent further loss.
- **Avoid risks from hobbies and play.** Riding a snowmobile or a jet ski, hunting, using power tools, or listening to rock concerts can damage hearing over time. Wearing hearing protectors or taking breaks from the noise can protect your ears. Turning down the volume when listening to music helps too, especially if you are listening to music with ear buds.

**Source:** Mayo Clinic Staff