

Hearing Loss



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Hearing Loss

Goals and Objectives

- Goal
 - Provide information and resources related to hearing loss.
- Objectives
 - Identify types of hearing loss
 - Identify risk factors of hearing loss
 - Identify symptoms of hearing loss
 - Discuss options for diagnosis and treatment
 - Describe strategies related to prevention and coping with hearing loss

Materials Needed (available from <http://teea.tamu.edu>)

- “Hearing Loss” PowerPoint
- “Hearing Loss” Handout
- “Telephone Game” Icebreaker
- Evaluation

Icebreaker

Group Leader will arrange attendees in a line so that one person can whisper to another person to another, etc. Ask the last person in the line to say what s/he heard. Compare that to what the first person was told. Whisper the following statement to the first person in the line:

This year, the weather people in South Texas are warning us to expect a big snow fall in July.

Hearing Loss

Presenter:
Education Chair and Author: Janet Reed
Texas Extension Education Association
2017



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Hearing loss is a common problem caused by noise, aging, disease, and heredity. People with hearing loss may find it hard to have a conversation with friends and family. They may also have trouble understanding a health provider's advice, responding to warnings, and hearing doorbells and alarms.

Some people may not want to admit they have trouble hearing. But hearing loss poses risks for depression, frustration, isolation and embarrassment, among other conditions. Understanding how hearing loss happens and options to help manage it are key to healthy aging and coping with changes in this critical sense.

How You Hear

- Sound waves get converted into nerve signals that the brain recognizes as sound
- Three major parts of the ear
 - Outer ear
 - Middle ear
 - Inner ear

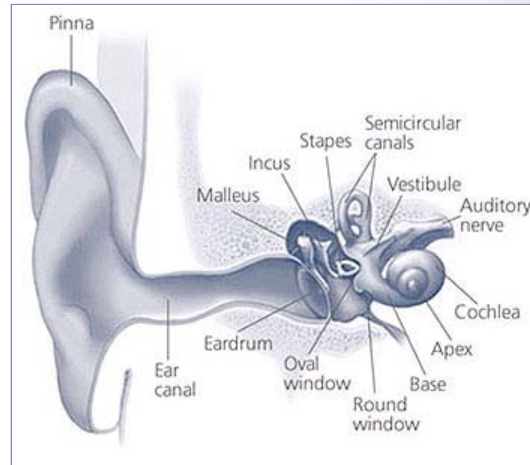


Image Credit: National Institutes of Health – National Institute on Deafness and Other Communication Disorders. Retrieved from <https://www.nidcd.nih.gov/health/age-related-hearing-loss> on 15 August 2017.



Hearing occurs when sound waves reach the structures inside your ear. The sound wave vibrations are converted into nerve signals that your brain recognizes as sound.

Your ear consists of three major areas: outer ear, middle ear and inner ear. Sound waves pass through the outer ear and cause vibrations at the eardrum. The eardrum and three small bones of the middle ear amplify the vibrations as they travel to the inner ear. There, the vibrations pass through fluid in a snail-shaped structure in the inner ear.

In the inner ear are thousands of tiny hairs that help translate sound vibrations into electrical signals that are transmitted to your brain. The vibrations of different sounds affect these tiny hairs in different ways, causing the nerve cells to send different signals to your brain. That's how you distinguish one sound from another.

Causes of Hearing Loss

- Conductive
 - Problems with the ear canal, ear drum or middle ear
- Sensorineural
 - Problems of the inner ear or damage to the tiny hair cells
- Mixed
 - Combination of conductive and sensorineural hearing loss

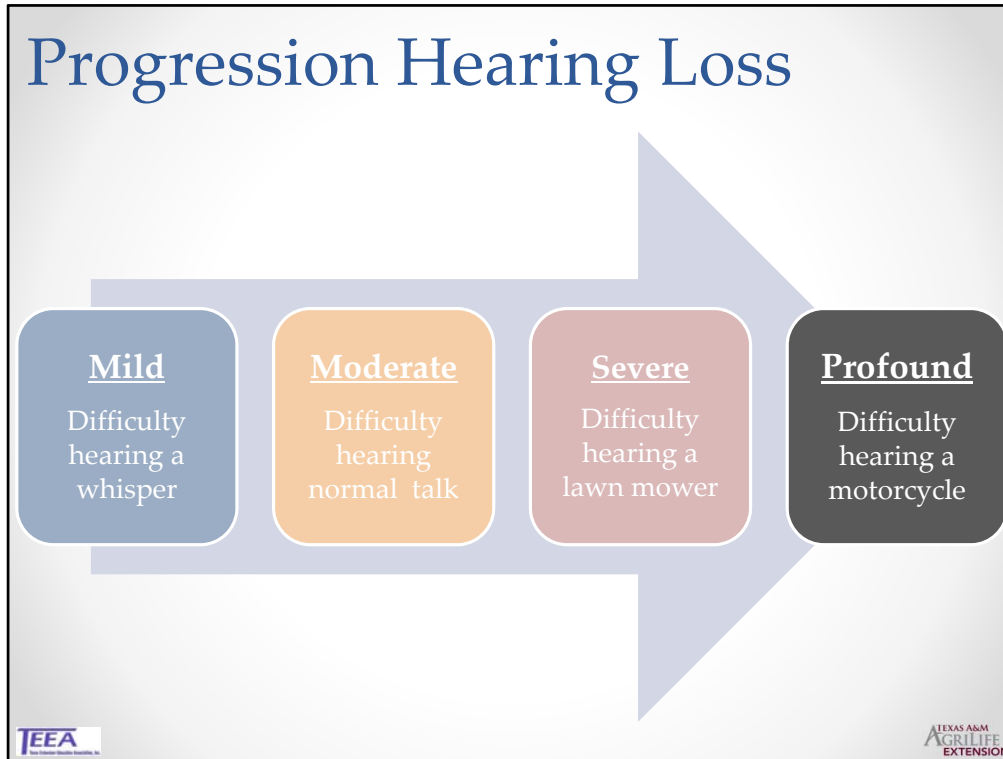


Conductive hearing loss - when hearing loss is due to problems with the ear canal, ear drum, or middle ear and its little bones (the malleus, incus, and stapes). A conductive hearing loss is caused by the inability to conduct sound from the outer ear and the middle ear into the inner ear.

Sensorineural hearing loss also known as nerve-related hearing loss - when hearing loss is due to problems of the inner ear, damage to the tiny hair cells,. The causes of a sensorineural hearing loss can be noise, age, medication and lifestyle as well as genetic causes.

Mixed hearing loss - refers to a combination of conductive and sensorineural hearing loss. This means that there may be damage in the outer or middle ear and in the inner ear or auditory nerve.

Hearing loss can be temporary or permanent and can affect one or both ears. Hearing loss may also occur suddenly and can sometimes be related to a cause. For instance, a noise-induced hearing loss may be caused by exposure to a loud noise. Hearing loss may also be age-related.



The most common categories of hearing loss are mild, moderate, severe and profound.

- Mild hearing loss
 - People who suffer from mild hearing loss have some difficulties keeping up with conversations, especially in noisy surroundings.
- Moderate hearing loss
 - People who suffer from moderate hearing loss have difficulty keeping up with conversations when not using a hearing aid.
- Severe hearing loss
 - People who suffer from severe hearing loss will benefit from powerful hearing aids, but often they rely heavily on lip-reading even when they are using hearing aids.
- Profound hearing loss
 - People who suffer from profound hearing loss are very hard of hearing and rely mostly on lip-reading, and/or sign language.

Risk Factors for Hearing Loss

- Aging
- Loud Noise
- Family History
- Occupational Noise
- Recreational Noise
- Medication
- Illness



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Hearing loss can have many different causes, some of which can be successfully treated with medicine or surgery, depending on the disease process.

Hearing loss that occurs as you age is common due to the gradual degeneration of inner ear structures. About 25 percent of people in the United States between the ages of 55 and 64 have some degree of hearing loss. For those older than 65, the number of people with some hearing loss is almost 1 in 2. Aging and chronic exposure to loud noises are significant factors that contribute to hearing loss. Other factors, such as excessive earwax, can temporarily prevent your ears from conducting sounds as well as they should.

Exposure to loud sounds can damage the cells of your inner ear. Damage can occur with long-term exposure to loud noises, or from a short blast of noise, such as from a gunshot.

Your genetic makeup may make you more susceptible to ear damage from sound or deterioration from aging.

Jobs where loud noise is a regular part of the working environment, such as farming, construction or factory work, can lead to damage inside your ear.

Exposure to explosive noises, such as from firearms and jet engines, can cause immediate, permanent hearing loss. Other recreational activities with dangerously high noise levels include snowmobiling, motorcycling or listening to loud music.

Some medications can damage the inner ear. Additionally, certain medications, both prescription and over-the-counter may cause temporary effects on your hearing — ringing in the ear or hearing loss.

Diseases or illnesses that result in high fever, such as meningitis, may damage sensitive parts of the ear.

Signs and Symptoms

- Muffling of speech and other sounds
- Difficulty understanding words
 - Especially against background noise or in a crowd
- Frequently asking others to speak more slowly, clearly and loudly
- Needing to turn up the volume of the television or radio
- Withdrawal from conversations
- Avoiding some social settings



If you think you or someone you know might have a hearing loss, you are not alone. If you have suspected for a while but just haven't got around to doing anything about it, that is not unusual. On average, it takes people seven years from the time they think they might have a hearing loss to the time they seek treatment.

If you have a sudden loss of hearing, particularly in one ear, seek immediate medical attention. Talk to your doctor if difficulty hearing is interfering with your daily life.

Do I Have a Hearing Problem?

Ask yourself the following questions. If you answer “yes” to three or more of these questions, you may need to have your hearing checked.

Do you sometimes feel embarrassed when you meet new people because you struggle to hear?

Do you feel frustrated when talking to members of your family because you have difficulty hearing them?

Do you have difficulty hearing or understanding co-workers, clients, or customers?

Do you feel restricted or limited by a hearing problem?

Do you have difficulty hearing when visiting friends, relatives, or neighbors?

Do you have trouble hearing in the movies or in the theater?

Does a hearing problem cause you to argue with family members?

Do you have trouble hearing the TV or radio at levels that are loud enough for others?

Do you feel that any difficulty with your hearing limits your personal or social life?

Do you have trouble hearing family or friends when you are together in a restaurant?



Adapted from: Newman, C.W., Weinstein, B.E., Jacobson, G.P., & Hug, G.A. (1990). The Hearing Handicap Inventory for Adults [HHIA]: Psychometric adequacy and audiometric correlates. *Ear Hear*, 11, 430-433. Retrieved from <https://www.ncbi.nlm.nih.gov/health/age-related-hearing-loss/> on 15 August 2017.



Ask yourself the following questions. If you answer “yes” to three or more of these questions, you may need to have your hearing checked.

- Do you sometimes feel embarrassed when you meet new people because you struggle to hear?
- Do you feel frustrated when talking to members of your family because you have difficulty hearing them?
- Do you have difficulty hearing or understanding co-workers, clients, or customers?
- Do you feel restricted or limited by a hearing problem?
- Do you have difficulty hearing when visiting friends, relatives, or neighbors?
- Do you have trouble hearing in the movies or in the theater?
- Does a hearing problem cause you to argue with family members?
- Do you have trouble hearing the TV or radio at levels that are loud enough for others?
- Do you feel that any difficulty with your hearing limits your personal or social life?
- Do you have trouble hearing family or friends when you are together in a restaurant?

Diagnosing Hearing Loss

- Talk to your health provider
 - It's important to determine the type and cause of hearing loss
- Tests to diagnose hearing loss may include
 - History and physical exam
 - Spoken word testing
 - X-Rays and imaging
- Referral to an Audiologist



If you are concerned about hearing loss, talk to your health provider. It is important to determine the type and cause of hearing loss; and to rule out other medical conditions. A hearing loss is diagnosed based on the person's history, behavior, and the results of medical and audiological examinations. Sometimes a hearing loss may be difficult to identify or diagnose and some providers may tell you that nothing can be done. If that happens, seek an additional opinion to evaluate other options. You may need to consult an Ear, Nose and Throat specialist or a Neurologist.

Tests to diagnose hearing loss may include:

- Physical exam. Your health provider will look in your ear for possible causes of your hearing loss, such as earwax or inflammation from an infection. Your health provider will also look for any structural causes of your hearing problems.
- General screening tests. Your health provider may ask you to cover one ear at a time to see how well you hear words spoken at various volumes and how you respond to other sounds.
- Audiometer tests. During these more-thorough tests, usually conducted by an Audiologist, you wear earphones and hear sounds directed to one ear at a time. The Audiologist presents a range of sounds of various tones and asks you to indicate each time you hear the sound. Each tone is repeated at faint levels to find out when you can barely hear. The Audiologist will also present various words to determine your hearing ability.

Options for Treatment

- Remove blockage
- Surgery
- Hearing aids
 - Completely in the canal
 - In the canal
 - In the ear
 - Behind the ear



Image Credit: National Institutes of Health – National Institute on Deafness and Other Communication Disorders. Retrieved from <https://www.nidcd.nih.gov/health/age-related-hearing-loss> on 15 August 2017.



Treating a hearing issue can help with self-confidence, closer relationships, less risk for depression and many others. Treatment options may include:

- Removing wax blockage. Earwax blockage is a reversible cause of hearing loss. Your health provider may remove earwax by loosening it with oil and then flushing, scooping or suctioning out the softened wax.
- Surgical procedures. Surgery may be necessary if you've had a traumatic ear injury or repeated infections that require the insertion of small tubes that help the ears drain.
- Hearing aids. If your hearing loss is due to damage to your inner ear, a hearing aid can help by making sounds stronger and easier for you to hear. An audiologist can discuss with you the potential benefits of using a hearing aid, recommend a device and fit you with it. Hearing aids use the same basic parts to carry sounds from the environment into your ear and make them louder. Small microphones collect sounds from the environment. A computer chip with an amplifier converts the incoming sound into digital code. It analyzes and adjusts the sound based on your hearing loss, listening needs and the level of the sounds around you. The amplified signals are then converted back into sound waves and delivered to your ears through speakers

The following represent some common hearing aid styles

- Completely in the canal: A completely-in-the-canal hearing aid is molded to fit inside your ear canal. It improves mild to moderate hearing loss in adults.
- In the canal: An in-the-canal hearing aid is custom molded and fits partly in the ear canal. This style can improve mild to moderate hearing loss in adults.
- In the ear: An in-the-ear hearing aid is custom made in two styles — one that fills most

of the bowl-shaped area of your outer ear (full shell) and one that fills only the lower part (half shell). Both are helpful for people with mild to severe hearing loss.

- Behind the ear: A behind-the-ear hearing aid hooks over the top of your ear and rests behind the ear. A tube connects the hearing aid to a custom earpiece called an earmold that fits in your ear canal. This type is appropriate for people of all ages and those with almost any type of hearing loss.

And there may be other types to best address a particular need or type of hearing loss. Discuss all of your options with a trained hearing device professional.

Coping with Hearing Loss

- Be proactive!
- Use your assistive device
- Position yourself to hear
- Turn off background noise
- Ask others to speak clearly
- Choose quiet settings



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These tips can help you to communicate more easily despite your hearing loss:

- Position yourself to hear. Face the person with whom you're having a conversation.
- Turn off background noise. For example, noise from a television may interfere with conversation.
- Ask others to speak clearly. Most people will be helpful if they know you're having trouble hearing them.
- Choose quiet settings. In public, such as in a restaurant or at a social gathering, choose a place to talk that's away from noisy areas.
- Consider using an assistive listening device. Hearing devices, such as TV-listening systems or telephone-amplifying devices, can help you hear better while decreasing other noises around you. Telephone service over the Internet — known as Voice Over Internet Protocol (VoIP) — transmits more frequencies from human speech than does standard telephone service, which may make it easier to hear during phone calls.
- Maintain a sense of humor, stay positive and relaxed.

Additionally, there are some tips for Hearing Person to Communicate with Person who has a Hearing Loss

- Face person directly. Don't hide your mouth, chew food, gum, or smoke while talking.
- Avoid noisy backgrounds.
- Get attention first.
- Ask how you can facilitate communication.
- When audio and acoustics are poor, emphasize the visual.
- Don't shout. Speak clearly, at moderate pace, not over-emphasizing words.

- Use facial expressions, gestures. Give clues when changing subjects or say “new subject.”
- Show respect to help build confidence and have a constructive conversation.

Reduce the Risk of Hearing Loss

- Keep music down
- Seek silence
- Protect your ears
 - Ear plugs
 - Beware the cotton swab
- Be aware of medication side-effects
- Get your hearing tested



The good news is that there are a few simple steps that, if taken, can head hearing loss off at the pass.

- Keep the Music Down
 - Hearing loss is often caused by trauma associated with extremely loud sound, from noisy vehicle engines/exhaust to concert speakers to power tools like drills and saws. But hearing loss is often caused by excessively loud music played through headphones, home theater systems, or car stereos. To ensure your hearing doesn't start to fade, keep the music down, especially when listening through headphones.
- Seek Silence
 - Keep the noise level down by buying vehicles, appliances, and electronic devices that have low noise ratings. Keep noise in mind whenever making purchases for your home.
- Protect your Ear
 - If you know you're going to be in an area with a lot of loud noise, protect your precious ear drums. That means wearing high-quality ear plugs or ear coverings when on construction sites or going to concerts. Be sure to protect your ears when using loud machinery to do yard work or complete a home project. Using a cotton swab to clean your ears can actually push wax deeper into the ear canal, potentially damaging your eardrums. There's an old saying that you shouldn't put anything in your ear that's smaller than your elbow!
- Watch your Medication
 - There are actually hundreds of medications that can contribute to hearing loss. If

you're concerned about how your medication, over the counter or prescription, is affecting your hearing, talk to your doctor.

- Get your Hearing Tested
 - A hearing test can tell you if you need to make lifestyle changes to preserve your hearing.

Key Takeaways

- Hearing loss is a serious issue that affects many adults
- Hearing loss may be caused by a variety of issues requiring thorough evaluation by a health provider
- Options are available to help cope with hearing loss



Let's review some of the key points we learned today.

Resources

- National Institute on Deafness and Other Communication Disorders
 - <https://www.nidcd.nih.gov>
- National Institute for Occupational Safety and Health
 - <https://www.cdc.gov/niosh>
- American Academy of Audiology
 - <http://www.audiology.org>
- American Speech-Language-Hearing Association
 - <http://www.asha.org>

NIDCD Fact Sheet | Hearing and Balance
Age-Related Hearing Loss

What is age-related hearing loss?
Age-related hearing loss (presbycusis) is the loss of hearing that gradually occurs in most of us as we grow older. It is one of the most common conditions affecting older and elderly adults.
Approximately one in three people in the United States between the ages of 65 and 74 has hearing loss, and nearly half of those older than 75 have difficulty hearing. Hearing trouble hearing can make it hard to understand and follow a doctor's advice, respond to warnings, and hear phones, doorbells, and smoke alarms. Hearing loss can also make it hard to enjoy talking with family and friends, leading to feelings of isolation.

The auditory system

How do we hear?
Hearing depends on a series of events that change sound waves in the air into electrical signals. Your auditory system then carries these signals to your brain through a complex series of steps.
1. Sound waves enter the outer ear and travel through a narrow passageway called the ear canal, which leads to the eardrum.

NIH/NIDCD. Improving the lives of people with communication disorders.

What Questions Would You Like to Ask?

References

<http://www.activebeat.co/your-health/listen-up-these-6-habits-cause-hearing-loss/3/>
<http://www.activebeat.co/your-health/8-tips-for-preventing-hearing-loss/>
<http://www.hearingloss.org/>
<http://www.mayoclinic.org/diseases-conditions/hearing-loss/basics/definition/con-20027684>
<http://www.mayoclinic.org/diseases-conditions/hearing-loss/expert-answers/con-20027684>
<http://www.hear-it.org/farmers-risk-hearing-loss>
<http://www.hear-it.org/general-state-health-influences-hearing-loss-among-seniors>
<http://www.hear-it.org/Alcohol-can-cause-hearing-loss>
<http://www.hear-it.org/Cigarette-smoking-and-hearing-loss>
<http://www.hear-it.org/diabetics-twice-as-likely-to-suffer-hearing-loss>
<http://www.hear-it.org/cholesterol-affecting-hearing>
<http://www.hear-it.org/Defining-hearing-loss>
<http://www.hear-it.org/types-hearing-loss>



Hearing Loss Evaluation

Please take a moment to provide feedback on this program.

1. Regarding the **overall program/teaching** (rate your response by circling a number):

Statement	Scale (1= Worst, 5 = Best)				
The value of the lesson was	1 not valuable	2	3	4	5 very valuable
The overall teaching was	1 poor	2	3	4	5 excellent
The teacher's knowledge of the lesson was	1 poor	2	3	4	5 excellent

2. Regarding **what you know and actions you plan to take** (circle your response):

- I learned new information today. YES NO
- I plan to use the information I learned today. YES NO
- I feel this information helps me understand hearing loss. YES NO
- I think I will be able to share a resource related to hearing loss. YES NO
- I know how to make at least one change to help improve my hearing. YES NO

3. This lesson was delivered by a(n) (check only one):

_____ TEEA Member. _____ Extension Agent/Specialist _____ Other Speaker.

4. Please tell us about yourself.

I am a _____ Woman. _____ Man.

I am in District: 1 2 3 4 5 6 7 8 9 10 11 12

I have been a member of TEEA for _____ years.

My age is _____ years-old.

5. Additional Comments.

Thank You For Completing This Form!