



## Why put up with hearing loss?

Hearing loss is one of the most common conditions affecting older adults. When left untreated, it can significantly impact your quality of life, but it does not have to be that way. There are remarkable quality-of-life-enhancing solutions. The key is early identification and intervention.

Individuals who choose to wear a hearing instrument report a significant improvement in quality of life, self-confidence, personal relationships, and mental well-being. Today's hearing instruments are also as small, comfortable and attractive as they are powerful.



## Evolution of the Hearing Instrument

Over the last 15 years, hearing instruments have been transformed from large, visible sound amplifiers to miniature high performance solutions. Today, it is often impossible to see that someone is even wearing a hearing device.



## Signs of Hearing Loss

Many individuals have a difficult time believing/accepting that they have a hearing loss. Part of the reason is that hearing loss often occurs gradually, so it's not always easy to notice at first. Often, people discover their hearing loss through the reactions of others.

### The following questions may help you decide whether you should have your hearing tested:

- Do you frequently ask for words to be repeated?
- Do you often turn up the television or radio louder than others like?
- Does speech sound muffled to you, or do people sound as though they're mumbling when they speak to you?
- Do you have ringing in your ears?
- Do you have trouble hearing over the telephone?
- Do you find it difficult to follow a conversation in a noisy restaurant or crowded room?
- Have you been exposed to significant noise at work?
- Do you find men's voices easier to understand than women's?
- Does a hearing problem cause you to feel embarrassed when meeting new people?
- Does a hearing problem cause you to visit friends, relatives or neighbors less often than you would like?
- Does a hearing problem cause you to talk to family members less often than you would like?
- Does a hearing problem cause you to feel depressed?

If you answered "Yes" to any these questions, you may have a hearing problem and should consider getting your hearing tested by a qualified hearing care professional. Answering "Yes" to several of the questions suggests that you should definitely have your hearing tested.



# Types of Hearing Loss

To understand hearing loss requires a basic understanding of how we hear. Your outer ear acts like a dish that collects sound waves. These sound waves travel along the ear canal and vibrate against the ear drum.

## Middle Ear

When the eardrum vibrates, the Hammer, Anvil and Stirrup (the smallest bones in the body) transfer vibrations to the fluid-filled cochlea in the inner ear. .

## Inner Ear

The ripples in the fluid bend the hair cells in the cochlea. This movement is then converted into electrical impulses that are carried through the auditory nerve to the brain, where they are translated into meaningful information.

## Hearing is a complex process and, as with any process, things can go wrong.



**Sensorineural loss** is the most common type of hearing loss and occurs when the nerve endings in the inner ear are not transmitting sound properly, often as a result of damage to the hair cells in the cochlea. This damage can be caused by a number of things, including noise or a natural withering of the cells (presbycusis) that comes with age. Sensorineural loss cannot be cured medically, but it can typically be improved through the use of hearing instruments.

**Conductive loss** occurs when sound is not being sent properly to the inner ear due to some “mechanical” problem. Conductive loss is often the result of damage or blockage in the middle ear. In some cases, conductive hearing problems can be corrected with medicine or surgery. If not, hearing aids can be of benefit.

## Regaining Hearing

The most common types of chronic hearing loss can be improved with hearing instruments. Hearing improvement programs or hearing instruments will not restore normal hearing, or prevent or improve a hearing impairment caused by organic conditions. However they can help many people with hearing loss reclaim sounds that would otherwise be lost to them. These sounds include the subtle variations in speech we rely upon to understand conversation. They also include an infinite variety of sounds that add color to life.

## Hearing Instruments

At the most basic level, a hearing device is a miniature sound amplifier. It receives sounds through a microphone, converts them to electrical impulses, amplifies the impulses, and converts them back into sound.

## Different Kinds of Hearing Loss

If that's all a hearing instrument were to do, however, it would be of limited use because it would amplify all incoming sounds equally. This would be ineffective because all hearing losses are different.

Hearing loss patterns are as unique as thumbprints — some individuals lose hearing in the high frequencies, while others lose the middle or low frequencies. Individuals with hearing loss also have widely varying comfort levels when it comes to the loudness of various sounds. That is why a hearing instrument must be highly selective in how it amplifies sound for its user.





## Digital Quality

The advent of digital hearing instruments made highly personalized fitting possible. Hearing care professionals feed hearing test results into a computer, which is then used to adjust hearing instruments for a user's particular needs. The hearing instruments then convert sounds into digital code, manipulate the code according to the user's programmed needs, and re-convert it into "CD" quality sound.



## One or Two Devices?

There are many reasons to use two hearing instruments (binaural) instead of one. The most fundamental reason is that you have two ears, which means binaural listening is more comfortable, natural and effective.

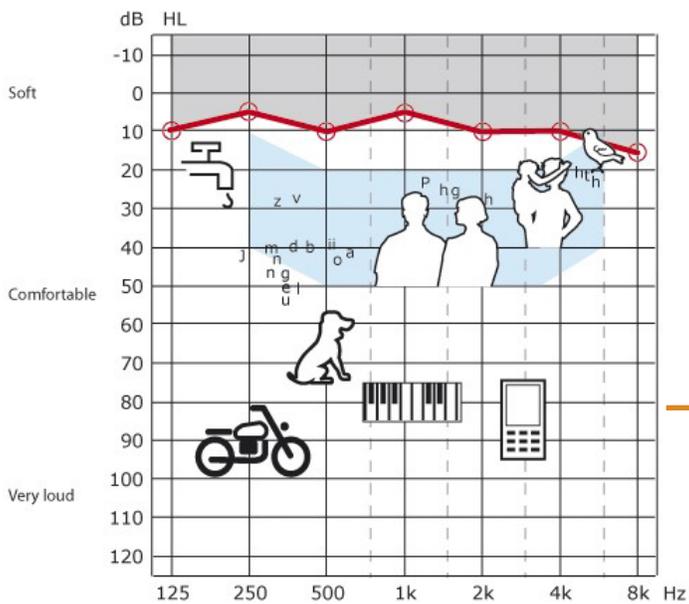
Your brain is accustomed to processing sound from both sides of your head, so it's no wonder that balancing the loudness of sounds entering both your ears works better than using just one ear.

Test comparisons show that individuals with devices in both ears hear sounds from a greater distance and can distinguish words better than those with just one instrument. They also have a much greater ability to tell from which direction sounds originate (localization). Furthermore, using just one device creates a "head shadow effect" in which sounds lose their intensity by having to go around a person's head to get to the amplified ear.

## Speech Understanding

Speech consists of combinations of vowels and consonants. Vowels are louder than consonants, but consonants are more important for speech understanding. A person's hearing threshold is the level of loudness above which a person can hear sounds. Sounds that are softer (quieter) than the threshold cannot be heard.

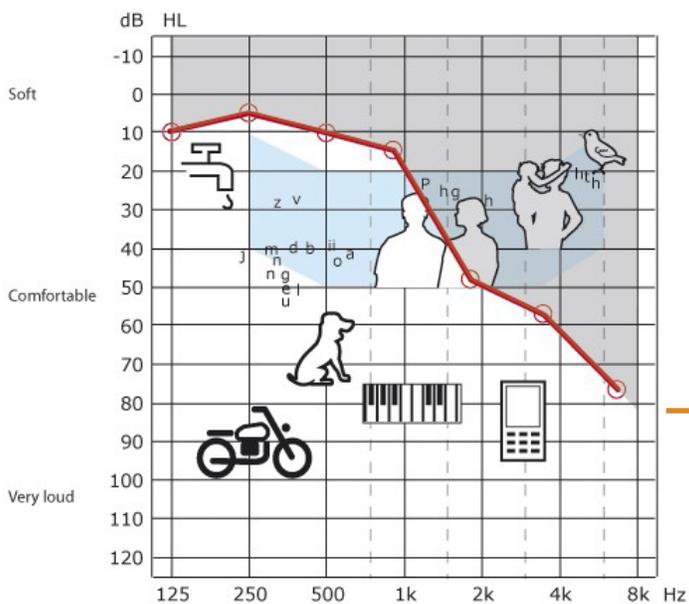




## Normal Hearing

Individuals with normal hearing can hear all the sounds that are a part of speech (and other environmental sounds) at normal levels of loudness. When each speech sound is perceived at its normal loudness, words are easily recognized and it is possible to carry on a conversation even in the presence of background noise.

*Normal Hearing Threshold: All speech and environmental sounds are at a level of loudness above the hearing threshold (red line) and can therefore be heard.*



## Hearing Loss

When a person suffers from hearing loss, it becomes difficult for that person to hear consonants of either soft or medium loudness. It can therefore be difficult for the person to distinguish between words that are closely related phonetically, such as “star” and “tar.” When background noise is present, it becomes even more difficult to recognize speech sounds and understand what is being said because the background noise covers over or “masks” the desired speech sounds.

*Abnormal Hearing Threshold: Some speech and environmental sounds are at a level of loudness below the hearing threshold and are therefore no longer audible (grey area).*

## Expectations

Your hearing exam will indicate whether you have hearing loss. If the nature of your hearing loss indicates a possible medical condition that can be treated with medicine or surgery, you will be referred to an ear doctor. If not, and it is determined that a hearing aid can help you, your hearing healthcare professional will present your options. Factors such as your hearing profile, ear shape and size, lifestyle, desire to have user-controlled options, cosmetic needs, and budget will all weigh into the decision.

After choosing the proper aids, they will be adjusted to fit physically and acoustically. **Hearing better is a process, not an event**, so you may require some adjustments to the amplification over time to maximize performance.

**Always be sure that you are comfortable with the knowledge and care that your hearing professional provides you on your journey to better hearing.**

