Choosing Care for Hearing Loss

While you have many options for the treatment of hearing loss, you should consider the experience of the program when selecting where to receive care. Cleveland Clinic specialists in the Head & Neck Institute explore all options to ensure that our hearing loss management program will result in an optimal outcome for each patient. Cleveland Clinic has been ranked among America’s top hospitals since U.S. News & World Report began its survey of “America’s Best Hospitals” in 1990. The 2011-12 survey recognized Cleveland Clinic as one of the nation’s best hospitals overall, ranking it No. 4 in the country. The magazine ranks our ear, nose and throat program No. 8 in the nation.

This guide provides an overview of the hearing loss management options offered at Cleveland Clinic. Please use this guide as a resource as you examine your treatment and management options. Remember, it is your right as a patient to ask questions and to seek a second opinion.
How common is hearing loss?

Approximately 17 percent of American adults (36 million) report some degree of hearing loss – a condition in which a person is partially or totally unable to hear in one or both ears. Hearing loss is the most common congenital anomaly found in newborns. Approximately one to three per 1,000 babies are born with significant hearing loss. Hearing loss also may occur after birth. One in every six children has some degree of hearing loss in early childhood, whether temporary or permanent.

Signs of hearing loss in adults

The following may be signs that a person is struggling with hearing loss:

- Complaining that people mumble
- Constantly asking people to repeat what they have said
- Avoiding noisy rooms, social occasions or family gatherings
- Preferring the television or radio to be louder than other people
- Having trouble understanding at the movies or theater, houses of worship, or other public gatherings
- Having difficulty understanding people when their faces cannot be seen
- Having difficulty understanding conversations in a group
- Becoming more impatient, irritable, frustrated or withdrawn
- Straining to hear conversations

Signs of hearing loss in infants and children

The following may be signs that an infant or child is struggling with hearing loss:

- Not passing the Universal Newborn Hearing Screening (UNHS) may be an early indicator of hearing loss
- Delayed speech and language development
- Often using words like “huh” or “what” and asking people to repeat themselves
- Having difficulty reproducing high-pitch or high-frequency consonant sounds, such as “s,” “sh,” “f,” and “th”
- A change in performance in school
Types of hearing loss?

Conductive hearing loss results from problems in the outer or middle ear. Conductive hearing loss includes any condition that prevents sound from reaching the eardrum or prevents the eardrum or middle ear bones (ossicles) from vibrating effectively. Sometimes, the cause of conductive hearing loss can be treated medically or surgically, resulting in a complete or partial improvement in hearing.

Sensorineural hearing loss (SNHL) occurs when there is a problem with the structure or function of the inner ear or auditory nerve. Sensorineural hearing loss is usually permanent and not reversible.

Mixed hearing loss is a combination of both conductive and sensorineural hearing loss.

Auditory Neuropathy Spectrum Disorder (ANSD) is a different type of hearing loss from the other three. It is caused when there is a disconnection or lack of communication between the inner ear and the auditory nerve.

What causes hearing loss?

Hearing loss affects people of all ages for a variety of reasons.

Age-related hearing loss occurs slowly over time. Exposure to loud noises, smoking and environmental toxins over time are the primary cause; however, family history and certain medical conditions and medications can contribute to age-related hearing loss.

Noise exposure (e.g., construction, loud music, firearms, power tools) can cause injury to the delicate structures in the inner ear. A single gunshot can result in permanent hearing loss. Noise exposure is cumulative and depends on how loud the sound is and how long it is present. This type of hearing loss can be prevented by turning the volume down, walking away from the sound source or by wearing hearing protection such as earplugs or earmuffs.

Viral or bacterial infections often affect any part of the hearing system and may cause hearing loss that is of sudden onset.

Injury to the head or ear from skull fractures or pressure differences from scuba diving may cause hearing loss.

Certain medications (e.g., chemotherapy drugs, excessive amounts of aspirin) can damage the delicate structures in the inner ear.

How is hearing loss diagnosed?

An audiologist – a professional who specializes in evaluating and managing hearing loss – will determine the type and degree of your hearing loss and its impact on your ability to communicate. Various methods of testing are used to evaluate the auditory system depending on your age and the nature of your hearing loss. These may include tests that require your responses to tones or speech, questionnaires that evaluate your impression of your hearing loss, and/or specialized objective tests in which your feedback is not required.

An otolaryngologist (ENT) physician or neurotologist (ENT subspecialist who focuses on the ear) evaluates and treats diseases of the ear.
Treatment Options

If hearing loss is identified, what types of treatment and management options are available?

Some hearing loss may be treated medically or surgically. The exact type of medical or surgical treatment is dependent upon the underlying cause of your hearing loss. Your physician will discuss medical or surgical treatment options, if appropriate, with you.

Hearing aids

Hearing aids cannot restore hearing to normal or provide a perfect substitute for normal hearing. The benefits derived from wearing them vary from person to person. However, hearing aids can:

- Improve a person’s ability to understand speech (such as conversations) by amplifying the sounds (such as high-pitched consonants) not audible to the individual. The extent to which a hearing aid can improve speech understanding will depend on the degree of the person’s hearing loss and how much noise is present in the listening situation. Some hearing aids can amplify high-pitched consonant sounds more than low-pitched vowel sounds to help you hear better in noisy situations. There are no hearing aids, however, that can completely eliminate troublesome background noise.

- Make sounds louder (amplify sounds) so that you can hear them. The goal with hearing aids is to make soft sounds audible, the sound of normal conversation comfortable, and loud sounds loud, but not too loud.

Hearing aids come in a variety of styles and levels of technology, each with its own advantages and limitations. Selecting a style and technology that is right for you depends on a number of factors, including the severity of your hearing loss, the size and shape of your ear, your personal preferences and lifestyle.

Audiologic Management

For hearing loss that cannot be treated medically or surgically, there are a variety of hearing devices available for audiologic management. Hearing device technology has improved tremendously over the past decade.
Implantable devices:

**Cochlear Implants**

A cochlear implant is a device that may improve hearing for people with substantial sensorineural hearing loss (SNHL). The cochlear implant system includes an internal device that is surgically placed in the cochlea (inner ear) during an outpatient procedure and a device with a sound processor that is typically worn behind the ear. The processor converts speech and sound into electrical energy that is sent to the implanted device to stimulate the hearing nerve directly.

A cochlear implant is very different from a hearing aid and is appropriate for those for whom hearing aids provide limited benefit. A hearing aid makes sounds louder, with the sound still traveling through the entire ear to the hearing nerve. A cochlear implant bypasses the rest of the ear and directly stimulates the hearing nerve with electrical energy. Clarity with a cochlear implant is usually better than a hearing aid for appropriate candidates because the implant does not rely on using the parts of the hearing system that are not working normally.

Both adults and children can benefit from cochlear implants. The age of patients who receive them ranges from approximately 12 months to 90 years and over. In general, cochlear implants are appropriate for:

- Adults with moderate-to-profound SNHL is both ears
- Children ages 2 to 18 years with severe-to-profound SNHL in both ears
- Children younger than age 2 with profound SNHL in both ears

Cochlear implants may be suggested when hearing aids no longer allow the wearer to understand speech well. Audiologic assessment for cochlear implants includes testing both with and without hearing aids to understand the degree of benefit that a patient’s hearing aids are currently providing. The patient must have no medical or radiological contraindications, be motivated to participate fully in the rehabilitation process, and have family support, and a clear understanding of the limitations of cochlear implants. Candidacy guidelines for cochlear implantation are governed in part by the U.S. Food & Drug Administration and Medicare requirements.

**About the Cleveland Clinic Hearing Implant Program**

Cleveland Clinic's Hearing Implant Program (HIP) provides high-quality, team-centered, patient-focused hearing care for adults and children with hearing loss. The multidisciplinary HIP team consists of specialists from a variety of disciplines, including neurotology, pediatric otolaryngology, audiology and speech-language pathology. The HIP team is dedicated to the long-term support of our implant recipients from candidacy evaluation through surgery, initial device fitting and programming, rehabilitation, and long-term management. HIP team members offer comprehensive clinical services and are also involved in various areas of implant research.

The HIP team reviews each patient to determine if he or she is a candidate for a hearing implant. Its members work closely with patients and their families to guide them toward the best course of treatment based on their personal and family goals.
Bone-Anchored Auditory Implants

A bone-anchored auditory implant is a surgically implanted prosthetic device that may partially restore hearing in individuals with conductive hearing loss, mixed hearing loss or single-sided deafness. Absence of medical and radiological contraindications is required. In addition, motivation to participate fully in the rehabilitation process and having family support and a clear understanding of the benefits of bone-anchored auditory implants are critical factors in determining candidacy. According to current guidelines, children under 5 are too young for surgical placement of the device. They instead may qualify to use the hearing device on a soft headband. Candidacy guidelines for bone-anchored implantation are governed in part by the U.S. Food & Drug Administration and Medicare requirements.

Options for Single-Sided Deafness

The complete loss of hearing in only one ear, known as single-sided deafness (SSD), diminishes the ability to localize sound and reduces communication function in difficult listening environments. Patients with SSD are often told to adapt by positioning their better-hearing ear more favorably toward the talker. Today, we are able to offer a variety of new and improved audiologic and surgical management options in order to help those with SSD.

Contralateral routing of signals (CROS) hearing aids are now available in miniaturized sizes thanks to recent advances in technology. When using the CROS system, a microphone is worn on the deaf ear and the sound is transmitted wirelessly to the normal hearing ear. The BiCROS, or bilateral hearing system, allows re-routing of sound and amplification to the better hearing ear which still has some degree of hearing loss.

Bone-anchored auditory implants provide a surgical option for patients with SSD, as well as conductive or mixed hearing losses. A bone-anchored auditory implant includes a titanium abutment, which is implanted in the bone behind the ear. An external sound processor is attached to the abutment which transmits sound to the inner ear via bone conduction.

The TransEar® bone-conduction device employs the use of a small bone-conduction transducer housed in a deeply fitted earmold that makes contact with the bony portion of the ear canal. Suitability for this device is based on a patient’s ear canal anatomy.

The SoundBite™ hearing system employs two components — a behind-the-ear microphone unit worn on the impaired ear and a retainer-like device fitted around the upper left or right molars. Similar in concept to the bone-anchored auditory implant and TransEar®, SoundBite™ transmits the bone-conducted signal to the normally functioning cochlea.
Wireless Connectivity Options

While hearing aids or implants are a tremendous help in many situations, you may still have difficulty hearing the TV or callers on the telephone, and communicating in an extremely noisy situation or in large group settings. For these more challenging listening environments, today’s technology allows your hearing device to connect wirelessly to these other sources of sound with special accessories. Your audiologist can discuss how to integrate any of the following technologies most effectively in your daily life:

Phone/TV/MP3 accessories – Several connectivity devices are available that stream information directly to your hearing device. These wireless, remote-controlled accessories can help you easily utilize your cell phone, GPS, MP3 player, tablet, video games and other audio electronics. They also allow you to set a volume that is comfortable for you, independent of your spouse or partner, for example, when watching TV together.

Wireless Lapel Microphone – The wireless lapel microphone also streams information directly to your hearing aids. This device may be worn on the lapel, or oriented in the center of a small group setting, such as a restaurant. It is also useful for communicating with fellow passengers when driving.

FM Systems – When used in combination with hearing aids or implantable devices, these systems can reduce communication difficulties caused by background noise, reverberation (echo), and those in which you must hear from a distance. They essentially bring the talker’s voice directly to you and may be useful in classrooms, lecture halls, noisy restaurants and houses of worship. FM systems consist of a transmitter (which can be worn by a speaker, set in the center of a group, or connected to device such as a PA system or TV) and a receiver, which is either worn around the neck or connected directly to your hearing device.

Hearing Assistive Technology Systems (HATS)

Depending on your degree of hearing loss, you may benefit from additional devices that can improve your quality of life and keep you safe. These devices may be used in combination with your hearing aids or implantable device, or they may be most useful during times when you are not wearing your hearing device. Your audiologist can recommend and help you obtain devices that may be appropriate for your situation.

TV listener – This device uses a microphone and ear buds to allow you to listen to the television (or radio) at a louder volume without turning up the TV’s volume.

CapTel telephone – This telephone works just like any other telephone, except that it also automatically provides captions (just like on a TV) so you can both listen to the caller’s voice and read along with what they are saying.

Telephone amplification – Several types of devices can be attached to your phone to help you hear conversations by increasing the volume of the incoming voice. There also are specially designed telephones that both amplify sound and enhance higher frequencies (pitches), which are important for understanding speech.

Alerting devices – These devices are designed to help you identify the presence of sound and are important for the safety of those with hearing loss. These devices are used to alert the user to such noises as the phone ringing, the doorbell chiming, and an alarm clock or smoke alarm sounding. Alerting devices may use vibration or light to keep you aware of the environment, particularly when your hearing device is off – for example, when sleeping.
Why should I choose Cleveland Clinic?

At the Head & Neck Institute, we offer patients the most advanced management options for any type of hearing loss. Our institute uses a multidisciplinary team approach, bringing all of the experts that you need together under one roof, including audiologists, otolaryngologists, neurologists and auditory-verbal therapists. Our experienced team works closely together and helps develop an individualized plan to best meet your needs.

Pediatric Hearing Management Clinic

Hearing can be evaluated and diagnosed in children of any age. Newborns have their hearing screened before they are discharged from the hospital. More in-depth diagnostic testing is recommended for babies who do not pass their screenings at birth as well as for babies and children with risk factors for hearing loss. The effects of untreated hearing loss can range from speech/language difficulties to trouble in social situations to increased risk of academic failure.

Various early intervention and special education services are available to provide resources, support and language/auditory stimulation to encourage your child to learn to communicate.

Cleveland Clinic’s Pediatric Hearing Management Clinic provides a comprehensive family-centered approach to the evaluation and management of children with hearing impairment. Our multidisciplinary team is focused on patient care, education and research.

Tinnitus Management Clinic

The Cleveland Clinic Tinnitus Management Clinic (TMC) offers a unique multidisciplinary approach to treating and managing patients with severe or disabling tinnitus (ringing or other sounds in the ear or head). The TMC is staffed by specialists from audiology, dentistry, neurology, physical therapy and psychology.

All patients must be seen by an otolaryngologist to rule out any health-related conditions that could be the cause of the tinnitus or could be treated through medical and/or surgical intervention. Following medical clearance and completion of a recent (past six months) hearing examination by an audiologist, an appointment for the TMC is scheduled. The initial TMC visit lasts about three hours and includes a group education session and screening by each of the specialists. After this visit, patients receive a letter outlining the results of the screening and recommendations for follow-up management. Management options may include the use of sound therapy, bite modification, behavioral modification therapy and/or physical therapy. Most patients obtain relief from their tinnitus using one or a combination of the recommended options.
What can I expect as I begin being evaluated for my hearing loss?

Our team will work with you every step of the way to determine the extent of your hearing loss, its cause and which management option is right for you. Here is a brief look at the initial steps through which new patients typically go:

**Hearing Aids**
- Hearing evaluation
- Medical evaluation, if indicated
- Hearing needs assessment (determination of style and appropriate technology based on communication needs)

**Cochlear Implants**
- Hearing evaluation
- Medical evaluation
- Cochlear implant candidacy evaluation (including testing with hearing aids)
- Hearing implant program team review and approval

**Bone-Anchored Auditory Implants (BAI)**
- Hearing evaluation
- Medical evaluation
- Hearing needs assessment (determination of candidacy for BAI and discussion of other nonsurgical options)
- Hearing implant program team review and approval

**How can I improve my chances of success with hearing technology?**

Here are some tips to help you achieve success with your hearing device or implant:

1. Attend all your scheduled follow-up appointments.
2. Participate in auditory rehabilitation as recommended.
3. Wear your hearing devices as much as possible – preferably the entire time you are awake. The brain needs time to acclimate to processing sounds that haven’t been heard in a long time. The more you wear and utilize your devices, the more quickly and seamlessly the transition will occur.
4. Tell your audiologist if you are struggling in any situations. He or she can discuss programming changes, hearing assistive technology devices and accessory options and even communication strategies that can help you optimize your hearing success.
5. Be your own advocate and take control of your hearing loss.
Ready to take the next step?
Contact us:

Cleveland Clinic’s hearing program extends into the community with hearing specialists at numerous convenient locations throughout Northeast Ohio.

Call 216.444.8500 or 800.223.2273, ext. 48500, to make an appointment with one of our hearing specialists.
You may also request an appointment online at www.clevelandclinic.org/appointments

Need a second opinion but cannot travel to Cleveland?
Our MyConsult service offers secure online second opinions for patients who cannot travel to Cleveland. Through this service, patients enter detailed health information and mail pertinent test results to us. Then, Cleveland Clinic experts render an opinion that includes treatment options or alternative recommendations regarding future therapeutic considerations. To learn more about MyConsult, please visit clevelandclinic.org/myconsult.